BRICK DRYER.—John McDonald, Saratoga Springs, N. Y.—This invention relates to an apparatus in which the heat which is used for burning brick is further utilized for the purpose of drying the same.

WATCH —Arthur Wadsworth, Newark, N. J.—This invention relates to that class of watches for the winding and setting of which no key is required, and in which both operations are performed by simply turning the pendant to the watch case.

REVERSIBLE FEED MECHANISM FOR SEWING MACHINES.—Robert B. Stanton, Oxford, Ohio.—This invention relates to a new and improved feed mechanism for sewing machines, so constructed and arranged as to be capable of being reversed and feed the work either to the right or left on the cloth place, whereby the removal of the work from the machine and the turning of it around at the end of each seam or row of stitching, is avoided.

GANG PLOW.—H. P. Stafford, Decatur, Ill.—This invention relates to a new and improved gang plow, and consists in a novel plan or mode of attaching the plow beams to the carriage, and also in a novel arrangement of the beams, mode of connecting them together, and in a peculiar application of a lever for moving them laterally and vertically, whereby the driver or operator has full control over the plows, and a very simple and efficient gang plow obtained.

KNOB LATCH.—George H. Palmer, New Bedford, Mass.—This invention relates to a new and improved knob latch for doors, etc., and it consists in a new and improved manner of attaching or connecting the latch to the hub of the door arbor, whereby the latch, in case of the door being closed while the hand of the operator is upon the knob, may be forced back and made to catch into or engage with the nosing, or strike equally as well as if the knob were perfectly free.

ANIMAL TRAP.—Hermann Belmer, Cincinnati, Ohio.—This invention relate to a trap that is stamped or pressed of wire cloth with a wooden or other bottom, and which has but one entrance or opening. The door to this opening is so constructed that a rat or other animal can easily open it from the outside, and so get into the trap, but when once in the trap it will be almost impossible for the captive to open the door from the inside.

BALE TIE.—L. Littlejohn, New York City.—This metal tie is for securing iron hoops on cotton and other bales and packages, and it consists of a stirrup yoke or bale, with an eye at one end and a hook at the other, in the former of which a headed pin is hung that at it its other end is headed, and is engaged with the hook end to the yoke or bale.

PHOTOGRAPHIC CAMERA.—F. E. Wilke, Brooklyn, N. Y.—This invention relates to a new device by which photographic cameras can be set up and down or inclined to any desired gage with great facility.

FULMINATE FOR NEEDLE GUNS.—Büchner & Ebertz, 202 Greenwich st., N. Y. City.—This fulminate is intended for needle guns which are provided with a needle designed to pierce or penetrate the fulminate. It is composed of chloride of potassium, sulphur, charcoal, niter, chlorate of potash, antimony, and mucilage or gum in about equal proportions, the office of the gum being to bind the other ingredients together so that they may be formed into elongated, conical, or other shapes, to insert into the rear of the cartridge. The inventors of this composition claim that it is certain fire, leaves no residuum, and is not affected by moisture.

ROLLER COTTON GIN.—J. W. Kokemuller, Bluffton, S. C.—This invention is an improvement on the old roller cotton gin and is designed to obviate the difficulty attending the springing of the rollers, a contingency due to the necessary small diameter of the latter. This difficulty, in connection with that of gearing the rollers so that they may be readily driven, renders the operation of the old roller gin very slow; it performs its work perfectly though slowly, and has not as yet been superceeded by any gin for thorough work, although other gins have operated more rapidly, but with more or less injury to the stock or fiber. This improvement admits of the rollers being rapidly rotated and without the possibility of their springing and without in the least injuring the fiber or stock.

LUBRICATOR.—Edwin Faull, Maldon, Australia.—The invention has for its object the obtaining a more certain and continuous supply of lubricating matter to the parts of machinery subject to friction and for this purpose I make the reservoir containing the oil or lubricating matter of glass or other transparent material, having a glass or other transparent conduit pipe through which I place a supply cock for the purpose of regulating the supply having a nut at one extremity, for the purpose of permanently adjusting it; below this regulating supply cock another similar one may be placed if desired for the purpose of cutting off the supply when needed, thus dispensing with the necessity of closing and readjusting the first mentioned cock. The coupling between the glass conduit pipe and the metal should be elastic to allow for the unequal expansion of the glass and metal.

HEMMER FOR SEWING MACHINES.—James R. Haggerty, Hillsdale, Mich.—This invention relates to an improved hemmer for sewing machines and consists in a hemmer having hinged edge turners.

BRICK MACHINE.—J. W. Crary, Pensacola, Fla.—This invention possesses a novel arrangement for crushing or pulverizing the clay, consisting of the rollers operating with different degrees of speed, whereby a combined crushing and grinding action is obtained which renders the operation of the rollers very efficient.

MOLD FOR CASTING LEAD.—S. E. Chubbuck, Roxbury, Mass.—This invention consists in suspending the box or mold on pivots and applying gearing to the same in such a manner that the box or mold with the plate it contains may be readily united and the plate discharged with the greatest facility.

SECRETARY BEDSTEAD.—J. F. C. Pickhardt, New York City.—This invention relates to a new and improved bedstead of that class which admits when not required for use, of being adjusted or folded up so as to resemble a secretary or book case, and when required for use, of being turned down and adjusted so as to serve equally as good a purpose as an ordinary bedstead. The invention consists in a peculiar construction and arrangement of parts whereby the bedstead is allowed to fold compactly within a case and still be of ample size even when designed to be occupied by two persons—such as are commonly termed double bedsteads—and the case also besides being ornamental, or chaste and neat, is capable of being made of quite moderate proportions not larger than an ordinary low secretary with book-case on top.

POWER FOR SEWING MACHINES.—L. Curdts, New York City.—This relates to a new and useful adaptation of a clock arrangement, with a spring or weight as a power to the driving of sewing machines. The invention consists in an improved means for controlling the power, a substitute for the pendulum, and also in an improved stop mechanism, and a brake, whereby complete control is obtained over the motion, its stoppings and starting and the regulating of its speed being at the will of the operator.

MILK COOLER.—N. C. Burnap, Argosville, N. Y.—This invention relates to an improved milk cooler and consists in a receptacle inserted in the middle of the milk can to receive ice or cold water. It is intended to be used while the milk is straining which is thus cooled by the time the can is filled.

METHOD OF HANGING SWORDS.—Virgil Price, New York City.—This invention consists in securing the plate by which the scabbard is fastened to the belt, by means of a chain, so as to make a flexible attachment which does away with all the straps used to hang officers' swords; it being as simple as the frog attachment which is generally used for fancy swords by free-masons and others.

RAILROAD SWITCH —Joseph P. White, Savannah, Ga.—This invention relates to a new manner of arranging a self-setting railroad switch, which is so constructed that the engineer on the locomotive can set the switch, while the train is moving at full speed so that it will enter the required track.

VISE.—J. C. Tate, New London, Conn.—The object of the invention is to provide a vise which can be used for general work in the machine shop.

COTTON CULTIVATOR.—Jesse Adams, Clarksville, Texas.—In this invention the hoes are made adjustable on a revolving shaft, bearing on an adjustable frame.

APPARATUS FOR EXTRACTING ESSENCES.—James C. Walker, Waco Village, Texas.—In this invention the extract is made under pressure, and bottled up, the whole process taking place in an air-tight apparatus, by which all the aroma is saved.

COMBINED PLANTER AND CULTIVATOR.—Jesse Adams, Clarksville, Texas. —The object of this invention is to produce a simple, practical, combined planter and corn cultivator, which shall be easily adjusted and operated, and shall be cheap and durable.

RAILROAD CAR HEATERS.—W. G. Kendrick, Wilmington, Del.—This invention consists in a heating apparatus suspended under the center of a car floor, in combination with certain pipes opening into the outer air, and registers to receive the air entering through and under the car doors, for the purpose of heating the same, and diffusing it when heated through the car, as hereinafter fully described.

SHIP VIAMETER.—James C. Walker, Waco Village, Texas —In this invention a tube is attached to the hull of the vessel, at or below the water line, through which a current of water is forced by the motion of the ship. At a convenient point in the tube a wheel is placed so as to be rotated by the current, and an indicator in some part of the ship, connected with the axle of the wheel, records the number of revolutions of the wheel, and in consequence the distance traversed by the ship in any given time.

TAILOR'S MEASURING INSTRUMENT.—J. M. Krider, Madison, Va.—The instrument has an elastic metallic strip and strap, which encircle the body under the arm pits. Upon the bar is a cross piece, which ranges vertically in front of the left arm; a movable stud slips upon the metallic strip, and is adjustable thereon, and a second metallic strip is adjustable on the movable stud. There are four points of departure on the instrument thus arranged from which measures are made and noted; and the instrument being detached and laid upon the cloth, the distances obtained are laid down from the points of departure as before, giving on the plane of the cloth the points by which to scribe and cut to fit the figure.

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 advertisemets at 50 cents a line, under the head of "Business and Personal."

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

J. E., of N. Y.—You are right in supposing that steam is invisible. What is seen issuing from an exhaust, or above the surface of boiling water, is spray, or water in a finely divided state. There is steam present in both of these cases but it cannot be seen. . . We understand that wood in seasoning contracts in every direction and hence that a seasoned tenon driven int green wood will become loose as the green wood seasons.

A. G., of Wis., would like to be informed how the column of air in front of a bullet can be practically exhausted, so as to secure the advantages claimed by Mr. Pardee on page 67. . . . The percussion powder of metallic cartridges is the same as that used for caps, fulminate of mercury.

T. S., of Idaho, destroys gophers by smoking them out. He takes a length of stove pipe, places near one end of it a grating, and provides the other end with a closely fitting cover with a hole in it to admit the nozzle of a hand bellows. He sets the pipe on the gopher hole banking it round with earth, puts rags and sulphur on the grating, sets them on fire, fits on the cover, and blows with his bellows. Whatever is in the hole never troubles any one afterwards.

N. T., of Pa.—The substance used to give the crystalline appearance on the somewhat fashionable wedding note paper, is sugar of lead. This paper is a good example of the folly of fashion.

H. W., of Pa.—Wood which has become creosoted becomes denser and tougher. The reason is that the resinous matter of the creosote fills the pores of the wood, and cements the fibers more firmly together The unpleasant smell of creosote, however, would render the process inapplicable for wood which is to be used in doors.

J. K., of Mich.—Turbines belong to the class of reaction wheels and yield more of the force of falling water than any other kind of water wheels. . . . Rubber cloth is suitable for small bellows and in fact is much used for blowing apparatus. We suggest to you to examine the bellows of accordeons and melodeons.

J. B. W., of N. H.—Most of the silver plating at present is done by the battery, and you will find that process quite suitable for your purpose.

J. H. C., of N. Y.—The Lawrence Scientific School, (Harvard), Sheffield Scientific School (Yale), and the School of Mines (Columbia) and The Polytechnic, Troy, N. Y. are institutions of the highest grade, and of such equal merit, that convenience, expense etc., might be sufficient reasons for choice between them.

R. G. C., of N. Y.—You need have no fear of the aerated bread on account of the conspicuous part which carbonic acid plays in its manufacture. The pores of the bread contain some of the acid, but its presence is in no way harmful.

C. E. F., of N. Y.—I think your reply to "W. J. B. of Mich," in No. 6 current volume was enormous; for since one cubic foot of water weighs 62.5 lbs., a column of water of one inch sectional area and one foot high would weigh 0. 434 lbs., and one of five square inch sectional area and four feet high would weigh 8·68 lbs., instead of 42 60 lbs. as you state. . . Our intention was to give the weight of a column of water five inches diameter and four feet high. We copied from a manual for mechanics, instead of making the calculation, or of directing the inquirer to the professed authority. Whether they are right or wrong can be easily ascertained by investigation. The full theoretical effect of five square inches of water under four feet head is 0. 25 horse power; the practical effect will vary from 80 to 90 per cent according to the kind of wheel used.

P. H., of Pa., wants the difference between one square mile and one mile square demonstrated. What demonstration is needed? A mile square and a square mile are identical; there can be no argument on this question. When you talk about two, three, four, or more square miles or miles square you change the subject entirely. These paltry arithmetical, or rather lingual puzzles are unworthy the time bestowed upon them. Our time and that of our correspondents can be better employed than on their solution or statement.

H. B. B., Jr., of Manchester, Eng., sends a diagram representing a pinion (driver) A, engaging with a gear wheel, on the shaft of which is another pinion, B, engaging with a gear wheel on a third shaft, and asks if it is not necessary that the pinion, A, and its wheel shall be as strong in pitch and width of face as the pinion, B, and its wheel on the third shaft. We reply that the last wheel—on the third shaft—and the pinion which engages with it should be as much stronger as the last wheel moves slower than the first. Example: If A makes forty revolutions and the third wheel ten, then the third wheel should have four times the strength of A, because the strain on it is as four to one.

C. S. W., of N. H. says:—"In your reply to 'R. S. S. of Ga.' in your issue of Aug. 10th referring to a pipe carrying wind from fan to cupola you say that 'when elbows are used they should have four times the sectional area of the straight pipe and asks.' Does this apply to water pipes as attached to force pumps for fire purposes?" The same law applies to your pumps as to the fan blower, if your pump is centrifugal. The angles will impede the current of the water. If your pump is a cylinder and piston the obstruction will be the same, but it is then simply a question of power to overcome the resistance and the strength of the pipes to sustain it.

H. W. H., of N. Y.—We know of no darker colored bronze than Copper, 85; Tin, 10; Zinc, 5.

J. M., of Mich.—We have as yet seen no official list of the awards at the Paris Exposition' Soon as the report is made it will be published.

C. C., of Miss., has a boiler 40 inches diameter, 26 feet long, with two 15-inch flues, chimney 24 feet high and 24 inches diameter. The grate of the furnace is about 18 inches from the boiler, and the passage for the smoke under the boiler is from four to six inches high. The mill is located in a swamp and no good draft can be obtained. Our correspondent asks the reason why, and inquires further for a cement to stop up blow holes in a cylinder. Reply. If you burn wood your grate is too near the boiler. It should be 30 inches from it. The under flue of boiler is of sufficient area, but if it has no pits it will choke. Your chimney should be at least 40 feet high. The boiler flues are sufficient for 18 feet of grate surface. The draft may be further increased by turning the exhaust steam into the smoke stack. Run it into the stack, turn it up and reduce the end aperture of the pipe to say about two inches diameter. We know of no cement for closing blow holes in steam cylinders. Your best way would be to drill and tap in a plug with a cement of red and white lead and linseed oil.

J. S. McC., of Ohio.—F. S. of Me., says that small cores for cast iron made of charcoal are very effective. He has used them three-sixteenths of an inch square and four inches long with success.

Business and Personal.

The charge for insertion under this head is 50 cents a line.

Pattern Letters and Figures to put on patterns for castings, etc., are made by Knight Brothers, Seneca Falls, N. Y.

G. M. Danforth & Co., Inventors' Exchange, see advertisment.

New invention. A potato digger which puts the potatoes in a bag and the small ones apart in a box. The original was made by a blacksmith at very little cost, which will be saved by the work on three acres of potatoes. Patent rights sell: C. G. Grabo. Address care of Schober Bro., Detroit, Mich.

Wanted. A man to bore an artesian well. Address, J. C. Burruss, Carrollton, Green Co, Ill, Stating price, etc.

Manufacturers of glass-ware for the use of chemists and druggists, will please send their address and circulars to H. B. Bond, Houma Post-office, Parish of Terrebonne, Louisiana.

E. Lunsford, Woodbury, Ind., wishes an agency to sell new and good inventions.

Rare chance. Patent rubber tips and fasteners for billiard cues, no chalk "miss cues" or torn cloth. Part or whole of right for sale. E. B. Stocking, Binghamton, N. Y.

EXTENSION NOTICES.

Henry Waterman, of Hudson, N. Y., having petitioned for the extension of a patent granted to him the 15th day of November, 1853, and reissued the 9th day of July, 1867, for an improvement in safety valves for locomotive engines, for seven years from the expiration of said patent, which takes place on the 15th day of November, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 28th day of October next.

Lanra S. White, administratrix of Jonathan White, deceased, of Antrim, N. H., having petitioned for the extension of a patent granted to the said Jonathan White, the 15th day of November, 1853, for an improvement in uniting shovel blades to handle straps, for seven years from the expiration of said patent, which takes place on the 15th day of November, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 28th day of October next.

Robert Sinclair, Jr., and Richard F. Maynard, of Baltimore, Md., having petitioned for the extension of a patent granted to them on the 15th day of November, 1853, for an improvement in feed rollers of straw cutters, for seven years from the expiration of said patent, which takes place on the 15th day of November, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 28th day of October next.

William B. Bates, administrator of the estate of George Wellman, deceased, of Mansfield, Mass., having petitioned for the extension of a patent granted to the said George Wellman the 6th day of December, 1853, and reissued the 30th day of July, 1867, for an improvement in stripping top flats for carding machines, for seven years from the expiration of said patent, which takes place on the 6th day of December, 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 11th day of November next.

William B. Bates, administrator of the estate of George Wellman, deceased, of Mansfield, Mass., having petitioned for the extension of a patent granted to the said George Wellman the 18th day of March, 1856, antedated the 25th day of November, 1853, and reissued the 30th day of July, 1867, for an improvement in stripping top flats in carding machines, for seven years from the expiration of said patent, which takes place on the 25th day of November 1867, it is ordered that the said petition be heard at the Patent Office on Monday, the 11th day of November next.

NEW PUBLICATIONS.

A NARRATIVE OF THE CAMPAIGN IN THE SHENANDOAH VALLEY IN 1861, by Robert Patterson, late Major General of Volunteers. Fifth Thousand. Philadelphia: John Campbell.

In this volume General Patterson, while vindicating himself from the aspersions cast upon him for his management of the forces under his command at the time of the first Bull Run battle, has added a very important chapter to the history of our late war. It is a compilation of official reports and testimony, with just sufficient narrative by the author to give coherency and continuity to the account. A very accurate plan of the country covered by the operations of the first campaign of the war accompanies the volume. Gen. Patterson is one of the wealthiest and most extensive manufacturers in Pennsylvania.

A POPULAR TREATISE ON GEMS IN REFERENCE TO THEIR SCIENTIFIC VALUE: A Guide for the Teacher of the Natural Sciences, the Lapidary, Jeweler, and Amateur. By Dr. L. Feuchtwanger. Third Edition. Published by the Author, 55 Cedar street, New York.

This edition of Dr Feuchtwanger's valuable work is greatly improved by the addition of an Appendix containing a chronological list of works on gems and minerals since the fifteenth century, a table of the characteristics of gems, and the present value of diamonds, precious stones, corals, and pearls. It has also a very life-like engraving of the author and a series of colored plates representing most of the precious stones and ornamental minerals. The treatise is filled with interesting facts.

NED NEVINS, THE NEWSBOY. By Henry Morgan. Fifteenth Thousand. Illustrated. Boston: Lee & Shepard.

This is the story of a Boston newsboy whose checkered career may be a copy of many others. The popularity of the story is sufficiently attested in the fact that it has reached its fifteenth thousand.

ELEMENTS OF CHEMISTRY, THEORETICAL AND PRACTICAL. By William Allen Miller, M. D., LL. D., etc. Part II. Inorganic Chemistry. From Third London Edition, with Additions. New York: John Wiley, 535 Broadway. pp. 805. Price $7.50.

Dr. Miller in this edition of his Chemistry adopts the atomic notation, and presents the most recent views of the leaders of the science. The republication of this great work at the present time is very opportune for American students. We have needed just such an authentic and reliable version of modern chemistry. It is the only large treatise extant which fully and fairly can meet the needs of American science. We understand the third and final volume, on Organic Chemistry, will be published in September.