

In the Illinois Penitentiary eight hundred convicts are employed in mechanical trades. Two hundred and fifty are in the cooper shops, ninety make shoes, forty-four make cigars, and there are thirty harness makers.

The Everett Mills, in Lawrence, Mass., run 90,000 spindles, employ 1,000 hands, use every week 12,000 pounds of wool and 20,000 pounds of cotton; and produce in the same time, 100,000 yards of goods, principally flannel shirtings, cotton and cot on wool fabrics, dress goods, and shawls.

Work upon the Iron Mountain Railroad between St. Louis and the South is going on rapidly. Track laying will be finished to a point four miles below Farmington within sixty days, and the track has already been laid from Belmont to Charleston. Fifteen hundred men are employed upon the line in and at the tunnel, fifty miles from Bismarck; four sets of hands are constantly employed working night and day. This tunnel is twelve hundred feet in length.

Experiments have recently been made at the camp of Lyons on the bodies of dead horses, with the view of ascertaining the precise character of the wounds produced by conical bullets discharged by the Chassepots muskets. It is said that the aperture made by the projectile at the moment it penetrates the flesh is commonly no larger than an ordinary pea, but that the rotatory movement of the ball revolving on its axis gradually enlarges its circles until it makes a hole into which a person could thrust both fists.

CHROMATE OF IRON.—This mineral, which is found so abundantly in Maryland and Pennsylvania, has recently been used for alloying iron and steel to considerable extent, and with highly satisfactory results, the steel made from the mixture being the hardest known. Works for its manufacture have recently been erected, and a company formed whose capital is \$400,000, which are in active operation. The extension of the use of this mineral for hardening various manufactures of iron is now under experiment; and if the results prove satisfactory, the consumption of chrome ore, or chromate of iron, as it is technically termed, will be greatly increased.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the more prominent home and foreign patents.

LAMP FEEDER.—T. P. Gibbons, Baltimore, Md.—The object of this invention is to provide a cheap and convenient device by which lighted lamps can be filled at any time with perfect safety.

SNOW PLOW FOR RAILROADS.—Jenkins Jones and T. G. Eiswald, Providence, R. I.—The object of this invention is to construct a snow plow for railroads which shall operate more easily and effectually than those heretofore in use, and by which the snow may be thrown upon either side of the track, as may be desired.

STOVE.—Henry D. Snyder, Carbondale, Pa.—The object of this invention is to so improve the culm or anthracite burning stove, that better combustion of the fuel will be effected, and the heat be better radiated than heretofore, while the outer wall of the stove can be opened all around the fire box so as to diffuse the cheerful radiance of the fire on every side. The stove can, also, be readily changed and adapted to burning different kinds of coal and wood.

WATER ELEVATOR.—C. F. Woodruff, Newbern, Tenn.—The object of this invention is to furnish a simple and neat device by which, after raising a bucket of water from the well, the bucket can be readily and conveniently lowered into the water again without reversing the motion of the crank by which it was raised. This device is an improvement on one patented by the same party Feb. 4, 1868.

CLOTHES WRINGER.—Josiah Webb, Spartansburgh, Pa.—This invention consists in the peculiar method of constructing and arranging the compressing rolls, whereby the water is more completely expressed from the clothes, and whereby, also, the rubber coating of the rolls can be easily adjusted and tightened when it wears loose.

PROCESS FOR PREPARING SULPHATE OF BARYTES.—Page and Krause, St. Louis, Mo.—This process is a simple and effective series of operations for treating the mineral known as sulphate of baryta or heavy spar, so called, whereby the mineral is refined and reduced to a fine powder known in commerce as sulphate of barytes.

GUIDE FOR SCROLL SAWING.—G. W. Staats, Newcastle, Pa.—The object of this invention is to enable irregular figures and curves to be sawn from wood by a scroll saw without the necessity of working to a line, which latter operation is properly performed by a skilled workman, beside requiring the figure to be marked to the wood to guide the operator.

GROUND AUGER MACHINE.—Jacob M. Walter, and Samuel Shank, Springfield, Ohio.—The object of this invention is to provide a machine for boring post holes in the ground, which is effective, easily and conveniently operated, and adjustable to operate upon side hills. It consists of a binged auger shaft whereby the earth lifted by the auger may be conveniently deposited away from the hole, together with windlass and cord mechanism for lifting the auger shaft vertically from the hole. It further consists in the form of the boring disk, and binged or pivoted uprights supporting the boring and lifting mechanism, the said uprights vibrating in contact with slotted semi-circular plates affixed to the bed frame of the machine which serve in conjunction with clamp borers and screw studs in the uprights to adjust the up rights and the auger shaft in a vertical position when the hole is to be bored on a side hill and the bed frame is necessarily inclined from the horizontal.

TENNONING MACHINE.—William McKnight, Clearfield, Pa.—The object of this invention is to provide an apparatus by means of which tenons of any suitable angle and slope, both in the tennon and shoulder of the same, may be cut in an expeditious and accurate manner. It consists of a frame having devices for adjusting and holding the wood to be cut in such a manner that the tennon when cut will be straight or tapered, or the shoulders of the same will be straight or mitred as may be desired and having, also suitable guides for the plane. It further consists of a tennoning plane having a shear iron, in combination with the frame above mentioned.

SAWING MACHINE.—Samuel Yarion, deceased, Corunna, Mich.—This invention refers to a portable machine designed more particularly for felling trees and for cutting the same up into dimensions suitable for portability or for consumption as fuel, and is peculiarly simple and effective in accomplishing the same.

LIFTING MACHINE.—Andrew Kriebel, Hereford, Pa.—This machine has for its object to furnish a simple, cheap, and convenient machine, designed especially to enable the end of an endless chain horse power to be easily and conveniently raised by one man, to receive the trestle, so as to give a proper inclination to the endless chain of the machine.

WAGON JACK.—E. R. Baldwin, Southfield, Mass.—The object of this invention is to provide a wagon jack that may be operated with great ease than those now in use, and which is more especially adapted for raising heavy trucks and carts which stand low, but which may also be used with equal facility for high and light wagons.

SEED COVERER.—E. D. Cramer, Hackettstown, N. J.—This invention relates to a new device for covering the seed behind a planting or seeding machine, and consists of a triangular frame which rests on three or more wheels and which is attached behind a planter or seeding machine, so as to follow its motion. On the two sides of the frame, which converge directly in front, are secured metal plates that are up and down adjustable these; plates acting as scrapers for covering the seed.

ADJUSTABLE CARRIAGE POLE.—M. A. Koon, Catskill, N. Y.—This invention relates to that class of carriage poles which can be adjusted to carriages, sleighs, or other vehicles, in which the clips may be set at any suitable distance apart and to any length of axle.

CORN HARVESTER.—Nelson Newman, Springfield, Ill.—This invention relates to a new and improved device for picking the ears of Indian corn from the standing stalks.

COMBINED CORN PLANTER AND CULTIVATOR.—John S. Mason, Coal Run, Ohio.—This invention relates to a combination of a corn planter and cul-

tivator, and it consists in a peculiar construction and arrangement of the same.

WRENCH.—Luke Chapman, Collinsville, Conn.—This invention has for its object to furnish an improved wrench, simple in construction, comparatively inexpensive in manufacture, strong, and convenient.

ANGULAR SHAFT COUPLING.—John M. Case, Worthington, Ohio.—This invention has for its object to improve the construction of my angular shaft coupling, patented March 10, 1868, and numbered 75,364, so as to make it simpler and cheaper in construction, and equally efficacious in use.

PLAYING CARDS.—J. J. Levy, New York city.—This invention relates to a new manner of forming the edges of playing cards, for the purpose of facilitating the shuffling of the same, and to prevent them from springing. It also consists in providing the cards with beveled edges when double beveled or single, so that they are narrower at the edge than in the middle.

BEEHIVE.—Orin Field, Independence, Iowa.—This invention consists in a peculiar construction of the hive, the manner of arranging the comb frames, etc., whereby a very desirable hive is obtained, all the comb frames readily very accessible, and all of them rendered capable of being renewed when necessary.

PACKING, PRESSING, AND WEIGHING WOOL, ETC.—A. W. Fox, Columbiaville, Mich.—This invention relates to a machine for packing, pressing, and weighing wool and other similar substances, and it consists in a novel construction and arrangement of parts.

REFRIGERATOR.—Wilson Bray, Stockton, N. J.—This invention relates to an improvement in refrigerators, and the improvement is applicable to railway provision cars as well as to stationary refrigerators, both on a large and small scale.

HEATING RAILWAY CARS BY STEAM.—W. B. Farwell, New York city.—This invention relates to certain improvements in heating railway cars by steam taken from the boiler of the locomotive by which the cars are drawn.

WAGON AXLE.—C. D. Bacheider, Camden, Me.—This invention consists in providing an oil recess in the body of the journal of the axle, and a sleeve which is put on over the axle oil tight, to confine the oil in the recess, having a slot communicating with the recess in the axle through which the oil is fed by a wick to the wearing parts.

CONSTRUCTION OF CHAIR SEATS.—E. L. Buckingham, Jefferson, Wis.—This invention consists in a method of fastening the rod or splint to the frame of the seat by providing oblique slots through the rails from about the center of the inner edge, downward and outward, terminating in the bottom face of the rails near the outer edge, and in passing the strips of which the bottom is to be woven through the said slots, instead of through vertical holes, as heretofore; and it further consists in providing tenons on the back ends of the side rails, to be secured in corresponding holes in the hind posts.

KITCHEN IMPLEMENT.—Charles S. Westland and John B. Allen, Providence, R. I.—The object of this invention is to provide an implement available both as a stove-plate lifter and a holder for knives, forks, and spoons, which latter will, when so held by the implement, be conveniently accessible to the person employed in cooking.

BLOCKING CHAIN.—Peter Kendrick, Trenton, N. J.—This invention relates to a device for facilitating the driving of wooden blocks in chains, such as are used for mining purposes.

SULKY PLOW.—J. R. McConnell, Marengo, Iowa.—This invention relates to a sulky plow, and it consists in a peculiar construction of the same, whereby ease of draft, uniformity in the depth of furrow, and complete control over the machine by the driver, is obtained.

DEVICE FOR CONDUCTING GRAIN TO THRASHING MACHINES.—A. W. Lockhart, Sacramento, Cal.—This invention relates to a device for conducting grain from the stack or from wagons, to thrashing machines, thereby effecting a great saving in labor in thrashing grain.

STEAM ENGINE.—Thomas A. Nizer, Hamilton, Ohio.—This invention relates to that class of steam engines which are known as rotary engines, and it consists in a novel construction and arrangement of parts.

GAS APPARATUS.—John W. Brown, Wooster, Ohio.—This invention relates to improvements in apparatus for generating and purifying coal gas, for illuminating and other purposes, whereby the apparatus is adapted to household or domestic use, and the flow of gas to the gas holder is regulated automatically, and the surplus gas used as fuel.

MACHINE FOR STUFFING COLLARS.—William Fauntleroy, New Harmony, Ind.—This invention consists of a collar board pivoted centrally on a suitable bench, whereon the leather portion of the collar is stretched and secured with both ends open, and a pulley made to operate by a foot lever, over which a belt works, to which a stuffing mandrel is connected, which is guided by one hand, while by the other the straw or the filling is fed into the mouths of the collar, and the strap actuates the mandrel to pack the filling. When the collar has been filled at one end to the center, the collar board is swung around to present the other end to the operator.

MORTISING AND SLOTTING AUGER.—Peter Cunningham, Eckley, Pa.—The object of this invention is to provide an auger with which the operations of mortising and slotting may be performed rapidly. Patented Sept. 1, 1868.

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 \$5 00 a line, under the head of "Business and Personal."

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

W. L. B., of N. Y.—There is nothing that will remove rust from polished steel and leave a smooth surface. Iron rust is dissolved by acids, but they will attack the polished metal. The only remedy we can recommend is repolishing.

A. J. G., of Kansas.—The amount of water that can be raised to a given height by the hydraulic ram, working under a given head, is limited only by the size of the ram and the supply. Hydraulic Rams are manufactured by W. and B. Douglass, Middletown, Conn.

J. J., of Ill.—If wheat is not allowed to sweat before grinding, the flour will sweat after grinding; but this may take place without injury or loss more than is usual in the complete drying of the grain. We believe the best flour is made from wheat which has passed through this stage before grinding. The bolting cloths made in Holland are of silk, instead of thistle fiber as you have been informed.

M. H. R., of Mass.—All other things being equal, increased length of a water pipe diminishes the flow. In your case, if we understand it, the flow through the aperture at the junction of the pipe with the cistern depends upon the pressure of the water in the reservoir. Beyond a length sufficient to compensate for the contracted vein a pipe will be of no advantage.

F. C. C., of Me.—There are different theories in regard to why the ocean is salt. Some think there may be large deposits of salt somewhere at the bottom of the ocean which by dissolving have rendered it salt. Some think that the sea obtained its salt at the time the globe was in the act of subsiding from a gaseous state. We are better satisfied to believe that it results from the evaporation of the water which is constantly flowing into the sea, which, although it may appear fresh to the taste, always or nearly always contains more or less salt absorbed from the earth during its flow. In this view the ocean bed is an immense caldron in which nature has been boiling away water for ages; the salt remaining in the kettle, precisely as it does in the saltworks, only very much slower.

G. W. B., of S. C.—A good waterproof cement may be made simply of powdered clay, dried by a gentle heat and mixed to the consist-

ency of a paste with boiled linseed oil. It may be thinned with turpentine, colored with ochres or other pigments, and used for covering metallic roofs.

M. A. K., of Conn.—We have frequently restored faded flowers by immersing a portion of their stems in very hot water and allowing them to remain until the water is cool; then, removing them, cutting off the scalded portion of the stems and placing them in a vase of cold water.

A. H., of R. I., says that sawdust is the best bedding for horses he has ever tried. It possesses all the qualities necessary; it is absorbent, a deodorizer, and a fertilizer, keeps the horse's skin in a healthy condition, and does not contaminate the clothes of the attendant with offensive smells.

P. T., of Mass., says: "Having seen in the SCIENTIFIC AMERICAN several notices of attempts to procure a substitute for ivory in the manufacture of billiard balls, my attention has been drawn to the subject, and I am surprised that no attempt has been made to utilize the seeds of the macrocarpa, or microcarpa, a sort of palm growing in the valleys of the Peruvian Andes. These seeds, large enough for billiard balls, have an apparent structure similar to none, but are hard and elastic like ivory. I think they might receive and retain color; they can be handsomely polished."

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.

Wanted—purchasers for a valuable patent right—large business can be done. Address G. Knell, 130 Market st., Philadelphia.

Manufacturers of steam engines, water wheels, flour and saw mill machinery, cotton gins, etc., etc., send circulars to A. W. Lunsen, machinist and millwright, New Braunfels, Texas.

To say that the siccohash, invented by Asahel Wheeler, Boston, is superior to any other oryzer for linseed oil, and cheaper, is but reiterating the words of Mr. John H. Peck, chief painter and chemist at the Washington Navy Yard, and many other good mechanics, among whom are Messrs. Barney & Styles, of New York.

Wickersham's American oil feeders oils loose pulleys, it being the most perfect, reliable, and economical plan for that purpose in the world.

For sale—State rights of a valuable patent for an article used in every household. Apply at room 12, No. 113 Water st., New York, between the hours of 10 and 12, M.

To inventors—a gentleman of energy and experience in the management of an agency business, desires the general agency, for Ontario, of some really valuable patent of general utility. Address Box 1092, Toronto, Canada.

Hardware dealers and manufacturers, address, for circular and sample of best sash lock in use, O. E. Woodbury, Madison, Wis.

For sale cheap—a small adjustable steam press for vulcanizing rubber or other light work. Address A. W. Gates, 418 Eighth avenue, New York.

For sale—a complete set of the "Scientific American," neatly bound, (31 volumes), old and new series; also, odd volumes. Address L. M. Montgomery, Box 2953, New York.

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.

To inventors.—I will furnish means to patent some useful invention, or will take an interest in a patent, if sufficient inducements are offered. Address, with stamp, J. K. Ross, Noblesville, Ind.

Wanted.—Makensie No. 2 2d-hand cupola. N. C. Stiles, Middletown, Conn.

Wanted—a machine suitable to crush quartz and bones. Send circulars and price list to E. D. S., Postoffice box 708, New Orleans.

Millstone-dressing diamond machine, simple, effective, and durable. Also, Glazier's diamonds, diamond drills, tools for mining, and other purposes. Send stamp for circular. J. Dickinson, 61 Nassau st., N. Y.

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

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.

Winans' anti-incrustation powder, 11 Wall st., N. Y. 20,000 references. No foaming. No injury. 12 years in use. Imitations plenty.

NEW PUBLICATIONS.

CONSTRUCTION OF IRON ROOFS. F. Campin, C. E., member Nat. Acad. Great Brit., etc. New York: D. Van Nostrand, 192 Broadway.

The increasing use of iron in the construction of buildings, and especially in the construction of self-supporting roofs, combining lightness and strength, seems to make this treatise of peculiar value at this time. The subject of iron roofs is treated practically and also theoretically, the formulae for strain being equally applicable to timber structures. The volume is illustrated with eight plates, showing the details of such work, taken from buildings actually erected.

AMERICAN HOUSES. A Variety of Original Designs for Rural Buildings Illustrated by Twenty-six Colored Engravings with Descriptive references. By Samuel Sloan, Architect. Philadelphia: Henry Carey Barré, 406 Walnut street. Sent free of postage on receipt of \$2.50.

The object of this book, as announced by the author, is to present a number of designs in an attractive dress, that may either serve as models to build from, or criterions by which the projector may judge of the relative quality and merits of his intended edifice. It will prove of value to such as need some guide in forming a judgment upon designs, and who, meditating the erection of rural buildings, wish for some hints upon the subject before consulting an architect. Architects also will find useful studies in this book, and we especially recommend it to beginners and students.

A TREATISE ON OPTICS, or Sight and Light Theoretically and Practically Treated, with the application to Fine Arts and Industrial Pursuits. By E. Nugent, C. E. With one hundred and three illustrations. New York: D. Van Nostrand, 192 Broadway.

This is a work written in popular and pleasing style, and adapted to the wants of those who have not time or the preliminary education requisite for the study of larger works. To all such we can recommend it.