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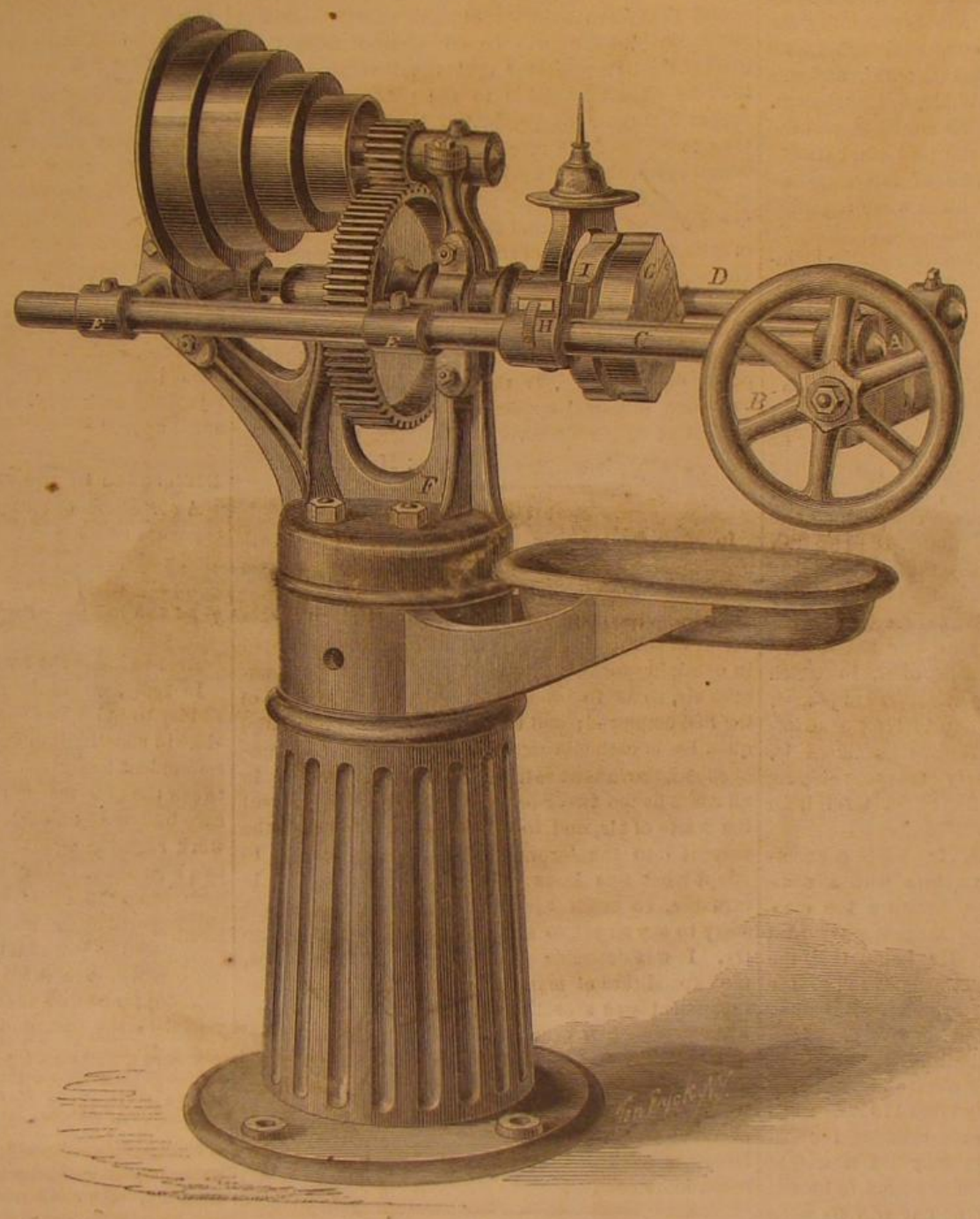
Improved Bolt Cutter.

If "time is money," all saving of the time employed in any process of manufacture is economy in cash; all improvements, therefore, in time-saving machinery are valuable. The ordinary bolt cutter is worked by reverse motions, entailing a loss of power and of time. The improvement here illustrated is intended to thread bolts by a continuous motion and at one operation.



SWEET'S BOLT CUTTER.

At A is a vise, the jaws of which are opened and closed by a right and left screw, worked by the hand wheel, B, which may be placed on either side of the vise to suit the convenience of the workman. The vise is secured to the sliding bars, C and D, which traverse horizontally through the bearings, E, which form part of the frame, F. The cutting dies are formed in two pieces, or parallel sections, secured together in such a manner that one starts the thread and penetrates the scale, and the other finishes the cut. They work in a dovetailed slot across the face of the head, G, which is secured to a hollow spindle to which motion is given by the pulley and gears.

At H is a stop or pawl, held in place by a spring, and intended to catch in one of the ratchet teeth on the disk, I, which turns freely upon the hollow mandrel. In the face of this disk, next the die head, is cut an ellipsoidal channel, or cam groove, which receives strong studs connected with and moving the dies. It will be seen that by turning the disk, I, the dies can be opened and closed. By means of an adjustable feather on the bar, C, not shown, which at the ends rises into inclined planes, the pawl is operated.

The operation is simple. When the blank is secured in the vise jaws, the bars being drawn forward, the pawl will be released and forced by the spring upon the ratchet, stopping the disk, I, for one-fourth of a revolution, when a cam upon the head, G, drives back the pawl. The stoppage of the disk has opened the dies and the blank can be introduced to whatever distance it is to be threaded. The sliding back of the rod, C, with the feather, again releases the pawl, and the stoppage of the disk another quarter of a revolution closes the dies; the pawl is thrown back and the cutting goes on automatically and rapidly.

It will be seen that after adjusting the feather on the bar, C, for the length of the bolt to be cut, the only work of the attendant is removing and replacing the blanks, so that the work goes on almost continuously, the dies opening automatically to receive the bolt, closing in the same way, and being held firmly to their work until the blank is threaded. The machine is simple, strong and compact. The application and adjustment of the shifting feather cannot be shown, but will be readily understood by a practical mechanic. It is seated in a slot cut in the bar, C. It is manufactured by Sweet, Barnes & Co., of Syracuse, N. Y., to whom all orders should be addressed, or to Wm. A. Sweet, President of the Onondaga Steel and Cutter Works, Syracuse.

Nitrate of silver, which is so extensively used in photography, is by no means sold in the shops in a pure state, and photographers who wish to procure superior copies should, therefore, purify it. The following is Mr. Maxwell Lyte's process for the purpose:—The trade article is first partially purified by crystallization; it is then redissolved to saturation in boiling water, and 1 per cent of nitric acid is added. The liquid is constantly stirred while cooling. A crystalline powder is gradually deposited, which is collected on a filter and washed with water acidulated with 10 per cent of nitric acid. The salt thus obtained is chemically pure.

Petroleum has been struck at Gadsden, Ga., at a depth of 237 feet.

WOOD TURNING AT HIGH SPEED.

We have received a communication on this subject from E. J. W., Lenox, Mass, which we have not space to publish in full, but make an abstract of the main points. He says his foot lathe runs at a speed of 700 turns per minute, but he finds that for wood of two inches in diameter and under, and for brass, a speed of 3,600 is far preferable, as the gouge or chisel is less liable to catch, and the work produced, much more satisfactory. He sends us a pulley chuck for wood, which is simply a disk of brass with a groove for a round belt, having a hole through the center, and three steel points or spurs secured equidistant from the center and each other, designed to hold the wood to be turned. With it is a punch of brass or other metal, having at one end, a flange or disk, from the center of which projects a steel pin long enough to pass through the center hole of the chuck and pierce the wood to form a center. The chuck is placed on the end of the stick to be turned, the spur of the punch inserted, and a smart blow with a mallet brings the disk of the punch in contact with the face or reverse of the chuck, and forces it home. The chuck may then be driven by a large pulley overhead, or it may be secured to the lathe spindle if the speed is high enough. He speaks highly also of the facility with which wet or green wood can be turned. His suggestions may be valuable to amateur turners.

The North London Railway.—With but 12 miles of line, and with trains working over 8 miles of connecting lines, or 20 miles in all, the North London Railway Company now have 54 locomotives, mostly of the heaviest class. The newer passenger engines, of which we have given a description in a recent number of *Engineering*, weigh 42 tuns, of which 30 tuns are on four coupled wheels. These engines have 17 inch cylinders, 24 inch stroke, 5 feet 9 inch wheels, and carry regularly a pressure of 160 lbs. per square inch.. Mr. William Adams, the company's engineer, builds his own engines at the company's works at Bow, and twelve additional engines are now on order there.—*Engineering*.

The newer the coal, in a geological sense, the less its calorific power; as the coal becomes older and approximates to anthracite in composition, the amount of carbon increases, while the oxygen decreases. Hence the cause.

[From the British Journal of Photography.]

A Powerful Source of Artificial Light.

One of the most brilliant discoveries made within the last few years, has just been made public by its inventor, who has not only discovered a new principle in electrical science, but has applied it to the construction of a machine which, by means of the carbon points, will give light of much greater brilliancy than has hitherto been produced by man. The present apparatus is made on a grand scale, but it remains to be seen whether a small machine cannot be made to work by hand, whereby the electric light can be produced at the mere cost of the labor and the carbon electrodes. So powerful is the current of electricity evolved by the present apparatus, that ordinary photographic paper, at two feet distance from the light, blackens in twenty seconds to the same degree that it will darken by exposure for one minute to the direct rays of the noon-day sun on a clear morning in the month of March.

This invention was first made known to the public by Professor Faraday, a week or two ago, at a meeting of the Royal Society. The paper containing the information was a very long one, sufficient to fill more than a whole number of this *Journal*, and was written by the inventor, Mr. H. Wilde, of Manchester. Some notes of the substance of its contents, and the marvellous effects produced by the powerful currents evolved by the apparatus, will be of interest, considering the promise of the invention when regarded from a photographic point of view.

Mr. Wilde first made a large hollow metallic cylinder with sides of iron, separated by a thick diaphragm of brass. This composite cylinder had its metallic parts bolted together by screws of brass. Permanent magnets could be placed over the cylinder, so that their poles would bite and make good contact with the opposite iron sides. The internal diameter of the cylinder was $1\frac{5}{8}$ inches. The four or five horseshoe magnets which could be placed over it, each weighed about one pound, and would each sustain a weight of ten pounds. Thus, when the magnets are mounted over the cylinder, the two iron sides of the latter become virtually the poles of one very powerful magnet. The armature is a long solid bar of soft iron, made to revolve inside the hollow portion of the cylinder. This solid bar has a deep longitudinal groove on each side of it, in which groove the insulated wires of the armature are placed, so that the latter has still a cylindrical form externally. It will be noticed that this arrangement is, in principle, that of the ordinary magneto-electric machine, though somewhat differing in form from those of the usual construction.

With apparatus thus arranged, Mr. Wilde connected the terminal wires of the armature with a common tangent galvanometer, to measure the electricity evolved as each permanent magnet was added to the outside of the cylinder. He found that the electricity produced was in direct proportion to the number of magnets on the cylinder. But now comes the wonderful part of the discovery. When the induced current of electricity from the armature was passed round an ordinary electro-magnet—the soft iron bar—the latter actually lifted 178 lbs., while the four permanent magnets on the cylinder, the original source of the power, would only lift a weight of 40 lbs. The effect here produced seems to be out of all proportion to the cause, and it will be seen what an important bearing the discovery has upon the law of the conservation of energy. Having made this first step, Mr. Wilde constructed a second cylinder larger than the first, and placed outside it electro-magnets instead of permanent magnets, the two machines being then worked together, and the current generated by the first being employed to excite the electro-magnets of the second. By this arrangement twenty four inches of No. 20 iron wire, 0·04 inch in diameter, were made red hot. Lastly, a machine with an iron armature ten inches in diameter was made, the total weight of the whole apparatus being four and a-half tuns. The three machines were then made to work together, the armature being driven as before by steam power, the results proving most astonishing. Pieces of cylindrical iron rods, each a quarter of an inch in diameter, and fifteen inches in length, were melted by the current, which also melted fifteen feet of No. 16 iron wire, 0·065 of an inch in diameter, and made twenty-one feet of the same wire red hot. Mr. Wilde says:—"The illuminating power of the electricity from the intensity armature is, as might be expected, of the most splendid description. When an electric lamp, furnished with rods of gas carbon half an inch square, was placed at the top of a lofty building, the light evolved from it was sufficient to cast the shadows from the flames of the street lamps a quarter of a mile distant upon the neighboring walls. When viewed from that distance the rays proceeding from the reflector have all the rich effulgence of sunshine. Lastly, as already stated, photographic paper is blackened in twenty seconds by this artificial light, to the same extent that it can be darkened by sunlight in a minute.

Such is the substance of the wonderful discovery made by Mr. Wilde. It is evident that its value to the photographer is a question of expense, there being no doubt as to its utility. As the most economical proportions of the parts of such machines become better known by experience, it is to be hoped that the maximum of light and minimum of mechanical power will be so altered from their present relative positions that the invention will be to some extent available to the photographer, and render him more independent of the weather. With the exception of the mechanical power, the expenses connected with the working of the apparatus are nominal. Ordinary wear and tear, the consumption of the carbon points, and the gradual burning away of the contact places of the necessary commutators, are inexpensive items, offering no impediment to the general use of the machine. Whether the expense of the mechanical power can be reduced so as to make the invention commercially available in the photographic world, is the only question hanging over one practical application of this, one of the noblest scientific discoveries of modern times.

WILLIAM H. HARRISON

Smelting Iron.

In a paper recently read to the Association of Foreman Engineers, of London, Mr. Oubridge traced the history of iron smelting from the very earliest periods, in the course of which he said that the great secret of economical and effective smelting consisted in obtaining for the purpose a rapid current of common air, so as to produce complete combustion of the fuel employed; and the speedy creation of a large quantity of carbonic oxide gas was the consequence of such an arrangement. The blast pipes should in all cases fit the tweer holes closely, so as to prevent the waste of air, and to direct the full force of the current into the furnace. It was all desirable to adopt what was known as the "drop bottom" in furnaces, so much used in America, and he was sorry to say as yet so seldom adopted in this country. It was desirable to lessen, as far as possible, the expenditure of manual labor, and this last arrangement was essentially a step in that direction. After a man had been engaged in working a furnace for several hours, it was rather hard to give him the task of raking it out and quenching it. By means of the drop bottom this might be accomplished in a few minutes, whereas it was a laborious and tedious process in the other case, and much more costly.

Preparation of Chrome Yellow.

The preparation of a good chrome yellow is rather difficult, and frequently the product obtained, instead of preserving its light canary color, becomes gradually orange colored. This change of tint greatly damages the beauty of the color, and consequently its value; it may, however, be altogether avoided, by leaving the precipitate of chromate of lead for some time in darkness. The reason why this orange tint is so easily produced is, that while the neutral chromate of lead, which constitutes chrome yellow, is of a light canary color, the basic salt, commonly called chrome red, is orange colored; but the former, like nearly every salt of lead, has a certain tendency to pass to the state of basic salt, whence arises a change of color, more or less marked, which is especially produced when acetate of lead has been used to prepare the chrome yellow. This alteration is less to be feared when nitrate of lead is employed, and when the solution of this salt, poured into that of chromate of potash, is rather less in quantity. Nitrate of lead is perhaps too expensive for every case, but it gives a purer, and, above all, a less orange product than the acetate.

Cork Springs for Cars.

In the published proceedings of the Franklin Institute, we find some remarks about the use of cork in the place of india-rubber for freight cars and other heavy vehicles:—

"The cork used for these springs is of the commonest description, harsh, hard, and full of fissures. It is cut into disks of about eight inches diameter, each pierced with a central hole. Previous, however, to cutting, it is soaked in a mixture of molasses and water, which gives it some softness and renders it permanently moist. A number of these cork disks are placed in a cylindrical cast-iron box, a flat iron lid or disk is placed over them, and by hydraulic pressure is forced down so as to reduce the thickness to one-half. A bolt is then run through box, corks, and cover at the center, and a nut being screwed on this, holds all in place, when the press is relieved, and the box of compressed cork, disks, or cork spring, is ready for use.

"One of these springs, placed in a testing machine, under a weight of 20,000 lbs., shows an elasticity suggestive of compressed air in a condensing pump. One would expect, from the appearance of the material, that, under heavy pressure, it would be pulverized or split into shreds, especially if this pressure was assisted by violent shocks, but in fact no such action takes place.

"A pressure which destroys india-rubber, causing it to split up and lose its elasticity, leaves the cork unimpaired, and, with the machinery in use, it has even been impossible, with any pressure attainable, to injure the cork, even when areas of but one inch were acted upon."

Difference in the Operation of Locomotives

A correspondent states that on a certain railroad there are two locomotives running, using the same kind and quantity of oil and tallow, and having the same attention, the cylinders of one of which "gum" so as seriously to interfere with its economical working, while the other remains perfectly free. He desires to know the reason for the difference.

In reply, we would premise that it is an impossibility to build two machines which shall be exactly alike in construction and working. Whether our correspondent has given all the conditions common between the two machines we much doubt, but if the care bestowed on each is the same, the conditions of work required equal, and the construction of the two locomotives alike, we cannot see why one should gum while the other remains free. In such cases theory is of little worth. A practical test by exchanging the work and workmen of the two locomotives will give more satisfactory results than any opinion formed on such insufficient data as is furnished in the communication, such opinion being at best only a conjecture.

Artificial Production of Goiter.

The cause of goiter is said by M. Maumene, a French chemist, to be the presence of fluorides in the water of certain regions. He has proved this experimentally. He gave a dog fluoride of potasium for five months, and at the end of this time he noticed a peculiar swelling in the neighborhood of the neck. His experiments were not then continued further, owing to the escape of the dog: but when the animal was recaptured, some three years afterward, the swelling was still as apparent as at first, though M. Gaillet, a Rheims physician, did not think it sufficiently prominently marked to justify him in calling it goiter. M. Maumene states that in all countries where goiter is prevalent fluorides prevail in the water.

M. GAILLARD suggests the making of a safety lucifer match by dipping the stick into melted sulphur after the application of the phosphorus. The sulphur being insoluble in water, and not melting below 110° centigrade, would hinder the phosphorus from doing any harm if the matches were dropped into food; and the greater friction necessary to ignite such a match would be a safeguard against accidental ignition.

PHENIC ACID.

What is it? We answer that it is carbolic acid, hydrate of phenyl, phenol, phenic alcohol, spyrol, salicone or mineral creosote, (C_{12} H_6 O, HO) (?). It has as many aliases as some of our notorious thieves, and under one or another of them is constantly getting into the newspapers. It was first christened carbolic acid by Runge, a German chemist, who discovered it in 1834. But it is not properly an acid; it is not sour, does not redden litmus paper, nor does it combine with alkalies any sooner than with acids; hence the names phenol, etc. In commerce—for it is sent to every part of the globe—the original name is still retained; but phenic acid sounds and looks more scientific, and is, therefore, commonly used in books.

Phenic acid, when pure, occurs in beautiful transparent needle-form crystals. If the crystals be exposed to the air, in a few minutes they absorb a very small quantity of moisture, and are transformed into an oily liquid, which is slightly heavier than water. Although the solid acid is so eager for water, it is satisfied with a very little, and is but slightly soluble in water. It has a burning taste and a powerful and persistent odor, which people call smoky. It dissolves freely in alcohol, ether, and oils, and is itself a powerful solvent of gum, resins, sulphur, and phosphorus. We cannot more briefly indicate its more useful properties than to say it is often called creosote, and that it is as like the genuine creosote as two peas. It is a poison to all animals and plants, and is especially destructive to insects and their eggs. All vermin hate the smell of it and get away from it as fast as they can. But although it is certain death to the animal, it is kind to the dead body, for it may preserve that forever; any kind of flesh which has been impregnated with phenic acid refuses to decay and return to dust. When decay has commenced, by putrefaction or fermentation, phenic acid will stop it instanter, and prevent its recurrence.

The chief source of phenic acid is gas tar, while the genuine creosote is found in wood tar. Both are separated in substantially the same way. Phenic acid is probably as powerful an antiseptic as creasote, and for many purposes is a cheap substitute. Those who understand smoking hams can have an idea of what the power of creosote is. How much creosote is there in a ham weighing fifteen pounds? Creosote is a very expressive word; it is derived from Greek words which mean "flesh preserver."

When nitric acid and phenic acid are brought together, picric acid, a splendid dye for yellow and green on silk and wool, is the result. Phenic acid, in the very crude form of gas tar and dead oil, has been used for preserving timber, and by the farmers for killing vermin. In the pure state it is generally known to physicians and is used by many of them.

Phenic acid is now much talked about as a disinfectant and especially in connection with the rinderpest. But its virtues as a disinfectant are doubtful. It promptly prevents the decomposition of matter which generates foul odors, but it acts slowly and poorly on the odors already existing. If it destroys an odor, it leaves itself in the place of it, and to most people will smell quite as "loud." The first odor of phenic acid is tolerable, but when continued it becomes exceedingly unbearable; it is quite the reverse of vice.—

"A monster..... ...." etc

THE MANUFACTURE OF BEET SUGAR.

Sugar is a modern product, so far at least as it has become a common condiment. In ancient times the product of the bee served inefficiently the purposes to which sugar is now universally adapted. The natives of the peninsula of India appear however to have known of its use, as also did the Chinese, from time immemorial. Indeed the word "sugar" is from the Sanscrit. That, however, used by the Chinese was probably the product of the sorghum. The sugar cane is a native of hot climates, and only within or near the tropics does it flourish, although it has been raised as far north as the Carolinas and Kentucky. But even in the localities most favorable in the United States for its growth and maturity, the necessity of replanting every three years, and the exposure to frosts and unfavorable seasons, have always made it an uncertain crop.

A substitute for the sugar of the tropics has always therefore been a desideratum. In the Northern States the maple is extensively cultivated for its saccharine sap, which, however, does not produce an article equal to the imported. The sorghum is found also to thrive well in this section, and the sugar and sirup from the Chinese cane has become an important production. Latterly the attention of the people has been drawn to the beet as a product, which yields sugar in good paying quantities. In France, Belgium, the Zolverein, Russia, and Austria, the product of sugar from the beet for the year 1859, was estimated at 357,500 tuns, at a cost, adding the manufacturer's profit, of from 9 to 11 cents per pound. On light dry soil the yield of the white or sugar beet is very large, and the manufacture of the sugar from it is not complicated nor difficult, requiring only care in the process of granulation. The establishment of its manufacture in France is due to the first Napoleon, who endeavored in this, as in other articles, to render his people independent of foreign importations. Through a long series of years it was encouraged and protected by premiums and duties discriminating in its favor, until at the present time it competes successfully with the imported sugars, although not specially protected.

From what data we can obtain, there appears to be no reason why its production and manufacture cannot be successfully prosecuted in this country. The juice from the beet cannot be so effectually separated by compression as from the cane, and to remedy this, one of two processes are employed, either by cutting or grinding the root and then subjecting it to pressure, or by maceration in water. This latter process, however, necessitates additional labor in the subsequent processes of filtration, concentration and granulation. These are similar to those pursued in the manufacture of cane sugar, consisting of boiling, evaporating, draining, crystallizing and claying. The refuse is of use in the manufacture of potash, the sirups are used as food, and the coarser sirups as a basis for the distillation of alcohol.

MISCELLANEOUS SUMMARY.

To Preserve Ice.—Put it in a deep jug, cover it with a plate, place the vessel on a pillow stuffed with feathers, and cover the top with another pillow carefully, thus excluding the external air. Feathers are well known bad conductors of heat, and consequently the ice is preserved from melting. Dr. Scwarz says, that, in this manner, he has preserved six lbs. of ice for eight days.

The following is an easy method of detecting whether the red color of wine is artificial or otherwise:—A small piece of bread or of sponge which has been well washed is dipped into the wine and then placed in water. If the color is artificial the water will be at once colored; otherwise the color will not be apparent for half an hour.

It is estimated that upward of 800,000 sewing machines have been manufactured in the United States since Mr. Howe introduced his invention, and that several millions of dollars are invested in the business. The Wheeler & Wilson Manufacturing Company employs a capital of $1,000,000.

The Sheffield file cutters, to the number of about 4,000 have been on a strike for several weeks. In the mean time a great impetus has been given to file cutting by machinery.

The vacuum pan was patented in England in 1812 by E. C. Howard, and the royalties paid under this patent for several years amounted to £200,000 per annum.

It has been ascertained that ozone is developed by the mechanical action of blowing machines producing strong currents. This fact may, in part, account for the healthy action of wind.

Steel Cannon.—Krupp, as we understand, is making a cast-steel cannon of 50 tuns weight, to be exhibited at the Paris Exhibition. This is about the weight of the American 20-inch army guns, the naval guns, of the same caliber, weighing about 45½ tuns.

The biggest piece of work ever done by the Water Department of Philadelphia is now in progress. Workmen are now engaged in connecting the forty-eight inch water main laid from Fairmount water works to Corinthian avenue with the turbine wheels.

The Athens (Ga.) *Cultivator* says the "probability is that the wheat crop throughout the Union will be considerably less than a full one. It will be considerably diminished at the South by rust, beside the injury sustained by the severe winter; at the North it suffered greatly in many sections from the latter cause Corn, though backward, looks well. Winter oats were badly killed out last winter, and are a very short crop in this section. Cotton, we hear bad accounts of from every quarter. Bad seed, planted in wet weather, hurried and indifferent preparations, hail storms, and beating rains, make the prospects of the growing crop very gloomy."

Another account says:—"Wheat in upper Georgia is believed to be out of danger and is promising well. Cotton is not promising. There will not be a fourth of a crop. Planters are still plowing up and planting corn."

An eccentric German physician recently died, leaving in his will what he considered a secret for increasing the years of our life. His own age was 109, and he attributed it to the fact that he always slept with his head to the north, and the rest of his body, as nearly as possible, in a meridional position. By this means, he thought the iron in his body became magnetized, and thus increased the energy of the vital principle. This idea is quite old; mention was made of it in the Scientific American many years ago.

To Wash Calico without Fading.—Infuse three gills of salt in four quarts of water; put the calico in while hot, and leave it till cold, and in this way the colors are rendered permanent, and will not fade by subsequent washing. So says a lady who has frequently made the experiment.

Varnish for Paintings.—Take mastic, 6 ounces, pure turpentine, ½ ounce, camphor, 2 drachms, spirits of turpentine, 19 ounces; add first the camphor to the turpentine; the mixture is made in a water water bath; when the solution is effected, add the mastic and the spirits of turpentine near the end of the operation; filter through a cotton cloth.

The lands along Oil Creek are estimated at a *bona fide* cash value of two hundred and fifty millions of dollars. Many portions of these lands have been sold at prices that would bring the whole at the same rate to this sum in the aggregate. The distance is but little over fifteen miles, and the valley narrow throughout its entire extent, so that an idea can be readily formed of the immense wealth contained in its bosom.

A useful cement is made by taking two parts of finely sifted unoxidized iron filings, mixing them with one part of perfectly dry and finely powdered loam, and kneading the mixture with strong vinegar until a perfectly homogenious plastic mass is formed. when the cement is ready for use. It must be made as wanted, for it quickly hardens, and once set is never fit for use again. The cement is said to resist fire and water.

The Southwestern (England) Railway Company possesses a monster engine, named the *Colossus*. It has been built to draw a train of eighty loaded wagons eighty miles in three hours, each loaded wagon weighing about ten tuns. It can drag nearly one thousand tuns from London to Southampton with almost the speed of a bird flying.

Round Steel Shot.—Large contracts for round steel shot are now being carried out at Sheffield, for the Admiralty, by Messrs. Cammel & Co. [limited], John Brown & Co, [limited], and Messrs Firth & Sons. Pot-steel is the sole material used, and the steel spheres, about 9 inches in diameter, are swaged out in blocks under the steam hammer.

A variable star has been discovered in the constellation of the Northern Crown, and has been carefully observed at the United States Naval Observatory in Washington. The daily rate of decrease is about four-tenths of a magnitude, and it has changed from the second to about the eight magnitude.

A fluteless flutist is spoken of in Havre, France, as performing wonderful things. He makes a flute out of his left hand, which he holds to his mouth, using the right in lieu of stops. The notes he produces are not to be distinguished from those of the real instrument.

The *Mechanics' Magazine* says that coal oil is a better article for preserving sodium and potassium than naphtha. In coal oil, soda keeps its luster for months and years, while in the purest naphtha it is dimmed in a few days.

SHOULD THERE BE A PATENT LAW?

It is said that the present Attorney General of England has vaguely intimated that the law of patents should be abolished. Sir William Armstrong has also expressed the same opinion, and some writers have ventured to urge such views, but the mature judgment of mankind is averse to so radical a proposition.

In a recent number of *Newton's London Journal of Arts*, we find this subject ably discussed in the report of a sub-committee appointed to consider the defects of the British patent system, from which we make some extracts:—

Many of the objections urged against patents on the ground of monopoly may be urged against other property of perpetual instead of limited duration.

The claims or rights of the inventor to own such property may be likened to those of the first finder or first occupant, and rest on the same principle as other property. The author of a book or of an invention has an undoubted right to keep it to himself; but if he thinks fit to publish the book or invention for the use of others, without which publication the book or invention would be valueless, exclusive property in such book or invention is gone, except so far as it may be retained or restored by municipal law. Much learning has been bestowed in support of the so-called natural right of an author, whether in a book or in an invention; but the sub-committee consider the question of such a legal natural right to have been long ago settled in the negative, and that the right of an author or inventor is the creature of municipal law.

The sub-committee cannot recognize any distinction in principle between the product of the brain as embodied in a book, picture, or statue, and an invention in the arts and manufactures; substantial differences, however, exist in dealing with such property. No property exists in an idea unless clothed or embodied in some material form; the protection to such property consists in the right to exclude others from multiplying copies. What is a copy may, under certain circumstances, give rise to serious difficulty. Not only must an idea be embodied in a material form as the basis of property, but the boundary or limits of that property must be defined. It has been urged as an objection to any patent law that it deals or attempts to deal with subjects incapable of being defined. What cannot be accurately defined is not the subject of property.

The eye or the ear can judge of the identity or similarity of two books, maps, pictures, or pieces of music; but an invention, embodied in a machine or a chemical process, admits of variations according to equivalents known or unknown. The imperfection of language, and the disposition to adopt forms of expression which may include or exclude as much as possible, as occasion may require, add to the difficulty; hence the necessity of some control in the creation of property to be protected by legal proceedings at the option of a party interested in checking or defeating rivals. The public have a direct interest in preventing the creation of rights which may be improperly used; hence the expediency of some check on the indiscriminate issue of patents.

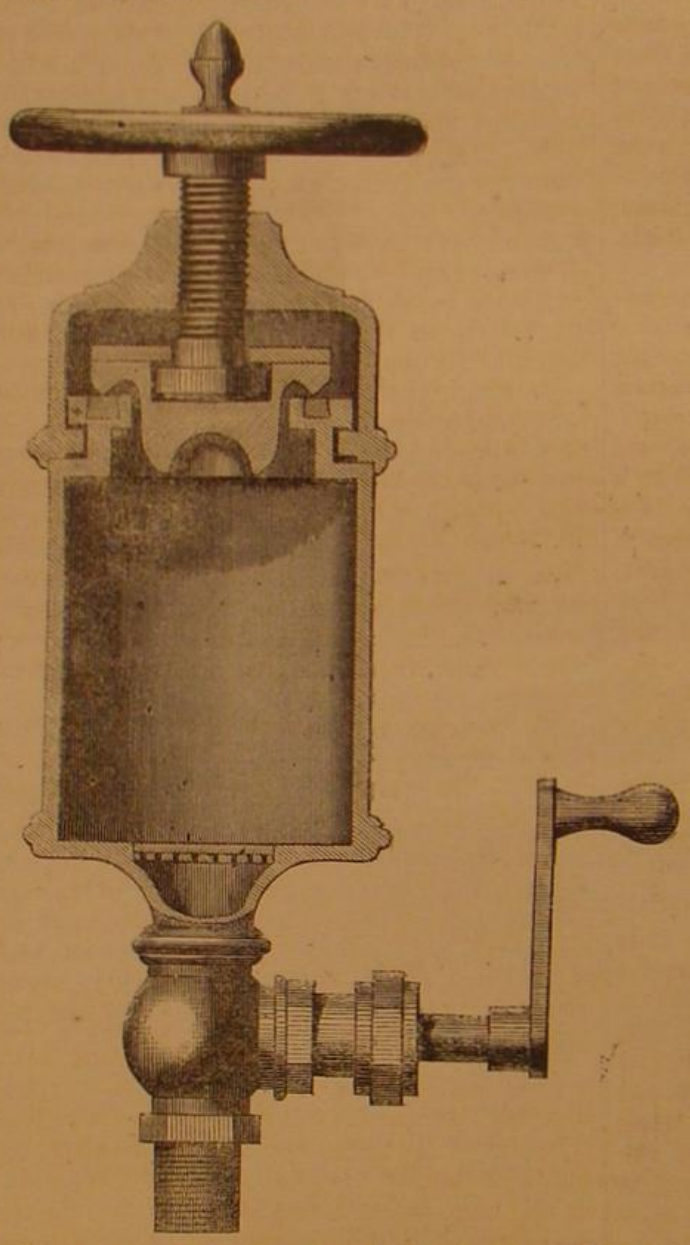
The interest of the public in the maintenance of a patent law, not the interest of the inventor, is the real question. The object of the patent law is to create, to call into existence, the trade, which, when so created or called into existence, shall be free; the duration of the monopoly given by the patent law being the time necessary for that purpose, which may and must differ in various cases. Property in each special invention is the only means hitherto devised for stimulating invention and rewarding the inventor. Invention, like poetry, may exist as a natural gift. Special instances may be referred to, in which a book or an invention might have been called into existence, or created, without the stimulus of copyright or patent right, or expectation of reward; but book making and invention may be followed as a legitimate business and means of livelihood, and of creating property to be transmitted to posterity. The poetry of Milton might have been recited to admiring audiences, but the capital to produce the first edition would not have been forthcoming if no property had existed in the product; that is, if there had been no exclusive right to the multiplication of copies. Watt might have exhibited his applications of the laws of heat and economy of fuel in the steam engine; but a Boulton would not have applied capital to call into existence the elaborate machinery by which our mines are drained, and looms driven, and railways worked, had there been no property in the product of the capital necessary for its existence. It has been often said, in reference to invention, that a Boulton is necessary for the development of a Watt; and no one acquainted with the history and progress of invention in this country, with the results of the labors of a Crompton, a Paul, and an Arkwright, can fail to recognize the fact that an unlimited amount of labor and capital is employed on the faith of the property to be created by its successful application. The dreams of the alchemists and searchers after perpetual motion laid the foundation of modern chemistry, and produced many mechanical equivalents. The authors of many most useful inventions have died in poverty, amid the wealth which their labors have created; but the public have reaped the benefit of those labors, which the patent system stimulated, however delusively.

Manufacture of Gold and Silver.

A correspondent from Indiana desires to know what would be the best use to which the discoverer of a method of making gold and silver could put his knowledge. We hardly know how to reply. If his object was selfish, he should keep the process a secret; and if he desired to benefit mankind in general, it is doubtful if giving it publicity would be a boon to the world. If the precious metals could be procured as easily and become as plenty as iron, their value would fall below that of this common metal, because they are not intrinsically as valuable as iron for the use and comfort of mankind. Gold and silver have certain qualities superior to similar qualities in iron, but in the really useful qualities, iron is the most valuable.

STORER'S OPEN-TOP SUET LUBRICATOR.

This instrument is used for supplying lubricating matter to the cylinders of locomotive steam engines, steam pumps, etc. Its distinctive feature is the movable top, which renders it capable of receiving suet or other fatty matter in bulk, which is gradually melted and fed in as required. Oil or melted tallow may be used in it, but they are carried off very rapidly, and, besides, are generally adulterated—sometimes to such



an extent that we have seen the valves, piston, etc., of a steam engine so badly eaten in a few months as to make it necessary to replace them.

It is asserted that suet only costs about forty per cent as much as good oil, so that it is an item of importance to use it as a lubricator.

Some twelve hundred of these cups are in use, all giving perfect satisfaction. The instrument will be readily understood by the accompanying engraving. The common globe valve at the bottom controls the steam opening and regulates the supply. The cover at the top is attached to the bowl with the clutch, as shown, forming an abutment for the screw, which, pressing on the loose valve, makes a joint on a ring of soft metal confined in a dovetailed groove. A very slight pressure is needed to make a tight joint. This is a very simple and efficient device, and it might be used for many other purposes.

It was patented Nov. 24, 1863, and March 13, 1866. Messrs. Cameron & Geoghegan, of 199 and 201 Center street, New York, are the manufacturers.

Manufacture of Crucibles.

Larkin, in his "Brass and Iron Founder's Guide," gives the following information on the above subject:—

The manufacture of crucibles is a branch of the potter's art, requiring great care to insure success; and, until lately, was at the best a very uncertain process. The chief requisites in a good crucible are, refractoriness in the strongest heats, capability of withstanding the corrosive effects of any substances that may be ignited in them, and the effects of sudden alterations of temperature. They must also be composed of a material sufficiently solid in its texture to prevent the passage of the solid metal through its pores.

The composition producing pots of the best quality is formed by pure fire clay mixed with finely ground cement of old crucibles, to which is added a portion of black lead or plumbago. The clay is prepared in the same manner as observed in pottery generally. The vessels, after being worked to the proper conical shape, are slowly dried, and then baked in a kiln.

The composition used in the Royal Foundery of Berlin is formed of eight parts in bulk of Stourbridge clay and cement, five of coke, and four of graphite or plumbago. Crucibles manufactured from this mixture are capable of withstanding the greatest possible heat in which wrought iron melts, being equal to from 150° to 155° Wedgewood. They also bear sudden cooling without cracking. In the Berlin foundery they have been employed for twenty-three consecutive meltings of seventy-six pounds of iron each, which perhaps is the most complete and trying test that could be adopted.

Another composition is as follows:—8 lbs. Stourbridge clay, 4 lbs. burned clay cement, 2 lbs. coke powder, and 2 lbs. pipe clay; the whole being compressed in molds while in a pasty state.

The Hessian crucibles from Great Almerode and Epterode, resist the action of fluxes, and are tolerably lasting. They are made from a fire clay containing a small amount of iron, but no lime. This is incorporated with silicious sand. These crucibles are rather porous, but they resist the effect of saline and leaden fluxes, and are not liable to crack, but they melt below the fusing point of bar iron.

The black lead crucibles bear a much higher heat. Their composition is two parts of graphite and one of fire clay; this is mixed into a pasty mass by means of water. The crucibles are baked slightly in the kiln, but are not completely hardened until put into the furnace for use. They are of a smooth surface, and are consequently suitable for gold and the precious metals generally. These crucibles are perhaps the very best yet manufactured, and many of the brass founders throughout Europe, and for aught I have yet seen to the contrary, all the brass founders of America, are adopting them in preference to the ordinary clay ones. Mr. Anstey's patent process for the manufacture of crucibles is as follows:—2 parts of finely ground raw Stourbridge clay, and 1 part of the hardest gas coke, previously pulverized, and sifted through a sieve of one eighth of an inch mesh, are mixed well together with water. This mixture is molded on a revolving wooden block somewhat similar to the process pursued in pot throwing, a gage being used to regulate the thickness of the pot, and a cap of linen placed upon the core previous to the application of the clay in order to prevent its adhering when removed. The pot is then dried in a gentle heat, and is not thoroughly completed until required for use. It is then warmed before a fire, and laid in the furnace, with the mouth downward—the heat of the fire having been previously lowered by the application of fresh coke. It is gradually brought up to a red heat, reversed, and fixed in its proper position in the furnace, and is then ready to receive the charge of metal.

CURB FOR DAMP WALLS.—The following is stated to be a good remedy for damp walls:—Three-quarters of a pound of mottled soap to one gallon of water. This composition to be laid over the brickwork steadily and carefully with a large flat brush, so as not to form a froth or lather on the surface. The wash to remain twenty-four hours, to become dry. Mix half a pound of alum with four gallons of water, leave it to stand for twenty-four hours, and then apply it in the same manner over the coating of soap. Let this be done in dry weather.

THE WAY FELT HATS ARE MADE.

At 101 Cliff street, in this city, is situated the hat-body manufactory of H. A. Burr. It is a large fire-proof building, filled with machinery, which is driven by a double cylinder beam engine of 400 horse-power. There are some half-a-dozen other similar establishments in the country, and they have all grown up from a simple invention, which has revolutionized the important art of making hats.

All felt hats, and the bodies of all silk hats, except a few cheap, heavy, woolen ones, are made of fur—mostly of the fur of hares and rabbits. When the several fibers of fur are crossed and entangled together in a sheet, and the sheet is then subjected to a peculiar rolling motion, the fibers are drawn more and more closely together, giving to the sheet a homogeneous character and considerable strength. Such a sheet is called felt, and the process of forming it is called felting. It has been stated that the fibers of fur are barbed or serrated, and that their hold on each other in felt is due to the interlocking of the teeth or barbs. On examining some rabbit's fur under a compound microscope, we were unable to discover any thing more than an irregular roughness, though the fibers seemed to be formed in short joints, somewhat like sugar cane.

Formerly the forming of a hat body was a laborious and tedious process, requiring some two hours' labor by a highly-trained and skilled workman. The proper quantity of fur was weighed, and divided by the scales into two equal portions. One of these was placed upon a table about six feet in length, which was situated in front of a window and protected by a vertical board at each end from lateral currents of air. The fur was then beaten up and arranged in order by means of a bow, formed of wood and catgut, and somewhat resembling a large fiddler's bow. The workman held his bow in his left hand, and drawing the string with his right, let it snap down upon the pile of fur, at the same time giving a peculiar twist to the bow to throw the fur into a pile or sheet of triangular form. This was pressed down flat and laid one side, and the other half of the fur was treated in the same manner. A sheet of paper, similar in form to the sheets of fur, but somewhat smaller in size and with one angle rounded, was then laid upon one sheet of fur, and the edges of the fur were bent over the edges of the paper on two sides and the rounded angle, the second sheet of fur was laid upon these, the whole was turned over, and the edges of the second sheet were rolled like the first. The edges of the two sheets, thus lapping, were subjected to a gentle rolling motion to partially felt them together. After a little further rolling of the whole mass, the paper was removed, and, by repeated dipping in hot water and rolling, the body was brought to the form of a hat, a wooden block of the latest fashion being introduced in the proper stage of the process.

About twenty years ago, Mr. Henry Augustus Wells, of this city, conceived the bold and original idea of a process for forming hat bodies, vastly easier and more rapid than the one above described, which was then in use all over the world. After years of expensive experiment, and many ingenious improvements by Mr. Burr and his partner, the plan of Mr. Wells was made practically successful, and by it all hat bodies in this country are now made.

Thin sheets of brass are punched full of small holes, about 64 to the square inch, and these sheets are brazed together in the form desired for hat bodies—that is, the form of a cone with a hemispherical summit. This is placed upon an air-tight box within which revolves, at high velocity, a spiral fan, drawing the air through all the holes into the cone, and blowing it out through a hole in the floor below; the cone at the same time slowly rotates around its vertical axis. A machine, placed in proper proximity, and furnished with a rapidly-rotating brush, beats the fur into a cloud, and blows it through a narrow vertical slit at the end of a wedge-shaped funnel, in a thin, attenuated stream, directly upon the rotating brass cone. The inward current of air draws the fur upon the outside of the cone in a sheet, with the fibers as completely crossed and interlocked as they can be by the most skillful bowing. A square foot of wet canvas is now dropped over the rounded top of the cone, and another piece of the same material is wrapped around it—the slow rotation of the cone making this wrapping a quick and easy operation. The whole is then covered with a second brass cone, (a little larger than the interior one, and perforated with larger holes), and is removed to a platform, and lowered into a kettle of hot water. The fur is instantly soaked by the water, which causes the fibers to adhere together with sufficient strength to form a bag that may be handled. The platform is then raised, the outer cone and the cloths removed, the inner cone inverted, and the fur loosened around the edge, when it falls upon the table in the form of a frail conical bag. Ten of these bags, or "bats," are laid in a pile, rolled in a cloth, and subjected to sufficient rolling motion to felt them strong enough to be sent to the hatters.

Fur for hat bodies is imported mostly from Germany, though some comes from Scotland. It is now worth four dollars a pound in this market; there is about an ounce in a fleece, and it takes from one to four ounces to make a hat body. Mr. Burr has made, at his establishment in this city alone, 10,000 bodies a day—1,000 an hour—for three months in succession. The fur is cut from the pelt by hand, and is imported in paper bundles. Formerly, the hair was all pulled from the skin before the fur was cut, by pressing it between a knife blade and the thumb of the workman, but now it is all cut off together, and the hair is rapidly separated by a machine, which also was invented in this country.

To form a hat body of sufficient thickness, and yet to have it as light as possible, it must be thicker in some parts than others—the rim and the junction of the rim and top with the sides being thick, and the other portions thin. By varying the width of the slit through which the fur is blown upon the rotating cone, the thickness of the several parts is adjusted to any desired scale with the utmost nicety, while by the steady rotation of the cone upon its axis the thickness of each part around the hat is made perfectly uniform.

Mr. Wells sold his patent for $30,000 to four men, and it ultimately came wholly into the possession of Mr. Burr, who has three or four other establishments besides the one in this city, and who receives a royalty of two cents on each bat manufactured by other parties. Some time since one of his licensees having made money enough, and having become old, Mr. Burr bought him out for $90,000. Mr. Burr is now selling out his machinery with the intention of retiring from business, having, he says, money enough to carry him through if he dies in any reasonable time.

The patent was granted on the 25th of April, 1846, and has been extended for seven years, so it expires next year. During the first fourteen years more than 46,000,000 of hat bodies were made on the machines, and for the last ten years no apprentice in this country has been taught the art of bowing fur—the machines having entirely superseded the old process. A man would form five bodies a day with the bow; by the machine three men and a boy will make 400 a day. Considering the extent of the business of manufacturing hats, and the completeness of the revolution wrought by this machine, it may, perhaps, be classed among the great American inventions.

To Clean Silver.—In one of his lectures before the London Society of Arts, Dr. F. Grace Calvert gives the following "simple method of cleaning silver or silver plate, without the trouble of employing rouge or other cleaning powder, which, besides rapidly wearing off the metal, takes up much time. It consists in plunging for half an hour the silver article into a solution made of 1 gallon of water, 1 lb. hyposulphite of soda, 8 oz. muriate of ammonia, 4 oz. liquid ammonia, and 4 oz. cyanide of potassium; but, as the latter substance is poisonous, it can be dispensed with if necessary. The plate being taken out of the solution, is washed, and rubbed with a wash leather."

A black ink, not corroding steel pens, and neutral, may be prepared by digesting in an open vessel, 42 ounces of coarsely powdered nutgalls, 15 ounces of gum senegal, 18 ounces of sulphate of iron (free from copper), 3 drachms of aqua ammonia, 24 ounces of alcohol, and 18 quarts of distilled or rain water. Continue the digestion until the fluid has assumed a deep black color.

Correspondence

Coffee, Still Nearer Perfection.

Messrs. Editors:—I feel rather diffident in writing on the subject of coffee-making, after the subject has been so ably handled by Professor Seely; yet I may possibly obtain a hearing in the matter, without being deemed intrusive, when I state that years ago, after many experiments, I succeeded in obtaining the most perfectly delicious coffee ever before tasted by myself or friends, it retaining its aroma in an eminent degree, and, at the same time, possessing all the strength of extractive matter desirable. This method of making coffee I subsequently published in the *Household Journal*, in its column of recipes.

I claim, and believe, that I was the first to discover and make coffee in the manner I am about to describe, which, although somewhat similar to the method pursued by Professor Seely, is, I think, more easily practiced by all persons desiring to do so.

Take, say a teacupful of freshly-ground coffee, one-half of which is to be put in a coffee pot, placed on a stove, and a sufficient quantity of warm (not boiling) water poured thereon, when it should be allowed to boil about five minutes, and then placed on the back of the stove for a few seconds.

The other half of the coffee may be put into a pitcher with a metallic cover, or a coffee pot used on the table only, and the liquid portion of the coffee which has been boiled poured therein, when, as the old ladies say, it draws in a similar manner to tea.

I thus, without any alteration of the form of the coffee pot, or the addition of strainers, really obtain all that is obtainable, of both the aroma and healthful extractive matter of the coffee used; at least by the use of ordinary culinary utensils.

The coffee which was in the pitcher, or table coffee pot, is either left therein, or at once placed in the cooking pot, where it is boiled the next morning, and half a teacupful again put into the table coffee pot, which is treated in like manner, thus proceeding in regular routine. In very warm weather, however, the coffee thus saved to be boiled should be kept in a cool place, as a few hours in a warm atmosphere is sufficient to cause the inception of fermentation, which gives an unpleasant flavor to the next morning's brewing.

I may remark, in conclusion, that no coffee should be used that has been roasted more than forty-eight hours before; and, in fact, coffee just roasted, but allowed to get cold before grinding, is always the best—which is the method pursued in Cuba, where they make a very delicious coffee from inferior berries,

James M. Jarrett.

Brooklyn, N. Y.

Is the World Growing Larger?

Messrs. Editors:—Is there not reason to think that the earth is daily increasing in size? Is there not an action taking place on its surface analagous to that which occurs in a plastic cell when placed in circumstances favorable for its development? To illustrate this thought. We plant a little acorn weighing a few grains in the ground. In the course of time, it becomes the large oak, weighing thousands of pounds, and spreading its branches far and wide in every direction. This oak gets its weight and bulk principally from the air we breathe, and remains upon the earth thousands of years, perhaps, and undergoes a great many changes before it is finally restored to the atmosphere, even if this event ever does take place. So animals derive their weight and bulk partly from the air they breathe into their lungs and partly from the vegetable productions which they devour. When animals die, their bodies, it is true, are partly decomposed into gas, and restored to the atmosphere, but they are principally seized upon and appropriated by growing vegetables, which in their turn are devoured by other animals. It thus seems to me that the earth, through the agency of its animals and vegetable productions, must be daily increasing at the expense of the atmosphere by which it is surrounded. In other words, the plants and animals of the earth are all the time appropriating to themselves the elements of the atmosphere and forming out of them new compounds which remain upon

the earth an almost indefinite length of time before they are decomposed and restored to the atmosphere. This idea is illustrated in our coal mines. All coal was originally wood, and like all wood, was formed principally at the expense of the elements of the atmosphere. This coal has remained upon the earth millions of years, perhaps, and now at length men urged on by their necessities, are digging it up, and by burning it, restoring it in the shape of carbonic acid, to the atmosphere, from which it originally came. No one, it seems to me, can doubt that the earth is larger now than it was when this coal exis'ed in the form of wood. Although the world may be increasing now, it does not follow that it will continue to increase for all time; sooner or later an equilibrium will be established between the amounts of elementary principles which the earth takes from and restores to the atmosphere. But at present, in my opinion, it is like a growing animal; its absorption exceeds its waste. In a word, our planet is not yet a full-grown earth; it is merely an "earthling"

W. H. B.

Baltimore, Md.

[This theory of the increase of the size of the world by accretion is not new. We do not know that any practical good can result from a discussion of this subject.—Eds.

Bill to Tax Inventors.

Messrs. Editors:—As you have opened your columns to the opponents of the bill imposing a fee upon an appeal to the Examiners-in-Chief in the Patent Office, you will doubtless admit a few words in its favor. The reasons for the bill are evidently not understood.

Until within a year the functionaries alluded to have been able to dispose of the appeals nearly as fast as they came in. On more than one occasion their register has been cleared. But for the last ten months the cases have increased at a much more rapid rate, and they are now between three and four months in arrear. This is not owing mainly to the interruption occasioned by the retirement of two of the Board, as has been suggested. The business brought before them has greatly exceeded what it was before; it is more than can be properly transacted, and is continually enlarging. Unless some remedy can be found for the evil it must soon become intolerable. It is so serious that a suitor remarked, a short time since, that he had better give five hundred dollars than to suffer the delay to which he had been subjected. If it can be checked in any better way, it would be gratifying to learn it. But no other has been devised than that of imposing a small fee upon the appeal. This will probably afford the needed relief. You cannot find another tribunal, or court of revision, which is not protected by the imposition of fees, and by the liability to costs, from being compelled to spend their labor on causeless appeals and frivolous proceedings. But it has become the practice to take an appeal to the Examiners-in-Chief in nearly every rejected case, without regard to its merits. The attempt is made continually where not the slightest reason exists for anticipating that the action of the primary Examiner will be reversed. But it costs less to carry up the question than to investigate it. There is a chance, and it involves no expense. Not a day passes when some utterly trivial case is not presented. It must be examined with care, nevertheless, and all the papers be read up, before its worthlessness is ascertained. A small fee will save a large part of this useless labor, and enable the Examiners-in-Chief to devote their attention to more important business, and to dispatch it with suitable expedition.

It has become quite common, moreover, to find appeals urged upon grounds, and accompanied with explanations, of which the primary Examiner never heard. To bring the application before the Appeal Board is gratuitous, and a more favorable hearing is anticipated. This has contributed to the burthen of the Board, to say nothing of its injustice to the primary Examiner.

Complaint has been made of the hardship of having to pay ten dollars to get an application thoroughly examined. To secure this end in every instance, the primary Examiners must be depended upon. It can never be accomplished by any one Board, however capable. In order that they may be able to consider with proper care the questions submitted to them, there must be some limit to the number of these questions. If they are required to take cognizance of all that arise, they must necessarily determine them without due investigation, or they must remain undecided. The cry will then be for a gratuitous appeal to the Commissioner, and then to the Judge of the Supreme Court, in order to obtain a "thorough examination."

The true theory of the Patent Office is, that the applications should be investigated to the utmost by the primary Examiner. In order to secure uniformity in their decisions these should be revised by the Examiners-in-Chief. It is manifest that neither should have any more duty imposed upon them than they can well discharge. The primary Examiners may be increased from time to time, as the emergencies of the Office demand. But there can be but one Board of Revision. Their business must be kept within reasonable bounds. And this can only be effected by requiring a fee upon appeals to it.

Scrutator.

Washington, June 7, 1866.

[We publish our correspondent's letter with pleasure, and fully recognize the fairness of his statements; but they do not alter our opinion as to the injustice of increasing the tax on applicants. The point of our objection is this: that inventors now pay enough for all the privileges extended to them at the Patent Office; and we suggest, that if the present Appeal Board cannot examine all the cases brought before it, let the law be amended to increase the force. The present large surplus fund will justify at least two additional $3,000 appointments; or, what would suit us just as well, if you please put on this $10 extra tax for appeal, but reduce the fee on applications to $10 each, making a total fee of $30 for the patent when issued. There are some people who have great skill in imposing burdens upon others, but it never occurs to them to propose relief.—Eds

Atmospheric Resistance to Railroad Trains.

Messrs. Editors:—At a meeting of the Massachusetts Institute of Technology, the atmospheric resistance to railroad trains was shown. A set of cars, made of pasteboard, with the engine of the usual form and shape, was placed upon a horizontally revolving cam, attached to a vertical shaft, driven round by the force of a given weight; the time of the revolutions was measured by an instrument beating seconds. Then the proposed improved form of car and engine (which improvement consisted in the conical shape given to the front part of the engine, same shape also to the rear end of the last car, spaces between the cars covered with canvas, with some other lesser changes from the common form), was placed upon the same rotating arm. The result showed, with the same power applied and same weight of cars and engine, a saving of twenty-five per cent in speed, which is, of course, equal to a gain of twenty-five per cent of running expense—certainly a most important item for railroad directors and railroad stockholders to inquire into. The same has also been tried by the same parties with hand cars, upon some of the roads in Massachusetts, with equally favorable results.

Square Soap Bubble.—Professor Rogers, President of the Institute of Technology, in experimenting upon the properties of the film formed by soap and water, found that various curious shapes were produced. He dipped a form of wire in shape of a hollow cube into soap and water, with a little glycerin added. On taking this out the shape of the film was that of two inverted pyramids, with the apex of each in the center; then blowing a small bubble, and placing it in the center, a beautiful square or cubical bubble appeared. Any one can easily try this with soap and water alone, but the film is stronger with a little glycerin added. Many other shapes of wire produce other beautiful forms at will. C. C.

Boston, June, 1866.

Abuse of the Franking Privilege.

Messrs. Editors:—I would like to inquire under what law a Member of Congress is at liberty to frank the business circulars of any firm through the United States mails?

Every inventor in this country that receives a patent for an invention, also receives a circular from a certain patent-soliciting firm in Washington, mailed free, under the frank of an M. C. *printed* on the envelope. And not only every inventor receives *one circular*, but if a man is *unfortunate* enough to receive more than one patent, he receives a circular for each patent, as I can testify, having received three within the last three weeks. Any person accustomed to looking over the weekly list of patents granted can judge how much matter is thus carried free in a year, and the above probably is not more than one-half of the number of those same circulars that are sent in that way.

It seems bad enough that a Member of Congress should have the right to lumber up the mails with a mass of political documents that very few care a fig for, but when it comes to taking contracts to send business circulars by the thousand, it seems to have a "bad look," to say the least. If it is all right, please inform your readers, as probably many have been struck by the same idea that has hit

An Inventor.

Springfield, Mass., June 2, 1866.

[The abuse of the franking privilege, of which our correspondent complains, is carried on to a considerable extent. Some patent agents in Washington, we understand, are not unwilling to practice this system of cheating the postal revenue. It is all wrong, and no honorable firm will resort to it. During the months of April and May we purchased at the New York post office over $600 worth of postage stamps. The frank of some accommodating M. C. would be a valuable saving in our office.—Eds.

Hand Lathe Tools.

Messrs. Editors:—In your admirable journal (to which I was introduced, to my infinite gratification, at Birmingham during the meeting there of the British Association) I see (Dec. 23d, page 402, Fig. 6) a handle to hold the various pieces for turning brass and iron in lathes.

I have a very small lathe, and turn only little trifles, and I am anxious to know whether these are made for such small amateur work. About twenty pieces, or tools, right and left, for common plain inside and outside work, would suffice, adapted to one handle.

If you could kindly, and without the slightest inconvenience, obtain for me the information as to such things being manufactured for small work, and what the cost of the handle with twenty pieces would be, I shall be extremely obliged. I do not require any extra finish, but the better the material the better they will answer my purpose. I can pay your agent here any expenses the inquiry may entail.

I trust we shall see at Paris many specimens of America's wondrous ingenuity. Your Patent Office must truly present a glorious spectacle to those who can appreciate such things.

Thomas Ingle.

The Viletta, Hants, Emsworth, England, April 19, 1866.

[The tools alluded to by our correspondent can be purchased in Sheffield, Birmingham, Manchester, or, in fact, any town of note in England where mechanics' tools are sold.—Eds.

Petroleum as a "Damaging" Lubricator.

Messrs. Editors:—In your issue of the 9th inst. is copied an item, going the rounds, that petroleum stains on printers' cloths are ineradicable, and that 6,000 cases have been rejected from this cause. As an article like this in your paper causes injurious effects among persons not wholly conversant with the points at issue, please allow me to give a few facts relative to the subject.

Our manufacturers, employing fine machinery particularly, have found, by a thorough system of tests, that coal oils are superior to sperm oils in the ratio of 100 to 84, a discovery extremely satisfactory from the great difficulty heretofore of obtaining regularly a grade of sperm or whale oil of uniform density, free of gum and foreign mixture. I can safely assert that nearly every large mill in New England is now using coal oils as a lubricator, without having yet discovered that it produces a stain on the cloth, more difficult to eradicate than is made by any other oil.

It is due, therefore, to the community at large that such statements should not be permitted to circulate without prompt refutation. C. M. S.

New York, June 11, 1866.

Measuring Logs.

MESSRS. EDITORS:—In your issue of May 12th is a communication from Mr. Heber Wells in regard to scaling logs to ascertain the number of feet in boards they contain. He gives his rule, which a moment's reflection will show to be incorrect, for a sixteen-feet log, twelve inches through, sawed into one square stick, would make only about 90 feet, which he makes 144. By his rule a twelve-feet log 24 inches in diameter will make but 216 feet, while all printed scales give 300, and it will always make that amount.

After near thirty years' experience in measuring logs and making and measuring lumber, I find no more perfect rule than the following: Multiply the length of the log in feet by half the number of inches in diameter, minus 4, and that product by the same number, divide that product by 4. Example—Log 12 feet by 24 inches—

$12 \times 10 = 120 \times 10 = 1200 \div 4 = 300$, amount of lumber.

The above rule is correct for an average lot of logs. If the logs are all small, less than 4 inches should be taken for slab; if very large, more than 4 inches should be allowed. Can you or any of your readers give me the reason why that mode of reckoning will produce that result? I have never found any one that could give me the information. Some of the printed tables are reckoned by this rule.

P. RHOADES.

Hannibal, N. Y., June 10, 1866.

HEALING SOAP.—A. A. Constantine, No. 59 Liberty street, has prepared a very excellent soap which is highly spoken of as a successful remedy for diseases of the skin. The basis is tar, which possesses healing properties. We have tried the soap, and like it very much.

Mr. Constantine also manufactures a laundry soap, which is also a very fine article.

CARE OF HARNESS.—Many persons owning harness do not wash or oil them once a year; consequently the leather becomes hard, dry, and rotten. A harness for service needs about two applications of neat's foot oil a year, but it should be washed as often as once in three or four weeks in strong Castile soapsuds, and kept in a dry place away from the dust.

ROSES, as soon as the flowers have opened and bloomed one day, should have the decaying flower cut away; cutting back to a good strong bud, from which will come a new stem and flowers. Attention to this practice of cutting will keep plants blooming almost continuously.

AN alloy consisting of ten parts of cast iron, ten of copper, and eighty of zinc does not adhere to the mold in casting, and it is of a beautiful luster when filed and polished. The most tractious metals are melted first, and the zinc last, in making it.

The bill to pay Assistant Examiners, for services rendered by them as Principals, has passed Congress and now awaits the signature of the President. We are glad to chronicle this tardy act of justice.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued the present week, with the names of the patentees :—

GUN.—W. G. OLIVER, Buffalo, N. Y.—This invention has for its object the guarding against the accidental discharge of the gun when carried with the hammer down; and it consists in combining a self-acting spring guard with the hammer.

WEIGHING SCALES.—JESSE S. LAKE, Smith's Landing, N. J., and EZRA B. LAKE, Bridgeport, N. J.—The object of this device is to furnish a weighing scale which shall indicate both the weight of the article and its value. It consists in combining with the beam or lever of a weighing scale a calculated table so graduated and arranged as to show the value of the amount weighed at a given price per pound.

FLAX DRESSING MACHINE.—DAVID S. ABBOTT, Cuba, N. Y.—This is a machine for dressing flax and hemp, and it consists in several novel features, the principal one of which is the form of the blades of the breakers, such blades being made with curves near their ends so as to throw the flax toward the middle of the bench and prevent it from getting outside of the arms and winding up on the shafts.

IMPROVEMENTS IN FLUTING MACHINES.—MRS. HENRIETTA H. COLE, New York City.—This invention relates to machines for making "fluting trimming," so-called, and it consists principally in so arranging one or two fluted rollers between which the material is passed, that the pressure of such roller thereon can be adjusted or released at pleasure, according as may be found necessary or desirable.

WATER METER.—ELIHU SPENCER and ERNEST L. MEYER, Elizabeth, N. J.—In this water meter two cylinders and sliding valves are employed, the valves working in a valve chamber common to both of them, and all being arranged together in a box in whose rear side is placed the water supply pipe.

LAMP CHIMNEY.—H. C. APPLEBY, Conneaut, Ohio.—This invention consists in constructing a glass chimney for lamps with corrugations flutings or the like, running spirally around the chimney, whereby the chimney will have a better capacity for expansion, and therefore be less liable to break than ordinary glass chimneys.

VACCINATOR.—HENRY MINTON, M.D., Brooklyn, N. Y.—This device consists in the arrangement of a puncturing tube in a barrel which contains a spring, in combination with a plunger passing through the puncturing tube, and provided with a momentum spring, so that when the puncturing tube is filled with the vaccinating matter and drawn back in the barrel against the action of the spring contained therein, and then released, after the barrel has been placed on the spot where the vaccinating matter is to be introduced, the tube punctures the skin and the plunger flies out, overcoming the power of the momentum spring, and causes the matter contained in the puncturing tube to discharge into the wound opened by said tube.

BALANCED CUT-OFF VALVE.—B. T. MCKINLEY, Falmouth, Ky.—This invention relates to a rotary valve which revolves on a seat at the bottom of a cylindrical chamber, in combination with a cut-off valve fitted into the cylindrical chamber over the main valve, and provided with a balance piston in such a manner that by means of said piston both the cut-off and the main valve are relieved from the pressure of the steam, or balanced, and by turning the cut-off valve in the direction against that in which the main valve revolves, the steam can be cut off at any desired point of the stroke, or shut off entirely, without any effect on the exhaust, which goes on without interruption.

DEVICE FOR KEEPING MEATS, ETC., UNDER BRINE.—JOHN BURGUM Concord, N. H.—This invention relates to an apparatus for keeping pork, beef, and other salted or pickled meats as well as fish, under brine while in barrels, firkins or the like. The invention consists in providing a circular or any other proper-shaped platform with a series of dogs so arranged and operating that the platform may be thrust down so as to place the meat below the brine, and there held by the dogs catching against the side of the barrel - a proper means for liberating them being provided.

DEVICE FOR TRIMMING MITERS.—ALBERT JOHNSON, Putman, Conn.—This invention relates to a device for trimming miters and planing them after being sawed, so as to render the surfaces smooth and true, and admit of a close joint being formed. It consists of a bed connected to a base by means of joints so arranged as to admit of the bed being adjusted in a more or less inclined position, according to the bevel required in one direction, this bed has an adjustable rest upon it to give a proper bevel to the work in another direction; also in a peculiar application of a plane to the device whereby it is retained in proper position so as to insure the work being done in a perfect manner.

PICTURE HOLDER.—WILLIAM WALKER, New Haven, Conn.—In this holder, frames of a uniform size and shape are provided for the several pictures, and are so arranged side by side in two series within a suitable box or casing, that by turning a pedestal or handle attached to the box, the several picture frames in regular order and succession will be made to pass from one row to another, bringing each in turn to the outside of each row or series, and in position for being viewed.

CORN SHELLERS.—WM GILMAN, Ottawa Ill.—This invention relates to a corn sheller, patented by F N. Smith, on June, 1843, whereby the efficiency of the sheller is greatly increased and many other important advantages secured.

TREATING WOOL.—P. S. HAINES, Newburgh, N Y.—The object of this invention is to facilitate the picking and carding of wool, and also to facilitate its treatment or disintegration by any other machines as well as by means of pickers and carding machines.

CULTIVATION OF STRAWBERRIES.—B. FULLER, Norwich, Conn.—The object of this invention is to improve the cultivation and raising of strawberries, and other plants and vines, and it consists in the use of a peculiarly formed and constructed vase made of earthen or pottery ware, or other suitable material.

MEDICAL COMPOUND.—P. ROSENBLATT, Greenville, Tenn.—This invention relates to a medical compound especially intended for the cure of dyspepsia, lung and liver complaints, and other species of indigestion.

MACHINE FOR GUMMING AND PRINTING ENVELOPES, ETC.—THOMAS V. WAYMOTH, New York City.—This invention relates to a machine for gumming and printing the blanks for envelopes, wrappers and other similar articles.

SWAGING THE ENDS OF THE BLANKS OF SCREW AUGERS.—RUSSELL JENNING, Deep River, Conn.—This invention is designed to facilitate the manufacture of screw augers as patented by this inventor Jan. 30, 1855, and reissued Oct. 3, 1865. The object is to swage the ends of the blanks in such a form that the heads of the augers may be subsequently made without welding any portions thereto, the metal being so disposed or distributed by the swaging, as to admit the spur, lips and cutting edges of the augers being all produced at one operation.

BUCKLE.—I. N. PLOTTS, New York City.—This invention consists in constructing the buckle frame of a continous rod or strip of metal and in attaching to the said frame a transverse bar, which is fitted to slide to and fro on opposite side strips of the frame, whereby a very cheap and efficient buckle is produced.

CATTLE POWDER.—JOHN S. ANDERS, Northwater, Pa.—This invention relates to a mixture which is intended as an antidote against various diseases of horses and cattle in general, and which has proved to be a preventive against the cattle plague.

FASTENINGS FOR BOXES.—H. T. BARKER, Napa, Cal.—This improvement consists in the mode or device for fastening a box for the transportation of fruit and for other purposes, by means of a slot and catch on one side or end of the box, and an upright bolt and nut turned with a key, on the other side or end, to secure it.

SASH FASTENER.—J. W. ELLIOTT, Leicester, Mass.—This device is a combination of a spring bolt for sash fastenings which is operated by a hinged lever which acts as a cam, by which the face of the bolt is withdrawn from the jaw of the window frame.

MACHINE FOR SANDPAPERING WOOD WORK.—J. H. WONDERLY, Williamsport, Pa.—This is an adjustable table which supports the wood, above which is a revolving disk faced with sandpaper and supported by a bracket in such a manner that it may be brought over any portion of the wood to be operated upon. The disk is put in motion by means of belts and pulleys attached to the bracket. A chest surrounds the disk, and from said chest the air may be exhausted by means of a fan which is connected with the chest by means of a series of tubes passing along the brackets, and so jointed as to move with it. The dust is by this means drawn into the chest and carried away from the wood

MEDICAL COMPOUND.—PETER EISENHUTH, Monroe, Mich.—This compound is a balsam which is an excellent remedy for colic, pains in the limbs, for all kinds of cold, coughs, fever, weak eyes, sea sickness, frost and fresh wounds; being applicable both externally and internally. It also cures the buzzing in the ears in a short time.

Notes and Queries

S. O, of Colorado.—Your suggestion to Aerostats to employ condensed gas is not new. This plan is well understood by all who are familiar with ballooning experiments.

F. W., of Wis.—If you have a taste and aptness for the business, become a mechanic. No profession is more honorable or useful.

W. P. B. C., of Wis., suggests that readers of the SCIENTIFIC AMERICAN keep a small book to note the pages containing useful recipes and other matters for reference. As he intimates, it would save them trouble and us the annoyance of repeated questions. The suggestion is a good one.

T. R., of Sing Sing, is informed we do not prepay postage on the paper. The rule to find the gears for screw cutting can be obtained from any manual on mechanics. We give a brief one. Divide the number of threads in the leading screw with that proposed to be cut. The quotient shows with the divisor the proportion between the gears. There is no perfect solvent for vulcanized rubber. The best is spirits of turpentine or petroleum naphtha.

R. C., of Conn.—Cimeg's process with Rochelle salt is commonly considered to be the best for silvering glass with pure silver. You may find this and all the other plans in the back volumes of this paper.

E. H., of Conn.—Micaceous ore is not used as a substitute for plumbago in making crucibles. It sometimes looks and feels like plumbago, but a crucible made of it with sand and clay would melt in a kitchen fire.

G. A. L., of N. Y.—Send your address and we will mail you a pamphlet which will inform you how to obtain a patent. The expease of engraving we cannot tell without seeing your model.

A. F., of Ohio.—We have found no difficulty in whitewashing over old paint. A pound of glue in about ten gallons of whitewash will aid in making it durable. One year ago we applied such a composition to an old house and it still looks and wears well.

G. B. C., of Ill.—We do not think *verbatim* reports of Prof. Doremus's lectures have ever been made. The most interesting and novel experiments were published in the SCIENTIFIC AMERICAN.

C. W., of Mass.—The ends of lead pipe are joined with plumbers' solder, which is made with two parts lead to one tin. The process is called "wiping a joint," and requires a certain degree of dexterity acquired by experience. The metal is used at a certain stage of temperature nearly approaching congelation, and is daubed and smeared over the surface much as wet clay would be.

Reader, of Mass.—The substance formed in your fusible plug is doubtless scale, which is deposited on brass as well as iron. The rough appearance on removal is doubtless owing to corrosion. Galvanic action would have a tendency to repel scale. We have seen shellac dissolved in ammonia. Booth to the contrary notwithstanding.

J. E. C., of Ohio.—An experiment tried by Mr. Charles Emery, of the U. S. Navy, showed that the injector was not economical as a means of supplying water.

S. M., of Ohio.—Vegetable parchment is made by immersing paper for a few seconds in a mixture of 2 parts sulphuric acid and one part water. The mixture is used at the temperature of 60°, and immediately on removal the parchment is thoroughly rinsed in clear cold water.

C. A. B., of Conn.—Clay is silicate of alumina. Add the clay to diluted sulphuric acid and boil; you thus produce sulphate of alumina. To this last add a solution of carbonate of potash and impure alumina is precipitated. Dissolve this alumina in hydrochloric acid and to the solution add ammonia; the precipitate which now appears is pure alumina. If your object is to procure only a small quantity of alumina, you will succeed easiest by extracting it from alum.

A. B., of Mass.—The Amiens about which you inquire is in France. A letter addressed to the society will reach its destination.

Inventors or manufacturers of first rate quartz crushers; also machines for raising gravel, etc., from river bottoms, are requested to communicate with Samuel M. Carter, Spring Place, Ga.

TRAPPER'S GUIDE.—S. N. Newhouse, Oneida, N. Y. Price 75 cents.

An interesting pamphlet of over 100 pages on the capture of fur-bearing-animals, has just been published by the Oneida Community, Oneida, N Y. The book contains illustrations of a great number of fur-bearing animals, with a description of their habits, where they may be found, how to catch the various species, and the best trap for the purpose.

Improved Tubular Evaporator.

This is an improvement designed to supersede the use of the steam evaporator and to simplify the reduction of saccharine juices to sirups. The inventor claims that it is equally adapted to the evaporation of cane juice, sorghum, and maple sap, and it appears as well applicable to beet juice. The manufacture of sugar is becoming more and more important every year. The desolation caused in our sugar-producing States, by the war, has left us too nearly dependent upon foreign production, and every means to utilize our own saccharine-producing plants, by cheapening the process of the manufacture of sugar, is worthy careful consideration. The demand for "sweetening," by sour humanity, in every period from infancy to old age, is additional reason for giving prominence to an improvement like that under consideration.

HAWLEY'S TUBULAR EVAPORATOR.

The outside of this evaporator is composed of wood, this being a non-conductor and economizing the fuel as well as retaining the heat. The first pan, or defecator, A, is capable of holding from fifteen to one hundred gallons, and is provided with nine copper flues, three in a series. The sap or juice is received into it in a continuous stream from the mill, through the pipe, B, and is brought to the boiling point at the end nearest the fire, thus carrying the scum back convenient for skimming. From the defecator it is brought into the front or main pan, *C*, by a gate, situated midway between the top and bottom of the defecator, to avoid the scum on the top and the sediment at the bottom. The sap is brought here in close contact with the copper fire box and made to boil more rapidly than in any other evaporator. When the sap has reached 25° Baume, it is passed by a similar gate to the finishing pan, E, parallel to the defecator. This pan is furnished with one series of flues, of wood, six in number, near the bottom. Here the product and process is entirely under the operator's control, by means of a damper under the fire box, which will shut off the hot air and admit a current of cold air at will, producing the same effect as removing the pan from the fire in other evaporators. The defecator is also furnished with a similar damper, handle shown at F, by which the heat in either of these receptacles is absolutely controlled.

After the sirup is finished it is passed into the cooler, G, by the gate, H. This extends under the defecator and finishing pan, and will hold and cool the sirup as fast as it is made. After becoming sufficiently cool, which process is facilitated by the longitudinal opening, I, which permits the steam and heat to escape, it is drawn off into barrels by the cock, J. The grate of the fire box (door shown at K), is hung on hinges so that its contents can be instantly dumped into the ash box, if the evaporator is used as a stationary, or on the ground, if portable. The smoke arch, L, collects the smoke after passing through the flues and discharges it through the stack, M.

It is claimed that this evaporator has every advantage possessed by the steam evaporator, and yet can be furnished at one-eighth or one-tenth the cost. It is portable and can easily be moved from place to place by a boy. The heating surface to which the sap is exposed is four or five times greater than in other evaporators, and it requires only one-half the fuel used in others to accomplish the same amount of work. It requires no masonry, and is complete in itself.

Patented May 1, 1866, by B. R. Hawley. Application pending through the Scientific American Patent Agency on other improvements. For further information address Marvin, Washburn & Co., assignees and manufacturers, Alton, Ill.

MERSHON'S WATCH KEY.

Some persons take about as much care of a watch as they would of a cast-iron grindstone. Half the injuries to this delicate machine, requiring the repairer's skill, are the result of carelessness. But the most careful will, at times, make a mistake, and none is more common than that of attempting to wind the wrong way. This invention is designed to obviate these mistakes by rendering them impossible, and at the same time to furnish a more convenient key than those in common use. The construction and operation of this key can be seen by the accompanying illustrations.

Fig. 1.

Fig. 2.

Fig. 3.

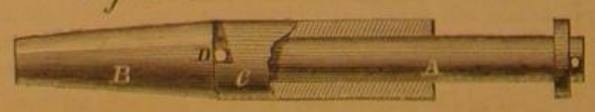


Fig. 1 represents the key perfect. In Fig. 3 will be seen a central shaft, A, attached to a pipe, B, and having a sleeve or tube, C, upon it. The lower portion of the sleeve forms a ratchet of two teeth, which catch upon the pin, D. By turning this sleeve to the right, the pipe is made to revolve by means of the ratchet and pins, while, by a reverse motion, the incline of the ratchet slides over the pin, and the sleeve only is turned. The spring, E, Fig. 2, holds the sleeve to the pins, but allows a lateral motion on reversing the revolution. The spring is held in place by the collet, F, and the whole is inclosed by the ornamental case, G.

The advantages of this key are obvious. It is more simple than some other ratchet keys, and is not liable to get out of order; the hand does not require to be removed from the key at each turn, which frequently injures the watch by "canting" the pipe. Only two teeth are made on the ratchet, as in winding a watch it is done by half revolutions.

This invention was patented Nov. 24, 1863, by R. S. Mershon, assignor to himself and John M. Harper, 308 Chestnut street, Philadelphia, to whom all communications should be addressed.

WORKINGMEN'S ASSOCIATIONS.

Among our workingmen are temporary combinations and more pretentious organizations for raising the price of work and shortening the hours of labor; and we have, also, trades' unions, designed for mutual protection against the aggressions of capital and the interference of outside pretenders. These combinations may be useful in their way. They may, if they do nothing more, bring the employer and employed in close contact, enable them to understand each other better, and throw new light upon their new relations. We cannot believe that there is, necessarily, any antagonism between capital and labor, but that what is for the best interests of the one is also for the best interests of the other, however much appearances or present circumstances may seem opposed to such an idea.

But what is more needed are associations among men of the same branch of business, including in their membership both workmen and employers, and having for their main object a comparison of experiences and discoveries. Hardly a single member of such an association would be found who could not, in some particular, add to the general fund of information. Unworthy jealousy and competitive prejudice should not be allowed to interfere with the free interchange of opinions and information. There are associations for this object located in our principal cities which are of great advantage to those who avail themselves of their investigations; but there is no reason why similar associations on a smaller scale, perhaps, should not exist in every small town or village. The comparison of results at mechanics' fairs is productive of great benefit, and we cannot see why a more frequent comparison of the processes by which these results are attained should not be equally beneficial. This is a matter entirely within the control of our mechanics, and we hope the suggestoin will be considered.

NOVEL MODE OF TREATING COFFEE.

Under the above caption we published, on page 359, a brief review of a reported trial upon a suit brought by Wm. Newell against Ezra Wheeler & Co., of this city, to enforce a contract based upon a patent granted to Mr. Newell in Nov., 1857, for an apparatus for polishing and cleaning coffee. Our article stated that one of the features of the process consisted in running the coffee through black lead, which gave to it a shiny metallic appearance.

The report published in the Scientific American was condensed from a more lengthy one that appeared in the *Herald* of May 15th.

Upon examination of Mr. Newell's patent, above referred to, we find that it was an error to state that the process consisted in part of running the coffee through black lead. Mr. Newell's invention consists in polishing coffee by subjecting it to the combined action of heat and friction, no mention being made in the patent of the use of black lead. We consider it due to Mr. Newell that the erroneous impression should be removed, and we take pleasure in making the correction.

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VOL. XIV., No. 26..[NEW SERIES.]. *Twenty-first Year.*

NEW YORK, SATURDAY, JUNE 23, 1866.

Contents:

(Illustrations are indicated by an asterisk.)

THE SCIENTIFIC AMERICAN—A NEW VOLUME.

The present number closes Vol. XIV. of the new series. The next number will appear in a new dress of type, and be greatly improved in clearness and beauty of mechanical execution.

The SCIENTIFIC AMERICAN has become an authority in the specialties of science and mechanics, and we shall endeavor to maintain that character for it and add to its influence. Its editors are selected for their practical knowledge of the subjects comprised in their respective departments, as well as for their ability to present those subjects in a clear and comprehensive light. A practical, analytical chemist devotes his time to the chemical and mineralogical department; the scientific department is in charge of a thorough and competent scientist, and the mechanical is managed by a gentleman whose long practice and experience makes his opinions valuable.

Apart from the editorial labor, we believe that the valuable suggestions and practical information frequently embodied in the contributions of correspondents, add immensely to the advantages of the paper to all classes of our producing and investigating readers. Our recipes are intended to be reliable, and in reply to inquiries for information we endeavor to present the facts, or, where discovery has not demonstrated them, to suggest a course which may lead to their elucidation. In short, we intend to make this journal a *vade mecum* to the mechanic, the scientific investigator, and the worker in all branches of productive industry.

With this number, as with many previous numbers, we send out a supplement. We find it necessary, often, to give our readers more than we promise in order to enable them to keep pace with the march of improvement. The supplement will be found to be not the least valuable portion of our paper, particularly to those who preserve the numbers for reference.

THE NON-RECOIL GUN—A NEW PRINCIPLE IN EXPLOSIVES.

Experiments have been made in England with tubes open at each end, used as a means of propelling a ball, or bolt, by the explosion of gunpowder, or gun-cotton, which seem to involve a principle in the resistance of gases not hitherto investigated.

We do not propose to assume the task of explanation, at least just now, but to state the facts, with our own suggestions, and leave our correspondents at liberty to give their theories, or the results of their experiments. It would seem that if the experiments in England have been fairly conducted (as we have no reason to doubt) the discovery may be made one of great value, especially in naval guns.

A Mr. Harding has been experimenting with open steel tubes, in which he inserts a charge of gunpowder backed by a felt wad, and, at a short distance in the rear, another felt wad, leaving an air space between. On the top of the charge of powder or cotton is a ball, in immediate contact with the charge. The charge is ignited in the usual manner, at the rear end, and the effect on the ball seems to be equal to that of a gun with a breech, while the wads are thrown out at the rear end of the tube, torn into lint, and the tube has no recoil.

These are, in brief, the facts in relation to this experiment, and it now remains to ascertain upon what principle the action of the explosive gases is expended mainly on the projectile and not on the breech wads. Between the charge and the ball there is no inclosed air space, but between the charge and the end wad there is. The resistance of the end wad must be equal, or nearly so, to the force exerted upon the projectile, yet one presents but a slight mechanical obstruction, while the other has the resistance of gravity and the column of air between it and the muzzle of the gun.

In commenting upon this experiment the law relating to the transmission of sound in waves forces itself upon our attention, but does not seem to explain satisfactorily the facts involved in these trials. The only solution which seems at all promising is that of the wedging or transverse jamming of the particles of compressed air between the two wads. It is known that a gun barrel can be burst by a slight obstruction placed in the muzzle, confining the air above the projectile and charge. But in this case the fracture is not always toward the muzzle, where the greatest compression would be likely to occur, but at the breech, the strongest part. We can account for this only on the supposition that the temporary obstruction at the muzzle compels the particles of the explosive gas to force themselves upon those immediately in front, thus producing a strain upon the walls of the tube.

In the case of an open breech, temporarily closed by wads inclosing an air space, the air thus confined is compressed, and finding no immediate exit or release, we may consider the globular particles of the air to be forced into wedge-shaped or cone-like forms, thus pressing laterally against the sides of the tube and forming, for an instant, a diaphragm of resistance as a substitute for the solid breech. It is well known that waves of sound can be propelled only at the rate of 1,100 feet per second, while the velocity of a ball propelled from a gun by an explosive is about 1,600 feet per second. There is therefore a loss of time between the movement of the ball and that of the resisting wads. In other words, the compressed atmosphere confined between the two wads behind the charge, does not have time to resist or recover from the sudden compression until the projectile is driven from the gun.

This matter is a fruitful source of speculation, but we have neither time nor space to investigate it further at present. It is worthy attention, as on it may depend valuable improvements in gunnery and new discoveries in science.

WHAT THE SOUTH NEEDS.

The Macon (Ga). *Citizen*, in a recent article, urges the necessity of capital and labor to rebuild the waste places of the South, and while it strongly advises the young men of the country to turn their attention toward developing the natural resources of that section, favors the invitation of capital and intelligent labor from Europe and the North. It, however, unnecessarily, we think, while stating that "we want the ingenuity and practical science of the Northern mechanic and artisan, and their indomitable industry and perseverance," exhorts them to "lay aside their intense radicalism and come down to this land of flowers and beauty," etc.

The *Citizen* is in error in supposing that the "Northern mechanic and artisan" are intense radicals. The radicalism that has cursed both sections of the country, North and South, and hindered the development of our natural resources and the progress of internal improvements, does not belong to the really producing and improving classes in either section. Fanaticism and its twin brother, intolerant bigotry, are to be found rather among political demagogues and not among the brain, brawn, intellect, and muscle-users of the country. Their mission and object is a nobler one than that of exciting or prolonging the influence of sectional and unworthy prejudices. The country is more dependent to-day upon the peaceful and beneficent influences of the mechanic and the capitalist, for future prosperity and future harmonious development, than upon President or Congress. It is gratifying to see that journals published in the South are willing to aid in the consummation of a union such as a community of interests and a harmony of objects will secure.

The South needs "reconstruction." Not so much a reconstruction of her political fabrics, but a material reconstruction. There are churches, dwellings, stores, shops, and bridges to be rebuilt; machinery to be introduced, cotton, wool, iron, and wood to be manufactured; mines to be delved, roads to be built, rails to be laid, ships to be constructed, and farms to be worked. Millions of wealth, now latent and unemployed, await only the magic hand of labor, guided by intelligence, to bless the people of the South, the country, and the world. The Mobile *Times* says:—"The South wants population—industrious population—working population. Where is this population to come from?" We answer, from the North and West. Will they be welcome? We answer, yes. It is only those interested to keep up a show of power who deny it. Northern and Western men, with good habits, with industry, with capital, are wanted. We have to fill up the room of one million blacks and one million whites slaughtered during the war. They were producers, and must be replaced.

"The Northern and Western man who comes among us as an equal, is not only welcome, but he is desired. He will populate our cities, he will cultivate our fields, he will develop our mineral resources. If he is a capitalist, he will build up our trade."

We believe it is the interest as well as the duty of our mechanics and capitalists to aid the South, by contributing of their wealth, their energy, enterprise, labor, and perseverance, to develop its natural and artificial advantages. Every useful immigrant from the North and the West will, we doubt not, be welcomed and find remunerative employment and investment, as well as a pleasant home. No work could be more patriotic, while none would be more profitable. The great need of the country now is a permanent settlement of the difficulties which engendered the bitter feelings that led to the war, and the removal of the jealousies, animosities, and prejudices which have grown out of the war. No agency could be more powerful to this end than the penetrating and peaceful influences of the constructive arts. By a union of means and of labor, and a common purpose of material improvement and internal development, the people of the two sections would become thoroughly acquainted and mutually attached.

After all, the mechanic and workingman are the true civilizers of the world. Their influence, although not so demonstrative and pretentious as that of government officials, is much more permanent and far-reaching. With an immigration of our intelligent mechanics into the South we expect to see the problem of "reconstruction" solved without the aid of politicians.

MINING BUREAU.—We have received the prospectus of the "Mining Bureau of Montana," an association of gentlemen organized at Virginia City for the purpose of giving information concerning the mining resources of that territory. It appears to be based upon the right principles, and if managed according to the plans laid down, it will be a valuable agency to those who may wish to invest in mining operations.

OBLIQUE BELTS.—It sometimes happens that it is necessary to lead a belt obliquely from a pulley or flywheel, and in such cases much trouble is frequently caused by the strap slipping off. This can, in very many instances, be prevented by fastening a strap of thick leather, of a less width than the belt, around the center of the rim of the flywheel or pulley. The leather strip may be secured by counter-sunk copper screws passing through it, and tapped into the rim of the wheel.—*Engineering.*

Patent Claims

ISSUED FROM THE U. S. PATENT OFFICE

FOR THE WEEK ENDING JUNE 12, 1866.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

55,446.—FLAX-DRESSING MACHINE.—David S. Abbott, Ischua, N. Y.:

I claim, 1st, Making the blades of the beaters of flax-dressing machines with a curve that rises towards their ends, substantially as described.

I also claim making one of the boxes for the journals of the apron-roller, S, movable, so that that roller can be taken out and cleaned at pleasure, substantially as described.

I also claim the clamp, H, constructed substantially as described, applied to the feed-table of a flax-dressing machine.

55,447.—PORTABLE GAS-STAND.—Boyd Allen and John Riddell, Boston, Mass.:

We claim, 1st, The sliding portable gas stand, constructed and operating substantially as described.

We also claim the combination of the stuffing-box with the inner end of the sliding-tube, as and for the purpose specified.

55,448.—SEAT AND COUCH FOR RAILROAD CARS.—Horatio Allen, New York City:

I claim, 1st, The combination with the floor and sides of a railroad passenger car of couches of a rhomboid form, placed diagonally to the length of the car, as herein described, and constructed of two seat-pieces, A, A′, two corner-pins, E, E′, and two central pieces, F, F′, and supported by frames and legs, said couches being convertible into a pair of seats, by putting out of the way the two corner-pieces, E, E′, and securing in a vertical position the two center-pieces, F, F′, by the cap-piece, G, said pair of seats having a relative position diagonal to the length of the car, all substantially in the manner and for the purpose herein described.

2d, The combination with the seats, herein described, and sides of a railroad passenger car, of upper couches of rhomboidal form placed diagonally to the length of the car, as herein described, and constructed of a frame supported as herein described, all substantially in the manner and for the purpose herein described.

55,449.—MEDICINE.—John S. Anders, North Wales, Pa.:

I claim a cattle powder made of the ingredients herein specified, and mixed substantially as set forth.

55,450.—LAMP CHIMNEY.—H. C. Appleby, Conneaut, Ohio:

I claim a spirally corrugated or fluted glass lamp chimney, constructed substantially as shown and described.

55,451.—PAPER BOSOM AND COLLAR.—James C. Ames, Northampton, Mass.:

I claim a new article of manufacture, consisting of a paper bosom and collar combined, when constructed as herein shown and described.

55,452.—COMPOSITION OF IRON AND OTHER METALS.—Wm. M. Arnold, New York City:

I claim the composition produced by the mixture of the ingredients above described, when made substantially of the proportion and in the manner herein contemplated and set forth.

I also claim the preparation of an alloy adapted and intended for use in the manufacture of my final composition, and which alloy is composed of copper, tin, zinc, and antimony, in the proportions above contemplated and set forth.

55,453.—BOLSTER FOR WAGONS.—D. L. Babcock, St. Charles, Minn.:

I claim the metal cap, B, constructed substantially as shown, and applied to the bolster of ordinary wagons and similar vehicles, as and for the purpose set forth.

55,454.—CURTAIN FIXTURE.—Jacob B. Bailey, New York City:

I claim, 1st, The cord-ring, e, formed with a groove around its periphery for an endless cord, an opening through it for the curtain roller to pass entirely through to its bearing and with teeth to penetrate said roller, as and for the purposes set forth.

2d, The combination of the semi-circular shoe or bracket, h, with the cord ring, E, and roller, b, for the purposes set forth.

3d, The friction spring for the curtain-roller formed by slitting the end of the said roller and introducing it within a ring or bracket, as set forth.

55,455.—FASTENING FOR FRUIT-BOXES.—Henry T. Barker, Napa, Cal.:

I claim the arrangement shown and described, consisting of the headed catch at the slotted end of the lid and the threaded bolt at the other end upon which the lid is screwed by the nut.

55,456.—RAILROAD SWITCH.—Joseph Bradt, Avon, N. Y., and James Hayes, Rochester, N. Y. Antedated March 6, 1866:

We claim the combination of the lifting tread-lever, I, with the ribbed chair or chairs, H, having seats, d, d, d, which correspond in number and position with the several diverging rails, B, C, D, when arranged in connection with the ordinary switch-lever, E, and connecting-rod, G, substantially as and for the purpose herein specified.

55,457.—MODE OF SUSPENDING CARS ON SPRINGS.—Alfred Bridges, Newton, Mass.:

I claim, 1st, The guide-pieces, c, c, combined and arranged relatively to the supporting-bar, E, box, C, axle, b, springs, D1, D2, and suspension-rods, G1, G2, or their respective equivalents, substantially as and for the purpose herein set forth.

2d, The jaw or frame, I, bar, H, suspension-rods, G1, G2, supporting-bar, E, springs, D1, D2, and axle-box, C, or their respective equivalents, combined substantially in the manner and for the purposes herein set forth.

3d, The method of locking the jaw or frame, I, upon the removable bar, H, by flanges, h′, or their equivalents, so as to resist horizontal strains without throwing such strains on the bolts, J, J, or their equivalents, substantially as and for the purposes herein set forth.

4th, The arrangement of the shelves, C1, C2, which support the springs, D1, D2, so as to swing near, but not in contact with, the upright inner faces, h, of the inclosing frame, substantially as and for the purpose herein set forth.

55,458.—DUST RANGE OR RECEPTACLE.—Alden Brigham, Coldbrook, Mass.:

I claim a dust range and receptacle as a new article of manufacture, the same consisting of a box with top flanges whereby it is held in the floor and sliding-bottom and register-cover, all the parts being constructed and arranged for use as set forth.

55,459.—ARTIFICIAL LEG.—Jesse Bringhurst, Philadelphia, Pa. Ante-dated June 1, 1866:

I claim, 1st, The bolts, C, as described and for the purpose set forth.

2d, The swivel-box, E, in combination with the bolt, C, and rubber packing, H, as specified and for the purpose set forth.

55,460.—LOCK.—B. V. M. Breuse, Kokomo, Ind.:

I claim, 1st, The combination of the pointed key, K, and the spring obstacle plate, N, substantially as described.

2d, The combination of the toothed key, K, with the spring tumblers, H, H′, spring bolt, C, with notches, I, I, arranged and operated substantially as described and represented.

3d, The combination of the notched spring-bolt, C, with notch, d, and the spring tumbler, F, f, arranged and operating substantially as described and represented.

55,461.—CENTRIFUGAL MACHINE.—John D. Browne, Cincinnati, Ohio:

What I claim in the construction of a centrifugal sugar separating machine is the separate or variable motion of the screen and distributor, as herein substantially described.

I also claim the oblique or spiral deflector as herein described and for the purpose set forth.

55,462.—BED-BOTTOM.—Daniel W. Burbank, New York City:

I claim, 1st, The combination of a double helical spring, C, C, with the double-headed mandrel, O, O, and the arm, E, E, when the coils of the spring are wound apart so that no part touches another part, substantially as specified.

2d, The enlarged loop, D, in combination with the slat, B, and mandrel, O, as specified.

3d, The double hook, N, N, in combination with the spring and rail, as specified.

4th, The corner lock, L, L, K, in combination with the frame slats and springs, substantially as set forth.

55,463.—DEVICE FOR KEEPING MEAT UNDER BRINE.—John Burgum, Concord, N. H.:

I claim, 1st, The platform or disk, A, provided with dogs, B, or their equivalent, constructed and arranged so as to operate substantially in the manner specified.

2d, The combination of the dogs, B, platform, A, collar, C, and connecting link, b and b′, or their equivalent, substantially as herein specified.

55,464.—MODE OF STARTING CARS.—W. H. Butler and R. G. Hatfield, New York City:

We claim, 1st, The combination and arrangement of the body of a vehicle, loose and portable upon the truck which supports said body, and movable thereupon by means of rollers, roller-sheaves, wheels, pulleys, or their equivalents, substantially as and for the purpose herein described.

2d, The combination of the frame, A, with the guide, D, springs, F, flanges, E, small wheels, C, and body, B, substantially as described and for the purpose set forth.

55,465.—DENTAL IMPRESSION CUP.—O. B. Buttles, Milwaukee, Wis.:

I claim combining with a dental impression cup an inner rim or flange, a, for preventing the wax or other impressed material from moving or slipping in the cup, as the latter is being removed from the mouth, substantially as described.

55,466.—COOKING STOVE.—Gardner Chilson. Boston, Mass.:

I claim the arrangement of the separate heat-saving plate within each of the oven-flues and case of the stove, so as not only to perform its function of saving heat, as described, but to gradually diminish the smoke-passage through the flue, in manner as specified.

I also claim the combination and arrangement of the arched chamber, G, with the oven, the vertical flues at the back of the oven, and with the three flues arranged beneath and against the oven, in manner as explained.

I also claim the combination and arrangement of the bay, A, and its side opening and its closing slide with the stove-body and with the grate-journal, as described.

55,467.—REAPING AND MOWING MACHINE.—Morell Clark, Castalia, Iowa:

I claim the arrangement of forked bar, C, bar, D, forked finger-bar, E, and journals, c, c, in combination with the axle, A, bevel-wheels, F, G, shaft, H, wheels, I, J, shaft, K, crank-pulley, L, pitman, M, and sickle, N, constructed and operating in the manner and for the purpose herein specified.

55,468.—MACHINE FOR CURVING THE BACKS OF BOOKS.—John E. Coffin, Portland, Maine:

I claim, 1st, The combination and arrangement of the cams, F, G, H, I, J, and K, in the main shaft, C, in the manner and for the purposes before described.

2d, The combination of the shaft, M′, the truck, o, the cog-wheels, w and x, the screws, Z, the sliding boxes, y, the posts, L, the segment-levers, k, and the adjustable pressure-bar, O, as and for the purpose described.

3d, The combination of the cam, F, lever, N, link, Q, lever, R, regulator, M, h, and sliding mold, f, as and for the purposes described.

4th, The combination of the cam, G, lever, g, shaft, P, levers, l, links, J, segment-levers, I, and segment-levers, k, and the pressure-bar, O, as and for the purpose described.

5th, The combination of the cam, I, lever, r, frame, p, p, supports, c, c, and sliding frame, s, s, for the purpose of raising the jaws under the pressure-bar and pushing the book through the jaws so it can be easily removed.

6th, The combination of the cam, J, shaft, S, levers, t, t, links, u, u, toggles, Z′, Z′, links, e′, e′, posts, L, L, as and for the purpose described.

7th, The combination of the cam, K, lever, o′, shaft, T, lever, p′, link, e, frame, p, p, sliding frame, S, S, screws, b, b, and bar, m′, for the purpose of adjusting the position of the book and presenting it to the operations of the pressure-bar.

8th, The combined use and arrangement of a solid adjustable pressure-bar, O, with the jaws which rise under the bar when the bar is in operation.

9th, The use of the clasp-holder, d, the screws, c′, c′, and the hinges or joints, r′, r′, as and for the purpose specified.

55,469.—FLUTING MACHINE.—Henrietta H. Cole, New York City:

I claim the upper roller of a fluting machine in boxes or bearings, resting upon spiral or other suitable springs, and moving upon guides, in combination with adjustable weighted levers for holding such boxes or bearings down, when arranged together and so as to operate substantially in the manner described and for the purpose specified.

55,470.—SEEDING MACHINE.—Byron D. Cook, Clarendon, Mich.:

I claim, 1st, The arrangement of the converging wings, w, upon the shafts, S1, S2, in such manner as to scrape seed or fertilizing material from each side and towards the center of their respective discharge apertures, O1, O2, substantially as herein set forth.

2d, The employment of the converging wings, w, in combination with the revolving agitator, E, the vibrating clearing fingers, f, and the distributor, D, arranged and operated relatively with each other and with the rest of the machine, substantially in the manner and for the purposes herein described.

55,471.—WASHING-MACHINE.—Elisha H. Cook, Clarendon, Mich.:

I claim, 1st, The employment of the suspended beaters, B, constructed with boxes, V, to contain weights, in combination with the perforated partition-board, P, substantially as and for the purposes herein described.

2d, The mode of actuating the suspended beaters aforesaid, by means of the crank-shaft, S, and cam, C, in combination with an adjustable roller, D, the same being operated in connection with the hangers and standards herein described, substantially as and for the uses specified.

55,472.—PLOW-COLTER.—Jacob Custer and Charles Rowland, Clinton, Ill.:

We claim the construction of a self-supporting colter in the form of an arch resting on its abutments, the share and post, and which, from its peculiar construction and application, is reversible and equivalent to two single colters, which form one arch, or arc of a circle.

We also claim the construction of the rod in combination with the colter, which rod passes to the beam and descends to and down at each side of the colter in the form of a fork, substantially as shown and described.

55,473.—MOSQUITO-NET.—J. G. De Coursey, Philadelphia, Pa.:

I claim, 1st, a net, A, in combination with elastic cords or bands, one of which is applied to each edge of the net, as and for the purpose described.

2d, In combination with the above, I claim the perforated corner strips or plates, B, of metal or other equivalent material, for the purpose specified.

55,474.—MEDICAL COMPOUND.—Peter Eisenhut, Monroe, Mich.:

I claim a medical compound made of the ingredients herein specified, and mixed together substantially as and for the purposes set forth.

55,475.—SASH-FASTENER.—J. W. Elliot, Leicester, Mass.:

I claim, 1st, The combination of the bolt, A, plate, C, spring, F, and lever, H, the whole being constructed and arranged to operate as herein described, so as to constitute a sash-lock and sustainer.

2d, The combination with the bolt, C, and lever, H, of the fulcrum, h, and lever, c, permitting the ready attachment and detachment of the lever, as and for the objects specified.

55,476.—FARM GATE.—William Elliott, Stockport, N. Y.:

I claim, 1st, Employing the inclined railway, D, in combination with the cords, pulleys, and posts, arranged substantially as and for the purpose herein described.

2d, The combination of the knee-levers, d, d′, with the drop-catch, h, arranged substantially in the manner and for the purpose set forth.

3d, The combination and arrangement of posts, pulleys, and cords, as or substantially as herein described, when employed for opening and closing gates of any other construction.

55,477.—PORTABLE DOOR FASTENING.—Levi S. Enos, Almond, N. Y.:

I claim the portable door fastening, constructed as herein described, as a new article of manufacture.

55,478.—ANIMAL TRAP.—Josiah B. Fairchild, Covington, Ky.:

I claim the folding-doors, a, armed with prongs, d, the springs, e, and trip-floor, f, in combination with the body, A, of the trap, all constructed and operating as above described and for the purpose set forth.

55,479.—DRAUGHT-PIPE FOR LOCOMOTIVES.—James M. Foss, Concord, N. H.:

I claim the draught pipe as made with two or any other suitable number of holes, b, b, arranged in its rear, and having a visor, c, to each, and with the front of the pipe closed and its lower end open, substantially as described.

55,480.—DEVICE FOR EXPELLING WATER FROM THE HOLDS OF VESSELS.—Thomas W. Fox New London, Conn.:

I claim the combination of the semi-cylindrical vacuum producer, Fig. 4, with the tube, A, when they are constructed, fitted together, attached to the vessel and used substantially as herein described and set forth.

55,481.—GATE.—Patrick Freeman, Benton county, Iowa:

I claim the reel or revolving part of the gate upon the shaft, A, together with the locking bolts, r and p, substantially as and for the purpose herein specified.

55,482.—VASE FOR CULTIVATING STRAWBERRIES.—Reuben B. Fuller, Norwich, Conn.:

I claim, 1st, The vase, A, made substantially as herein described, and for the purposes specified.

2d, In combination with the above, I claim the use of the vessel or pot, E, or its equivalent, as and for the purpose described.

55,483.—PRUNING-HOOK.—Michael Gates, Paw Paw, Mich.:

I claim communicating a "drawing cut" movement to the chisel, C, by bending its bar as at a, and operating it between guides, in connection with the hook, A, and its attached stock, substantially in the manner and for the purpose herein described and set forth.

55,484.—CHURN-DASHER.—A. J. Gibson, Cincinnati, Ohio:

I claim, 1st, The churn-dash, A, constructed with two truncated cones, placed base to base (one or more of which may be united, forming a more extended dash as shown in the drawings), as above described and set forth.

2d, The churn-dash, A, in combination with the churn-handle, B, for the purpose above specified.

55,485.—CORN-SHELLER.—William Gilman, Ottawa, Ill.:

I claim, 1st, The rail, O, placed just in front of the open end of the cylinder concave, I, for throwing or deflecting the corn escaping from the said concave to the screen or riddle, J, arranged substantially as described.

2d, The front rail, D, in combination with the rail, O, substantially as and for the purpose specified.

3d, The combination of the deflector rail, O, screen, J, and fan or other suitable blower, when arranged together and so as to operate substantially as described, and for the purpose set forth.

55,486.—CLOTHES-WRINGER.—R. Gipson, Shelby, Ohio:

I claim the arrangement of the shaft, D, sleeve, a, lugs, C and C′, in combination with the bridge-tree, B, gearing, D, D′ and H, H′, operating as and for the purpose set forth

55,487.—HARVESTER RAKE.—William F. Goodwin, Washington, D. C.:

I claim, 1st, The standards, G1 and G2, and cap, G, arranged for the purpose and to operate in the manner substantially as described.

2d, The cam, M, flange, q, yoke, Y, bar, I, guide-box, D, link, L, crank, S3, journals, S1 and S2, rod, S, bar, F, with its projection, F, and stud, E, arranged to operate in the manner and for the purpose substantially as described.

3d, The pulleys, P and P′, chain, N, shaft, C, and crank, C′, arranged to operate in the manner and for the purpose substantially as described.

4th, The bars, B1, B2, B3, B4, B5, and B6, constructed and arranged to form the jointed arm, B, to operate in the manner and for the purpose substantially as described.

55,488.—ROCK DRILL.—John Greives, Brooklyn, N. Y.:

I claim the drill constructed of a central polygonal rod with cutting point and angular sectional cutters bolted to the sides of said rod, substantially as herein specified.

55,489.—Wooden Mat for Cars.—Warner Groat, Green Island, N. Y.:

I claim a wooden mat for railroad cars and for other similar or suitable purposes, composed of wooden slats, A, spaced or retained at a proper distance apart by washers, B, and bolts, C, substantially as herein shown and described.

55,490.—Apparatus for treating Wool for picking, carding, etc.—P. S. Haines, Newburg, N. Y.:

I claim the perforated steam-pipe, F, constructed and located as described, and continued beyond the line of its perforations and connected to a water-pipe to run off the water of condensation continuously, substantially as set forth.

55,491.—Churn.—Alexander W. Hall, New York City:

I claim providing for the operation of the swinging dasher, G, by means of a pendulum weight applied outside of the churn and in connection with the said dasher, substantially as herein set forth.

55,492.—Revolving Desk.—Charles Hope, Springfield, Mass.:

I claim the revolving desk herein described, constructed with the standard, B, supporting and forming a pivot for the part, A, and having these and the other parts arranged substantially as shown and described.

55,493.—Construction of Screw-taps.—Bennet Hotchkiss, New Haven, Conn.:

I claim forming reamers, taps, and dies, substantially in the manner and for the purpose herein set forth.

55,494.—Transfer Switch.—Horatio Willard, Plainfield, Ind., assignor to himself and George F. Adams, Indianapolis, Ind.:

I claim pivoting the movable or transfer section of track at one end and attaching the other end to a segmental tie or bar, formed as shown and resting on friction rollers so arranged as to raise the suction from its bed, for the purpose substantially as set forth.

55,495.—Hoop-skirt Wire.—Stillman Houghton, Worcester, Mass.:

I claim as an improved article of manufacture skirt hoop-wire, first covered with a fibrous material and then a braided plated wire covering or casing applied thereto, substantially as shown and described.

55,496.—Invalid Bedstead.—Eugene Hutchinson, Manchester, N. H. Ante-dated June 1, 1866:

I claim, 1st, The combination of the bed-supporting frame, D, the back elevator, G, the bedstead frame, A, and mechanism, substantially as described, for operating or moving the said frame, B, so as to elevate the frame, G.

I also claim the combination of the auxiliary frame, E, and its elevating mechanism, substantially as described, with the bedstead frame, A, and the back elevator, G.

I also claim the combination of the frame, E, and its elevating mechanism, the bedstead frame, A, the back elevator, G, the frame, D, and mechanism for operating the latter as described.

I also claim the combination of the leg-rest or frame, F, the frame, E, the back elevator, G, the elevating frame, D, and the two bedstead frames, A, B, the whole being constructed and applied together in manner and so as to operate substantially as explained.

55,497.—Saw-mill.—E. P. Irons, Baltimore, Md.:

I claim, 1st, The described mode of connecting the elastic saw bands, g, g′, to the walking-beam by rods, f, f′, attached at points, e, at the opposite ends of the beam from that upon which the said bands, g, g′, are lapped, substantially as described.

2d, The manner substantially as herein described of attaching the flexible wire cords or bands to the ends of the saw by means of the stirrups, q, in combination with the jaws, t, t, the adjustable gibs, u, u, and guides, U, the parts arranged and operating substantially in the manner and for the purpose set forth.

3d, The combination of the connecting-rods, i′, bell-crank, K, K′, graduating connecting-rod, k, lever, M, feed hand, m, rag-wheel, o, and shaft, L, with pinions and racks arranged and operating substantially as and for the purpose set forth.

4th, The manner of graduating the length of the cut or feed by means of the graduating connecting-rod, K, moving up and down on the arm, K′, of the bell crank-lever, so as to be moved a long or short distance, for the purpose and substantially in the manner set forth.

5th, The combination of the adjustable steel arming-plates, x, with a connecting-rod, k, arranged and operating as herein set forth, for the purpose of compensating for wear, and allowing lost motion to be readily taken up, as set forth.

55,498.—Die for swaging the Ends of Auger-blanks.—Russell Jennings, Deep River, Conn. Ante-dated Dec. 19, 1865:

I claim the swaging of the ends of auger-blanks so as to have thick masses or portions, c, c, at the sides thereof, with a central thick portion for the pintle, by means of dies constructed substantially as described, for the purpose of enabling the heads of augers to be formed or swaged at one operation, and so avoid all welding and joining of parts, as set forth

55,499.—Machine for trimming Miter-joints.—Albert Johnson, Putnam, Conn.:

I claim the adjustable bed, C, in combination with the adjustable bar or seat, E, and the plane, H, substantially as and for the purpose set forth.

55,500.—Knob Lock.—Frank G. Johnson, Brooklyn, N. Y.:

I claim the movable tumbler-case, C, in combination with a knob, A, having a stationary flanged guard, B, applied to it, substantially as described.

55,501.—Bolt-heading Machine.—Edward Kaylor, Pittsburg, Pa.:

I claim forming the head on square-head bolts by means of a machine constructed and operating substantially as herein-before described, by staving up the iron with a heading tool between two side dies which at the same time advance and compress the iron as and while it is being staved, and then compressing the other two sides of the head by another pair of dies which advance and compress the opposite sides of the head as the first pair recede, the operation being repeated until the head is properly formed.

55,502.—Method of preserving Eggs.—Augustus G. and E. E. Kyle, Newville, Pa.:

We claim the within-described compound as a packing for preserving eggs, substantially as set forth.

55,503.—Weighing Scale.—Jesse S. Lake, Smith Landing, N. J., and Ezra B. Lake, Bridgeport, N. J.:

We claim, 1st, The combination with the beam or lever, C, and beam or partition, H, of a weighing scales, of the scales, M, N, O, constructed and arranged substantially as described and for the purpose set forth.

2d, The combination of the cylinder, J, and cog-wheel, I, with the toothed end of the beam or lever, C, substantially as described and for the purpose set forth.

3d, The combination with the cylinder, J, and beam, K, of the weighing scales of the tables, P, R, S, constructed and arranged substantially as described and for the purpose set forth.

55,504.—Apparatus for molding Castings.—P. W. Lamb, Albany, N. Y.:

I claim the cams, J, and cam-shafts, I, in combination with the box, A, frame, B, and cope, D, arranged substantially as herein set forth for the purpose specified.

55,505.—Gate Hinge.—Henry Last, West Lebanon, Ind.:

I claim an improved double-jointed gate hinge, constructed and arranged substantially as herein described and for the purpose set forth.

55,506.—Rope-guard.—Obadiah B. Latham, Seneca Falls, N. Y.:

I claim the combination of a metallic knob with a rope of whatever material composed, such knob being concave in its inner surface, to allow for the expansion of the rope, fastened and operated in the manner described.

55,507.—Composition for Water-proofing.—John D. Lee, Trenton, N. J.:

I claim the mixing of the ingredients and the applying them to boots and shoes to render them impervious to water, as herein described.

55,508.—Churn.—E. O. Leonard, Binghamton, N. Y.:

I claim the combining and arranging of the body and dasher, substantially as herein recited, so that the body and the dasher may be operated as described.

55,509.—Apparatus for making Coffee.—Friederich Liesche, East New York, N. Y.:

I claim, 1st, The combination of the suspended vessel, C, weighted frame, D, curved tube, G, strainer, H, and stationary vessel, F, the whole arranged with regard to a lamp or other burner, substantially as herein set forth for the purpose specified.

2d, The lever, k, and spring or weight, m, n, operating in combination with the movable vessel, A, to extinguish the lamp or burner when the said vessel is raised, in the manner substantially as herein set forth.

55,510.—Paint.—H. A. and D. E. Longsdorf, Mechanicsburg, Pa.:

We claim the compound composed of the ingredients herein named, and mixed together in or about the proportions described, for the purpose specified.

55,511.—Speculum.—Charles Leutz, Philadelphia, Pa.:

I claim the described improvement in speculums, consisting in the use of the springs, I, I, and notched pins, G, G, or their equivalents, when arranged relative to each other and to the leaves, A, A and F, F, substantially as and for the purpose specified.

55,512.—Fruit Jar.—John Letchworth, Philadelphia, Pa.:

I claim the cap, B, made of thin metal, and having internal projections made by external indentations, the whole being applied to the neck of a jar, substantially as described.

55,513.—Squeezer.—John Letzkus, Pittsburg, Pa.:

I claim the combination of the top upset, p, lower upset, f, and drums, e and n, with the main shaft, S, geared directly or indirectly to the inner circumference of the lower upset, the whole being arranged and operating for the purpose of squeezing puddler's balls, substantially as herein-before described.

55,514.—Machine for tunneling Rock.—Thales Lindsley, Rock Island, Ill.:

I claim, 1st, The drill-gauge, substantially as and for the purposes specified.

Further, the ram-guide, in combination with said gauge, the ram, and the drill-wheel, substantially as herein specified.

Further, constructing the drills and the drill-shafts, and connecting the same, substantially as set forth.

Further, the combination of the compensating springs with the drill-shafts, substantially as set forth.

Further, the drill-shaft-guides and the notched collars between the compensating springs, substantially as specified.

Further, the water-pipes and jets in connection with the drill-wheel and ram, substantially as set forth.

Further, the combination of parts forming the drill-wheel, substantially as set forth.

Further, the grooved collar upon the long ram-sleeve and the clutch attached to the rear face of said drill-wheel and working into said collar, substantially as herein specified.

Further, the ram and the ram-hammers, substantially as herein specified.

Further, the wedge index, in connection with said hammers, or their equivalents, together withthe splitting apparatus, substantially as set forth.

Further, the cam-wheel and its adjustable cams for working the drills, substantially as set forth.

Further, the drain drill, and the collar upon the long ram-sleeve, which serves as its guide, constructed and arranged substantially as described.

Further, the non-revolving of the ram-sleeve aforesaid, and the non-revolving of the short ram-sleeve of the rear frame of the machine, as specified.

Further, the combination of the valves receiving the com-dressed air to the ram-cylinders, and the valves discharging it from them with a hand-lever, so as to control the action of the ram, etc., by a touch of the engineer, substantially as set forth.

Further, the construction of the platforms upon the legs of the machine, substantially as described.

Further, the supporting of the machine upon friction-wheels, beveled upon their face, substantially as set forth.

Further, moving the drilling apparatus back and forward by means of the ram-cylinders and their connections, substantially as set forth.

Further, moving the ram back and forth at any velocity desired by the engineer, by means of the ram-cylinders and their dependencies, substantially as specified.

Further, moving the machine by means of said ram-cylinders, and the toggle-levers, substantially as set forth.

Further, the toggle-levers and their necessary appendages, substantially as set forth.

Further, the bracket drill, constructed and operating substantially as specified.

Further, the hauling out of the debris by means of the drag-pulley and its appendages, substantially as specified.

Further, also the hauling out of the debris by means of the ram, and the tackle and clamps appended, substantially as specified.

Further, the combination whereby the ram and the drill-wheel are united and revolved, substantially as set forth.

Further, in combination with a machine, constructed substantially as herein set forth, the method of leveling the same transversely of the tunnel, and of adjusting it to the grade line of the excavation, as herein specified.

Further, the combinations by which the ram-cylinders operate without the oscillating cylinders or in conjunction with them, and *vice versa*; by which the bracket-drill works independently of the drill-wheel, or simultaneously with it; by which the drag-pulley hauls rock independently of, or cotemporaneously with, the snag-pulley, and *vice versa*; by which the drill-wheel revolves without the cam-wheel or in conjunction with it; by which the ram-cylinders through the toggle-levers may move the machine forward and backward, whilst the oscillating cylinders through the drag-pulley are hauling out rock from the heading; by which the drills are kept home to their work and at the point of maximum action, and by which the bottoms of the concentric channels are kept relatively in the same plane, whatever the disparities in the hardness of the rock cut; by which the ram is permitted, at the will of the engineer, to move independently back and forth and without shock to the machine from the oscillations; by which the drills for the heading are kept cool, the dust from them laid, and their minute chips swept out of the concentric channels into the common drain; by which a drain is cut in the bottom of the tunnel parallel with, and directly under, the axial line of the same; by which the machine progresses forward and backward with or without the convenience of a railroad, and by which the tunnel, adit, etc., are supplied with an abundance of fresh air and water; by which, finally, the drill-wheel, the cam-wheel, the ram, the bracket-drill, the drag-pulley, the snag-pulley, the ram-cylinders, the oscillating cylinders, and other parts may operate concurrently and otherwise; all of which substantially as presented.

55,515.—Boom-connection for Masts.—Bartholomew McGrath, Gloucester, Mass.:

I claim, 1st, The mast and boom-connection, as composed of the clasps, F, F, the curved-rod, C, its screws and nuts, and the arms, D, D, arranged substantially as specified.

2d, The combination of the wheel, E, with the clasps, F, F, the curved-rod, C, its screws and nuts and the arms, D, D, the whole being arranged as explained.

55,516.—Steam Engine.—William Louis Winans and Thomas Winans, London, England:

We claim the arrangement of the propelling-shafts, e, between the piston-rods, c, c, mounted in suitable bearings on the cylinders, a, or frames attached to the cylinders, the cylinders being placed directly below the propelling-shafts, whose cranks work down alongside of the cylinder or cylinders, for the purpose herein set forth.

55,517.—Hand Corn Planter.—David McKanna, Madison, Wis.:

I claim, 1st, Operating the seed-slide, D, by means of the inclined-rod, b, when placed at one end of the slide, as shown and described.

2d, The combination of the stationary bar, B, having the groove, H, therein, the bar, C, provided with the slot and the inclined rod, b, and slide, D, all arranged and operating as set forth.

55,518.—Balanced Cut-off Valve.—B. F. McKinley, Falmouth, Ky.:

I claim the adjustable cut-off valve, E, and balance-piston, F, in combination with the revolving valve, C, constructed and operating substantially as and for the purpose described.

55,519.—Broom-head.—Charles Messenger, Chicago, Ill.:

I claim making the head in two parts, as described, in combination with the ring, K, springs, N, teeth, H, as and for the purpose set forth.

55,520.—Breech-loading Fire-arm.—Isaac M. Milbank, Greenfield Hill, Conn.

I claim, 1st, A swinging breech in combination with a transverse turning bolt, beveled on one side to enter a recess and acting to retain the breech by a partial turn of said bolt, substantially as set forth.

2d, The lever, h, for turning the bolt, e, of the swinging-breech, in combination with the hammer, g, the parts being fitted substantially as specified, so that the discharge of the hammer shall insure the proper turning of said bolt, as set forth.

3d, The latch, i, in combination with the lever, h, and turning bolt, e, as set forth, whereby the said latch is disconnected from the lever by the closing of the breech, as set forth.

4th, The spring, K, in combination with the turning-bolt, e, and swinging breech to effect the locking or partial locking of the breech as soon as closed, as set forth.

5th, The claw or retractor, n, formed with or attached to the supporting block, g, in combination with the swinging breech-block, as and for the purposes specified.

55,521.—Vaccinator.—Henry Minton, M.D., Brooklyn, N. Y.:

I claim the puncturing-tube, b, and plunger, d, in combination with the springs, h, i, trigger, K, and barrel, A, constructed and operating substantially as and for the purpose described.

55,522.—Sleigh-brake.—J. J. Moore, Little York, N. Y.:

I claim the tongue, B, working in a slot in the bar, C, being provided with the rods, b, b and f, f, the same connected to join spurs, h, h, when arranged and used substantially as and for the purposes herein set forth

55,523.—Automatic Heliotrope.—Leopold F. Morawetz and Charles Volkmar, Baltimore, Md.:

We claim, 1st, The axis, A, adapted to revolve on one or more fulcra, so that it can be adjusted to a position parallel to the axis of the earth, in conjunction with a solar instrument, substantially as specified.

2d, The driving-wheel, O, applied at a suitable point on the axis, A, in combination with a weight or its equivalent, and with or without an escapement, substantially as described

3d, The construction of the main revolving axis of the heliotrope so that it supports a solar camera for photographic and other purposes, and revolves said camera, as well as permits it to be revolved, in such manner that the main supporting axis and the camera may be brought into any required angle of inclination with relation to each other, substantially as described.

4th, Automatically moving an optical or solar instrument in the plane of the daily course of the sun, and synchronic with the sun, so that the solar rays shall fall directly or continually with the same angle of incidence upon a certain point of said instrument, by means substantially as herein specified.

55,524.—Nicking Screw-heads.—George S. Morris, Taunton, Mass.:

I claim the improved two-nicked screw, having each of its nicks made so as to increase in width as it approaches the circumference of the head of the screw, the same being substantially as and for the purpose specified.

55,525.—Photographic Apparatus.—Emile Muller, New York City:

I claim the apparatus for holding vases or other uneven objects for the purpose of photographing thereon, substantially as herein-before described.

55,526.—Fanning-Mill.—John Mumma, Middletown, Ohio:

I claim, 1st, Constructing the fans, e′, with curved ends for gathering the air, and concentrating the blast in the manner described.

2d, The deflecting board, C′, upon adjustable shaft, a′, arranged so as to be set and retained in any desired position by means of the exterior handle, d′, in the manner and for the purpose described.

3d, The combination of the toothed feeding-roll, Q, with the hopper, arranged and operated as described.

4th, Shaft, R, and fingers, c, vibrated by the arm, e, and cam, S, in the manner and for the purpose described.

5th, The shoe, F, in combination with spring, g, and cams, S, on shaft, P, operating in the manner and for the purpose described.

6th, The combination of the double tapering tappet or cam, L, with adjusting blocks, 4, and spring, i, in the manner and for the purpose specified.

7th, The adjusting roll, T, arms, m, and staples, n, in combination with the shoe, suspending wires, h, for regulating the motion of the shoe in the manner described.

8th, The combination of the journal-blocks, V, W, the bolt and thumb-screw, r, with the friction rubber-block interposed as described, for the purpose specified.

9th, The combination of the wires or rods across the inner end of the shoe, with the clamping-rod and thumb-screw, X, for securing the sieves and screens in the manner substantially as described.

10th, The arrangement of the india-rubber blocks in the sides of the casing, B, adjustable by set screws, Z, to regulate the vibrations of the shoe and obviate wear and noise in running the mill, as specified.

11th, The combination of the shoe, F, rock-shaft, R, cams, S, and spring, g, with their connecting and regulating mechanism, operating substantially as set forth for the purpose specified.

55,527.—Gas-inhaler.—Cuthbert L. Munns, Philadelphia, Pa.:

I claim the hollow tube, C, in combination with the reversible plug, with its ball-valve, and the ball-valve, O, the whole being constructed and operated substantially in the manner and for the purpose set forth.

55,528.—Horse Hay-fork.—John K. O. Neil, Kingston, N. Y.:

I claim, 1st, Operating the tines or fingers of a grappling-fork by means of a rod connecting said tines or fingers with a pivoted cross-lever, said rod being pivoted to both tines and lever at a distance from their centers of motion, as set forth.

2d, The cross-lever, C, in combination with the arms, B, B, fingers or tines, A, A, and connecting-rod, D, as and for the purpose described.

55,529.—Baby-walker.—P. Pallissard, Aroma, Ill.:

I claim the arrangement of the hoop, A, supported by the caster-wheels, F, F, and connected with the ring, E, by the supports, B, B, having screw-threads cut upon their ends for the ready adjustment of the ring, E, to the hight of the baby, the whole being constructed and operated substantially in the manner and for the purpose set forth.

55,530.—Fruit Basket.—Jesse K. Park, Marlboro, N. Y.:

I claim the combination of the warp-bands, D, with the interwoven weft or filling splints, E, passing up and down, and bent over the upper edge of the basket to form the binding, substantially as herein set forth for the purpose specified.

55,531.—Valve.—Jefferson Peabody, Dixmont Center, Maine:

I claim the improved valve-box as made with the case, A, series of valve-guides, D, D, D, stops, E, E, E, arranged with respect to the valve, B, and the opening, C, of its seat, substantially in manner as described.

55,532.—Refrigerator for cooling Oil, etc.—Charles F. Pike, Providence, R. I.:

I claim, 1st, The construction of parallel open-mouth pipes or tubes fastened to the ice-box or receptacle, A, and water-tank, C, in combination with the ice-box or receptacle, A, and also in combination with the water-tank or receptacle, C, substantially as herein described and for the purposes herein-before set forth.

2d, The application of the pump or pumps, as herein described, for the purposes of keeping up an artificial circulation by raising the water from the water-tank, C, and throwing it into the ice-box or receptacle, A, and the using of the water so raised and thrown into the ice-box or receptacle, A, substantially in the manner and for the purpose herein-before stated.

55,533.—Buckle.—I. N. Plotts, New York City:

I claim a buckle having the bar, B, with its eyes, a, a, encircling the sides of the frame, A, arranged to slide to and fro, in the manner and for the purpose herein described.

55,534.—Medical Compound.—Peter Poucin, Minneapolis, Minn.:

I claim the medical compound composed of the ingredients united in the proportions and manner as above set forth.

55,535.—Lard Lamp.—Charles F. Rees, Millersville, Penn.:

I claim the combination of the lamp and stand, J, K, L, N, with its vessel, B, spout, I, and arrangement of the cylinders, A, C, and rings, E, G, in the manner and for the purpose set forth.

55,536.—Die for forming Metal Heads on Harness Nails.—F. Reynolds and F. L. Hilbright, Newark, N. J.:

We claim, 1st, The half-dies, B and C, constructed as described, in combination with each other and with the block, A, substantially as and for the purpose set forth.

2d, The combination of the lever, F, with the block, A, and with the half-die, B, substantially as described and for the purpose set forth.

3d, The combination of the spring, G, with the block, A, and with the lever, F, substantially as described and for the purpose set forth.

4th, The combination of the wedge-stop, E, with the block, A, and with the half-die, C, substantially as described and for the purpose set forth.

55,537.—Car Coupling.—Nathaniel Robbins, Jr., Rockport, Mass.:

I claim in combination with the link and the draw-bar, a mechanism, substantially such as described, or its equivalent, for enabling a person without going between the cars or taking a position where he will be liable to be crushed by and between them, to control and direct the link with respect to its entrance into the mouth of another draw-bar, as specified, such mechanism being the arm applied to the link and the rod or rods arranged on the draw-bar, the whole being as set forth.

55,538.—Hanging Window-sash.—Augustus Roehrig, Williamsburg, N. Y.:

I claim the arrangement of a sinuous wire, d, in the frame, A, in combination with three or more staples, a, b, c, fastened in a zig-zag line in the sash, B, substantially as and for the purpose described.

55,539.—Steam Generator.—Robert E. Rogers and James Black, Philadelphia, Pa.:

We claim one or more water-spaces or jackets surrounding or in combination with the boiler, a, constructed substantially as herein recited, said water-spaces or jackets having or not the tubes for circulation and exposure to heat, and being provided with fire-tubes or not, substantially as described and for the purposes set forth.

55,540.—Medical Composition.—P. G. Rosenblatt, Greenville, Tenn.:

I claim the medical compound composed of the ingredients and mixed together in about the proportions herein described.

55,541.—Telegraphic Repeater.—C. H. Rudd, Sandusky, Ohio:

I claim the posts, G, L, with the spring, M, post, K, and extension of the lever, E, beyond the line of the post, F, F, so arranged as to enable me to use extra force, for holding the relay closed, when said extra power is obtained from the main current, which is unemployed just at the time when needed, substantially in the manner and for the purpose set forth.

55,542.—Cotton-gin.—H. V. Scatlergood, Albany, N. Y.:

I claim the cylinder having a surface consisting of rounded needle-pointed teeth so curved and arranged as that the point of each tooth approaches nearer to its next preceding tooth than at any other point thereof, substantially in the manner and for the purpose above described.

55,543.—Bag Frame.—Albert J. Sessions, Bristol, Conn.:

I claim slitting or cutting the strip, substantially as described so as to form one-half of a bag-frame in one piece of metal.

55,544.—Alarm Funnel.—Joseph Sholl and John Collins, Burlington, N. J. Ante-dated May 28, 1866:

We claim the combination of the funnel, A, with its tube, b, the rod, C, with its float, D, and the bell, H, as and for the purpose described.

55,545.—Manufacture of Stone, Cement, and Plaster.—Frederick Rensome, Ipswich, England:

I claim, 1st, The manufacture of artificial stone, cement, or plaster, by mixing silicate of soda or potash with quick-lime and chalk, or sand or clay or other similar substance, substantially as described.

2d, The manufacture of artificial stone, cement, or plaster, by mixing together in a paste, chalk, or sand or other suitable mineral in a powdered state, soluble silicate and a soluble salt of an alkaline earth or of aluminum or iron, substantially as described.

55,546.—Lamp Burner.—Willard H. Smith, New York City:

I claim, 1st, The metal-plate or its equivalent, with points between the two pieces of cork entering both as represented, as and for the purpose set forth.

2d, The two parts, A and B, constructed and combined as and for the purpose set forth.

3d, The mode of fastening the wick-tube to the said metal-plate and of fitting the same snugly in the said cork or other non-conductor, so as to hold the same firmly in its place without touching the metal-plates inclosing the non-conductor either above or below, as set forth.

4th, The combination of the parts, A and B, filled with cork or other non-conductor, fastened together by means of the metal-plate as shown in Fig. 4, as set forth.

5th, The combination of the sleeve, G, and the tips, E and F, as and for the purpose described.

55,547.—Water Meter.—Elihu Spencer and E. L. Meyer, Elizabeth, N. J.:

We claim, 1st, A water-meter made and arranged substantially as above shown, that is to say, consisting of two cylinders having a common valve-chamber between them, within which valve-chamber are placed two slide-valves, operated substantially as described by means of a shaft rotated by proper connections from the pistons of the cylinders, such shaft carrying a worm, E, which rotates a gear-wheel, F, whose spindle carries a fixed index, all as above set forth.

2d, Combining the said apparatus mentioned in the preceding clause with an inclosing box, A, in the manner substantially as above shown.

55,548.—Apparatus for generating Washing Gases for Inhalation.—A. W. Sprague, Boston, Mass.:

I claim, 1st, The combination of the float, F, and vessel, E, with the lever, H, or its equivalent, as and for the purpose described.

2d, The perforated conical projections, C, formed in the tube, B, or its equivalent device, substantially as and for the purpose specified.

55,549.—Lock.—Martin Staehelin and Henry Young, Port Chester, N. Y.:

We claim the swinging-frame, E, applied in combination with the shot-bolt, B, latch, C, and key, D, substantially as and for the purpose set forth.

55,550.—Hose Protector.—Isaac H. Stone, St. Louis, Mo.:

I claim the combination of the rails, A and A', with the hollow beam, B, the dogs, c, and spurs, c', forming a secure protection for hose during the entire length of its passage over railway tracks, as set forth.

55,551.—Harvester Rake.—Ole O. Storle, North Cape, Wis.:

I claim, 1st, Bevel wheels, 5, and segmental wheels, 6, and pinion, 4, in combination, constructed and operated substantially as and for the purpose described.

2d, Guide-wheel, 18, in combination with guide-truck, 19, and rake, 14, substantially as and for the purpose described.

55,552.—Nippled Cartridge for Breech-loading Fire-arms.—Thomas L. Sturevant, Boston, Mass.:

I claim the combination and arrangement of the tongue, D, with the nipple, C, and the charging tube, A, arranged substantially as specified.

55,553.—Curry-comb.—Miles Sweet, Troy, N. Y.:

I claim, 1st, A series of comb-bars, A formed with perforations, b, and fastened together by collars, d, and rivet-bolts, e, extending through the said collars and comb-bars, substantially as herein described.

2d, A series of perforated comb-bars, A, fastened together by rivet-rods, c, and collars, d, and with the rivet-rods forming a shank, m, for a handle, substantially as herein described.

3d, A series of perforated comb-bars, A, fastened together by rivet-rods, c, and collar, d, and having one or more of the collars extending beyond the end of the comb-bars, substantially as herein described.

4th, A series of single perforated comb-bars, A, fastened together by rivet-rods, c, and collars, d, and having a back-plate, P, secured to the said comb-bars, substantially as herein described.

55,554.—Planking Clamp.—Joseph C. Thomas, Kennebunk, Maine:

I claim the combination of the screw, a, the nut, C, the rotary head, g, the two chains, D, D', and the hooks, E, E, the whole being constructed, arranged, and applied to the stock, A, provided with the screw, B, substantially as and so as to operate as and for the purpose herein-before specified.

55,555.—Air-tight Burial-car.—Charles Timmerman, Amsterdam, N. Y.:

I claim, 1st, The use and arrangement of the tongue pieces, E and F, and corner-plate, D', for connecting and fastening the bottom and upright parts of the case together, substantially as described.

2d, Constructing the cover or upper part of the burial case of iron and wood in combination, substantially as described.

55,556.—Dog Churn.—Franklin Traxler, Scottsburg, N. Y.:

I claim, 1st, Communicating a vibrating movement to the arm, b, by means of a cam-wheel, G, applied to the shaft of the tread-wheel, said wheel acting upon rollers, c, c', the bearings of which are allowed to have a movement independent of the arm to which the wheels are attached, substantially as described.

2d, The pivoted bearing-plate, d, having rollers, c, c', applied to it, in combination with a vibrating arm, b, or its equivalent, and a cam-wheel, G, substantially as described.

3d, The construction of the main supporting frame of triangular supports, A, A, horizontal beams, B, B', and a stall, E, substantially as described.

4th, The combination of an inclined tread-wheel, D, cam-wheel, G, rollers, c, c', vibrating arm, b, pitman, a, and vibrating lever, F, arranged and operating substantially as described.

55,557.—Coal Elevator.—John P. Tucker, South Reading, Mass.:

I claim the combination of the slotted arm, E, the curved lever, H, provided with the tripper, C, the director, J, the scoop, I, and the rope, K, with the gallows-frame and its discharging chute, the whole being arranged and made to operate substantially as above set forth.

55,558.—House Bell.—Andrew Turnbull, New Britain, Conn.:

I claim the cast-metal hub, c, having the eyes, g, and rod, h, firmly secured therein, in combination with the spiral spring, n, detents, m, plate, a, and bell, d, substantially as and for the purpose described.

55,559.—Steering Apparatus.—J. B. Van Deusen, New York City:

I claim, 1st, The interposition between the tiller and the rudder-head of a steering apparatus of a spring or springs, operating substantially as and for the purpose herein described.

2d, The combination of the inner and outer ring with their radial projections, and india-rubber or other springs, substantially as and for the purpose as herein fully described.

55,560.—Die for welding Links into Chains.—Frederick Van Patten and Oren A. Anthony, Ilion, N. Y.:

We claim forming the dies, E and F, with two or more cavities for the reception of two or more links, as and for the purpose specified.

55,561.—Picture-holder.—William Walker, New Haven, Conn.:

I claim, 1st, A holder for pictures, cards, and for other analogous purposes, consisting of a series of frames, or their equivalents, placed one in front of another, but in two rows or sections, when such frames are so connected through any suitable mechanism with the outer casing or box in which they are arranged, or with a pedestal or other portion of the same, that by either revolving such casing or box, or its pedestal or other portion thereof so connected, the said picture frames, in regular order and succession, can be brought to the end of each row or section in proper position for being viewed, substantially in the manner described.

2d, The combination of the reciprocating sliding carrier-plate, H, with the transverse sliding-plate, K, when both connected with and operated by a common revolving disk, E, of the box or casing, A, or its equivalent, and arranged with regard to the double row of frames, B, so as to act upon the same, substantially in the manner and for the purpose specified.

55,562.—Machine for gumming and printing Envelopes.—Thomas V. Waymoth, New York City:

I claim, 1st, The hinged table, B, which swings back and forth on arms, a, to operate in combination with the gummer, D, substantially as and for the purpose described.

2d, The movable separator, G, in combination with the gummer, D, substantially as and for the purpose set forth.

3d, The endless apron, H, in combination with a suitable mechanism, imparting to it an intermittent motion, and with the reciprocating carrier, F, and gummer, D, constructed and operating substantially as and for the purpose described.

4th, The finger, l', and rollers, k', in combination with the apron, H, and carrier, F, constructed and operating substantially as and for the purpose set forth.

55,563.—Snap-hook.—R. L. Webb, New Britain Conn.:

I claim the employment of the spring, d, passing around the heel or joint formation, when both ends are secured to the outside edge of the hook-shank and the latch without a pivoted joint, substantially in the manner as and for the purpose described.

55,564.—Hot-air Furnace.—Edward Webster, Hartford, Conn.:

I claim, 1st, The employment of the plate, j, in combination with the arrangement of the exit flange or pipe, t, substantially as and for the purpose described.

I also claim the case, u, constructed as described, in combination with the dish, v'', tube, w, and cover, v''', substantially as and for the purpose described.

55,565.—Apparatus for molding Peat.—Edward Weissenborn, Hudson City, N. J.:

I claim, 1st, The combination of a reciprocating ram, F, having a hammer-like action, the compression-box, E, and the open-bottomed mold or molds, c, substantially as and for the purpose herein specified.

2d, The cylinder, B, and its piston, in combination with the ram, F, compression-box, E, and mold or molds, c, substantially as and for the purpose herein set forth.

3d, The construction of the partitions, b, b, of the mold-frame with sharp cutting upper edges, substantially as and for the purpose herein described.

4th, The open-bottomed mold or molds, c, constructed with a downward taper, substantially as and for the purpose herein specified.

55,566.—Churn.—Amos Westcott, Syracuse, N. Y.:

I claim, 1st, The use of dasher-paddles having their faces beveled or cut away diagonally, substantially in the manner and for the purpose above described, when combined with the main shaft, as above described.

2d, The manner of connecting the main shaft with the gearing and body of the churn, in combination with said shaft and the dasher-paddles, constructed substantially as and for the purposes above described.

3d, The combination of the parts mentioned in the preceding claims, constructed as above described, with the fan-wheel or blower, substantially as above described.

55,567.—Caster for Sewing Machines.—John N. Wilkins, Chicago, Ill.:

I claim the combination of the leg with the forked plate, A, and the wheel by means of the screw and lug, substantially as specified.

55,568.—Wardrobe and Bedstead.—Levi Wing and David Myers, Chicago, Ill.:

We claim the combination of the wardrobe, A, provided with its regular and distinct compartment for wearing apparel, and the bedstead, E, arranged so as to fold into a recess in the rear part of said wardrobe, substantially as herein specified and shown.

55,569.—Sheep-shears.—Tobias and John W. White, Adrian, Mich.:

We claim, 1st, The employment in a pair of sheep-shears of a central blade, c, arranged in such relation to the two blades of an ordinary pair of sheep-shears as to effect the object herein specified.

2d, The combination of the guard, D, with the central blade, C, and stops, g, g, on the blades, A, A, substantially as specified.

3d, Attaching the shank of the central blade by a screw and nut, or an equivalent thereof, which will permit of the said shank, and the central blade also, being removed from the shears at pleasure.

55,570.—Machine for sand-papering Woodwork.—J. H. Wonderly, Williamsport, Pa.:

I claim, 1st, The combination of the cap, d, or equivalent jointed connecting pipes and exhaust fan, operating substantially as described.

2d, The adjustable table, B, provided with the sliding-frame, p, having the inclined planes, s, s, and the regulating screw, C, arranged and operated substantially as shown and for the purpose set forth.

55,571.—Screw-cutter.—Moses M. Young, Chelsea, Mass.:

I claim, 1st, The improved arrangement of the guide, C, or its application directly to the die, B, and so as to project therefrom, as specified in combination with the application of the die to the stock so as to enable the two to be separated without the necessity of first detaching the guide or centralizer from the die.

I also claim the combination and arrangement of chip-discharging passages, k, k, with the guide and the die applied together, as set forth.

55,572.—Paint-mill.—George Philip Zindgraf, Philadelphia, Pa.:

I claim, 1st, Rounding the shoulder, r, of the part, q', of the mill-spindle, N, and forming a rounded recess or cup in the top of the rynd, q, into which the rounded shoulder, r, is received, substantially as and for the purpose herein specified and described.

I also claim the extension of the mill-spindle up through the balance-rynd of the lower running stone, so as to attach the feeding-screw thereto, as specified.

55,573.—Valve-arrangement for Organs, etc.—Moritz Baumgarten, assignor to himself, Jacob Heller, G. C. Clarke, A. S. Keeler, and Morris Steinhert, New Haven, Conn.:

I claim the arrangement of the rod, L, provided with packing

collars, a, in combination with the valves, D, E, and F, more or less, substantially in the manner and for the purpose herein described.

55,574.—SPRING BED-BOTTOM.—Charles B. Bristol, assignor to himself and Philippe Koch, New Haven, Conn.:

I claim the combination of the 'spiral 'or helical springs, C, C, etc., when placed horizontally with the connecting-rods or hooks, b, b, etc., or their equivalents, and the frame, A, A and A', A', when the whole is constructed, arranged, and fitted for use substantially as herein described and set forth.

55,575.—OSCILLATING ENGINE.—Felix Brown, assignor to A. & T. Browne, New York City:

I claim, 1st, The rock-shaft, j, and arm, i, or other equivalent mechanism, in combination with the links, h, h', arms, g, g', valves b, b', and oscillating cylinder, A, constructed and operating substantially as and for the purpose described.

2d, The arms, o, links, p, and studs, q, in combination with the exhaust-valves, c, c', and with the oscillating cylinder, A, constructed and operating substantially as and for the purpose set forth.

55,576.—MITER-BOX.—Daniel Bull, assignor to himself, C. D. Vaughn, and F. A. Gibbs, Amboy, Ill.:

I claim, 1st, The parallel moving saw-guide frame arranged, constructed, and operating substantially as and for the purpose set forth.

2d, Arranging the slotted self-adjusting cylinders or rollers in sashes, e, e, or their equivalents, in combination with the parallel moving frame and the stationary frame, all constructed and operating substantially as described.

3d, The adjustable gauge-stops, I, in combination with the saw-guide frames and the lugs or pointers, p, all constructed and arranged substantially as described.

4th, The combination of the index-plate, m, cross-tie, H, n, parallel moving frame and notched segment, C2, and support, C3, substantially as described.

5th, The combination of the segment notched-plate, C2, support, C3, parallel moving saw-guide frame and combined thumb-catch and lever or link, F, all constructed and arranged substantially as described.

6th, The stationary saw-guide frame constructed with a self-adjusting roller, in combination with the parallel moving saw-guide frame, also constructed with a self-adjusting roller and with a front-board or piece, D, D, the said parts being applied together on a miter-box, which is constructed and furnished with the appurtenances described, substantially as set forth.

55,577.—BLIND-FASTENER.—H. M. Clark, assignor to Charles Blanchard, Meriden, Conn.:

I claim the combination of the slotted bar, E, pin, A, the wheels, C and D, and the knob, B, or its equivalent, constructed and arranged to operate together substantially as herein described.

55,578.—PIPE-WRENCH.—Durfee W. Coggeshall, assignor to George E. Church, Providence, R. I.:

I claim the pipe-wrench made substantially as described, viz.: of the lever and hinged jaws or clasp, provided with the tooth, a, and bearing, f, and combined and arranged in manner and so as to operate substantially as and for the purpose as herein-before described.

55,579.—CANVAS-STRETCHER.—Chauncy Dowd, New Haven, Conn., assignor to H. W. Gear, New York City:

I claim the swivel-buttons, c, and eccentric abutting plates, d, in combination with the strips, a, b, of the frame, A, constructed and operating substantially as and for the purpose described.

55,580.—CARRIER OF BRAIDING MACHINES.—Otis E. Drown, assignor to Darius Goff and Darius L. Goff, Pawtucket, R. I.:

I claim combining the weight constructed as described, to be lifted from the bottom by the surrounding bight of the yarn with the pawl, constructed as described to slide on a separate guide, and permitting the weight partially to pass it before being lifted to let off more yarn, substantially as described for the purpose set forth.

I also claim the combination of the hooks or guides, r and s, as described, with the tension-weight constructed as described, with the groove or hook, t, on one side of the bottom thereof for receiving the yarn, substantially in the manner described and for the purpose set forth.

55,581.—FRUIT JAR.—John Focer, assignor to W. and S. A. Whitney, Glassboro', N. J.:

I claim the thin metal-ring, D, having screw-threads adapted to similar threads on the cover, B, and neck, A, of a preserving jar, all substantially as and for the purpose herein set forth.

55,582.—KEY FOR LOCKS.—Porter A. Gladwin, Boston, Mass., assignor to himself and Horace M. Lee, Dorchester, Mass.:

I claim the within-described safety-guard for locking keys, consisting of the shank, B, in combination with the hook, C, substantially as described.

55,583.—BRICK MACHINE.—Isaac Gregg and Charles Green, assignors to Isaac Gregg, Philadelphia, Pa.:

We claim operating the alternating "sweeps or mold clearers," of the said brick machine by means of the device consisting of the lever arms, D, D' and H, H', and the bars, E, E' and F, and the fixed joint, G, in combination with the two rock-shafts, C, C', and lever-arm, I, the same being constructed, arranged, and applied to operate together, substantially as described.

55,584.—ICE-CREEPER.—Augustus S. Hadaway, assignor to himself and W. S. Hadaway, Plymouth, Mass.:

I claim the combination of the wire, F, the toggle-lever, L, and the plate, D, all for the purpose set forth, and substantially as specified.

55,585.—PRESERVE CAN.—Friederich H. Lauter, back, assignor to himself and Newman S. Wax-Boston, Mass.:

I claim the combination as well as the arrangement of the ring, D, and its stud, c, and curved arm, d, with the staple, C, and the hinged loop, E, applied to the body of the can, as specified, the cover of the can being provided with an annulus, b, of india-rubber or its equivalent, and the whole being substantially as herein-before explained.

55,586.—MODE OF DRIVING PILES.—John McClay, assignor to himself and J. W. Bliss, Hartford, Conn.:

I claim the yoke or clamp, d, constructed as described, and operating as set forth.

55,587.—ASH-SIFTING DEVICE IN COOKING-STOVES.—Edward Mingay, Boston, Mass., assignor to the Boston and Maine Foundery Company, South Reading, Mass.:

I claim my improved construction of the sifting-hod, as described, and the arrangement of it and its chamber so as to extend directly underneath the grate, in order to cause the coals or ashes, when discharged from the grate, to pass vertically into the hod without first falling on an inclined plane or such a spout leading into such hod as to require the said ashes to be raked from it into the hod.

55,588.—SAFETY-STOP FOR GUN-LOCKS.—W. G. Oliver, assignor to himself and C. K. Remington, Buffalo, N. Y.:

I claim the combination with the hammer of the gun-lock of the automatic spring-guard, so arranged as, in its normal position, to engage with the hammer and act as a detent thereto, and relieved from the same for the purpose of cocking by pressure towards the stock, substantially as described.

55,589.—BOTTLE-STOPPER.—Thomas Primer, New London, Conn., assignor to Henry W. Putnam, Bennington, Vt.:

I claim the combination of the collar, a, hook, b, rigid cross-piece, d, tapering mass of soft material, c, and tie, c, arranged substantially as and for the purpose herein specified.

55,590.—PHOTOGRAPHIC BATH.—Robert E. Sisson, Wickford, R. I., assignor to Cyrus H. Moore and Asa Sisson, North Kingston, R. I.:

I claim the use of the independent false bottom, B, B, in combination with a photographer's bath, substantially as and for the purposes described.

55,591.—TOY TOP.—F. O. and William W. Tucker, Meriden, Conn., assignors to themselves and H. C. Stiles, New Haven, Conn.:

We claim, 1st, The arrangement of the ballast ring, D, substantially in the manner and for the purpose specified.

2d, The combination of the two cords, L and P, with the hooked tube, F, and barrel, E, constructed and arranged to operate substantially in the manner and for the purpose specified.

55,592.—PHOTOGRAPHIC PROCESS FOR COPYING DRAWINGS, ETC.—William Willis, Birmingham, England, assignor to Vincent Brooks, London, England:

I claim the improvements in processes for copying or reproducing, by the agency of light, drawings, engravings, lithographs, and photographs, and written and printed documents, herein described—that is, preparing the sensitive surface to be acted upon by light by the use of a solution containing a chromate mixed with an acid which will combine with the oxyd of chromium formed by the action of light, and with the organic base used for development, and developing the picture by means of aniline, pyrrol, and other organic bases which, when applied either in the state of vapor or liquid, are oxydized by the chromic acid and form therewith a dark-colored compound.

55,593.—ANCHOR.—Peter Dinzey, St. Bartholomew, West Indies:

I claim, 1st, The shank, A, with its branches, a, a', in combination with the adjustable fluke, B, the whole being constructed and arranged substantially as and for the purpose specified.

2d, The combination with the above of the cross-pieces, c, c', for the purpose described.

55,594.—ELECTRO-MAGNETIC ATTACHMENT TO RULING MACHINES.—E. D. Averell, New York City:

I claim, 1st, The circuit break, consisting of a metallic lever and finger, with a piece, n, of non-conducting material, in the hub of the lever, and a spring, l, or its equivalent, the whole applied and operating substantially as herein specified, in combination with a galvanic battery, or other generator of an electric circuit, and a ruling machine.

2d, The lever, R', and finger, l', applied in connection with the lever, R, and finger, l, substantially as and for the purpose herein specified.

3d, The rollers, Q, Q', applied in connection with the levers, R, R', and fingers, l, l', and adjustable relatively to the cloth, B, and rollers, D, D, substantially as and for the purpose herein described.

4th, The combination of the posts, L, L', adjustable about their axes, the arms, M, M', and the rods, N, N', carrying the foot-pieces, P, P', rollers, Q, Q', circuit-break, R, and lever, R', substantially as and for the purpose herein specified.

5th, The foot-pieces, P, P', carrying the rollers, Q, Q', circuit-break, R, and lever, R', adjustable relatively to the rods, N, N', or other equivalent supports, by screws, g, g, substantially as and for the purpose herein set forth.

RE-ISSUES.

2,280.—POTATO-DIGGER.—L. Aug. Aspinwall, Albany, N. Y. Patented Nov. 14, 1865:

I claim, 1st, The screen or screens, F, F, having a lifting movement and vibrating one from front to rear, and, when two are used, vibrating alternately.

2d, The combination of such screen or screens with a plow, having an uninterrupted passage for the earth over its entire upper surface, substantially as set forth in the above specification.

2,281.—APPARATUS FOR STRAINING PAINTS AND OTHER MATERIALS.—Luman Bishop and Stephen Brewer, Cortlandville, N. Y., assignees of Luman Bishop. Patented Feb. 20, 1866:

We claim, 1st, The strainer, G, or its equivalent, as and for the purposes herein shown and described.

2d, The combination of the strainer, G, with the tube, F, and piston, B, substantially as and for the purpose described.

3d, The lateral apertures, H, H, H, or their equivalents, in combination with the tube and piston, substantially as and for the purpose herein described.

2,282.—CYLINDER-POLISHER.—George Cowing, Seneca Falls, N. Y. Patented April 14, 1863:

I claim the expanding arms, A, A, in combination with the vulcanized scourers, B, B, substantially as described.

2,283.—PIPE-TONGS.—Allen Beach, Boston, Mass., assignee of Henry H. Gilmore, Medford, Mass. Patented April 6, 1858:

I claim, 1st, Constructing either member of a pair of pipe tongs with a slot or its equivalent, so that by the relative adjustment of the jaw and pivot the "grip" of the tongs can be accommodated to various sizes of pipes, substantially as herein described.

2d, The combination of an inclined plane or planes, or the equivalent thereof, with the slotted jaw, for the purpose described.

2,284.—CAPPING WOOD SCREWS.—Charles T. Grilley, New Haven, Conn. Patented April 20, 1852; and extended for 7 years:

I claim the application to a nicked screw-head of a cap already nicked and folding the same upon and around said screw-head by compression, substantially as described.

2,285.—TANNING.—Judson Schultz, Ellenville, N. Y. Patented April 3, 1866:

I claim the treating of hides or skins substantially as herein described.

2,286.—BLANK FOR SHOE-PEGS.—Benjamin F. Sturtevant, Boston, Mass. Patented Aug. 16, 1859:

I claim as of my invention the new article of manufacture herein described, which is a peg-blank, having essential characteristics substantially such as herein set forth.

2,287.—CLOTHES-WRINGER.—Wm. B. Rhoads, assignee by mesne assignments of Nelson B. White, South Dedham, Mass. Patented March 4, 1862:

I claim, 1st, The combination with rolls of a wringing machine of bevel cog-wheels for transmitting motion from one roll to the other, substantially as described.

2d, In a machine for wringing clothes, I claim the bevel-gears, K and N, with l and m, and shaft, b, operated by the groove, r, arranged substantially as described, and driven by any power in combination with rollers of india-rubber or other suitable material, as set forth.

3d, In a wringing machine, I claim a "purchase" cog-wheel, that is to say, a cog-wheel of any form, mounted upon an independent axis, and employed to give motion to the gearing or other devices which rotate the rolls.

DESIGNS.

2,332.—TRADE-MARK.—Samuel E. Barney, assignor to the Elm City Company, New Haven, Conn.

2,333.—BRACKET.—John H. Bellamy, Charlestown, Mass.

2,334.—LADY'S TUCKED PAPER COLLAR.—J. M. Flagg, Providence, R. I.

2,335 and 2,336 (2 cases).—TRADE-MARK.—H. Fletcher, assignor to the Fletcher Manufacturing Co., Providence, R. I.

2,337.—COOK'S STOVE.—C. Harris and P. W. Zoiner, Cincinnati, Ohio.

2,338.—PARLOR STOVE.—C. Harris and P. W. Zoiner, Cincinnati, Ohio.

2,339.—COAL STOVE.—C. Harris and P. W. Zoiner, Cincinnati, Ohio

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