

HORSE COLLAR FASTENING—W. A. Sharp and J. A. Shannon, Tama City, Iowa.—This invention relates to a new and improved method of constructing the collars of horse harness whereby many advantages over the ordinary method are secured.

SECTIONAL STEAM BOILERS—Charles Bean, East Douglass, Mass.—This invention relates to a new and improved plan for constructing steam boilers whereby they are rendered more durable and more effective as steam generators than those of ordinary construction.

MACHINE FOR MAKING GINGER SNAPS—Daniel M. Holmes, Williamsburgh, N. Y.—This invention has for its object to furnish a simple, convenient, and effective machine by means of which ginger and other snaps may be made from soft dough rapidly, conveniently, and accurately.

PIPE CUTTER—John Peace, Camden, N. J.—This invention has for its object to furnish an improved tool for cutting off pipe, which shall be simple in construction and durable, and which will cut off the pipe quicker and better than the pipe cutters now in common use; cutting away the metal, and not leaving a burr upon either the outside or inside of the pipe.

CAR HEATER—W. S. McNeil and O. S. Cadwell, Jr., Springfield, Mass.—The object of this invention is to construct a heater for heating or warming railroad cars by heated air that the air shall be purified before it is heated and discharge into the car and properly distributed therein, and so that fuel shall be economized and proper provision made for protecting the passengers and car from injury from fire in case of accident.

HAND DRILL—Alois Wirsching, Brooklyn, E. D., N. Y.—This invention relates to a new and improved drill, which is designed to supersede the ordinary bow drill, now generally used for fine or small work, by watch-makers, etc.

HORSE RAKE—A. H. Robbins, Copenhagen, N. Y.—This invention relates to certain new and useful improvements on the ordinary wooden-toothed revolving horse rake; and it consists in a peculiar construction of the same, whereby the operator may control and operate the machine with the greatest facility, and the latter connected to a sulky or cart if desired, so that the driver or operator may ride if he prefers to do so.

GRAIN AND GRASS HARVESTER—Amos Smith, Vienna Cross Roads, Ohio.—This invention relates to certain new and useful improvements in grain and grass harvesters, and it consists, first, in a novel and improved construction and arrangement of the driving gear; second, in a peculiar manner of applying the draft pole; third, in a novel manner of attaching or applying the finger bar to the machine; fourth, in a peculiar application of a lever for raising the finger bar; fifth, in a novel construction of the guards or fingers.

SOIL PULVERIZER—Cornelius Berninger, Mier, Ill.—This invention relates to a new and improved device for pulverizing the soil, and it consists in a novel combination of a rotary toothed pulverizer, and a harrow fitted in a swinging or suspended frame, and attached to a mounted frame, all arranged in such a way as to admit of the soil being pulverized in an expeditious and perfect manner.

CORN-SHELLING MACHINE—Geo. F. Johnson, Marshall, Iowa.—This invention consists in a rotary wheel provided with a central opening in which are provided a series of hooked shellers, having edges which press upon the cob to prevent the shellers from slipping the cob too deeply, the said shellers being provided with radial stocks, which slide on corresponding grooves in the rotary wheel, and surrounded by a spring which constantly bears them towards the center of the said rotary wheel. A set of feeding rollers is also provided for grasping the cob after a portion of corn on one end of the ear has been shelled off, and drawing it through the sheller, the whole being actuated from a hand crank.

LOCKING DEVICE FOR LOOSE PULLEY—William J. Linton, Detroit, Mich.—The object of this invention is to provide a simple and effective locking device, to be used in machinery, when pulleys or other wheels are required to run loose or fast on a shaft for locking or unlocking them.

JOINERS' PLANES—F. Smith, and I. Carpenter, Lancaster, Pa.—This invention relates to improvements in joiners' planes, whereby it is designed to render the stocks less liable to warp, to regulate the weight of the same, to provide for a more perfect delivery of the shaving, adjusting the same to be used as a single or double plane, and adjusting the mouth so as to govern the width of the same, for the passage of the shaving.

SAW-SET—W. B. Weaver, Reading Center, N. Y.—This invention relates to a new and improved saw-set, and it consists in a peculiar construction of the same whereby it may be readily adapted for setting the teeth of large and small saws, and also adapted for other purposes or uses than setting saws.

PUMP—Jehyleman Shaw, Bridgeport, Conn.—This invention consists in placing the ordinary lift pumps within a cylinder, provided at its lower end with a holding valve; the piston rods of the two pumps being connected by ends or chains passing over a pulley, and all arranged in such a manner that the device is made to operate as a force pump, and elevate water or other fluid to any desired height, according to the amount of power applied to operate it.

CAR BRAKE—S. W. Y. Schimonsky, Cheyenne, Dakota Ter.—This invention relates to a new and improved brake for railway cars and consists in a novel construction of the same, whereby the principle of the wedge is applied to the shoes, and the brake rendered self-acting and entirely self-locking. The object of the invention is to obtain a brake which will be efficient in its action, strong, and not liable to get out of repair, and which may be applied with a very slight effort or expenditure of power.

LAMP WICK—Wilhelm August Gensch, New York City.—This invention relates to a new lamp wick, which is composed of animal and vegetable fibre, fitted together so as to be more effective and useful than those now generally made.

MACHINE FOR CUTTING MITER JOINTS—Frank A. Howard, Belfast, Me.—The object of this invention is to accomplish the cutting and fitting of miter joints for moldings, picture frames, and the like, in a perfect and expeditious manner. It consists in a sliding V-shaped cutter, composed of two shear edges and an adjustable V-shaped rest plate, together with other devices perfecting the whole.

CAN HOLDER—M. M. Shurt, Delaware, Ohio.—This invention consists in the combination of expanding staves with a hollow box and staff sliding thereon, together with other devices perfecting the whole. It is used for holding cans to be soldered, and is designed as an improvement upon a machine for the same purpose patented by Henry P. Dennis (No. 45,143).

PERMUTATION LOCK—T. J. Sullivan, Albany, N. Y.—This invention relates to improvements for setting the combination of any lock having indented wheels, actuated by a knob bearing a graduated circle exterior to the lock, but is designed more particularly to improve a lock previously patented by the same inventor. The invention consists in attaching circular springs to the disks containing the combination wheels, said springs being each provided with a detent pin for detaining the combination wheels at any desired point, by fitting into the indentures of the same, together with other devices relating to and perfecting the whole.

SEWING MACHINE—Robert Barclay, Buffalo, N. Y.—This invention relates to a new and improved sewing machine, and it consists in a novel feed mechanism and a take-up movement for the thread, whereby simplicity, economy in construction, and durability of the working parts are obtained.

FIRE GRATE—G. H. McEvey, Newcastle, Pa.—The object of this invention is to construct and arrange a fire grate and the plates and fixtures connected therewith, that the fuel shall receive a supply of oxygen from the back and ends as well as from the front and underside of the grate, and so that the heat generated shall be utilized instead of being passed directly to the chimney from the throat of the grate, as is ordinarily done.

WATER WHEEL—P. H. Wait, Sandy Hill, N. Y.—This invention relates to a new and improved water wheel of that class which is secured on a vertical shaft and rotate in a horizontal plane at the lower end of a cylindrical case under a chute or water gullet.

CAR COUPLING—Leonard Monzert, New York City.—This invention relates to a new car coupling, of that class in which two jaws are employed for holding the connecting link, and consists in the application of a ring, which is fitted around the coupling box, and which, by being turned, serves to lock the jaws together, or to release them, to allow their opening, as may be desired.

WEAVING MACHINE—Adolph Wagner, New York City.—This invention relates to a new machine for weaving hoopskirts and other fabric of suitable tubular or irregular shape, but is more particularly intended for the manufacture of petticoats and hoopskirts. The invention consists principally in the use of a circular machine in which the fabric is woven around a block suspended between the warp carriers and the track of the shuttles, said block being up and down as well as laterally adjustable, so that it may always be adjusted centrally between the shuttle; however irregular its shape may be.

SMUT MACHINE—Henry Stanley, St. Johnsbury, Vt.—This invention consists of an arrangement of fan-blowers within cases which are curved around the fans in the form of scrolls, into one of which the grain to be cleaned is admitted through the air passage to the fans, and from which it is forced by the blast of air around the scroll (the sides of which are perforated), to the mouth into a spout communicating with the next fan chamber, and in like manner forced from there to the mouth of the scroll, when it encounters another blast of air from another fan which is designed to separate the chaff.

MACHINE FOR ROLLING SAW LOGS—Esau Tarrant, Muskegon, Mich.—This invention has for its object to furnish an improved device for turning or rolling logs upon the carriage of circular or other saw mills, which shall be simple in construction, on effective in operation, and conveniently operated.

FIRE ESCAPE—Thomas Tompson, Jr., New York City.—This invention has for its object to furnish an improved fire escape for permanent attachment to the outer sides of buildings, which shall be so constructed and arranged, that it may be conveniently lowered when required for use, and raised again out of the way when not required for use.

VULCANITE RUBBER BILLIARD BALLS—For many years, indeed, since the game of billiards became popular, there has been a demand for a substitute for the ivory of which billiard balls are made. The game seems to demand a certain weight, a fixed diameter, and a degree of elasticity to the balls; qualities difficult to combine in their necessary proportions in any manufactured material. But Mr. W. H. Lippincott, of Pittsburgh, Pa., claims by a patent obtained through the Scientific American Patent Agency, May, 12, 1868, to have succeeded in obviating these difficulties, and in producing a ball superior in some respects and equal in others, to those made from solid ivory. He says: "Although a number of attempts have been made to construct billiard balls of vulcanized rubber, none have succeeded in overcoming the difficulties of thoroughly vulcanizing them. Balls vulcanized by single layers in square blocks, when turned, will be only one half the requisite weight, and are liable to be porous. By my process all the qualities of elasticity, density, weight, etc., are obtained, and the balls will last for years; cheaper in first cost, smooth as ivory, and not liable to chip, crack, or get out of truth. These balls are susceptible also of a high polish, and can receive any color desired." The inventor forms first a ball of say one inch diameter and vulcanizes it, then increases the size by successive vulcanizations until the desired thickness is attained. The constant expense for the renewing of the stock of billiard balls amounting for each table to \$32 for eight sets per year, makes this invention worthy of attention.

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 \$3 00 a line, under the head of "Business and Personal."

All reference to back numbers should be by volume and page.

A. M. C., of Mo.—Is there any depth in the ocean to which an iron weight or bar would not sink. Ans. No.

E. B., of Pa.—Wire can only be properly coated with gutta-percha by machinery. For any small work, it may be coated by hand, softening the gutta-percha by immersing in water heated to 200° Fah.

S. H., of N. J.—The contraction and expansion of the spindle by heat and cold is sufficient to account for the fact you describe. We can supply some back numbers but not all; the dates are the same.

R. C., of Mass.—The pressure upon a closely fitted steam valve not covering any ports is as the area of the valve and the pressure of the steam. When it covers ports it is the same minus the back pressure from the cylinder.

H. A. S., of Mo.—Owing to the variety of circumstances under which stones and bricks are used in building no general rule can be given for computing the strength of structures. Each case must be worked by itself. Mahan's Civil Engineering gives all the necessary tables and data.

J. H. W., of Mass.—Sheet iron plates are galvanized by first cleansing the sheets with dilute sulphuric acid, hammering, and scrubbing with emery and sand. The plates are then immersed in a bath of melted zinc covered with sal-ammoniac. Galvanized iron plates are simply iron coated with zinc. There are several other processes of manufacturing it.

H. A. S., of Me.—"Would coal tar on a roof injure the rain water caught from the roof when used for domestic purposes?" If the roof has been newly coated the taste will be perceived for a time, but it is in no sense unhealthy.

T. H., of W. Va.—This correspondent states that his steam boiler, fed with good, pure well water, after lying unused for a time, shows honey-combed holes filled with a "substance resembling black lead," and that his boiler leaks badly. He asks if an acid is present an alkali like soda or lime will neutralize it and prevent its deleterious effects. Either, we think, will do the business. It is evident that the water he uses is unfit for boiler purposes. Better procure water from a purer source.

W. M. G., of Vt.—This correspondent has a plan for setting off the divisions of a gear to be cut on an engine which seems to be novel, but the description sent is too obscure to be valuable. We advise him to insert an illustration of his device in our columns if he desires to introduce it to the trade.

E. H. H., of Mich. sends a plan for a gear cutting engine which has been in use for many years, and is not popular among machinists. His plan presents no novel features and its publication does not seem advisable.

C. B., of Iowa, proposes to build a five-horse power boiler thus: The shell a cylinder 12 feet long and 24 inches diameter with one flue 14 inches diameter, shell and flue to be connected at the ends with heavy cast iron rings 24 inches external and 12 inches internal diameter, to fit shell and flue, they are to be attached to the ring with tapped bolts instead of rivets. Set the boiler at an angle of about 30 degrees making one end a steam chamber, the products for combustion to circulate all around the shell below the water line and return through the flue its whole length to the chimney. The feed water pipe to run down through the flue—coiled if desired—and enter into the lower end at the bottom with check valve. "Do you think such a cheaply constructed boiler would be safe?" The plan is neither new nor safe. Similar boilers have exploded some months ago, one in Williamsburg, L. I., which we noticed at the time.

J. P. J., of Mass.—Paper of the proper sort is a good material for cleaning the face of a mirror or window glass, but the use of ordinary newspaper is not to be recommended. Much of the paper used for printing the common daily and weekly journals is manufactured from straw, which contains a large proportion of silex or flint, and the process of grinding, pulping, etc. is not sufficient to eliminate this substance. Consequently a glass often rubbed with newspaper exhibits in time a congeries of scratches, less pleasant to behold than dust or fly-specks, as flint will scratch glass, if it cannot cut it as the diamond.

B. J. P., of N. Y.—The business information you desire we cannot give, neither are we acquainted with the composition of "Zopissa" cement. We believe it has not yet been made public. Ammonia dissolves

copper when exposed to the air. As long as it is thus exposed it has a splendid blue color, when not so exposed it becomes colorless. The copper in the former case is an oxide in solution, in the latter it is a dioxide. The process of making the solution of metallic copper being slow, the same solution may be more rapidly obtained by using the hydrated oxide. The statement that this solution will dissolve zinc has the sanction of good authority. Linseed oil is oxidized by heating it with litmarge. Nitrobenzole is made by slowly adding benzole to fuming nitric acid gently heated; upon the addition of water the nitrobenzole separates in the form of a heavy yellow oil.

B. F. L., of Pa.—It is probable that you can obtain the work of Dr. Beaumont referred to in the article, of Lea & Blanchard of Philadelphia.

Business and Personal.

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

For State and County rights to the best and cheapest sorghum stripper now in use, address C. P. Hale, Calhoun, Ky. Agents wanted.

Half the profits of a cotton gin that will add twenty per cent to the value of the lint, given to the manufacturers. Jas. S. Carnall, Lockhart, Texas.

Wm. G. Vermilye, 6 Park Place, New York, gives special attention to the manufacture of india-rubber articles for inventions.

Siccocast, that dryer for linseed oil, made in Boston by Mr. Asahel Wheeler, which so astonishes everybody who knows about paints—what is it? What does it impart to the oil? Simply causes oil to attract oxygen from the air and dry with the pigment upon the surface.

Metallic cartridge machine makers send circulars to J. V. Meigs, postoffice box 1031, Lowell, Mass.

Broughton's lubricators, for suet or oil, have none of the objectionable features which pertain, more or less, to all others. Manufactured by Broughton & Moore, 41 Center st., New York. Their gage cocks and oil cups are the best.

If you want to buy a factory with water power, read advertisement in another column.

Wanted—samples and price of native sumac. Address D. Miles, 95 Water st., Boston, Mass.

Pratt Brothers, publishers and printers, 37 Cornhill, Boston, will negotiate with writers for the publication of popular manuscripts, provided the authors will guarantee the sale of one-half the first edition.

Metal-edge card and show-bill manufacturers will please address H. C. Small, box 2169, Portland, Me. State whether the article is patented, and where the machines can be purchased.

A paying investment.—We are offering County and State rights. Also, manufactured goods of newly invented and patented household articles of great merit, at very low prices. On receipt of \$1 75 we box and ship the above, nine articles, with directions and terms. Agents wanted everywhere. Send for samples. Marsh & Co., 33 Maiden Lane, N. Y.

Wickersham's American oil feeder, combining principles of the siphon capillary attraction, and filtration; saves 90 per cent in oiling journals; perfectly reliable; always under control. J. B. Wickersham & Son, 143 South Front st., Philadelphia, Pa.

Those prepared to manufacture the beam steelyard please address H. Maranville, Akron, Ohio.

Machines for boring, turning, and slotting pulleys, mill gearing, and turbine water wheels, ten feet diameter and under,—about half the cost and does double the work of a lathe of same swing. Gear cutters of new and improved pattern, to cut gears 8 ft. diameter and under, and all kinds of machinists' tools. Send for circular to L. W. Pond, 98 Liberty st., New York.

For descriptive circular of the best gear bar in use, address Hutchinson & Laurence, No. 8 Dey st., New York.

Peck's patent drop press. Milo Peck & Co., New Haven, Ct.

Parties about to buy steam boilers should examine Root's wrought iron sectional safety boiler at 95 and 97 Liberty st., New York. See advertisement.

Spring-bed bottom—unequaled for simplicity, cheapness, and durability. Manufacturers wanted as agents. Address S. C. Jennings, Wautoma, Wis.

Moss's improved compound oil for use in the manufacture of woolen goods, and the greasing, carding, cleansing, and spinning of all kinds of wool is the greatest invention known. Address Moss & Lindsey, New Richmond, Ohio.

N. C. Stiles' pat. punching and drop presses, Middletown, Ct.

For sale—just finished—an 18x42 Wright engine. Address Merrick & Sons, Philadelphia, Pa.

For sale—the whole or a part of a paper mill, all new machinery. For particulars address L. A. Beardsley, Fredericksburg, Va.

For sale—the patent right, in Great Britain, for perforated saws. The manufacture of these saws is now firmly established in the United States, and they are rapidly taking the place of all other solid saws. Apply to J. E. Emerson, Trenton, N. J.

Prang's American chromos for sale at all respectable art stores. Catalogues mailed free by L. Prang & Co., Boston.

For breech-loading shot guns, address C. Parker, Meriden, Ct.

Wanted—a second-hand steam hammer. Norway Manufacturing Company, Wheeling, W. Va.

NEW PUBLICATIONS.

HANDBOOK OF THE STARS, for School and Home Use. By W. J. Rolfe and J. A. Gillett. Boston: Crosby & Ainsworth. New York: Felt & Dillingham, successors to O. S. Felt.

The study of astronomy is of all others most calculated to enlarge and elevate the mind. Descriptive astronomy is particularly adapted to interest youth, and can be pursued advantageously without a previous knowledge of the higher mathematics. The little work before us is designed to aid the school and family in this important study, and seems well adapted to the purpose. It has maps of the constellations, including all the stars down to the fourth magnitude, with a table of all the constellations visible during each month, and full instructions as to their location, their history and mythology. The book is printed and bound in superior style. An additional attraction is its description of the spectroscopic and its use in the study of the heavenly bodies.

THE WORKSHOP.

We are in receipt of the seventh number of "The Workshop," containing besides its usual amount of useful and artistic designs, some very entertaining and instructive remarks upon the subject of antique vessels, and a valuable article on the "Employment of Calcareous Tufa for the Production of a Fine, Artificial Marble."