

were soldered under continual reports produced by the heating of drops leaking out, but caused no accident.

"In one case a captain of artillery was hammering on a shell filled with nitro-glycerin, until it exploded and killed him.

"In one case a man took to greasing the wheels of his wagon with nitro-glycerin, not knowing what it was, and it went all right until it struck hard against something, and the wheels went to pieces.

"In one case it was burnt in a lamp, as an improvement on petroleum."

Last in the list comes the Newcastle explosion, which, it seems clear, was caused by the grossest violation of the printed instructions. The cans containing the nitro-glycerin were opened with blows of a spade, and then thrown into a hole one upon another. From the shock thus occasioned the explosion took place.

This list is published that these accidents may serve as a warning against similar attempts to perform these feats, but the inventor protests against the very narrow view of trying to check the career of any improvement on the plea of liability to accidents. "There is," says he, "a very easy way of getting rid of them; we need only prohibit the use of steam, fire, poisonous substances, cutting tools, firearms, explosives, etc., and return to those days when ignorance and safety went lovingly hand in hand. But unless civilization is to be stopped, we cannot possibly confine the community to those articles only which it is impossible or even difficult to abuse. Something must be left to the understanding, and it is an excellent regulator. Thus, for instance, phosphorus, one of the most dangerous poisons and combustibles, is in every child's hand, and yet does but little harm."

THE AMERICAN WOOD PAPER COMPANY AND THE FIBER DISINTEGRATING COMPANY.

A case of great importance to patentees, upon the validity of Reissues, and illustrating the importance of having a correct description of the invention in the original specification, has just been decided in the U. S. Circuit Court for the Eastern District of New York.

In this case the American Wood Paper Company filed a bill against the Fiber Disintegrating Company to restrain the defendants from the use of certain inventions for which Letters Patent had been granted to the inventors in this country and by them assigned to the complainants. The whole of the inventions related to the manufacture of paper pulp from crude vegetable substances by means of chemical agencies applied at a high degree of temperature in a vessel or boiler of peculiar construction.

The patents, five in number, alleged by complainants to have been infringed by defendants, were:

(1st and 2d.) Watt & Burgess patents, being two reissues (Nos. 1,448 and 1,449) dated the 7th April, 1863, of a single reissue, 5th October, 1858, of original patent, dated 19th August, 1853, for improvements in the manufacture of paper from wood.

The two reissues were one for the product obtained by, and the other for the process of treating wood so as to produce paper pulp by boiling in caustic alkali under pressure.

Mellier's patent, dated 7th August, 1854, for an improvement in making paper pulp from straw. The process being very similar to that described in the reissued patents of 7th April, 1863, and 5th October, 1858.

(4th and 5th.) For improvements connected with the machinery for the purposes of making paper pulp. But the only question of general interest to inventors is in connection with the reissues of the Watt & Burgess patents, and on the Mellier patent, to which we confine our report.

The original Watt & Burgess patent, of August, 1853, contains the following words:

"The shavings are then to be boiled in a solution of caustic alkali, the strength of which, being dependent on the nature of the vegetable substance operated on, can be only learned by experiment. For deal or fir wood we find that a solution of alkali of the strength indicated by 12° of the English Hydrometer answers very well. The length of time necessary for this part of the process is somewhat dependent on the nature of the vegetable substance to be heated. We find boiling in a solution of caustic alkali under pressure, of considerable service. We do not claim this operation as part of our invention."

In an English patent obtained by Watt & Burgess, 1st August, 1853, their complete specification, which is dated 18th February, 1864, contains exactly the same words. In their French patent, dated 27th September, 1853, boiling in alkali is mentioned, but there is nothing whatever to indicate that this boiling should be under pressure, but it states "We have found it very advantageous to have a heating apparatus in the vats where the alkali solution is added; the pulp should be heated by steam, or other convenient method, to the boiling point."

In October, 1858, Messrs. Watt & Burgess obtained a reissue of their patent, and their specification contains the following words:

"The length of time necessary for this part of the process is somewhat dependent on the nature of the vegetable substance to be heated; that is, its resinous or gummy nature, and boiling in a solution of caustic alkali under pressure is of considerable importance. By the words 'under pressure' is meant a pressure at, near or above 300° of Fahrenheit's scale."

To the specification to the two reissued patents of 1863, the words used are substantially the same, the claim in the first (No. 1,448) being for the product, viz., a pulp suitable for the manufacture of paper made from wood or other vegetable

substances by boiling in alkali under pressure; the claim in the second (1,449) being for the process of boiling in an alkali under pressure.

The defendants contended as to the Watt & Burgess patent (among other things), that the reissued patents of 1858 and 1863 were improperly issued, being for a substantially different invention to that described by the specification to the patent of 1854; and with regard to the Mellier patent, they alleged that as they treated bamboo and not straw, and that while Mellier claimed the employment of a pressure of seventy pounds, and a heat of 310° Fah., as the pressure used by defendant as denoted by the steam gage, never exceeded sixty pounds, they did not infringe on Mellier's patent.

It was argued by Mr. Jenckes for the complainant, and by Mr. Russell and Mr. Harding for the defendants. Mr. Jenckes contended that the reissue of the patents by the Commissioner was conclusive until reversed by a substantive proceeding for the purpose; that the inventions therein described were those really invented by Watt & Burgess, and incorrectly described in the first instance; and he very ingeniously argued that, by inserting the words "under pressure," Watt & Burgess narrowed their claim. That Burgess believed, when he took out his English patent, that he could cover the open boiling process, as well as boiling under pressure. On examination, it was found that Coupier and Mellier, in 1851, treated wood precisely in that way. His action was, therefore, exactly within the requirement of the law, that where by mistake a patentee has claimed too much in his original patent, he should surrender it and take out a narrower claim in his reissue.

The Court took time to consider, and on the 7th of January, 1868, rendered a judgment of which the substance, so far as of importance from the point offered above indicated, is:

First, that the Watt & Burgess reissued patent (No. 1,448) is void, on the ground that it is impossible to consider that to be a new material, patentable as a new product, which is simply a substance long well known to exist in wood and other substances in a state nearly pure.

Second, that the Watt & Burgess reissued patent (No. 1,449), is also void, on the ground that the process described is substantially different from any described in the original patent. And this decision, which seems sound from every point of view, serves to establish as a principle, that even though an invention be so undescribed and the evidence of actual invention at the date of application so clearly established before the Commissioner of Patents as to entitle the inventor to a reissue, that the reissued patent will be void if the invention described in it be the description of an invention essentially different from the one previously described.

Third, the Mellier patent was held to be good and a decree made in favor of complainants on the ground that the 70 pounds pressure mentioned by the inventor was evidently meant in accordance with the French method of reckoning, viz., internal pressure, from which one atmosphere has to be deducted to get at the pressure denoted on the steam gage, as was further apparent from the temperature given of 310° Fah., which, on the French scale, corresponds to 70 pounds pressure, meaning internal pressure. That, further, Mellier's description sufficiently covered the treatment of bamboo, which is of the same natural order as the wheat, oats, and other plants, to the stalks of which the term straw is usually applied.

Decree in favor of the complainants on the Mellier patent bill. Dismissed as to the others.

Rotary Ventilating Fan or Blower.

At the November meeting of the Massachusetts Institute of Technology, Mr. S. P. Ruggles exhibited and explained a model of the ventilating fan or blower, invented by himself, now in practical operation at the Institute and about to be introduced into the State House in Boston.

It consists of three floats of which one remains for a short time stationary while the other two are moving, each in turn becoming stationary. The object of the stationary fan is to act as a wall to prevent the air going back, and to cause the air brought by the ascending float to pass upward through the passage which conducts it to the building. This action of the floats is produced by the shaft which carries them, being made in three parts, one within the other, each carrying a float. From the condition of rest the first float begins to move slowly, and gradually increases in speed for a quarter of a revolution, then carries the body of air at a uniform speed for half a revolution, and then decreases in speed in the last quarter of revolution to the state of rest. When the first float has completed a half revolution, the second begins to move, to follow in like manner; the third float begins to move when the first has completed its revolution, and follows in the same manner as the other two, the action of the three producing a constant and uniform current.

This movement is produced by an ingenious arrangement of wheels of irregularly oval shape producing a crank motion. The fan at the Institute is vertical, ten feet in diameter, and ten feet high; it makes about twelve revolutions per minute, forcing out seven to eight hundred cubic feet of air at each revolution; this amount must go forward and never can go backward on account of the wall of the stationary float. It requires only about one sixth of the power required for ordinary fans of this size to move it.

Prof. Rogers alluded to the great number of rotary aspirators and blowers in use in Europe and this country, in all of which centrifugal action from rapid revolution is depended on; in the apparatus of Mr. Ruggles centrifugal action is not the motive force, but the mass of air is drawn in below and forced or bucketed up, and delivered to the discharge pipe. The temporary stationary condition of a float in a fan blower had been used before the apparatus of Mr. Ruggles;

but in fans with two floats only, in which no provision can be made against the backward flow of the air. In Mr. Ruggles' invention, the use of three floats, by the novel and ingenious arrangement of shaft and wheels, render this retrograde action impossible, as all the air drawn in can pass in no other than a forward direction, where it is required for use. K.

Preservation of Stone.

This subject, which has attracted the attention of so many chemists, seems now to have been brought to a very successful point. We have received some specimens of chalk treated by a process discovered by Messrs. Dent and Brown, of the Chemical Department, Woolwich. Their process consists in the application of a solution of oxalate of alumina to the stone. The experiments date from December, 1865, and the results they have now obtained are most encouraging. The process is applicable to limestone, dolomite, and chalk, and may, we think, be made subservient to the preparation of lithographic stone. Oxalate of alumina is readily soluble in water, and the solution, which is simply applied with a brush, is made of a strength varying with the porosity of the material to which it is to be applied. The specimens we have before us are left in the original condition at one end, and have been prepared with the solution at the other. The physical characteristics of chalk so treated are—lightness, the possession of a glazed surface approaching somewhat in appearance to marble, and greatly increased hardness; in this respect the stone is about equal to fluor spar, or 4 in Mohs' scale. Furthermore, the lime being transformed into one of the most insoluble and unalterable of its compounds, and the alumina being precipitated, the pores are filled with a substance almost unacted upon by water or by the impurities present in the atmosphere of large cities. We should be glad to hear that the discoverers had one of the experimental bays of the Houses of Parliament placed at their disposal. They might thus prove their process to be a formidable rival to that of their colleague Mr. Spiller which, according to present appearances, is likely to be the numerous schemes now *sub judice* at Westminster.—*Chemical News*.

PRIMITIVE GEOMETRY.—M. Lenormant, a member of the French Academy, has been devoting considerable attention to the study of an interesting papyrus, just added to the British Museum collection. This ancient relic contains a fragment of a treatise on geometry applied to surveying, including a description of the modes of estimating the areas of a square, a parallelogram, of various kinds of triangles, and of the computation of the area of an irregular figure by means of triangles, and of the volume of a pyramid, the whole being illustrated by appropriate diagrams. M. Lenormant, in a report to the Academy, refers the production of this papyrus to the period of the twelfth dynasty, which would be cotemporaneous with the reign of Solomon.

STEAM MAN.—A lengthy account is going the round of the newspapers of a wonderful piece of mechanism in the form of a "Steam Man," invented at Newark, N. J., by one Zaddock Dedrick. We have taken the pains to investigate the truthfulness of the wonderful story and we learn that, although an invention of the kind is in progress, it is far from being perfected; and we have the promise that as soon as the steam man is in a condition to travel we shall have an opportunity of witnessing it, and the liberty of explaining its construction and operation. In the mean time we advise our contemporaries not to get excited over the steam man for he is likely to remain harmless for the present.

ELECTRICITY IN A VACUUM.—A new apparatus for demonstrating the fact that the electric spark will not pass through a perfect vacuum has been contrived by M. M. Alvergniat, of Paris. A glass tube, having inserted in it two platinum wires placed at a distance of two millimeters (three thirty-seconds of an inch) apart, is attached to a mercurial pneumatic machine. After half an hour's action the tube is heated over charcoal to a dull redness, and the vacuum continued until a point is reached when, in spite of the slight distance between the wire points, electricity ceases to pass.

HOW TO HOLD PEARLS.—It is stated that certain native artists resort to an ingenious plan for firmly securing in any desired position such pearls as they wish to drill or work upon. The gems are first fitted loosely in holes bored in a piece of soft wood. A few drops of water are then sprinkled over them, and this penetrating the fibers, causes the wood to swell and the pearl is held as in a vise, but without marring it or in any way depreciating its value. After a time the water evaporates, the fibers gradually relax, and the gem is again set free.

ABSORPTION OF GASES BY SOLIDS.—Atmospheric air by passing through india rubber, Mr. Graham, master of the British Mint, has observed, becomes super-oxygenated, and will rekindle smoldering wood like pure oxygen. He has even collected this gas by creating a vacuum in a thin india rubber bag, which latter is kept distended by mechanical means. Mr. Graham states that gases passing through solid films are first condensed into liquid form within the substance, and then pass off on the other side by evaporation.

"WASHING-DAY SPRING."—A correspondent says that "in Saline county, Missouri, is a spring, a few miles from the Missouri river, which flows freely on Fridays, but is dry on every other day, and the people thereabouts call it washing-day spring for this reason." From the above it would seem that the traditional washing-day, usually considered as following Sunday, is not recognized in Saline county. If the spring was hereaway its usefulness would be much enhanced by a change in its day of flowing.

The Public Clocks of New York.

Mr. D. W. Bradley, City Timekeeper, lately read an interesting paper upon Tower Clocks, before the American Institute, in which were the following remarks:—

“With all due deference to the philosopher who said that time is money, I would observe that time is improvement, progress, science, art; and on the other hand it is idleness, dissipation, poverty, decay, ruin. As for its being money, let me remark that I have been experimenting with it these thirty years, and have never succeeded in making it yield more than enough to keep soul and body together. We visit St. Paul’s. The bell was new a year ago. The old one got cracked, and they set a man to boring the crack out. He worked a week or two, and nearly froze to death, and when he finished his work it was found that the crack was larger than ever before. So they put in a new bell. The frame of the clock stands five feet long, two feet three inches wide, and four feet high. The pendulum is of wood, 13 feet long, giving 32 beats, and the ball weighs 75 pounds.

“St. John’s clock was built by Henry Harris, London, in 1812. It is nearly similar to St. Paul’s, but is better finished, and has the worst escapement I ever saw.

“The clock of the Dutch Reformed Church, Fifth avenue and Twenty ninth street, and that of St. Mark’s, were made by Stokell. They are both like the clock of St. Paul’s, though smaller and better. Stokell made some of the best regulators in this country.

“Trinity clock is the heaviest in America. The frame stands 9 feet long, 5 high, and 3 wide. The barrels are 20 inches, turning three times in 24 hours. The winding wheels are driven by a pinion and arbor. On the latter is placed a jack, or a wheel, a pinion, and a crank; 850 turns of the crank are required to draw up each of the weights. It takes 700 feet of 3-inch rope for the three cords; and the winding up of the weights consumes more than an hour of time, and requires the labor of two men. The pendulum is 18 feet long, and makes 25 beats. I cannot think that Mr. Rogers had a correct notion of what he was going to do when he began the building of this clock. At first it would not run 7 days, and he was obliged to put in new main wheels. The clock was at last finished, and an agreement was made with the sexton’s son that he should receive 25 cents whenever it stopped, provided he at once notified the timekeeper; but as it stopped every day, and frequently three or four times a day, the expense of feeding the informer became irksome to bear, and the cumbersome timepiece was placed in new hands. By this time it had gained a poor reputation, which clings to it even in our day. The weights are 800, 1,200, and 1,500 pounds respectively, and drop 50 feet. A large box is placed at the bottom of the well, which holds about a bale of cotton waste to check the fall of a weight in case of accident. Two years ago I wound it up on Saturday, and on Sunday morning the chiming cord broke, letting the 1,500 pound weight fall a distance of 50 feet, causing much damage. The cotton box was strongly braced on all sides, but the force of the blow burst it open. The contents were well scattered, otherwise the organ bellows, just in line below, would have contracted under a pressure somewhat greater than that which the “blower” was accustomed to exert upon them. A much better clock could be built of the metal contained in the frame and main wheels of Trinity’s. None of these clocks keep accurate time. Trinity does best, the clock of the Dutch Reformed Church next. During the late heavy snow storm the north window in the clock-room of St. Paul’s was blown open. The snow came in, partially covered the movement, and drifted down into the box to the depth of several inches, nearly covering the ball; yet the old pendulum waded through it with the glee of a school-boy, and stowed the snow on this side and that, and pelted it with such pertinacity that by the next morning the clock was 15 minutes ahead of time. The first warm day that followed, it fainted, and stopped running. There was an old German clock on the Post Office, but it was removed a long time ago. It had but one hand. Old St. George’s clock is about 50 years old. It is smaller than the others, but has gained a reputation for accuracy. Twenty years ago a person who had not St. George’s time was supposed, like a busy man, to have no time at all. As it is soon to be pulled down no care is taken of its inside, and the figures on the dial are grown so rusty that the time can only be guessed at. At the City Hall we find a good clock. The pendulum, 15 feet long, vibrates in 2 seconds. The ball weighs 300 pounds. To counteract the effect of heat and cold the compensation principle has been applied to this pendulum. The contraction of the iron rods which would draw up the ball is opposed by the greater contraction of the brass bar on which the ball rests, thus letting it down. When the rods expand the greater expansion of the brass bar lets it down—only it don’t—that is, not yet. I regulated it from June 1866, to February 1867, without moving the hands, but after the latter date, for three or four months, I set it every week although the variations never exceeded 30 seconds. The pendulum has not lost one vibration in more than two years. The new clock of St. George’s, Sixteenth street, has never been excelled in finish. The frame is 8 feet long, 3 wide and 7 high. The main time wheel is 3 feet in diameter, has 180 teeth, turns once in 12 hours, has the figures on its face, and a pointer marking the hour. The second wheel is 27 inches, has 300 teeth, revolves every hour, and has the minutes on its face. The third wheel turns once in three minutes, and has the seconds pointed off on it. The pendulum is 35 feet long, and vibrates in three seconds, and the ball, weighing 300 pounds, is four feet in length by seven inches diameter. Two pinions and three wheels constitute all the machinery of this clock. Trinity’s has five pinions and ten wheels. A duplicate of this clock is now being put up in the new arsenal at Rock Island. The clocks in the

Brick Church and that in St. These are small but good ones, if attended to. They are cared for by the sextons, and get no care at all. A gentleman from Pennsylvania was lately telling me about his wonderful one, which did not vary 15 seconds in a year. On questioning him as to the observations he was in the habit of taking, he remarked that he took observations every day, by a noon-mark cut in the floor of his back porch. The clock of the Third-avenue Railroad depot is a fine instrument. It is exposed to a greater range of heat and cold than any other clock in the city, yet keeps excellent time.”

[We gave a detailed description of the “new clock of St. George’s, Sixteenth street,” on page 80, Vol. XV., SCIENTIFIC AMERICAN. The finish of that clock and the beauty of its construction is probably not excelled by any in this country, whether of domestic or foreign manufacture.—Eps.]

OFFICIAL REPORT OF PATENTS AND CLAIMS

Issued by the United States Patent Office

FOR THE WEEK ENDING JANUARY 14, 1868.

Reported Officially for the Scientific American.

PATENTS ARE GRANTED FOR SEVENTEEN YEARS, the following being a schedule of fees:—

Table with 2 columns: Fee description and Amount. Includes items like 'On filing each caveat', 'On filing each application for a Patent, except for a design', 'On issuing each original Patent', etc.

In addition to which there are some small revenue-stamp taxes. Residents of Canada and Nova Scotia pay \$500 on application.

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.

73,220.—HOLDER FOR DRYING GLUE.—William Adamson, Philadelphia, Pa. I claim the within-described holder on which to dry glue, the said holder consisting of cords, wires, strips or sheets of suitable material saturated or coated with paraffine, or its equivalent, for the purpose specified.

73,221.—CONNECTING THE TUBES WITH THE HEADS OF SURFACE CONDENSERS.—Horatio Allen, New York city. I claim, 1st, Making one of the tube heads of greater thickness than the other, the horizontal face or bearing, c, with a shoulder, b, in the center of the tubes, for the purpose and substantially in the manner hereinafter described.

73,222.—HORSE HAY FORK.—D. W. Amos, Broad Top City, Pa. I claim, 1st, The combination substantially as described of pivoted tines, A, link rods, e, and a spreading link, D, with a tripping latch and hoisting chain, B, for the purpose set forth.

73,223.—HORSE HAY FORK.—Lewis Atwater, Ithaca, N. Y. I claim, 1st, The tines, C, D, constructed in the form of hooks at their upper ends and branching below the said hooks to a broad bearing support near their center and to double prongs at their lower ends, all in one piece, substantially as set forth.

73,224.—CULTIVATOR.—A. Bennett, Rockford, Ill. Antedated January 4, 1868. I claim, 1st, The hitching iron, a, in combination with the plow beams, C, C, and the front cross beam, D, arranged and operating substantially as and for the purpose herein described.

73,225.—SHEEP WASH.—E. B. Booth, St. Louis, Mo. I claim a sheep wash composed of the ingredients above named, or their equivalents.

73,226.—SAW.—E. M. Boynton, Grand Rapids, Mich. I claim an improvement in the construction of saws providing them with the gazing and clearing teeth, B, consisting of the inclined points, c, and the horizontal face or bearing, e, with a shoulder, b, between the point and the bearing, e, substantially as shown and described.

73,227.—SAW TANG.—E. M. Boynton, Grand Rapids, Mich. I claim the detachable saw tang consisting of the socket, A, with the arm, B, having the groove, n, formed in its under side in combination with the slotted bolt, D, and the thumb nut, E, substantially as described.

73,228.—SHOE HOLDER.—A. N. Breneman, Lancaster, Pa. I claim the arrangement of the toe and heel pieces, A, B, when connected by a hinge, C, in combination with the sliding wedge and band, D, E, or its equivalent, for separating the parts below, substantially in the manner and for the purpose specified.

73,229.—SPIROMETER.—G. W. Brown, Rockford, Ill. I claim, 1st, The arrangement of splanometers and index, H, and shield, I, in the manner specified and for the purpose as described herein.

73,230.—STRAP HOLDER.—H. W. Burgess, Ithaca, N. Y. I claim, 1st, The construction of the strap holder when the said surfaces of the strap are on the back piece of the bed or opposing piece or part, A, are made to be a part or section of the volute curve, F, as figured and described.

73,231.—SHOVEL PLOW.—H. C. Chandler, Erie Township, Ind. I claim, 1st, The notched beam at D, for the purpose of adjusting the handles to the desired height, by a bolt passing through them and the notch.

73,232.—BALANCED FEED WATER VALVE.—Geo. E. Chenoweth, Baltimore, Md. I claim, in combination with the valve, valve-stem, and passages, an elastic, impermeable diaphragm, and air chamber underneath it, for the purpose of holding the valve in a balanced condition in any of the positions of the valve, substantially as herein described and represented.

73,233.—APPARATUS FOR DETERMINING DEVIATION OF LOCOMOTIVE CRANK PINS FROM TRUE CENTER.—Chas. J. Clifford, New Hampton, N. J. I claim the instrument for ascertaining, without quartering or centering, whether or not crank pins on locomotive driving wheels are bent or sprung, constructed with the arms, a, feet, b, brace, c, adjusting screws and spring, marking point, fig. 2, all arranged and combined substantially as shown and specified.

73,234.—POLE ATTACHMENT.—Geo. N. Compton, Canton, O. I claim, 1st, The combination of the pole, L, with the pins, a, a, and the ring, G, the whole forming the ring pieces, L, G, shown in fig. 6, in the manner and for the purpose herein specified.

73,235.—CORSET.—Clara Z. Cummings, Buffalo, N. Y. Antedated Dec. 28, 1867. I claim a corset having a portion of its back formed of elastic goods, B,

and provided with elastic buckle straps, C and D, for the purposes and substantially as described.

73,236.—CART HARNESS.—P. K. Curll, Elk Ridge Landing, Md. I claim a cart harness saddle, provided with the lever, D, pivoted in the upper end of a bolt, C, said bolt being arranged to turn loosely in the cross-piece, A, all constructed and arranged to operate substantially as shown and described.

73,237.—LOOM.—John Deakin, Gloucester, N. J., assignor to himself and D. and C. Kelly, Philadelphia, Pa. I claim the combination and arrangement of the heddle levers, pattern chain, and adjustable cams, with levers, E, H, or their equivalents, the whole being constructed and operating substantially as specified.

73,238.—CIRCULAR SAW.—Henry Diston, Philadelphia, Pa. I claim a circular saw, every tooth of which has its back edge so formed in the arc of a circle, having a center eccentric with the center of rotation of the saw, that the sharpening of each tooth may be effected by reducing the front edge in a spiral course, as herein set forth.

73,239.—SAW GUMMING MACHINE.—Thos. S. Diston (assignor to Henry Diston), Philadelphia, Pa. I claim, 1st, The rotary cutter, G, arranged to revolve in disks, adapted to and admitting of being turned in a suitable frame secured to the saw, all substantially as described for the purpose specified.

2d, The combination of the rotary cutter, G, its bearing blocks, D, D, adapted to the movable disks, B, all substantially as and for the purpose herein set forth.

3d, The rod, J, rendered adjustable on the machine, and having a notched end, adapted to the point of one of the teeth of the saw, as set forth for the purpose described.

4th, The recesses, k, k, in the disks, B, for the reception of the forked end of the lever, H.

73,240.—REGULATOR FOR TIME PIECES.—Samuel F. Estell, Richmond, Ind. I claim the combination of the regulating lever, C, having a slotted end, in combination with screw, F, and nut, E, substantially as described, and for the purpose set forth.

73,241.—AMALGAMATOR.—A. L. Fleury, New York city. I claim the herein described amalgamator, constructed and operating substantially in the manner set forth.

73,242.—BUCKLE.—George L. Gerard (assignor to himself and David Forbes), New Haven, Conn. Antedated Dec. 28, 1867. I claim the combination of the central bar, f, and bars, h, h, i, and the ribs, r and s, the whole constructed and arranged so as to operate in the manner specified.

73,243.—MACHINE FOR SCOLLOPING LEATHER.—Andrew Goodyear, Albion, Mich. I claim, 1st, A cutting-edged disk, A, with radial corrugations or other ornamental shaped indentations formed around it on both its faces next the periphery, substantially in the manner and for the purpose herein described.

2d, The use of one or more revolving cutting disks, A, with faces shaped radially in ornamental forms, in combination with an adjustable roller, B, and levers, L and M, mounted in a suitable frame and arranged, adjusted, engaged, and operated substantially as and for the purposes set forth.

73,244.—NECK TIE FASTENING.—Robert A. Goodyear, New Haven, Conn. Antedated Dec. 28, 1867. I claim the spring clasp, c, formed as shown at 1, for grasping the button, and so bent at or near the hinge, h, of the plate, a, that a spring is produced for keeping the plate, a, toward the clasp, as and for the purposes set forth.

73,245.—ANTI-FRICTION BEARING FOR MACHINERY.—John Harden, Chicago, Ill. I claim the glass bearings, B, in combination with the working parts of machinery, A, flexible seat, d, arranged as set forth and for the purposes specified.

73,246.—COMPOSITION FOR PRESERVING WOOD, METAL, CANVAS, ETC.—Louis Harmyer, Cincinnati, Ohio. I claim the composition itself, and the manner and process of compounding and using the same, substantially as herein set forth.

73,247.—AUTOMATIC ALARM FOR GRIST MILLS.—M. W. Helton and J. H. Redfield, Bloomington, Ind. I claim, 1st, The apparatus substantially as described, and which is constructed so that when applied to mill machinery and properly adjusted thereto, it will automatically give an alarm at the proper time for changing the sacks, for the purpose set forth.

2d, In combination with alarm mechanism and devices which will automatically sound the alarm, and then be disengaged from the main driving power, substantially as shown and set forth, means, substantially as described, by which the machine can be adjusted and set to sound the alarm at any given time, for the purposes set forth.

3d, The adjustable index wheel, K, with its stop, l, and pawl, m, or their respective equivalents, in combination with the hand or arm, L, upon the shaft, h, and an alarm mechanism, operating substantially as described.

4th, The vibrating lever, D, and catch, H, in combination with the tripping wheel, E, worm-wheel shaft, C, and driving shaft, B, operating substantially as described.

5th, The pawl and clamp, m, s, or their equivalents, applied to the wheel K, for holding this wheel firmly in place when properly adjusted, substantially as described.

6th, Sustaining the worm-wheel shaft, C, at one end, by means of a lever, D, in combination with a catch, H, and also with means for tripping this catch, when said shaft, C, has made a given number of revolutions, substantially as described.

73,248.—HORSE RAKE.—Benj. F. Horton, Ithaca, N. Y. I claim, 1st, The arrangement of the teeth, and the knobs projecting from the lower sides of the tines, B, substantially as described.

2d, The combination and arrangement of the described levers and rods, F, G, H, I, and J, substantially as set forth.

3d, The combination of the hand lever, J, rod, I, pivoted lever, H, rod, G, lever, F, and lifting bar, E, when all are constructed and operated substantially as described.

73,249.—SODA FOUNTAIN.—John S. Hull, Cincinnati, Ohio. I claim the soda fountain, G, tubes, H, I, and J, and cooler, E, combined and arranged for ejecting the water by compressed air forced into the water reservoir, substantially as described.

73,250.—STEAM GENERATOR WATER GAGE.—John S. Hunter, Hartford, Conn. I claim the arrangement of the three-way cocks, b and c, with their respective outlets, G, in combination with the tube, E, the connections, D, so as to operate substantially in the manner and for the purpose herein set forth.

73,251.—MACHINE FOR HUSKING CORN.—H. W. Knowlton, Saratoga Springs, N. Y. Antedated Jan. 1, 1868. I claim the combination of the rollers, c, d, with the elastic aprons, K, on the rollers, I, L, substantially as and for the purpose set forth.

73,252.—GENERATING ILLUMINATING GAS.—Ferdinand King (assignor to himself and Charles W. Neudecker), Richmond, Va. I claim, 1st, The method herein described of generating or producing illuminating gas.

2d, Also the compound oil herein described, for the purpose set forth.

73,253.—PUMP.—James McBride, Flint, Mich. I claim an inclosee annular space around the pump cylinder, deriving a supply of air from the well, substantially as and for the purpose described.

73,254.—ANIMAL TRAP.—Oliver Metcalf, Salem, Ind. I claim, 1st, The combination of a catch, a, upon a hinged door, A, with the catch rods, c, upon the revolving platform, C, substantially as described.

2d, The hinged platform, d, held up by a spring, g, and combined with the revolving platform, C, and apron, b, substantially as described.

3d, Connecting the platform, C, to the spring shaft, c, by means of a removable key rod, h, applied substantially as described.

73,255.—PEN.—Wm. A. Morse, Philadelphia. I claim a fountain union pen, made of two parts, a and F, the same being adjustable, and connected, substantially as described and shown, for the purpose specified.

73,256.—HAND LOOM.—Jas. E. Nute and Geo. H. Hathorn, Lincoln, Me. I claim, 1st, The combination with the loom frame of the pivoted arms a, warp beam, C, rod, G, and eye, d, and screw nut, e, or equivalent, secured to the frame, substantially as described.

2d, Combining with the treadles, H, the adjustable devices, herein described, for holding the shed pen till the reed beats up the thread, or which will allow the shed to close when the shuttle passes, when constructed and arranged to operate by means and in manner substantially as described and specified.

3d, The combination with the loom frame of the shaft, f, and spooling mechanism, substantially as described, so that the motor which drives the loom shall simultaneously operate the spooler, substantially as described.

4th, The spooler, as constructed, with the sliding serrated bar, s, slide, r, actuated by cam, z, or its equivalent, and with the pawl, t, and eye, P, arbor Y, and support, w, or their equivalents, for suspending the bobbin, all constructed and arranged to operate in manner substantially as and for the purposes specified.

73,257.—FENCE.—E. F. Olds, Brighton, and Warren Clark, Green Oak, Mich. We claim the special arrangement of the braces, C, in combination with the posts, B, when the said braces are connected to the post and to each other in manner and for the purpose substantially as described.

73,258.—BRICK MACHINE.—S. J. Parker, Ithaca, N. Y. I claim, 1st, The perpendicular adjustable cam, C, in connection with the plungers and movable wheel, arranged and operating together as shown and described.

2d, So arranging the mold wheel, A, feed plate, E, E, E, and contracted feed pipe, G, G, G, in connection with each other, that nearly the entire surface of each brick shall be subjected to the smoothing contact of metal, as described.

3d, The arrangement of the adjustable auxiliary cam, N, in connection with the main cam, C, as and for the purposes described.

4th, The cutting wheel, X, arranged in connection with the feed pipe, G, and feed plate, E, as set forth.

5th, The secondary feed pipe, Z, and its side grooves, in connection with the feed pipe, G, and feed plate, E, substantially as described.

6th, The combination of the wheel, A, on the horizontal shaft, L, adjustable cam, C, feed plates, E, E, and E, when substantially made, and operating as described.

7th, The combination of the wheel, A, on its shaft, L, adjustable cam, C, auxiliary cam, N, cam surface, T, a, plate, E, and table, H, arranged and operated substantially as described.

8th, The feed plate, E, E, E, when made adjustable, and arranged with reference to the mold wheel, A, substantially as shown and described.

73,259.—APPARATUS FOR THE MANUFACTURE OF STAPLES.—John A. Owens, Little Falls, N. Y., assignor to himself and Henry I. Petrie. I claim, 1st, The tank, A, with the shaft and arms, A1, constructed and operating as described, and for the uses and purposes mentioned.

2d, The screen, C, constructed of the sieves, C1 and C2, and the incline