

**BALF TIE.**—Joseph Bragg Dunn, Petersburg, Va.—This invention has for its object to furnish an improved bale tie, simple in construction, which will hold the hoop securely, which may be easily applied, and which can be manufactured at small expense and without waste of material.

**CORN PLANTER.**—N. G. Hughes, Waynesburg, Pa.—This invention has for its object to furnish an improved corn planter, by means of which the ground may be marked and the seed dropped and covered at the same time and by the same operation.

**SNAP HOOK.**—John McKibben, Lima, Ohio.—This invention relates to an improved spring snap hook, the advantages of which are that while it secures all the advantages of other rein and springs now in use, it is greatly reduced in size. By the position of the spring it acts as a guard snap, and as the spring is almost concealed within the hook, it is protected by the jaws that hold the lip on which it acts. It is also very compact, thus securing greater strength, so there is less purchase bearing upon it from its curtailed length of body and spring, also rendering it lighter, neater, and better, and more convenient.

**VISE.**—Samuel S. Barnaby, Macon, Ga.—The object of this invention is to produce a vise which will be of such a construction as to obviate the great inconvenience and loss of time now unavoidable with the use of all vises heretofore invented.

**MACHINE FOR RAISING HEAVY WEIGHTS.**—S. E. Tuttle, Genoa, Nevada.—This invention has for its object to furnish an improved machine by means of which heavy weights may be raised with a comparatively small outlay of power.

**ROTARY STEAM ENGINE.**—Chester B. Turner, Grand Rapids, Mich.—This invention consists in the arrangement of wings or valves on the piston core, or center, and in so forming the parts of the engine that the steam can be cut off at any part of the stroke, or at any desired point.

**HORSE RAKE.**—Oliver E. Randall, Lewiston, Maine.—This invention consists in the application of a separate and independent spring to each tooth bar, and in a peculiar lifting arrangement whereby the rake teeth, as hitherto, are allowed to conform to the inequalities of surface over which they may pass, and the rake at the same time allowed to gather up and retain a large quantity of hay or grain before being discharged.

**PORTABLE SAWING MACHINE.**—G. W. Bell, Rising Sun, Ind.—This invention has for its object to furnish a simple, cheap, and portable machine, by means of which timber for shingles, staves, fire-wood, etc., may be sawn in the woods without its being necessary to incur the expense and labor of transporting the logs to a machine, as is now the case.

**STREET AND STATION INDICATOR FOR RAILROAD CARS.**—Anthony Pirz, and Manucl Pirz, East New York, N. Y.—This invention relates to a new and improved street and station indicator for railroad cars, and of that class in which the names of the streets or stations are on a belt or band which is moved at certain proper intervals, after each street or station is passed, in order to exhibit to the passengers the name of the preceding street or station.

**FLOUR SIFTER AND SIFTER.**—F. A. Hoyt, Hanover, Mis.—This invention relates to an article of household use, and consists of a sifter operated by a crank and gearing, the said sifter located over a drawer covering the flour receptacle beneath.

**DITCHING MACHINE.**—A. A. Taseller, Alkiers, La.—This invention relates to an improved machine for excavating ditches or canals, and consists of a carriage mounted on wheels, to be worked and propelled on temporary movable rails, by a steam engine, and supporting drums for carrying an endless belt or chain to which are affixed excavating buckets.

**CALCULATING AND REGISTERING MACHINE.**—Thomas T. Strode, Mortonville, Pa.—This invention relates to an improved calculating and registering machine, being a simplification of the calculating machines heretofore invented.

**COMBINED FLOUR SIFTER AND SCOOP.**—G. W. & C. L. Sherman, Seymour, Conn.—This invention of an improved article of domestic utility relates to a flour sifter and scoop.

**MACHINE FOR EMBOSSEING WINDOW SHADES.**—R. K. Slaughter, and J. O. Hundt, New York city.—This invention relates to a new machine for embossing window shades of all sizes with ornamental borders, corner or central pieces, and consists chiefly in the use of a sliding carriage, which is covered with a plate of rubber or other elastic surface, and which is provided with adjustable guide bars for guiding the rollers, by which the ornamental borders are produced, and for holding the shade to be embossed on the table.

**HAY PRESS.**—George W. D. Culp, East Enterprise, Ind.—This invention relates to an improved beater press, which is so arranged that the motion of the follower can be reversed whenever desired, without reversing the motion of the horses; and that, furthermore, the beater or the follower, or both, can be thrown out of gear whenever desired, without stopping the horses, and in which an automatic self-opening and closing feed door is arranged in such a manner that when the beater ascends it will be closed, while it will open as soon as the beater is down.

**SPINNING WHEEL.**—S. W. Clark, Seneca, Wis.—The nature of this invention consists in a novel and useful modification of the ordinary domestic spinning wheel, enabling the operator to sit while spinning, and thus avoid the labor of walking to and from the head of the wheel.

**WALKING VEHICLE.**—R. C. Vernol, New York city.—This invention relates to a new manner of operating vehicles, and consists in the use of legs, to which a motion is imparted imitating as near as possible the motion of the human extremities. At least two legs or bars are arranged on each side of the platform of the wagon, or vehicle, and are secured to and suspended from a horizontal axle, which has its bearings on the platform. On the shaft are two circular eccentric cams, to which the legs are secured, the cams projecting equally far from opposite sides of the shaft. An alternate up and down motion is thus imparted to the two legs on each side of the platform.

**BRICK MACHINE.**—Ephraim R. Greene, and Henry D. Phillips, Trenton, N. J.—This invention relates to a machine for pressing and molding brick, and it consists in a novel manner of operating the plungers, by which the clay is forced into the molds, and in a novel manner of operating the molds, feeding them underneath the press boxes.

**CORN GATHERER.**—James Mains, Olena, Ill.—This invention has for its object to furnish an improved machine for gathering the corn, simple and inexpensive, in construction and effective in operation.

**HORSE HAY FORK.**—L. S. Mason, Middlefield Centre, N. Y.—This invention relates to a harpoon hay fork, which is provided with tines projecting from the sides of the shank, so that the hay, straw or grain will be prevented from slipping on the shank.

**PORTABLE HAY AND GRAIN ROOF.**—John J. Naylor, Brighton, Mich.—This invention has for its object to furnish a simple and convenient portable roof for covering hay and grain stacks, and for other purposes.

**GRINDING MILLS.**—John Snyder, Hart's Mills, Ind.—This invention has for its object to furnish an improved manner of hanging the upper mill-stone or runner, so as to insure freedom of motion and the proper and effective action of the runner and spindle, and at the same time to facilitate the tramping of the spindle.

**WAGON HUB REAMER.**—J. W. Emerson, Rochester, Minn.—This invention has for its object to furnish an improved machine by means of which wagon and other hubs may be reamed out quickly and accurately, so as to be ready to at once receive the cast-iron box.

**DRYING AND VENTILATING APPARATUS.**—Jarvis Royal, Rochelle, Ill.—This invention has for its object to furnish an improved means for drying and ventilating damp grain, fish, and other things, stored in bins, holds of vessels and other places.

**ANIMAL TRAPS.**—Joel Manchester, New York City.—This invention has for its object to furnish a simple, cheap, and effective trap, by means of which animals may be killed and thrown from the trap, the trap setting itself for the next animal.

**WOOD SAWING MACHINES.**—Isaac B. Jones, Xenia, Ohio.—This invention relates to improvements in machines for sawing wood, whereby great strength, firmness, simplicity and efficiency of operation are secured.

**BED BOTTOMS.**—S. L. Southard, Rock Island, Ill.—This invention relates to an improvement in bed bottoms, and consists in an arrangement of compound special springs attached to the under side of the bed bottom and resting upon cross pieces set in the bedstead.

**SEEDER.**—Olney Fry, Jr., Albany, Oregon.—This invention has for its object to furnish a simple, cheap and effective machine for sowing grain broadcast, which shall sow the grain evenly and cover it at a uniform depth, thereby decreasing the labor and time required for putting in the grain, and at the same time increasing the yield.

**PORTABLE PISTOL GALLERY.**—F. A. Spofford & M. G. Raffugton, Columbus, Ohio.—This invention relates to a device for supporting the aim and for retaining the balls, marbles, or other articles thrown at the aim, during target exercise with toy guns.

**SECURING THE OUTER SOLE OR PATTERN AND THE HEEL TO BOOTS AND SHOES.**—L. A. Favre, Paris, France.—This invention consists in securing to the underside of the inner sole, whether it is sewed or nailed to the vamp, a metallic plate, which is provided with small perforations or slots, and in securing said plate, either by nails, rivets, screws, or other suitable means thereon. The outer sole or pattern, which is to be connected to the sole and to complete the shoe, is provided with a set of projecting screws or tenons on its upper face, said screws or tenons being intended to fit into corresponding slots in the plate.

**FASTENING BOILER TUBES.**—James U. Adams, Richfield, Mich.—This invention relates to a mode of fastening tubes in steam boilers, and consists in attaching a thimble or ferrule having external and internal threads cut on it which screws are engaged with the internal threads upon the end of the boiler tube and with the external threads upon the boiler plate.

**PORTABLE FENCE.**—H. A. Stewart, Minneapolis, Minn.—This invention has for its object to furnish an improved portable fence, simple and cheap in construction, durable, easily taken down, set up, or transported from place to place, and which, when not in use, can be packed for storage in a very small space.

**ELEVATING DEVICE FOR LOADING HAY, ETC.**—Ezra N. Curtice, Spring Water, N. Y.—This invention relates to a new and useful device for making hay loaders, elevators, &c., and consists in applying rubber friction rollers to the front wheels, in such a manner that they shall rotate one or more drums placed on the shafts of the friction rollers, and wind a rope for elevating hay, &c., as may be required.

**BOILER FOR HEATING WATER.**—John Ellis, White Plains, N. Y.—This invention relates to a boiler for heating water for buildings, green houses, and other similar purposes, and consists in arranging a series of horizontal pipes between two hollow heads, in such a manner that the water will flow at least twice through the tubes, so as to be very completely heated.

**SAP SPOUT.**—R. F. Livermore, Starksboro, Vt.—This invention consists of a metallic sap spout of such a form that many important advantages are secured over the common wooden spout as heretofore used.

**CARPET HOLDER.**—F. Smith, Alexandersville, Ohio.—This invention relates to a device for holding carpets upon the floors, whereby the same are more firmly held against them on board and more easily at any time moved.

**PUMP ROD.**—H. F. Purmort, Saginaw City, Mich.—This invention relates to pump and drill poles or rods, and consists in a novel manner of jointing together the several sections composing the same, whereby rivets are dispensed with, consequently obviating not only all injury to the interior of the pump now resulting from the breaking and falling of rivets into the same, but also the frequent drawing up of the pump tube from the well to remove the rivets.

**SAFETY HOOK.**—E. F. Brundage, Virginia City, Nevada.—This invention relates to a safety hook for watch and lock chains, bridle reins, trace chains, etc. The object of the invention is to obtain a simple and efficient hook of the kind specified, and one which will admit of the jointed portion of the hook being readily opened and closed and also readily secured in a closed state.

**STREET LAMP LIGHTER.**—Albert Assman, Rahway, N. J.—This invention relates to a device for lighting lanterns in streets, public buildings, railroad depots, or wherever a large number of lights are arranged too high to be reached without the use of a ladder or long lighter. The invention consists in attaching the lamp or light to the upper end of a pole of suitable length, and in arranging the pole and lamp within a tubular inclosure.

**HOOKS FOR HOLD BACK STRAPS.**—N. W. Robinson, Norwich, N. Y.—This invention relates to an improvement in hooks for hold back straps of harnesses, which improvement consists in a novel combination of a post with the hook, whereby the unfastening or detachment of the strap therefrom, by accident or otherwise, except so desired, is rendered impossible, while at the same time the unbitching of the strap, if desired, can be accomplished with the utmost ease and dispatch.

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 references to back numbers should be by volume and page.

**W. M., of Canada,** asks how he can lengthen boiler tubes three-eighths of an inch. They are 7 feet, 8 1/2 inches long by 3 1/2 inches diameter and were cut too short by three-eighths of an inch. We think they might easily be lengthened by heating two feet or so between the ends and then stretching them in an ordinary horizontal screw press. Or, they may be slightly drawn by means of a die which may be made in halves, one half to be forced upon the other by a screw.

**G. & P., of Ky.,** ask how to bronze or lacquer the handles of steel instruments. We have often answered similar questions and should, in justice to ourselves, refer this correspondent to back numbers of our paper; but, as we have frequent inquiries on this subject we will repeat what we have several times said before. An ordinary coating of a copper color can be deposited on polished iron or steel by immersing the article in a solution of sulphate of copper (blue vitriol), the mineral being dissolved in water. But if a more brilliant bronze is required it can be produced by simply painting the article with a sizing and sprinkling it with bronze powder. Coating iron or steel with bronze can be done only by a deposition of the copper or brass on the surface of the iron by the galvanic battery. Its difficult and costly.

In reply to a correspondent who asked how to harden plaster of Paris casts, X says: A little glue dissolved in the water with which plaster is mixed will harden it to almost any degree. Experiment will soon determine the proper quantity for the degree required.

**N. C. L., of N. Y.,** asks if it is not time for "C," of Troy, N. Y., to explain, as promised, his system of cypher published in No. 13, Vol. XVII. He says: "I, for one, have worried enough over it."

**J. L. B., of Iowa,** says he has a well 45 feet deep, surface of water generally within 20 feet of the ground, never more than 25 feet. From well to house 100 feet with rise of 12 feet. He wishes to use wind power for pumping so as to supply a reservoir at the house at all times, but there are tall trees near the well which would interfere. He asks if he can locate the windmill near the house and what sort of pump he shall use. There are plenty of good pumps in the market intended for lifting and forcing. The proper location for a pump in this case would be at the well so that it could lift 25 feet and force 12 feet higher through 100 feet of pipe. Of course, the windmill and pump should be located together. If the pump and power should be located at the house it would be found difficult, even with an air chamber, to obtain a supply from an ordinary lifting or suction pump. Any sensible pump maker or dealer can overcome your difficulty on a personal inspection of the premises.

**G. W. E., of Wis.,** asks us to give him the rule for calculating horse-power of non-condensing engine. John Bourne states it briefly thus: "Multiply the square of the cylinder's diameter in inches by the cuberoot of the length of stroke in feet, and divide the product by 47. This is the nominal horse-power." We prefer to state it thus: "Multiply number of feet traveled by the piston per minute by the pressure of steam on the piston and divide by 33,000." We choose that you apply the above to the data you send rather than have us tell you the power of your ten-cylinder engine.

**J. F. L., of Ohio.**—Henry Carey Baird, 406 Walnut street, Philadelphia, Pa., will probably furnish you with a manual on sugar refining from which you will obtain more information than it is possible to crowd into our columns.

**G. H. W., of N. Y.**—"How many feet of grate surface will be required for a boiler nine feet, six inches long with thirty-two-inch tubes?" The rule is to allow one square foot of grate surface to twenty inches flue surface. See No. 9, Vol. XVII SCIENTIFIC AMERICAN for the proper method of setting boiler. It has saved our readers already many hundreds of dollars.

**F. M. D., of Va.,** asks "what is the best mixture to temper [harden] files in?" Files are not generally "tempered" they are left of full hardness. There is no "mixture" equal to clean cold water for the hardening. Before they are heated for hardening the teeth are coated with strong brine thickened with beer grounds, yeast, or bean flour and allowed to dry. This makes a protecting flux for preventing the teeth from burning.

**G. G. B., of Conn.,** inquires "whether yellow pine or cypress is to be preferred for frame and tressle work for water wheel where the timber will be exposed to water and steam." The cypress in use in this country is not the true cypress of which we read in sacred and profane history. It is a deciduous tree whose value for timber exposed to constant moisture we do not fully understand. The yellow pine is very long lived under the circumstances mentioned.

**G. W. R., of Pa.**—"Can you tell me the ingredients of a good marking ink that will not evaporate and will resist the action of rain, etc.? I want something better than the mixture of lamp black and turpentine now used." We have used successfully shellac varnish thin, with lamp black stirred in. It will evaporate but will stand water. The evaporation, however, is necessary if you want the marking ink to dry rapidly.

**E. B. R., of Mass.**—"Can you inform me of the best method of conveying power a distance of one hundred feet, whether by a leather or other flat belt or a rope running over a wheel with a V-groove?" The latter method we put in practice nearly twenty years ago, the distance between points being over two hundred feet. It was speedily rejected for the ordinary belt and pulleys. We know of nothing better than flat belts or a continuous shaft. The rope is unreliable and annoying.

**J. S., of Pa.**—The essential oils of wintergreen, mint, spruce, hemlock, etc., are procured by steam distillation of the leaves, buds, blossoms, or roots of the plants. For processes and full details we refer you to the "Art of Perfumery" by Piesse, published by Lindsay & Blackiston, Philadelphia, Pa., or to "Perfumery: Its Manufacture and Uses," by Campbell Morfit, published by H. C. Baird, 406 Walnut street, Philadelphia, Pa.

Business and Personal.

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

Inventors and Patentees wishing to get small, light articles manufactured for them in German Silver or Brass, address Schofield Brothers, Plainville, Mass.

\$300 will buy a Patent of A. Grushus, St. Paul, Minn.

Agents wanted everywhere—enormous profits. Sample doz. \$1.50. Retail for \$3 each. Thomas Powell, Milroy, Ind.

Scale removed from Boilers by Winans' Powder (11 Wall st., N. Y.), 12 years' use proves it reliable and uninjurious.

For Steam and Gas Fitters Tools, Machines for Hand or Power to Screw and Cut-off Gas pipe; stocks, dies, pipe, vises, Peace's adjustable pipe tongs, address Camden Tool and Tube Works Co., Camden, N. J.

Address J. S. Elliott, East Boston, Mass., for best machinery for making lime and sand building blocks.

Good 2d-hand engines, all sizes & styles. A. Logan, Tideoute, Pa.

Persons having the best barrel and bucket machinery send circulars to D. C. Baggerly, Luray, Page Co., Va.

Manufacturers of potato diggers send circulars to H. C. Oathout, Luana, Iowa.

Inventions made for those desiring them, or aid lent to perfect others. Address A. E. Watkins, 114 Fulton st.

Hamilton's self-oiler for shafting uses one half-pint of poor oil for two-inch bearing in three months. Has been in constant use two years, and fast coming into use. Rights for sale by A. G. Stevens, Manchester, N. H.

J. N. Proctor, of Albion, Orleans county, N. Y., wants the address of Inventors and Manufacturers of Brick Machines with descriptive circular and mode and operations for burning brick.

W. C. Stripe, Keokuk, Iowa, wishes to obtain a mill capable of grinding fifteen barrels of lime per day.

Manufacturers of Wood-working Machinery send Catalogue and prices to Wm. Z. Hallam, Denver, Colorado Ter.

EXTENSION NOTICES.

Mablon Loomis, of Washington, D. C., having petitioned for the extension of a patent granted to him the 2d day of May, 1854, for an improvement in plates for artificial teeth, for seven years from the expiration of said patent, which takes place on the 2d day of May, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 13th day of April next.

Phlander Shaw, of Boston, Mass., having petitioned for the extension of a patent granted to him the 2d day of May, 1854, and reissued the 17th day of July, 1860, for an improvement in air engines, for seven years from the expiration of said patent, which takes place on the 2d day of May, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 13th day of April next.

Conrad Liebrich, of Philadelphia, Pa., having petitioned for the extension of a patent granted to him the 2d day of May, 1854, for an improvement in trunk lock hasps, for seven years from the expiration of said patent, which takes place on the 2d day of May, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 13th day of April next.

E. G. Allen, of Boston, Mass., having petitioned for the extension of a patent granted to him the 27th day of October, 1857, for an improvement in steam pressure gages, for seven years from the expiration of said patent, which takes place on the 27th day of October, 1871, it is ordered that the said petition be heard at the Patent Office on Monday, the 29th day of June next.

E. G. Allen, of Boston, Mass., having petitioned for the extension of a patent granted to him the 22d day of November, 1859, for an improvement in combination steam gage, for seven years from the expiration of said patent, which takes place on the 22d day of November, 1873, it is ordered that the said petition be heard at the Patent Office on Monday, the 29th day of June next.