

PAPER PULP.—Hippolyte Emile Ballière, Hoboken, N. Y.—This invention relates to the manufacture of paper pulp, half stock binder board, papier maché, etc., and fibers for textile fabrics or materials from bamboo, cane, and other vegetable and woody fibrous substances which have been previously disintegrated by the process embraced in the Letters Patent granted to H. S. Lyman of New York city, on the 3d day of August, A. D. 1858, and now commonly known as the "Lyman Steam Blowing Process," or by any other equivalent process or processes.

PLow.—W. T. Howell, Alfred, N. Y.—This invention relates to an improvement in that class of plows which are commonly termed "shovel plows," and it consists in a novel and improved manner of attaching the blade or share to its standard, whereby a very firm attachment is obtained and one which will admit of the share being very readily applied to and detached from the standard.

PLow.—D. W. Hughes, Quincy, Ill.—This invention is designed to reduce friction draft in plows and consists in dispensing with the ordinary land side substituting therefor a supplemental share which is placed at the rear of the front plow and has a reverse angular position to the latter, so that the lateral pressure exerted against one share in one direction, will compensate for that exerted against the other in an opposite direction. The invention further consists in placing the plows at the outer side of the wheels, so that both the latter will travel over unplowed ground.

AXLETREES.—Charles E. Buck, Racine, Wis.—This invention relates to an improvement in wooden axletrees for wagons, and it consists in the application of a rod to the axletree, whereby the axle is greatly increased in strength.

FLOUR SCOOP.—Rufus S. Mitchell, Elizabeth, Ind.—This invention relates to an improved flour scoop, and consists in combining a sifter and scoop in one device.

BOOT CRIMP.—J. Tipton and J. Carl, Malaga, Ohio.—This invention is an improved device for crimping leather for the manufacture of boots, shoes, etc., by which the operation can be performed more easily, quicker, and better than by the methods hitherto in use.

SELF-SUSTAINING HOOF EXPANDER.—John Tipton, Malaga, Ohio.—This invention is designed to expand the hoof of a horse in case of its contraction from corns, or other diseases of the foot, or from any other cause.

MACHINE FOR SAWING SHIP TIMBER.—John L. Knowlton, Philadelphia, Pa.—In this invention the saw is supported by a yoke which allows it to be inclined in any direction, vertical or horizontal, for the purpose of changing the direction or inclination of the cut. The yoke is attached to a carriage which feeds the saw to the log, the latter simply moving backward and forward in the same line for all the different cuts.

RAT TRAP.—John C. Guerrant and Benton J. Field, Leaksville, N. C.—This invention relates to a rat trap provided with a movable platform upon which the rat stands in order to get at the bait, the pulling of which draws a stop pin away from a lever, which when thus released is actuated by a spring and through suitable connections made to suddenly jerk the platform from under the rat, which in falling into the trap, strikes a rod, which causes the spring lever to be again actuated, so as to restore the platform to its original position.

MACHINE FOR CUTTING DYE WOODS.—Onsville E. Pray, Portsmouth, N. H.—This invention relates to an improved machine for cutting dye woods into pieces or chips direct from the log. The invention consists of a rotary drum provided with cutters at its periphery, and arranged in relation with an inclined trough containing a feed bar, which is operated by a rack and pinion.

DEVICE FOR FACILITATING THE NAILING OF LATH TO JOISTS OR WALLS.—Thomas Hill, New Centerville, Wis.—This invention relates to a device for facilitating the nailing of lath to joists or walls, and it consists in a novel construction and arrangement of parts, whereby a number of lath may be adjusted together and held in proper position, so that they may all be applied to the joists or wall at the same time, and nailed thereto.

MACHINE FOR MANUFACTURING SHEET LEAD AND LEAD PIPE.—Andrew Dow, Brooklyn, N. Y.—The object of this invention is to arrange a machine for making sheet lead in such a manner that the same can be easily converted into a machine for making lead pipe.

MACHINE FOR SAWING HOOPS.—Abraham Lutz, Orangeville, Ill.—This invention relates to an improved arrangement of springs and bearings in machines for sawing hoops from poles, whereby the pole is more easily and securely held in its proper position while being fed to the saw, and which improvement is applicable to ordinary sawing.

TRUSS, ABDOMINAL SUPPORTER, ETC.—Jules Lecocq, New York city.—This invention has for its object to furnish a simple, light, and effective truss, etc., which may be worn without annoyance or fatigue, and which will not chafe the body of the wearer.

STEEL TRAP.—C. P. Goss and Adrian Rais, Waterbury, Conn.—This invention relates to an improvement in the construction of steel traps for catching rats and other vermin, and consists in making a combined spring and bottom plate or support of the trap out of one piece of metal.

GOVERNOR.—Wm. L. Collamore, Warren, R. I.—This invention relates to a governor for steam engines and for other purposes where governors are usually employed. The invention consists in a novel application of a supplemental weight or weights to the ordinary ball governor, whereby the governor is rendered far more sensitive than at present and a material saving of steam and fuel effected.

ATTACHING OR SECURING SPRINGS.—Daniel Witt, Hubbardston, Mass.—This invention relates to a mode of securing or holding springs, and is more especially designed for securing or holding in position upholstery springs and those which are applied to chairs, etc., etc. The object of the invention is to obtain a simple and economical means which will admit of the springs being readily attached to the fixtures designed for them, and which will firmly hold the springs in position.

FILLING SYPHON BOTTLES.—William Gee, New York city.—This invention relates to an apparatus for filling glass siphon bottles, those designed for holding liquids impregnated with carbonic acid gas, and which are provided with a faucet or valve to admit of the liquid being drawn from the bottles as required for use. The object of the invention is to obtain a device for the purpose specified, which will admit of the bottles being charged or filled with the greatest facility, without material waste of liquid, and which will admit of being adapted for filling or charging bottles of different shapes or patterns and capable of being adjusted to suit the height of different operators, so that a man or boy may use the apparatus.

DASHER.—Morgan O. Davis, Warrensburg, N. Y.—This invention relates to a new method of constructing dashers for churns, by means of which the butter is separated from milk in a much shorter time, and the same is more easily taken apart to be cleaned.

FENCE.—Daniel Kaufman, Boiling Springs, Pa.—This invention has for its object to furnish an improved fence, simple in construction, light, strong, and durable, and one which can be easily and quickly put together.

MACHINE FOR FILLING SAUSAGES.—Martin Feuerstein, Williamsburgh, N. Y.—This invention relates to a machine for filling sausages, and consists in the use of a cylindrical vessel into which the material to be filled into the skins is placed, and in which a piston is arranged, by which the contents are gradually forced downward.

COMBINED HARROW, PLANTER, AND CULTIVATOR.—J. G. S. Garwood, Vermillion, Ill.—This invention has for its object to furnish a simple and convenient machine which shall be so constructed and arranged as to be easily adjusted for use as a harrow to prepare the ground, as a planter, to drop and cover the seed, and as a cultivator to cultivate the crop.

WAGE COCK.—W. G. Thomas, Centralia, Pa.—This invention relates to an improvement in wage cocks for steam boilers, and consists in forming the same in several removable parts, so that the certain parts which may require repair can be taken off and repaired while there is steam in the boiler.

DREDGING MACHINE.—Thomas Walsh, and Augustin Walsh, New York city.—This invention relates to a new mode of dumping the contents of buckets of dredging machines, by means of having the buckets made in the form of a quadrant, with hinged arms attached to them in such a manner that they can be opened and closed at the pleasure of the operator.

MEDICAL COMPOUND.—James T. Stewart, Peoria, Ill.—This invention has for its object to furnish an improved tonic, stomach bitter, and, as a secondary effect, blood purifier, which is applicable to all cases of debility, and especially those resulting from and following ague and other malarial fevers, and which may be taken freely and for a great length of time without producing headache or other unpleasant symptoms.

RAILROAD CLAMP.—John E. Watkins, Smithfield, Ky.—This invention has for its object to furnish an improved clamp for railroad rails, by means of which the ends of the rails may be kept in line, both vertically and horizontally with each other, and which shall hold the ends of the rails firmly and securely, at the same time that it does not interfere with their contraction and expansion.

WASHING MACHINE.—Henry Helm, Pittsburg, Pa.—This invention relates to a method of constructing washing machines, whereby the same are more convenient, and clothes are more thoroughly and quickly washed.

CANDLE HOLDER.—S. J. Rockwood, Elmhurst, Ill.—The object of this invention is to construct a holder for a candle in such a manner that it will receive and hold candles of varying sizes, whether large or small in diameter, and without either cutting or wrapping up the candles.

HAND HOLE COVER FOR STEAM BOILERS.—Gilbert White, New York city.—This invention consists in a peculiar modification in the application of the packing or gasket of a hand hole cover for steam boilers, whereby a tighter or closer joint is obtained than hitherto, and the packing or gasket rendered less liable to become injured or deranged in applying the cover to the hole, and taking it therefrom.

ROTARY BLOWER.—P. H. and F. M. Roots, Connersville, Ind.—This invention relates to a new manner of constructing the shells of that class of rotary blowers and engines, in which two revolving pistons, whose peripheries are formed by arcs of different diameters, connected by suitable sides, are arranged. The invention consists in forming within the shell at suitable distances apart, projecting packing straps, against which the outer peripheries of the pistons work.

APPARATUS FOR FLOCK MACHINES.—Henry Turner, New York city.—This invention relates to a device for automatically feeding the fibrous material from which flock is to be made, from a box or other suitable receptacle to the printing or printing cylinder, and consists in arranging agitators in the aforesaid box or receptacle, by which the material is constantly stirred and fed to an endless apron, which is provided with cups, for carrying the said material to the hopper on the printing cylinder. Plungers are provided on a crank shaft, which is arranged above the hopper, by which plungers the material is received from the apron, and delivered to the cylinder, and by which it is prevented from becoming clogged in the hopper.

VIOLIN.—Bambridge Bishop, New Russia, N. Y.—This invention relates to violins, bass violins, guitars, and other similar musical instruments, and consists in continuing the finger board over the sound board to the foot of the instrument, and in there fastening the ends of the strings, whereby the finger board is made to support the whole tension of the strings. And in combination with the above, the use of a supplementary bridge resting upon the finger board in such a manner that the pressure of the strings upon the sound board bridge can be controlled without altering the pitch of the strings, or the height of the sound board bridge, thereby giving the strings the pressure in the sound board bridge requisite to produce the most perfect tone, within the power and capability of the instrument, and the sound board is relieved of all contact from dead wood, and thus left free for vibration, and consequently to give out a fuller, more even tone.

BUCKLE.—C. W. Martin, Mount Pleasant, Iowa.—The present invention relates to a buckle intended more particularly for use upon traces to harnesses of horses, the nature of the invention consisting in providing a means by which the chafing of the sides of the animal is prevented, and the possibility of the tongue to the buckle pulling and splitting out the trace, from the strain by the animal, is obviated.

Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1 00 a line, under the head of "Business and Personal."

All reference to backnumbers should be by volume and page.

P. C., of R. I.—Strong nitric acid will set fire to turpentine charcoal powder, or sawdust. There is danger of fire if it is stored where it is liable to leak out on straw or shavings.

J. H. T., of Pa., asks how to render leather hard without destroying its fiber. It can be done simply by saturating its substance with shellac dissolved in alcohol or glue applied quite warm, and not injure its fiber.

P. D., of Va., sends us a small package of shiny black grains and asks their nature. They are particles of the magnetic oxide of iron. Such sand often contains gold, but where it is abundant, even if not auriferous, it is valuable, yielding iron of excellent quality. We have no doubt large deposits exist in this country which have not yet been reported.

F. S. C., of Mass.—Bone and ivory may be softened by soaking in hydrochloric or acetic acid. The acid dissolves the mineral matter upon which the hardness of the material depends.

J. W., of Mass., wishes to know how to prevent his flour paste from molding. Add a little creosote, carbolic acid, or bisulphite of lime. Neither of them will impair its adhesive qualities.

P. J. P., of N. Y.—When the vapor of water is compressed it returns to the liquid form. A common rule for estimating the comparative volumes of steam and water is to reckon one cubic foot of steam equal to one cubic foot of water.

W. H. N., of N. J.—The French emperor has taken the initiative in the unification of coinage by minting gold coin stamped "5 dollars—25 francs."

J. M. S., of Vt.—Sulphuric, nitric, and many other acids can be detected by dipping a piece of litmus paper in the solution suspected of containing the acid. If it is present the blue of the litmus paper will turn to red. The paper can be obtained of any druggist.

A. C. D., of Pa.—White lead is not an acetate of lead; it is called carbonate of lead. The method usually employed in this country for its production is to expose very thin sheets of the lead, rolled loosely into cylinders, to the hot fumes or vapors of acids in closed receptacles. The acid vapors disintegrate the lead and the carbonate falls in the form of a paste or wet powder. It is then washed to separate the acid and ground with oil.

M. S., of Conn.—Glycerin and nitro-glycerin are two entirely different substances. One is an emollient, useful in the toilet and in medicine. Nitro-glycerin is a highly explosive substance and dangerous. Glycerin is a thick, sirupy liquid, having but little color, no smell when pure, oily or sticky to the touch, and sweet to the taste. It is entirely innocuous. Nitro-glycerin is the union of glycerin and nitric acid. Like many other compounds it does not show the characteristics of either of its elements.

D. A. K., of Md.—Whiting, or Spanish white, is a preparation of chalk, merely ground fine and washed. French chalk or tailors' crayons is a variety of talc or steatite—soapstone—colored by any coloring matter to give it body and shade.

A. J. K., of Wis.—Spanish gun barrels were formerly very highly valued, their superiority being attributed to the excellent iron which was made almost exclusively of stub nails and old horse or mule shoes.

W. P. T., of N. H.—If you desire to give your brass levers density and hardness not obtainable by the quality of the composition, it can be done by hammering them after leaving the foundry. This will harden the brass and give it greater resistance to wear. It must be hammered when cold.

J. B. P., of Mass.—"Suppose a hole be made through the earth from pole to pole, and a cannon ball be dropped in at one of the poles, what would be the course of the ball? One person maintains that the ball would go only to the center and there stop. Another that it would go beyond the center and then return; and that this movement or oscillation would be repeated, but gradually becoming feebler till the ball rested at the center. A third claims that if there were no obstruction or resistance, the ball would fall through to the opposite pole and would then return to the starting point; and that this oscillation from pole to pole would go on forever." The first philosopher is wrong. The second and third are about right. The question discussed is a very old one.

F. R., of Mass.—Patent drawings may be signed by an inventor or his attorney. . . . The process for making parchment paper is correct, with sulphuric acid and water equal parts. Your failure is probably due to using an unsuitable paper, or to using the acids too warm.

J. S. B., of Me.—The English monetary unit, the pound sterling equals in value 20 shillings, or 240 pence. Anciently 240 pence weighed a pound of silver; hence the origin of the term. Now, the equivalent weight of the pound is over three and one half Troy pounds. The signature, a pound sterling, is the initial letter of the Latin word "libra," a balance, the horizontal marks serving simply to distinguish this L from the ordinary letter. We have previously published a history of the dollar mark, and refer you back to that explanation.

F. S. B., of Conn., asks "why in the case of streams near their debouchure into the sea, the effect of the changing tides is first noticed on the sides of the river, so that near both banks a rising tide gives two up-currents while the main body of water is still running down and so vice versa when the tide changes." The momentum of the greater body of water which is in and near the channel of the river requires a longer time to be overcome than is the case with the shallower parts of the stream.

L. F. S., of N. J.—Entomologists divide the insect world into seven classes, the orthoptera, or insects having straight or longitudinal folding of their wings, and of which grasshoppers, cockroaches, and crickets are examples; the hymenoptera, or honey bearers, of which the bee forms a characteristic example; the neuroptera, or the order having, like the dragon fly, four membranous and transparent wings; the lepidoptera, insects with four membranaceous wings covered with fine imbricated scales like powder, as the butterfly; the coleoptera, or order to which the beetle family belong, all having crustaceous shells which when shut form a longitudinal suture along the back, and cover the wing; which lie beneath; the diptera, having only two wings, and two poisers, as the house fly; and the aptera, or wingless insects.

Business and Personal.

The charge for insertion under this head is one dollar a line.

For Gas-Pipe Screwing and Cutting-off Machines for Hand or Power, or any tool used by Steam and Gas Fitters, address Camden Tool and Tube Works Co., Camden, N. J.

A Large Marble Factory to rent on the Hudson River. Address Davis Machinery Yard, 124 Hudson st., Jersey City.

Wanted, address of parties wishing scale removed from boilers by Winans' Anti Incrustation Powder, 11 Wall st., N. Y., 12 years' recon't.

Wanted,—To be used in Elk county, Pa., a portable engine and boiler, of 30 horse-power, a circular saw mill, 30-foot carriage, planer, edger, shingle machine, and jack saw. Also, any other machinery connected with saw mill and tannery, if they are sold cheap. Address J. Schultz, Ellenville, Ulster county, N. Y.

One Third Interest in the Athens Foundry and Machine, Works for sale. Having an extensive collection of tools and patterns, a large circuit of custom, being in a healthy section of country, located among factories and mills. It is a desirable investment for a practical man. For full particulars address R. Nickerson, Agent, Athens, Ga.

Agents wanted everywhere—enormous profits. Sample \$0.25. Retail for \$3 each. Thomas Powell, Milroy, Ind.

Parties in want of Fine Tools or Machinists' Supplies send for price list to Goodnow & Wightman, 23 Cornhill, Boston, Mass.

I will give a half-interest in a valuable invention to any one who will get it patented in Foreign Countries. A. Lake, Smith's Landing, Atlantic county, N. J.

For Paper Collar Machines and Bosom Plating Machines, address W. H. Tolhurst, Troy, N. Y.

Steel.—To Dealers and workers in Steel—A simple and reliable method of testing the quality and detecting the imperfections of steel, for sale. Price \$1. Full instructions by return mail. Address P. O. Box 2,993, Boston, Mass.

Second-hand Barrel-head Rounder, with iron frame, in perfect order, for sale, price \$100. Will make 4000 heads per day. Address Owen Redmond, Rochester, N. Y.

Parties wishing Machinery or Patents of any kind sold on Commission. Address Geo. P. Everhart, Shrewsbury, York county, Pa.

I wish to correspond with manufacturers who can build my Self-Track-Laying Cars, Patented Jan. 22d, 1867. Address J. S. Lake, Smith's Landing, Atlantic county, N. J.

NEW PUBLICATIONS.

THE GALAXY. The February number of this widely circulated and popular magazine comes to us laden with very choice original articles from the pens of a variety of well known and well paid contributors. Messrs. W. C. & F. P. Church, 39 Park Row, New York, are the publishers of the Galaxy, and also of the Army and Navy Journal—both first class publications in their respective line. The Galaxy, (monthly,) \$3 50 a year. The Army and Navy Journal, (weekly,) \$6 00 per annum.

GEMMA.—T. B. Peterson & Brother, Philadelphia, Pa. Price, bound, \$2; paper, \$1 50.

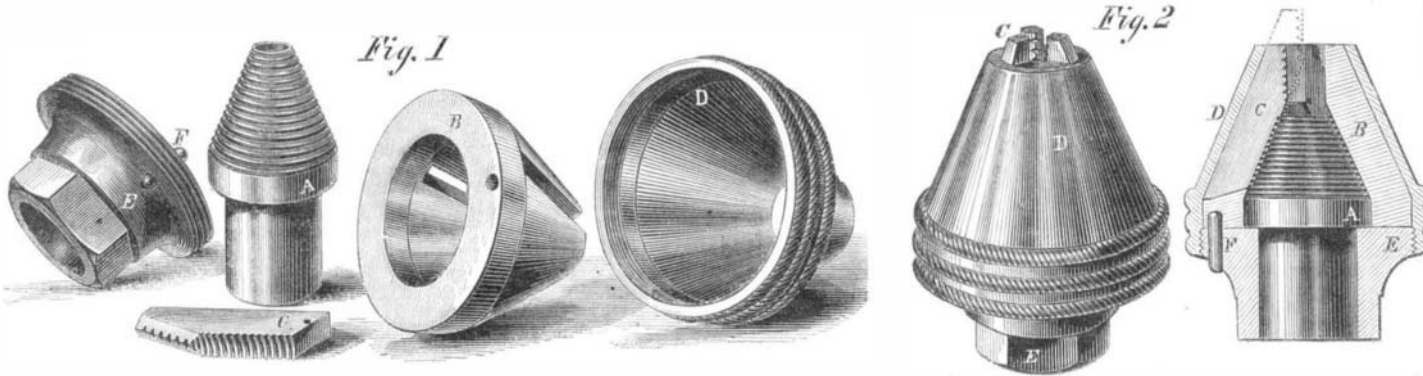
A Novel of 450 pages by T. A. Trollope. The Athenæum thus reviews it:—"Mr. Trollope again gives us one of his novels of Italian private life of the present day. The descriptions of the city of Siena—of the country around—of Savona, the desolate town of Maremma—are wonderfully graphic, and bear witness to their having been done from the life by one who has lived in the places and loved them. The scene in the great church of Savona is brought vividly before the reader, who will not easily shake off the impression it produces. We would recommend the reader to learn for himself the unravelling of the plot and the final result. The story will repay perusal and the interest increases as it proceeds."

DAVID COPPERFIELD—By Charles Dickens. Cheap edition, paper, 25c. T. B. Peterson & Bro., Philadelphia, Penn.

ATLANTIC MONTHLY—February number just out. Ticknor & Fields, Boston, Mass. \$4 00 a year.

Improvement in Lathe Chucks.

The accompanying engravings give different views of a chuck for holding drills, wire, etc., in the lathe, which was patented by Isaac Smith, of New York, July 10, 1866. It differs in many respects from all others, employing no spring to open the jaws when the gripe of the screw is relaxed, all the movements being absolute. There are neither holes nor projections on the exterior case to become filled with dirt or to catch into the clothes of the workman. Fig. 1 exhibits perspective views of the different parts, and Fig. 2 a vertical section and a perspective of the chuck complete. A is the conical screw which gives motion to the jaws, having a shank for attachment to the lathe spindle. Over this slips a shell, B, having three or more slots in its periphery in which fit the movable jaws, C. These are threaded on the under side to fit the thread of the conical screw. The whole is

**SMITH'S PATENT DRILL CHUCK.**

covered by the case, D, held in place by the cap nut, E, which is connected to the slotted shell, B, by a pin or screw, F.

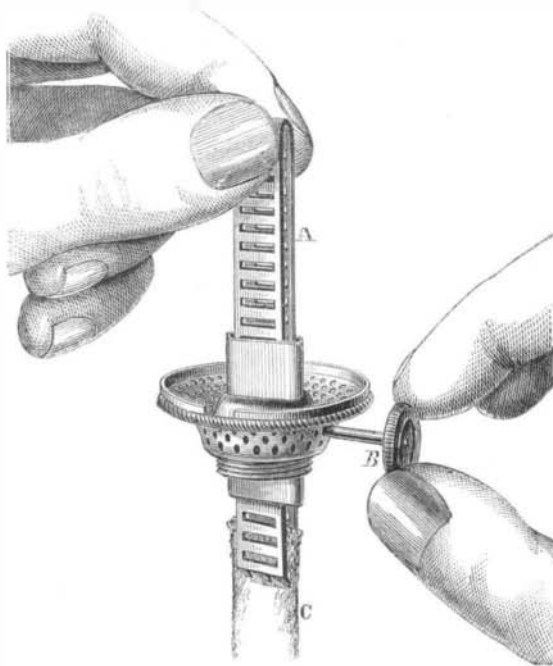
In operation the chuck may be turned with the hand, by means of the milled beading on the outer case, sufficiently hard to hold the drills, and if more force is required a wrench may be placed upon the nut, E. The chuck is very neat in appearance, and the jaws, whether open or closed, are always parallel.

This chuck is peculiarly adapted to screw making from wire, and to screw machinery, having a hole through its entire length as large as the opening of the jaws. Used upon a hollow lathe spindle wire of any length may be chucked for turning or screw cutting. It will receive a long or double drill, an advantage appreciated by all machinists.

All communications, orders, etc., should be addressed to the Excelsior Chuck Co., No. 10 Park Place, New York city.

BLAETTERLEIN'S DEVICE FOR INSERTING LAMP WICKS.

All who use kerosene or other lamps which require the flat wick, understand the difficulty of passing the wick through



the flattened tube. The difficulty is much increased if the stiffened end of the wick becomes frayed or softened. The simple device shown in the engraving will enable the clumsiest or most inexperienced to pass a wick through the tube. It is a strip, A, of sheet metal, punctured with transverse slots, calculated to engage with the teeth of the pinion or spur on the elevating shaft, B, and furnished with inward bent teeth at each end. The strip is bent or doubled at the middle, so that the teeth on the ends come opposite each other.

Its operation is thus: The threader, taken in the hand, is made, by its teeth, to grasp the end of the wick, C, and then the doubled end is passed into the tube from the bottom, when, by turning the elevating pinion, its teeth "take" in the slots of the threader until the wick engages, when, of course, the spurs take the wick and the threader can be removed. Its simplicity and utility will recommend itself to every housewife.

Patented through the Scientific American Patent Agency, Dec. 31, 1867, by F. A. Blatterlein, to whom, at West Meriden, Conn., all communications relative thereto should be addressed.

Manufacture of Artificial Stone.

It has long been known that a mixture of sand, magnesia, and bittern water, a refuse of salt works which contains

chloride of magnesium, will form a strong mortar, which soon hardens, and when molded into blocks makes a good artificial stone. Many forms of these mixtures have been made. D. and W. McCaine, of Groton, Mass., have recently patented the idea of using pulverized stone, brick, etc., instead of sand.

Blocks thus made are more costly, but not any better, apparently, than the previously made blocks. The patentees give the following particulars:—

"In the preparation of such stone, we use, as a cementitious agent or agents, calcined magnesia and bittern water, and our invention consists in an artificial stone, made by combining, with stone chips and finely pulverized or powdered stone, magnesia and 'bittern water,' the residuum from salt works.

"The proportions and the process of combination preferred by us are as follows: To twenty parts, by weight, of comminuted stone and chips of stone, we add about one part of cal-

culated magnesia, and mix them together, with sufficient bittern water to form a stiff mortar, which mortar may be molded and pressed, or simply molded, or applied with a trowel.

"Heat may be used to hasten the hardening process; but this is not generally necessary, as the stone dries well in the open air, and indurates perfectly in two or three weeks, without any application of artificial heat.

"By this process, sand, soapstone, marble, or other mineral substances, in broken, pulverized, and comminuted form, may be used for the production of blocks and slabs, the invention being particularly valuable for the utilization of chips in stone quarries, and of marble, soapstone, and slate stone dust and chips, in places where these minerals are worked. The stone so made answers perfectly for building purposes, for tiles, for stone sinks, stoves, etc., and, generally, the same purposes for which bricks, clay, and stone blocks and slabs are employed.

"The relative quantities of finely pulverized and of broken materials that are used depend somewhat upon the size of blocks that are to be formed; but it is only necessary for the producing of the stone that the mortar, made up of the pulverized stone and the calcined magnesia and bittern water, should fill all the interstices and spaces between the broken stones or chips."

Filling of Wood for Carriage Bodies, etc.

Many cheap methods of filling the pores of wood, prior to the application of paints, have been introduced. These fillings have the effect to keep the paints and varnishes upon the surface of the wood, where they solidify and form a very smooth and elegant surface. George Chambers, of Ithaca, N. Y., in a recent patent, says:—"To any convenient quantity of boiled linseed oil I add, over and above the ordinary drying use of the article, any free and large excess of litharge, and also a small quantity of chalk, or of chalk, and whiting, and starch. This makes a thick, glutinous semi-fluid mass. Next, the surface of the wood being cut, planed, or sandpapered, or otherwise smoothed or polished, but having no preparation or mixture of any kind on it, I coat it over with the above preparation, rubbing it freely into the pores and grain of the wood. Then I at once apply a thick dusting or coating over the wood thus covered with sulphate of lime or plaster of Paris. I let it stand for a few moments, that the fluid parts of the oil may be absorbed by the sulphate of lime. Then I proceed at once and polish the surface, using if necessary, more plaster of Paris in so doing. Brushes, woollen cloths, and other articles in rubbing and polishing, are used. Further, to suit the color of the wood, I use in my preparation, and in the plaster of Paris, various coloring substances, the mineral ores being especially useful, as Vandyke brown, umber, Spanish yellow for black walnut and oak, chalk and whiting (in additional quantities) for maple and cucumber and satin wood, and so of other colors and woods. These I mix in the preparation before it is applied to the wood, and, if necessary, in the plaster of Paris in polishing. The result is a fine, clear, even polish, that hardens, and is dry and ready for use, in much shorter time than varnish or other ordinary articles and modes."

THE ERUPTION OF VESUVIUS.—Professor Palmieri, of Naples, who is engaged in making observations in all phenomena connected with the last fire outbreak of this volcano, states that he has never seen the magnetic needle so frequently or seriously disturbed as it is at present, and the seismometer records at least ten distinct earthquake shocks daily.

HOW TO HAVE WARM FEET.—It is said that the wearing of cotton stockings under woolen ones will prevent cold feet. It no doubt will when caused by moisture. The woolen stockings will absorb the moisture as it accumulates in the cotton sock, and keep the latter comparatively dry. But when the cold arises from the lack of circulation, the woolen sock will be found the most comfortable worn next to the foot.

Recipes for Steel Having Various Qualities.

James R. Bradley and Moses D. Brown, of Chicago, Ill., have lately patented the following:—

"For treating scrap iron or malleable iron of good quality, produced by the ordinary processes, and producing therefrom different kinds of steel, we melt the scrap or malleable iron in crucibles, adding thereto chemical ingredients of different properties, and in different proportions, as follows, to wit: To make shear steel, to a pot of 50 pounds, add potash, 1½ ounce; sal-ammoniac, 1½ ounce; manganese, 4½ ounces; charcoal, 7 ounces; sodium, 3 ounces. To make cast steel, to a pot of 50 pounds, add potash, 1½ ounce; sal-ammoniac, 1½ ounce; manganese, 4½ ounces; rock salt, 3½ ounces; charcoal, 7 ounces. To make German steel, to a pot of 50 pounds, add potash, 1½ ounce; sal-ammoniac, 1½ ounce; manganese, 4½ ounces; charcoal, 7 ounces. To make Damascus steel, to a

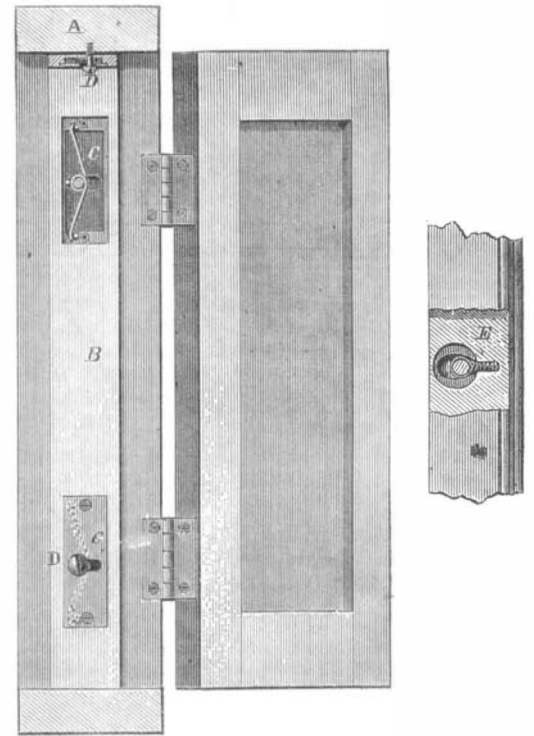
pot of 50 pounds, add potash, 1½ ounce; sal-ammoniac, 1½ ounces; manganese, 5 ounces; saltpeter, 4 ounces; charcoal, 7 ounces. To make saw steel, to a pot of 50 pounds, add potash, 1½ ounce; sal-ammoniac, 1½ ounce; manganese, 4½ ounces; charcoal, 8½ ounces; common salt, 3½ ounces; saltpeter, 1 ounce. To make silver steel, to a pot of 50 pounds, add potash, 1½ ounce; sal ammoniac, 1½ ounce; manganese, 4½ ounces; charcoal, 8 ounces; salt, 3½ ounces; alum, 1 ounce. To make file steel, to a pot of 50 pounds, add potash, 1 ounce; sal-ammoniac, ½ ounce; manganese, 4 ounces; charcoal, 9 ounces; salt, 3½ ounces; alum, ½ ounce.

make rifle steel, to a pot of 50 pounds, add potash, ¾ ounce; manganese, 4 ounces; charcoal, 3½ ounces; salt, 3 ounces; alum.

"What we claim, as new, is—The improved processes for making steel of different kinds herein described, by mixing the several ingredients in the proportions, and melting the same with malleable or scrap iron, as specified."

BUTLER & WARING'S WEATHER STRIP FOR DOORS AND WINDOWS.

Slamming doors and rattling windows are annoying to the strong and healthy as well as to the nervous and feeble; and ventilation by ill-fitting sashes and doors is neither healthy nor economical. The engraving represents a self-acting or automatic weather strip which is cheap, durable, not liable to derangement, and can be easily applied. It is a simple strip of wood secured to the inside of the window sash, or door



jamb, by screws through slots, the strip being held in place by springs.

A, in the engraving, is the section of a door or window frame, and B is the weather strip. A plate, C, mortised into the strip, has a transverse slot through its center through which the screw, D, passes, engaging with the elliptical spring under the plate. As will be seen, when the door comes in contact with the edge of the strip the springs allow the strip to recede and yet holds it snugly against the door. Its action on window sashes is similar. The strip may be carried up both sides of a door or window and across top and bottom without adding perceptibly to the labor of closing. The small figure, E, shows a simpler form of the spring and plate, the first being simply a spiral and the latter a washer under the head of the screw.

It is evident from the description and engraving that this strip is very simple. Any other form or material of spring may be used, as deemed desirable. The patent—secured through the Scientific American Patent Agency—is dated June 4, 1867. Rights are for sale by Butler & Waring, who may be addressed, Box 119, Hudson, N. Y.

In taking up belts the time used in carefully cutting the belt square is always time saved.