

FIRE KINDLER.—M. E. Ezell, Hatchchubbee, Ala.—The object of this invention is to provide for public use a simple, cheap, and convenient instrument by which a fire can be kindled in the stove, or a lamp or gas jet lighted at night without the necessity of any one's rising from bed for the purpose. By means of the same instrument the opening of a door or window may be caused to light the fire, lamp, or gas, the apparatus thereby operating as a burglar alarm.

CHURN.—Manuel Witmer, Cedar Rapids, Iowa.—This invention relates to improvements in churns, whereby it is designed to provide an improved arrangement of vibrating and swinging churns.

HINGE.—Wm. Wells, Ashtabula, Ohio.—This invention relates to improvements in hinges the object of which is to provide a locking device for spring hinges whereby the door may be held open; also an improved construction of loose jointed hinges.

COMPOUND FOR PRESERVING HAIR.—A. L. Baker, Newark, N. J.—This invention relates to an improved compound for the hair, designed to preserve it and restore its growth in cases of baldness, which will be designated "Calla Cream."

CORN CULTIVATOR.—D. C. Stover, Lanark, Ill.—This invention relates to improvements in the construction of cultivators, the object of which is to make them more useful than as at present arranged, and it consists in an improved manner of constructing the sulky or carriage and connecting the plow beams to the same.

FEEDING SHOES FOR GRINDING MILLS.—John C. Andrew, Seventy-six, Ky.—This invention relates to improvements in feeding shoes for grinding mills, the object of which is to arrange them so that they will also serve as sieves for separating chaff, dirt, and other foul matter. It also consists in constructing the bottom of the shoe of any suitable reticulated substance through which the fine grains of foul matter may be separated from the good grain, and providing under the said bottom a spout for conveying it away.

STENCIL PLATES.—J. L. and H. L. Tarbox, New York city.—This invention relates to improvements in stencil plates, designed to provide a simple and convenient arrangement whereby the stencil letters may be readily connected together for forming words, and be as readily disconnected for changing their combinations without the employment of frames for holding them when set up, as is now commonly practiced.

MACHINE FOR SCRAPING AND LOADING EARTH INTO WAGONS.—Albert Ward, New Michigan, Ill.—This invention consists in suspending scrapers from the frame of a wagon between the front and hind wheels, by an adjustable apparatus, whereby the front ends of the said scrapers may be let into the earth at any required depth, which scrapers are provided at their rear ends with inclined flaps, up which the earth is forced, and delivered to a carrier operated from the hind wheels of the wagon transversely of the said wagon, and which projects from one side thereof in an elevated position, whereby the earth may be delivered to another wagon moving alongside the scraping apparatus.

BLIND FASTENING.—Wm. J. Decker, Nyack, N. Y.—This invention relates to a new combined apparatus for holding blinds and shutters closed, open, or partly open, for locking them safely to the window frame and sash and or setting the slats. The apparatus is of very simple construction, readily applied to old and new blinds and not liable to get out of order.

FISHING NET.—F. A. Werdmuller, New York city.—This invention relates to a new apparatus for catching fish, crabs, lobsters, and other animals in deep water, and consists of a rigid frame, which forms the upper edge of a shallow bag, and the outer support for a flat ring, both the bag and ring being woven in suitable material. When this net is let into the water, and some bait placed into it, it will form a secure trap for the animals entering it, as the same cannot escape except by direct upward motion, which is scarcely ever attempted, and which is made impossible when the net is being drawn up.

WASHING MACHINE.—H. B. Tibbits, Vineland, N. J.—This invention relates to a new machine for washing clothes; and it consists in the application of a rubber and box bottom of peculiar form and construction, whereby when the requisite motion is imparted to the rubber, a combined rubbing and striking action is produced. The lower face of the rubber is V-shaped and corrugated or roughened. The bottom of the suds box is also V-shaped and roughened or corrugated. The rubber working on it will be drawn from one inclined face of the bottom to the other, and will rub the clothes as it travels on each face, striking or pounding them as it reaches the end of a stroke. The invention also consists in providing a device for supporting the rubber above the box, to allow garments to be put in or removed from the box.

TOY BALL EJECTOR.—E. S. Belton, New Orleans, La.—This invention relates to an improved toy for amusement of children and others, and it consists of a cup or mortar, having a handle for holding the mouth of the cup upward, in which a piston is arranged for suddenly ejecting a ball from the cup into the air.

WATER WHEEL.—D. Holdiman & S. Goodwin, Waterloo, Iowa.—The object of this invention is to provide an improved water wheel of the turbine class. It consists of a horizontal wheel, having the buckets arranged to be acted upon by the direct action of the water, and also by the reaction of the same, having a contracted discharge tube to produce an effect by suction, and a series of adjustable gates arranged to act as expansible sheets to convey the water to the wheel; also an improved arrangement of means for actuating the said gates. The buckets are so constructed as to discharge a portion of the water sidewise toward the center of the same, and another portion downward through the bottom.

TRITURATING AND AMALGAMATING APPARATUS.—Leonard Wray, Rams-gate, England.—This invention of improved methods of, and apparatus for obtaining or separating metals from their ores, matrices, slimes, tailings, or other substances containing them, is applicable to those kinds of minerals, earths, clays, sands, gravels, or conglomerates which contain gold or silver in any form, shape, or combination, and which may or may not require to be pulverized, washed, concentrated, triturated, or amalgamated in order to facilitate the great object of separating and obtaining the precious metals existing in these substances by washing, as in the case of tin, and some other of the refractory minerals, such as auriferous and argentiferous pyrites, sulphides, sulphurets, antimonates, or other combinations containing gold or silver, or by direct amalgamation, as in the case of the precious metals. This improved apparatus for effecting these objects consists of a machine which has for its object to triturate the ore or substance containing the metal until it is reduced to an almost impalpable powder; and secondly, of a machine for washing the mineral matters, and for catching or securing by amalgamation the precious metals, even to those finest particles which, in ordinary processes, float away with the water, and are lost.

BRAID REELS AND GUIDES FOR SEWING MACHINES.—William Carpenter, Fairbury, Ill.—The nature of my improvements relates to the application to sewing machines of a means for supplying braid to be sewed on to the cloth, and for guiding the same in a more perfect and satisfactory manner than can be done by the means now in use; and it consists in attaching to the frame of the machine a braid reel in a position above the work so as not to obstruct or be in the way of the same, and arranging it in combination with guides on a braid foot of peculiar construction, whereby a braid of any width may be easily and truly guided to the needle so as to be sewed to the cloth in the middle, or on either edge, as may be desired, and whereby the angles may be made much more perfect than by the means now in use.

FENCES.—Joseph B. Tedrow, Chillicothe, Ohio.—This invention relates to improvements in fences, the object of which is to render them cheaper of construction, more durable, and to arrange them so that they may be protected from floods when located in river bottoms subject to be overflowed. It consists in providing sectional posts, to be constructed partly or wholly of metal, and joining the sections, either by bringing them together or driving the one into the socketed end of the other. They are also constructed sometimes wholly of metal, and in one piece.

SOLDERING APPARATUS.—Chas. Pratt, New York city, and Conrad Seimel, Greenpoint, N. Y.—This invention relates to an apparatus intended for holding sheet-metal vessels and cans which are to be soldered at their edges; the part of such apparatus holding the same being made adjustable, so that the can or vessel can be immersed in the solder to the requisite depth and be raised out, when soldered, in a straight line, thus preventing the unequal distribution of solder occasioned by careless handling. The invention consists chiefly in retaining the can or box to be soldered, in a proper position by means of a frame or float, which can be depressed and elevated at will, to allow of the can or box being uniformly immersed in and raised out of the solder to the extent required.

CULTIVATOR PLOW.—William Looker, Graham, Mo.—This invention has for its object to furnish an improved cultivator plow, simple in construction, effective in operation, and easily operated, each of the plows operating independently of the others.

CAR AXLE.—E. T. Ligon, Demopolis, Ala.—This invention has for its object to improve the construction of car axles, so as to make them stronger, less liable to break, and less liable to fail or part suddenly when injured, or when there may be a flaw in the metal.

STIRRUP STRAP LOOPS.—A. B. Zellner, Monticello, Ark.—This invention has for its object to furnish an improved stirrup-strap loop, which shall be so constructed and arranged, that, should the rider be thrown or fall from the horse, the stirrup strap may be disengaged from the loop, so as to guard against the person's being dragged by the foot, should it accidentally become caught in the stirrup.

HOEING MACHINE.—Horace C. Briggs, West Auburn, Me.—This invention has for its object to improve the construction of the improved hoeing machine, patented by the same inventor, Nov. 17, 1868, and numbered 84,165, so as to make it more convenient and effective in use.

SKYLIGHT AND VENTILATOR.—George Hayes, New York city.—This invention relates to a new and improved method of constructing and arranging skylights and ventilators on dwelling houses and other buildings; and it consists in securing the glass of the skylight in a metallic frame without the use of putty or other equivalent material, and arranging it so that all leakage is avoided, and in the method of operating a series of skylights or ventilators, either in a cluster or range.

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; beside, as sometimes happens, we may prefer to address correspondents 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.

G. W. K., of D. C.—We have seen tolerably good specimens of American Russia-sheet iron, but nothing equal to the imported.

C. A. S., of —Gasoline is so exceedingly volatile that its evaporation can be prevented only by keeping it in hermetically sealed vessels, of non-porous material. You will find answers to your other inquiries in any elementary text-book on chemistry.

J. T., of N. Y.—No substance known can be positively asserted to be a simple substance or element. The possibility of discovering elements in the base metals, which will unite to form the precious metals, of course implies the recombination of those elements to form the base metals.

E. M. S., of La.—A splendid blue writing fluid can be made as follows: Take pure Prussian blue six parts, and oxalic acid one part, mix with a little water and rub it into a perfectly smooth paste. Then dilute with rain water to the proper consistency, and add a little gum-arabic to prevent the spreading of the ink.

R. R., of Ohio, writes us that in the discussion relative to the floating of solid on melted iron, the fact that white or chilled iron will sink and gray iron will float has not been mentioned. Reference to this statement may serve to throw some light upon the discrepancies in experiments as hitherto recorded. We would inform this correspondent in reply to his inquiry that, red hot iron has as high a temperature as the flame generated in the combustion of many substances.

H. and Co., of W. Va.—The "proper speed of a mule saw to cut the most lumber" depends on the quality of that lumber. It will vary according to this circumstance from 200 to 300 revolutions, or double strokes per minute. The proper speed of a circular saw is 9,000 feet per minute for the edge; thus in case of your 54-inch circular saw it would be: 14 feet, the circumference, 9,000 feet, the speed, product by division 648, the number of revolutions. If the lumber is soft wood and clear 700, or even 720 revolutions may be advantageously used.

J. H., of N. J., can bronze his gun barrel by diluting either nitric or sulphuric acid with its volume of water and applying it to the barrel with a rag. Be sure the barrel is perfectly clean. This cleanliness can be assured by washing the barrel with lye or soap suds and rubbing dry with cocoanut husk. Several applications of the acid may be required, but one is usually enough. When the tint is obtained wipe off with an oily rag.

U. E., of N. J.—We do not approve of leading the exhaust steam into a brick chimney stack, as it tends to disintegrate the mortar. It will, however, increase the draft. Better build the chimney higher.

B. H., of Mich.—We have already given detailed descriptions, generally illustrated, of all the notable improved firearms in this country and Europe. They are to be found in back volumes from XIV. up. The galvanic or electro-magnetic battery is fully described in almost any work on chemistry or natural philosophy.

W. W. T., of R. I., says he has a gear of 100 teeth, pitch 18 to the inch, what thread shall he cut on a worm to drive it? If the gear teeth are 18 to the inch, of course the worm must be the same pitch—18. one revolution of the worm moves the gear the space of one tooth.

J. N. H., of Canada, asks where the best smoke consuming apparatus, the best paint and putty mill, and the fixtures for using liquid fuel may be obtained.

D. W. H., of Iowa.—Your explanation of the inside and outside crank pins in reply to the inquiry on page 151, current volume, SCIENTIFIC AMERICAN, is correct, but altogether unnecessary.

A. B., of Tenn.—We cannot understand how you can use the condensed steam for a blast or draft after heating your feed water with it. Condensed steam is water. The capacity of a boiler is increased by heating the feed water—we mean the capacity for producing a given amount of steam in a given time. A pipe one-and-a-fourth inches diameter is sufficient to supply a steam cylinder 8x18 inches unless the pipe is very long, crooked, and unfelted.

J. W. H., of Minn., asks if a belt running at a speed of 2,400 feet per minute will transmit more power than the same belt running 1,600 feet per minute. Of course it must; it requires more power to drive it at the greater velocity and that power is not thrown away. Velocity is one of the manifestations, if not an element, of power.

C. H. P., of Ill.—We have lately published recipes on cements and mullages. The bases of them are starch, gum-arabic, dextrine, or gum tragacanth, dissolved in water and preserved by a small addition of alcohol or acid.

E. E. P., of N. Y.—The occurrence of a partial or complete explosion in a kerosene lamp upon the slight turning down of the wick, may be accounted for by supposing the heat to have generated gas in the lamp,

which could not readily escape, until the turning of the screw opened some small aperture. This view is sustained by the sound you describe as of escaping steam. If the wick was drawn in tight, when saturated with oil it would prevent the escape of the gas, until lowered. The orifices by the side of the burners you describe might easily become stopped by congealed oil. The best kerosene oil will be converted into gas by heat.

J. B., of Pa.—This correspondent asks how many horse powers are required to drive an eight or ten inch circular saw, running entirely in wood. He says he runs an eight inch saw through one inch board, turning with one hand. The question is indefinite. The speed of the saw, its thickness, whether ripping or cross-cut, the sort of wood sawed, etc., should be known before a definite reply could be made.

M. E. H., of Iowa, says he has laid 4,000 feet of two-inch pipe from a spring which is 30 feet higher than the delivery end, but the water rises at that point only 15 feet. The pipe runs in a straight line, having a descent of 18 feet the first 1,000, the remainder level to the upright delivery. In this case there can be no reason why the water will not rise to the level of the head, less the friction, which, however could not retard the water to the amount of 15 feet. The pipe has a leak somewhere in its length.

H. M. S., of Ohio.—We do not remember one instance in which Congress has ever been asked to repeal a patent. It is not likely that any such application would be acted upon, unless very special reasons could be shown.

Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notice exceed Four Lines, One Dollar and a Half per Line will be charged.

Velocipede Wheels—10,000—Superior to all others. Send for an illustrated circular and price list. G. F. Perkins & Co., Holyoke, Mass.

To watchmakers and dealers in watches—Wanted, agents in every City, County, & State in America, and all parts of the globe for Arthur Wadsworth's patents. Apply to Patentee, Watch Factory, Newark, N. J.

Manufacturers of coil and other heaters for steam boilers send circular and price list to Reading Hardware Works, Reading, Pa.

Portable engine, 10-h. p., 2-hand. A bargain. Agents for Hoagland's patent lock valve. Address Handel Moore & Co., 5 Pine st.

Just patented—Cheapest and best water meter. Apply to Hamilton E. Towle, 78 Cedar st., New York

Letter-copying Brush—water in handle, enough to make 100 copies. Liberal terms to the trade and to canvassers. T. Shriver & Co. No. 1 Spruce st., New York.

Lillingston Paint, pure white, mixed ready for use. The best, cheapest, most durable and convenient paint ever made. All you have to do is to pour it out and go to work with your brush. All the colors and varnishes mix with it. Address Lillingston Paint Co., 530 Water st., N. Y.

Velocipedes cheap.—Specifications and elaborate drawings, by the aid of which any mechanic may construct a velocipede, together with full instructions for learning to ride, sent for fifty cents. Address M. M. Roberts, Box 3481, Boston Postoffice.

Wanted—Superior spring steel, Solingen preferred, 1-8 of an inch thick, 2½ wide, and 7½ or 8 feet long. Also, wanted, the address of manufacturers and dealers of horse powers and threshers. John H. Hafner, Commerce, Mo.

Etching on saw blades—A cheap and rapid process wanted, to take the place of stamping name, etc. Must be small and neat throughout, and duplicate of each other. Woodrough & McParlin, Cincinnati, Ohio.

Inventors' and Manufacturers' Gazette—a journal of new inventions and manufactures. Profusely illustrated. March No. out. \$1 per year. Sample copies sent. Address Sattiel & Co., Postoffice box 448, or 37 Park Row, New York City.

H. C. Sandusky & Co., General Agents for the sale of patents. Rights, territory, and patented articles sold on commission, 12 Mill st. opposite Postoffice, Lexington, Ky.

Peck's patent drop press. For circulars, address the sole manufacturers, Milo Peck & Co., New Haven, Ct.

The manufacture of sheet and cast metal small wares is made a specialty by J. H. White, Newark, N. J.

The Magic Comb will color gray hair a permanent black or brown. Sent by mail for \$1.25. Address Wm. Patton, Treasurer Magic Comb Co., Springfield, Mass.

For coppered iron castings address J. H. White, Newark, N. J.

Patent right agents please address Box 230, New Britain, Conn., for description of valuable patent for sale on commission.

For portable grist mills and mill machinery, address J. T. Phillips, No. 18 Adams st., Brooklyn, N. Y.

For sale at a bargain—a complete barrel factory, nearly new. Address Hartmann, Laist & Co., Cincinnati, Ohio.

Diamonds or Carbon for mill-stone dressing, drilling, and all mechanical purposes. Also, Glaziers' Diamonds. See advertisement on another page.

Brick clay lands for sale. Apply 19 Cliff st., New York, Room 7.

Pickering's Velocipede, 144 Greene st., New York.

Two-set knitting mill for sale—See advertisement back page.

W. J. T.—We think the patent asbestos roofing manufactured by H. W. Johns, of this city, is the best substitute for tin or slate. It is cheap and easily applied.

Tempered steel spiral springs. John Chatillon, 91 and 93 Cliff st., New York.

For solid wrought-iron beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Punching and shearing machines. Doty Manufacturing Co., Janesville, Wis.

Responsible and practical engineers pronounce the Tupper Grate Bar the best in use. Send for a pamphlet. L. B. Tupper, 120 West st., N. Y.

Iron.—W. D. McGowan, iron broker, 73 Water st., Pittsburgh, Pa.

N. C. Stiles' pat. punching and drop presses, Middletown, Ct. Machinists, boiler makers, tanners, and workers of sheet metals read advertisement of Parker Brothers' Power Presses.

Winans' boiler powder, N. Y., removes and prevents incrustations without injury or foaming; 12 years in use. Beware of imitations.

The paper that meets the eye of all the leading manufacturers throughout the United States—The Boston Bulletin. \$4 a year