

RAKING DEVICE FOR HARVESTER.—Antony Shebanck, Cleveland, Ohio.—This invention relates to a new and improved automatic raking device for harvesters, and it consists in a new and improved means employed for operating the rake, moving it forward and backward over a segment or quadrant-shaped platform, so that it will have, during said movement, a rising and falling motion; falling when the rake arrives at the front edge of the platform, so that it may work low over the same, from front to rear, and sweep or rake the cut grain therefrom, and rise at the rear end of the platform, and pass over the same from the rear to the front, in an elevated position, so as not to interfere with the cut grain thereon.

Plow.—Mathias Penning, Leavenworth City, Kansas.—This invention consists in forming the colter in one continuous piece with a landside and shear extension, which is bolted to the mold board, by which arrangement the plow is made to operate in a more easy and efficacious manner.

COMBINED REEL AND SPINNING WHEEL.—G. Bradway and N. Bradley, Maquoketa, Iowa.—This invention relates to a combination of a reel with an ordinary spinning wheel, by attaching reel heads to the spokes of the wheel and connecting worm-wheel gearing for making the cut of yarn.

LACING AND FASTENING BOOTS AND SHOES.—Wm. Banister and Albert H. Rowell, Mass.—The object of this invention is to enable the lace or string to be pulled tight throughout its length by one motion, and also an improved method of securing the lace.

MANUFACTURE OF SPOTTED AND CLOUDED YARN.—John W. Bentley, Woodsocket, R. I.—This invention relates to an improvement in the manufacture of clouded or spotted yarn.

GAS FIXTURE.—Emory McClintock, New Brunswick, N. J.—This invention relates to a new device whereby the ordinary gas cock is dispensed with in gas fixtures for illuminating purposes, as for instance gas brackets for rooms and for other positions where gas fixtures are arranged for illuminating purposes.

SAW SET.—James F. Broadhead, Rondout, N. Y.—This invention relates to a new and improved method of constructing machines for setting saws.

STEAM JET HEAD FOR CLEANING BOILER TUBES AND FLUES.—Joel M. Wheeler, Oxford, Conn.—This invention relates to a new and improved method of forming "heads" for producing steam jets for cleaning the tubes and flues of steamboilers, where the same is made applicable to all horizontal tubular or flue boilers.

MACHINE FOR CLEANING BURRS FROM HAIR.—F. Walpert, Baltimore, Md.—This invention relates to an improved machine for cleaning burrs from the hair of the tails of horses and other animals.

DEVICE FOR SETTING WHEELS ON AXLES.—M. S. Wilcox, Union Mills, Ind.—This invention relates to a new and useful device for determining the exact length and also set pitch or set of axles for wagons and other vehicles.

OPERATING ROCK DRILLS AND STEAM CUT-OFF.—James H. Thomas, Lacon, Ill.—This invention relates to a new and improved method of operating rock drills, and to the manner in which the steam engine ports are opened and closed.

ROCKING CHAIRS AND CRADLES.—S. E. Martin, Shamokin, Pa.—This invention relates to an improvement in rocking chairs and cradles, rocking horses, and like contrivances, and consists in the application of a sole of gutta percha, india rubber, or other elastic gum, or of soft leather, to the rockers, rendering the rocking more easy and noiseless, preserving the carpets from wear and tear, and being also more economical in use than the rockers now adopted.

RAILROAD CHAIR.—Arcule Elms, North Granville, N. Y.—This invention relates to the manner of fastening the two parts of a railroad chair together in a simple and effective manner by a book lock device.

UMBRELLA RUNNER.—Wm. Lang, Brooklyn, E. D., N. Y.—The object of this invention is to provide a runner for umbrella rods, which shall be simple, elegant, and more convenient to operate than those heretofore made. It consists in providing a spring lever which operates crosswise of the runner, together with other devices conducting to the perfect operation of the runner.

END GATE FOR WAGON.—Enos S. Miller, Baltimore, Ohio.—The object of this invention is to provide an end gate for a wagon box which shall serve both as an end gate and a feed trough, as occasion may demand.

BREAST PAD.—Daniel K. Wertman, Centerville, Pa.—This invention relates to breast collars for harnesses and consists of tin pads stiffened by sheet metal plates and attached to the breast strap, whereby a breast strap or collar is obtained which is superior in many points to the breast collars heretofore made.

GATES.—Eliac Roth, New Oxford, Pa.—This invention has for its object to furnish an improvement in the means for opening, closing and fastening gates, so that they may be opened and closed without its being necessary for the driver to get out of the carriage, or from any desired distance from the gate.

BOOKBINDER'S ROLL.—John Feely, New York city.—This invention relates to a new manner of securing the type to a roller and handle, for the purpose of producing an ornamenting or gilding bookbinder's roll, in which the type can be easily removed and replaced whenever desired.

BABY JUMPER.—John H. Coldwell, Poughkeepsie, N. Y.—This invention relates to a new baby jumper, in which arms projecting from the straight seat-bar are pivoted to arms projecting from the base, the arms on the seat-bar being adjustable, so that the fulcrum can be brought nearer to or further from the seat, and so that thereby the apparatus can be adapted for more or less heavy children.

MILK STIRRER.—Joel H. Soule, Georgetown, N. Y.—This invention has for its object to furnish an improved, self-acting machine, by means of which milk may be stirred in cheese factories and elsewhere, to keep the cream from rising during the night, or while said milk is standing.

WAGON JACK.—T. L. Gable, Orange, N. Y.—This invention has for its object to improve the construction of the improved wagon jack, patented by the same inventor April 30, 1867, and numbered 64,302, so as to make it more convenient and effective in operation.

HAY COOKING AND TEDDING MACHINE.—R. T. Dill, Poughkeepsie, N. Y.—This invention has for its object to furnish an improved machine, by which hay may be cooked or tedded rapidly, conveniently, and thoroughly.

MACHINE FOR BENDING CARRIAGE CIRCLES.—S. S. Daniels, Kendallville, Ind.—This invention has for its object to furnish a simple, convenient, and effective machine for bending carriage circles.

WELTING OR CORDING ATTACHMENT FOR SEWING MACHINES.—Francis B. Contessa, New York city.—This invention consists in attaching to the ordinary foot-pad bar a curved roller, and in adjusting thereon an elastic ring, whereby the machine is adapted to the process of cording and welting generally, and especially to stitching or sewing on the lace or braid shoulder straps and chevrons in military work, thereby saving much valuable time.

CHAIR SEATS.—Henry Meyer, Graiton, Wis.—This invention relates to a machine for hollowing the upper surface of wooden chair seats, and consists in the combination of a carriage sliding on prepared rails, with a set screw, by means of which the depth of the depression will be regulated, and with revolving cutters, which can be easily removed from the head to be replaced by others of different shape when desired.

HEAT RADIATING ATTACHMENT FOR STOVES.—James H. Patterson, Glens Falls, N. Y., and Henry B. Northrup, Sandy Hill, N. Y.—This invention relates to a new and improved heat-radiating attachment for Franklin and open stoves, and is a modification of a heat-radiating drum attachment, for which letters patent were granted to these inventors bearing date Jan. 30th, 1866.

DINNER KETTLE.—John Wagner, Cumberland, Md.—This invention relates to a new and improved dinner kettle, and consists in a peculiar construction of the same, whereby a greater number of compartments are obtained than usual, and the different kinds of food kept separate from each other.

CLAMP FOR HOLDING PALM LEAF WARP.—Cyrus Powers, Greenwich Village, Mass.—This invention relates to an improvement in a clamp for holding palm leaf warp to be attached to the apron of the cloth beam of a loom for weaving palm leaf web for hoods or other purposes.

STEEL AND IRON PLATES.—E. T. Lyon, Demopolis, Ala.—This invention relates to the covering of steel with copper, and consists, first, in serrating or otherwise roughening the surface of the steel to be covered, and, second, in then placing the said serrated steel plate, with the copper plate, in contact with such surface, with borax or tinner's flux between the two plates, after which the two plates are placed upon a thick bed-plate of cast iron or steel, previously heated to or above the melting point of copper, which bed-plate is placed on the lower disk of the press, the upper disk of which is made hollow, and with a non-conducting substance inside.

DITCHING MACHINE.—W. A. Nichols, West Liberty, Iowa.—This invention relates to an improvement in a machine for cutting small ditches.

MILK SHELF.—William Veber, Jr., Shingle Creek, N. Y.—This invention relates to a method of constructing shelves for setting milk so as to allow the cream to rise for making butter.

SEWING MACHINE GAGE.—Charles H. Buck, 2d, West Arlington, Vt.—This invention relates to a new adjustable gage for sewing machines, which is not only a guide for the fabric to be sewed but which may also be provided with an adjustable binder for guiding and holding bands of suitable widths around edges of cloth or fabric of suitable thickness.

STEAM PLOW.—John C. Delavigne, New Orleans, La.—This invention relates to a method of plowing and cultivating land by steam power.

HOSE FOR CONDUCTING WATER.—Andrew Carney, New York city.—This invention relates to a method of constructing hose for conducting water forced through the same, whereby said hose is rendered more strong and durable and a freer passage is given to water through the same.

PIANO STOOL.—James Bramble and H. M. Deihl, Fort Wayne, Ind.—This invention consists in the application of the principle of hydrostatics for elevating or lowering the seat of a piano stool, whereby the performer may be raised or lowered on the seat without rising from it by the movement of the foot.

SEWING MACHINE.—A. W. Halbert, Taylor, N. Y.—This invention relates to improvements in the construction of sewing machines, and consists in the construction and arrangement of mechanism whereby the working parts are much simplified and movements given to them all by one wheel directly connected with the needle bar, the shuttle and the feed plate.

CATTLE CAR.—Eugene Fontaine, Fort Wayne, Ind.—This invention relates to an improvement in cattle cars, whereby the same may be adapted for carrying either large or small animals.

COMPOSITION FOR WELDING AND REFINING CAST STEEL AND IRON.—Julius Lehmann, Bloomington, Ill.—This invention relates to a new composition for welding and refining cast steel and iron and for restoring burnt steel.

LOCK.—P. S. Felter, Cincinnati, N. Y.—The object of this invention is to obtain a lock of simple and comparatively inexpensive construction which will be equally as secure against the efforts of burglars in picking the same as the various expensive burglar-proof locks now made, and one which, when locked from the inner side of the door and the key left in the lock, will not admit of being unlocked from the outer side of the door.

SHAFT BEARING.—Samuel Kine, McVegetown, Pa.—This invention is designed more particularly for the upper bearing of mill stone spindles or shafts but is equally applicable as friction roller bearings for other shafting. It consists of a box inclosing the spindle and which contains friction rollers working in the ends of levers which latter are adjustable by set screws to bring the rollers and spindle in a vertical position. The box serves to contain the lubricating material and is provided with a stuffing box to prevent the oil from running down the shaft.

PLOWS AND OTHER FENCE TOOLS FOR JOINERS' USE.—E. M. Chapin and Solon Rust, Pine Meadow, Conn.—The object of this invention is to construct a joiners' plow and other similar tools which are provided with adjustable fences, in such a manner that the fence guides and screws will not extend through the body or stock of the implement, as is now the case, and which is the source of a great deal of annoyance in using such tools, rendering it necessary for the workman, each time the tool is used, to remove out of the way or to one side tools and implements of various kinds on the work bench which may chance to be at the right-hand side of the tool and near the same.

SAFETY GUARD FOR FIRE-ARMS.—Benjamin P. Cutler, Boston, Mass.—This invention relates to a device for the purpose of rendering fire arms safe from accidental discharge. It consists of a guard rod which is presented at the side of and beyond the cone or nipple to receive the contact of the hammer until the moment of firing arrives when it is then readily withdrawn.

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 "Best news and Personal."

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

J. H., of N. Y., has had the case of his gold watch stained with mercury and asks how to remove the stains. Mercury combines readily with gold and can be effectually removed only by heating. Heat volatilizes the mercury, which leaves in the form of vapor. A careful hand may, by the use of a blowpipe or even a common spirit lamp, remove the stains without injury to the works or case, which may, however, require after polishing.

S. G., of Pa.—"What is the rate of increase of pressure of confined atmospheric air at high temperatures?" The pressure of confined air is increased at the rate of fifteen pounds for each addition of about 500° of sensible temperature. You will find this matter and your cognate questions discussed in "Cook's Chemical Physics."

E. F., of R. I.—"In the common pump is the whole column of water raised at every stroke by the muscular force of the operator?" Yes.

J. H., of Mass.—"The equivalent of acetic acid (dry) is 51 of oxide of lead 1117. I should suppose by this that each part of (dry) acid would dissolve 2 parts of oxide of lead. I have only been able to make one part of dry acid dissolve only a little more than one part of oxide of lead without the formation of a basic salt; how can this be prevented?" There should be no difficulty in dissolving 1117 parts of oxide of lead (by weight) in 51 of acetic acid and obtaining a neutral salt. Have you perhaps tried to dissolve 2 equivalents instead of 2 parts by weight? "After ammonia has been extracted from the ammoniacal liquor of the gas works, can the residue be profitably employed to manufacture cyanides or carbolic acid?" We believe not.

C. G., of Ohio.—"What is the extreme radius of a 52-sided polygon, the sides of which are twelve feet each?" We do not know whether by the "extreme radius" you mean the longest diagonal or the radius of the circumscribed circle. At your request we will give you a simple method of determining such questions yourself without much knowledge of mathematics. Draw a circle and two diameters of it at right angles to each other. Divide every quadrant of the circle into the requisite number of equal parts, in this case *g* into *B* arcs, each about 7° in length. By connecting the ends of each arc by straight lines you will construct the polygon. Now draw the line required, and by means of a graduated ruler, compare its length with any of the sides of the polygon. If, for example, in our case the "extreme radius" is *N* times larger than one side of the polygon, its actual length will be *N x 12* feet.

J. H. T., of Racine College.—"Will you inform me of the process of preserving bird's skin, both for laying away and also for setting them up in cases?" Bird's skins are preserved by rubbing them with a solution of arsenic or corrosive sublimate. The first, after a time, evolves arseniated hydrogen, which is highly poisonous.

G. C., of N. Y.—"Can you inform me why a continuous sound issuing from a rapidly moving body (take for example the whistle of a locomotive) is a higher note when approaching than when directly opposite, or past the point where one is standing? The sound slurs as it passes, from the note at which you first hear it, to one several semitones below. The same phenomenon may be observed during the passage of a shot or shell." We have never observed this phenomenon and are inclined to class it among the "auricular" delusions. Perhaps, also, our correspondent confounds the intensity with the pitch of the sound; the former varies with the distance, while the latter remains the same.

J. B. D., of N. Y.—Stone breaking machinery was made by a Mr. Blake, of New Haven, Conn., several years ago, and perhaps is still made by him. We have had a great many inquiries for this class of machinery, and parties who can furnish it would find a demand by advertising.

G. W. N., of Pa.—"What is the difference between the stroke and the throw of a cam? Some contend that the stroke is the height it raises a lever, and the throw the point at which the steam is cut off." The "throw" of a cam is the distance it moves the lever. If the lever is hung and vibrates on its center, the movement of the valve corresponds with it and is the throw.

Business and Personal.

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

There are now in actual operation eight thousand of Ashcroft's Low-Water Detectors. John Ashcroft, 50 John st., New York.

Tube Well—Best in Use.—Patented in 1865. State, County, and Town Rights for sale. Send for circular and prices. Address Dutton & Maguire, Port Jervis, N. Y.

Parties wishing to Manufacture the Holler Knitting Machine on royalty, or who would manufacture machines for a Company, address Todd & Duncan, Bellefonte, Pa.

Henry Carey Baird, Industrial Publisher, 406 Walnut st., Philadelphia, has just issued a new and much enlarged descriptive Catalogue of Practical and Scientific Books, 56 pages, 8vo, now the largest list of this character, comprising only the Publications of any one house in either the United States or Great Britain. It will be sent free of postage to any one who will favor him with his address. Every reader of the Scientific American is invited to send for it.

Coal-oil Works, revolving retorts and refinery, lately erected, for sale. Address, on the premises, John White, Darlington, Beaver Co Pa., or C. G. Waterbury, 116 Wall st., New York.

\$2,500 will buy one-half interest in a business that will pay fifteen thousand dollars a year. Address Steam Mill, Belair, Ga.

Bartlett's Reversible Sewing Machines are the cheapest reliable Machines. Bartlett Machine and Needle Depot 569 Broadway, N. Y.

Mill-stone Dressing and Glaziers' Diamonds. Also, for all Mechanical purposes. Send stamp for circular. John Dickinson, 64 Nassau st., New York.

For Patent Engine Lathes and Upright Drills, Planer Centers, Lathe Chucks, Planer Chucks, and all kinds of Cutlery Machinery address Thomas Iron Works, Worcester, Mass.

Incrustations of Boilers removed and prevented by Winans' Boiler Powder. (11 Wall st., N. Y.), 12 years in use, no injury, no foaming.

To insure the safety of your steam boilers, property, and life, apply Ashcroft's Low-water detector. John Ashcroft, 50 John st., N. Y.

For Improved Lathe Dogs and Machinists' Clamps, address for Circular, C. W. Le Count, South Norwalk, Conn.

Brick Machine.—Laffer's New Iron Clad has more advantages than any other ever invented. For descriptive circular address J. A. Laffer & Co., Albion, Orleans county, N. Y.

For Cotton and Woolen Machinery—Roll-carding Machines, Ring and Traveller Spinning Frames, etc., address Union Iron Works, Rhinebeck, N. Y.

Seal-Press Manufacturers will find the most valuable invention of the age, in their line of business, advertised on another page.

Malleable-Iron Manufacturers, for small articles, please send address to N. W. Robinson, Moriah, Essex Co., N. Y.

Henry Carey Baird, Industrial Publisher, 406 Walnut street, Philadelphia, Pa., has just published "Perpetual Motion;" or, A Search for Self-Motive Power During the 17th, 18th, and 19th Centuries. By Henry Dircks, C. E., with numerous Illustrations. 538 pages. Price \$3 50 by mail free of postage.

Parties wishing to contract for first-class Brass and Composition Castings, please address Ridlon & Bond, P. O. Box 733, Biddeford, Me.

Projectors of Wooden Railroads address G. S. Nevius, Bushnell, Ill.

Manufacturers of Wrought Butts and Flap and Strap Hinges address X. Y. Z., Lock Box No. 236 Providence, R. I.

Wanted—A Situation in a Planing Mill, as Foreman, or to take charge of Machinery and Saws. Address W. F. Gordon, Ann Arbor, Mich. Good reference given if required.

A No. 5 P. H. & F. M. Root's Blower for a large foundry, but little used, for sale by Hale, Mardock & Peters Columbus, Miss.

Allen's Catalogue of Agricultural and Household Implements and Machinery, Seeds and Fertilizers.—Messrs. R. H. Allen & Co. 139 and 181 Water street, New York (P. O. Box 378), have just issued a new edition of their very complete and handsome Catalogue for the current and coming season. It fills 272 pages, illustrated with nearly 600 engravings, and is sent to applicants for \$1—less than the actual cost of production.

NEW PUBLICATIONS.

POEMS. By Mrs. O. M. Livingston. New York: Hurd & Houghton.

A volume of poetry, homely, unpretentious, and fresh; the subjects, mostly drawn from New England home scenes, treated without any attempt at "fine writing," and charming for their naturalness and simplicity. The text is clear and elegant, justifying the well-earned reputation of the publishers.

THE WATCH. How to Choose It and How to Use It. By H. F. Piaget, 119 Fulton street, N. Y.

This is a very small work, comprising less than 100 pages, but the author is a practical watchmaker, and the hints he gives to purchasers and owners of watches are very useful. He gives a brief description of the difference in the construction of watches made by the various celebrated manufacturers in Europe and in our own country, which is of importance to the uninitiated purchaser.

KNOX COUNTY, ILL., DIRECTORY.

J. L. Dewey, Galesburg, Ill., has undertaken the publication of Directories for the different counties in Illinois. The first of the series (Knox county) is just out, and will be found of interest to every resident of that county.