

Spiegeleisen), is melted and run into the decarburized iron. At this excessive temperature—not less than five thousand degrees—the oxygen and other impurities that make the iron red-short, come out of it with great commotion, and enter into the carbon and manganese thus added, forming an intense flame and copious slag. A part of the carbon combines with the iron, thus producing steel. All this is the work of a moment, and the thorough reaction is due to the excessive temperature. The oxygen which is removed by the carbon (or chiefly by the manganese), was produced by the oxidation of some of the iron, by the blast of air. This, and the sulphur, and some other impurities, now removed by the manganese, were what made the product redshort before recarburization. The steel is now cast into ingots, which are malleable at a high heat.

But Mr. Bessemer's troubles did not end here. The product was still uncertain, though often uniform and excellent. Some subtle impurity was still lurking in some obscure corner—now appearing and now retiring. To find it, Mr. Bessemer put every iron and material employed, through a costly and thorough course of chemical analysis, and so discovered phosphorus to be the arch-enemy. And to this day, irons containing above two hundredths of one per centum of phosphorus cannot be employed to advantage. Experiments to remove or neutralize it are in progress, and greater obstacles than this have been overcome. Mr. Bessemer also determined the amounts of other materials—silicium, sulphur, etc.—that affected his process, and with Mr. Mushet's assistance (satisfactorily acknowledged) has presented to the world, not merely a theory, but a perfected process and adequate machinery, for carrying it out. It will thus be observed, that however greatly the public is indebted to Mr. Bessemer's inventive powers, it owes still more to his indomitable pluck.—*Troy Times.*

BURYING ALIVE—EXPERIMENTS WITH VESTER'S PATENT BURIAL CASE.

The idea of being buried alive is one that fills the mind with horror, and the accounts which have from time to time appeared in the public prints, describing such occurrences, have always attracted the attention of a sensation-loving public. It may safely be assumed, however, that a very large proportion of the stories of the exhumation of bodies which gave signs of having moved in their coffins, are rehashes from old romances, or have their origin in the awkwardness of those who were intrusted with the interment of the remains; the indications of convulsive efforts to escape death; and other sensational details, being purely imaginative. The chances at this age in a civilized community, observing the decent rites of burial, that living bodies should be interred by mistake, is so small, that it is practically unworthy of consideration. In Germany it has long been the practice in many places to deposit the dead in mortuary houses erected for that purpose, until the commencement of decomposition shall have absolutely proved the death of the bodies deposited in them. Our editorial letter from Strasbourg, page 202, vol. XVII, contains the following description of this practice, as we saw it at Frankfort-on-the-Main, and at Munich:

"In a building at the entrance to the cemetery, the bodies are placed upon iron cots in a recumbent or half-sitting posture, and upon the wrists are fastened rings, which connect with wires and alarm bells hung in the adjoining rooms of the watchman. Each cot is numbered to correspond with the number fastened under the bell, so that in case there should be the slightest motion of the body an instant alarm would summon the watch to the spot. In an adjoining room there is a bed carefully prepared, a bath-tub, electric apparatus, and restorative medicines to be employed in cases of resurrection.

"At the time of my visit I counted the bodies of eight infants, and eight adults, all serenely reposing in a profusion of flowers, and watchmen were sitting in solemn silence awaiting the click of the bell. In Frankfort not a single case of resurrection has yet occurred, but at Munich they had a case many years ago; so they say."

At Wentz, the surgeon, during a course of forty-five years, had only one alarm. It occurred from the body of an old man whose abdomen having subsided from the discharge of a large quantity of fluid, allowed the arms to fall lengthwise beside the body.

There are numerous and generally reliable tests for determining whether death has actually occurred previous to the commencement of decay, which are familiar to most people. Granted that in extremely rare cases, it is possible these should fail, it is difficult to perceive how the device of Mr. Vester is an improvement upon the German method. It consists of an ordinary burial case or coffin with a tube at the head, containing a ladder and a cord to enable the resuscitated individual to return to the upper air, provided he has strength to do it, which we think would in most cases be doubtful.

An experiment with this apparatus was made by the inventor on the 1st instant, at Newark, New Jersey, in the presence of a large number of people, and is thus described in the *New York Tribune*:

"At the hour named the inventor made his appearance and laid himself in the coffin, the lid of which was fastened by four screws, two on each side. This coffin was of the ordinary description, with the exception of a wire screen immediately at its head. The coffin was then ornamented with a cross and a quantity of leaves and white flowers, and the whole—man, coffin, cross, and flowers—lowered by straps into the grave. A large box, rather larger than the customary ones, with a hole two feet square at the head, directly over the coffin screen, was then lowered into the grave. Another box, about two feet in width and seven feet high, was placed in an

upright position, one end fitting exactly into the square hole in the coffin box. The earth was thrown upon the box, around the upright, and all was ready for the test. In the upright box was a flight of stairs, by which the ascent to the "upper crust" was to be made. One curious individual looked down the upright, and, seeing the inventor wiping the perspiration from his brow, asked if it was "warm down there?" He narrowly escaped being put from the grounds by the excited Germans present. About an hour after the "burial," Mr. Vester pulled himself from his coffin by means of ropes attached to the lower portion of the upright, and ascending to the stairs, again appeared upon the earth. He was greeted with kisses and other manifestations of warm approval by a number of his ardent admirers. The exhibition passed off very successfully. Those who witnessed it are divided in opinion as to the utility of the invention. The inventor proposes to place a sort of alarm upon the upright, that the person interred can attract the attention of parties in case assistance is need, and also intends to place shelves in the upright, within reach of the party buried, on which stimulants may be placed. The invention is claimed to be of inestimable service where parties have been interred while in a trance, as well as to relieve persons of the sorrowful thought that perhaps their friends have been buried alive."

MANUFACTURING, MINING, AND RAILROAD ITEMS.

A FACT OF IMPORTANCE TO TOURISTS.—At this time, when many persons are about to make a European tour, it may be interesting to learn that so great are the facilities of communication between London and Switzerland, that a traveler leaving Charing Cross Station at 8:30 A.M., can arrive at Geneva on the following morning.

ILLINOIS AND ST. LOUIS BRIDGE.—The total cost of the great Illinois and St. Louis Bridge, including structure, land, and approaches, is set down at \$4,500,000. The engineer-in-chief estimates that the work will be completed in 1870, or 1871, and that in the last named year the receipts of the bridge will be \$1,136,260.

THE CANARIE RAILROAD.—The Canarie Railroad Company contemplate an extension of their track northwesterly to Greenpoint; thus having two water fronts, and furnishing facilities for travel from East New York to Greenpoint and the upper part of Manhattan Island.

THE MONCRIEFF GUN-CARRIAGE.—Experiments were conducted last month at Shoeburyness, for the purpose of testing the Moncrieff Gun Carriage, the construction and operation of which were fully described in a late number. The gun mounted was the ordinary 7-inch land service, fired first with 14 lb. powder and 115 lb. shot, and afterward with full battery charge of 22 lb. powder and 115 lb. shot. The result was very successful.

FRENCH RAILROADS.—According to official documents, there are at present in working order in France 9,666 miles of railroad, and it is proposed to have 14,699 miles completed before 1878. The cost of construction per mile is estimated at about \$145,000 gold.

SLEEPING CARS FOR EUROPEAN RAILROADS.—An American firm has sent an agent to Europe to negotiate with various railroad companies for the introduction of sleeping cars upon their lines. The firm offers to build the carriages and hand them over to the companies on condition of being permitted to collect extra fares, for the accommodation thus furnished, from such travelers as may avail themselves thereof. The adventure will likely prove a success on the long continental lines.

OUR STREET DEPARTMENT.—The President of the Citizen's Association charges the Street Commissioner, in a lengthy letter, with expending \$40,000 per annum for blank books and stationery and \$30,000 for repairing roads and avenues contrary to section 38 of the city charter, which provides that no expenditure exceeding \$250 shall be made except in pursuance of contracts. There would seem to be a necessity of mending ways in a metaphorical as well as in a literal sense.

Recent American and Foreign Patents.

Under this heading we shall continue weekly to give of some of the more important recent American and Foreign Patents.

COMBINED SHEARS AND BOLT AND RIVET CUTTER.—Thomas Smith, California, Mo.—The object of this invention is to furnish a neat and convenient tool for the use of persons who work in sheet metal, blacksmiths.

SELF-ACTING WAGON BRAKE.—Thomas Smith, California, Mo.—In this invention the friction blocks are adjustable in order to accommodate them to different wheels, and are directly attached to and supported by the springs of the brake. The apparatus is also made adjustable to horses of different sizes.

CULTIVATOR.—D. McNeely and C. J. Cady, Spurgeon, Ind.—This invention has for its object to produce a cultivator which will be convenient and effective for plowing corn, cotton, tobacco, potatoes, and other vegetables, and which can be readily and easily adjusted for shallow or deep plowing, as circumstances may require.

CHURN.—J. W. Thompson, Bureau Junction, Ill.—This invention relates to that class of churns in which the dasher has four motions, viz: up, down, right, and left, and consists in effecting such motions by means of a new and greatly simplified device, which can be attached to any churn at a trifling expense, and which is convenient and easy of operation.

HAY FORK.—C. S. Ambruster, Woodstown, N. J.—The object of this invention is to provide a neat, cheap, and convenient hay fork, by which the hay can be grasped securely, and firmly held, while being elevated, and can be instantly released when arriving at the place where it is desired to deposit it.

POTATO DIGGER AND SEPARATOR.—Wm. Green, Holly, Mich.—In this invention, a new and improved device is employed for separating the vines from the potatoes, whereby the work is more rapidly and effectually accomplished than in other machines, and in connection with this, a new apparatus is used for adjusting the working parts of the machine, and throwing them into or out of gear.

COMPOSITION FOR ROOFING.—Benjamin Stephens, Wheeling, W. Va.—This invention is an improved composition of matter for roofing which is of such a nature, that it will prevent the paper from cracking, and will form a fire-proof and water-proof covering for the building.

SELF-FEEDING ROD MACHINE.—Frank Douglas, Norwich, Conn.—In this invention, the knives which reduce the stick to a round rod, are so arranged that one of them scores directly into the stick, and, at the same time, draws it along and feeds it to the cutter, while the others shave off the corners of the rod and round it to the proper size. A new guide plate is also employed together with a new device for holding the rods when they shall have passed through the guide plate.

FLOUR BOLT.—H. N. Shultz, Sabillasville, Md.—The object of this invention is to provide a simple and inexpensive device which can be used in connection with any form of flour bolt, and applied to the old ones now in use, and by which the bolt can be jarred or subjected to a series of sudden shocks during each revolution, so as thereby to be cleansed and kept free from the accumulation of flour. The device is so arranged that it can be readily adjusted to impart any required degree of violence to the shocks, or to allow the bolt to run smoothly, if desired.

BASE BALL TALLY BOARD.—Thos. L. Canary, Brownsburg, Ind.—This invention relates to the game of base ball, and consists in an arrangement of pins and in the use of colored balls thereon, and in a slate or other equiva-

ent marking surface in combination therewith, whereby the game of the contending sides may be accurately kept, as well as that of each individual player.

MACHINERY FOR TURNING, CROSSING, AND FINISHING BARRELS.—Saxton J. Arnold and Amos F. Clark, Raymondville, N. Y.—This invention relates to improvements in machinery for turning, crossing, and finishing barrels, and consists of a device for holding the barrel in a convenient position for the performance of these operations.

SHUTTLES.—Edward Baggett, Fall River, Mass.—This invention consists in a secondary spring interposed between the spring commonly used, to take the wear off from the shoulder of the spindle, and in constructing the shoulder of the spindle in a form adapted to the application of the said secondary spring.

RAILROAD CHAIRS.—Samuel T. Alexander, Pittsburg, Pa.—This invention consists in a bed plate which is to be fastened to the tie, provided with grooves for seating clamping pieces which support the rail and with lugs for preventing the said clamping pieces from being thrown out of the grooves wherein they rest; and also in the said clamping pieces.

CHECK VALVE FOR PUMPS.—Wm. R. Malone, Mason, W. Va.—This invention consists in providing a hollow tapered seat having a downward projection for supporting the valve stem, which is provided with jam nuts to regulate the amount of lifting of the valve, which is seated upon the top of the valve seat, the latter being arranged to be fitted into a box or cylinder and secured in the well tube at any desired point.

STOVE DRUM.—G. S. Walker, Erie, Pa.—This invention consists of a hollow radiating cylinder or drum made of sheet metal and suitably arranged to be applied to a stove in any desired manner, and having pipe connections for securing and discharging the product of combustion, and provided with an internal apparatus for conveying the said product around and exposing it to the shell of the drum in a manner to extract the heat therefrom.

ADHESIVE PLASTERS.—John Lynch, Columbia, S. C.—This invention consists in attaching to the backs of such plasters one or more springs, stays, or flexible rods or bows, which not only prevent the plaster from crumpling or wrinkling, but serve as additional support to the muscles.

CARRIAGE COUPLING.—Alfred S. Johnson, Waupun, Wis.—This invention relates to an improvement in the method of coupling the hubs of buggies or the poles of carriages to the

PUNCH FOR BELTS AND OTHER PURPOSES.—David M. Weston, Boston, Mass.—This invention consists of an improved construction of the jaws of a common hand punch, whereby the distance of the hole to be punched from the edge of the material may be readily gauged, and the material disengaged from the punch after the hole has been formed; also, an improved arrangement of the spring for opening the jaws.

HAND LOOM.—Edwin Lowe, Burrows, Ind.—This invention consists in connecting to the lay, pawls suitably arranged to give intermittent rotary motion to a tappet shaft, which in turn operates the treadles and picker staves.

GATE.—J. H. McKnight, Oakland, Mich.—This invention has for its object to furnish an improved gate, simple in construction, strong, and durable, and which may be conveniently operated to open or close it, without its being necessary to get out of the carriage for that purpose.

ORGAN PIPE.—Geo. H. Brock, Huntington, N. Y.—This invention relates to a new manner of constructing organ pipes, and consists in making each pipe of a curved plate, held between two disks. In this manner a more substantial, solid, effectual, and cheaper pipe is obtained than could ever be produced according to the old plan now in use.

SEGAR PIPE.—Henry E. Doster, Bethlehem, Pa.—This invention relates to an improved method of smoking tobacco, whereby all the advantages of a fine segar may be enjoyed without incurring the expense, and whereby the objections to the vulgar pipe are obviated.

CHURN.—N. P. Chaney, Potsdam, N. Y.—This invention relates to improvements in churns, the object of which is to provide a churn having beaters provided with air passages to convey the air down into the cream while it is being agitated, and scrapers for scraping the cream off from the underside of the cover, all arranged in such a manner as to scrape it away from around the opening for the shaft, and thereby preventing it from oozing up through the cover around the shaft.

SLEIGH.—Lewis A. Spickler, Clear Spring, Ind.—This invention consists in the location of the point of attachment of the shafts with the sleigh behind the front or bent part of the runners and the metal plate, permitting this improved location of the same.

RAILROAD CAR SEAT.—F. F. Wagner, Harrisburg, Pa.—This invention consists chiefly in attaching projecting lugs to the axles, by which the swinging arms, holding the chair backs, are secured to the seat frame, said lugs being attached to that side of each axle which is opposite to that from which the arms project, so that if the arms are turned down, the lugs will project from above the axle, and will raise the seat on that side on which such arms are folded down.

DISTILLING APPARATUS.—Duby Green, New York city.—This invention relates to a new apparatus for distilling alcohol directly from the mash, and consists in a new construction of the boiling apparatus, which contains six chambers, one above the other, all communicating with each other, and all producing vapors from the mash contained in them; the lowest chambers, which have the weakest mash, receiving the greatest amount of heat, and the highest the least. The invention also consists in the arrangement of a new stirring device, which receives its heat from the vapors that arise from the boiling apparatus, while heretofore direct steam had to be used for that purpose.

VENTILATING SASH OPENER.—W. C. Stickney, and James McGee, Steubenville, Ohio.—This invention has for its especial object to furnish an improved device for opening and closing ventilating sash doors, or transoms of railroad cars, which shall be simple in construction, easily operated, and which will hold the sash securely in any position to which it may be adjusted.

CIRCULAR SAW CARRIAGE.—John Orm, Paducah, Ky.—This invention has for its object to improve the construction of the carriages of circular saw-mills, so as to make them more convenient and effective in operation.

LIFE AND SURF BOATS.—John R. Grace, Brooklyn, N. Y.—This invention has for its object to improve the construction of the improved and surf boat, patented by the same inventor, March 6th, 1860, and numbered 27,362, so as to make it more convenient and safer in use.

VELOCIPED.—Andrew Christian, New York city.—This invention has for its object the construction of a velocipede, in such manner that the axle will always be under complete control of the operator, the dead point being readily and completely overcome. The invention consists in so connecting the two operating levers with the connecting rod of the crank, that the dead point of one will readily be overcome by the movement of the other.

WATER WHEEL.—Joseph Hathaway, Woodstock, Vt.—This invention relates to a new and improved water wheel, of that class which is attached to a vertical shaft, and works within a cylindrical case, and has an internal discharge.

CORN PLANTER.—S. O. Campbell, Leavenworth, Kansas.—This invention relates to a new and improved corn planter, which also, when desired, may be readily converted into a cultivator. The invention consists in a novel construction and arrangement of parts whereby corn may be dropped with great accuracy, and properly deposited in the hills; the kernels or grains being left at the desired distance apart, and the device placed under the complete control of the operator or driver.

CHURN DASHER.—A. T. Bleyley, Conception, Mo.—This invention has for its object to furnish an improved churn dasher, which shall be so constructed and arranged as to bring the butter in a very short time, while at the same time it may be used for gathering the batter, and for removing it from the churn.

CHURN.—Joseph Watts, Brazil, Ind.—This invention has for its object to furnish an improved churn, which shall be simple in construction, easily operated, and effective in operation; bringing the butter quickly, developing

all the butter that may be in the milk, and separating the butter as fast as it is formed from the milk.

DENTAL INSTRUMENTS.—H. T. Fogg, San Paulo, Brazil.—The present invention relates to a new and useful improvement in dental and surgical instruments, which are so constructed with adjustable handles that the dentist or surgeon may carry a number of instruments with him with one set of handles which shall be common to all, thus greatly reducing the weight of metal he would otherwise be obliged to carry.

BALING PRESS.—Dangerfield Dunn, Lewisport, Ky.—This invention relates to a new and improved baling press, of that class in which toggle levers are employed for operating the platen. The invention consists in a peculiar manner of applying the rope to the toggles by which the latter are operated, and in a novel manner of arranging the platen with the toggles, whereby a compact and powerful baling press is obtained, and one which will admit of being used as a beater press when required.

STEAM PRESSURE AND FIRE REGULATOR.—Abram Kipp, Jr., Sing Sing, N. Y.—This invention relates to a new and improved apparatus or device for regulating the pressure of steam in boilers by automatically controlling the fires thereof; and it consists in a means connected with a damper, and communicating with the steam boiler, whereby an excess of steam pressure in the boiler is reduced by the action of the steam from the boiler upon the mechanism employed in such a manner as to partially close the damper and check the draft of the fire, and when the pressure is below the standard required, the mechanism made to open the damper and thereby increase the draft of the fire.

HANGING OR SECURING CIRCULAR SAWS TO THEIR SHAFTS.—William McDonald, Calais, Me.—This invention relates to a new and improved mode of hanging or securing circular saws to their shafts, whereby several advantages are obtained over the present or old mode.

SOFA BEDSTEAD.—M. K. Maximilian, New York city.—This invention relates to a new and improved sofa bedstead, and has for its object simplicity of construction, economy in the manufacture, and a general neat appearance of the article.

CHURN.—John Faussauer, Wheeling, Iowa.—This invention relates to a new and improved churn of that class which are provided with vertical rotating dashers and it consists in a novel construction of the dash and means for operating the same.

BROADCAST SEEDING MACHINE.—Joseph Haas, El Paso Ill.—This invention relates to a new and improved machine for sowing seed broadcast, and it consists in a peculiar construction and arrangement of parts, whereby seed may be sown broadcast in a perfect manner.

REAPING AND MOWING MACHINE.—K. H. C. Preston, Manlius, N. Y.—This invention relates to certain new and useful improvements in reaping and mowing machines, and consists, 1st, in a novel and improved arrangement of driving mechanism, whereby spur gearing of moderate dimensions may be used and arranged in a very compact way. The invention consists, 2d, in a wooden strip or connection interposed between the sickle and the crank, and which drives the same for the purpose of ensuring ease of motion, preventing wear and tear and derangement of the working parts connected therewith. The invention consists, 3d, in a novel and improved means for throwing the sickle driving mechanism in and out of gear. The invention consists, 4th, in an improved pivot for the connecting rod, whereby strength and durability are obtained with ease of motion and diminution of friction. The invention consists, finally, in a novel and improved manner of attaching and adjusting the draft fall for the purpose of raising and lowering the points of the fingers or guards, as circumstances may require.

ANIMAL TRAP.—Alexander Campbell, Oxford, Ind.—This invention consists in a platform suspended centrally in respect of its length, or on a pit, but above the center vertically, so that it will return to its normal position by the action of gravitation, and provided with a latch projecting downward from the center of the platform to hold it in position until the animal, approaching the bait near the center of the platform, steps on a hinged plate connected with the latch, disengaging it, when the weight of the animal causes the end of the platform he is on to swing downward, delivering him into the pit.

TOOL FOR CUTTING OR SLITTING THIN BOARDS.—John Langham, Jr., Philadelphia, Pa.—This invention consists of a cutter or knife secured vertically to a hinged holder which is suspended on a sliding stock arranged in ways resting at each end upon suitable supports, which may be secured to a bench so as to maintain the said ways sufficiently above the bench to admit the board to be cut to be passed under the same in front of the cutter, which, being pushed forward by the operator will sever the board. A spring is connected to the stock of the cutter to retract it.

ASBESTOS FELT.—H. W. Johns, New York city.—This invention consists of sheeting composed of asbestos and various kinds of felted and pulped water. It is designed for roofing and sheathing purposes and provides a cheap and indestructible article for the purpose.

DRAFT EQUALIZING DOUBLE TREE.—George A. Mesher, Champlain, N. Y.—The object of this invention is to enable two horses of unequal strength or energy to be worked together with the best results.

ADVERTISING BULLETIN FRAME.—Wm. P. Brown, Watertown, N. Y.—The object of this invention is to provide a convenient and inexpensive means of publishing a number of business advertisements in the same frame. It consists of a frame constructed with several devices for the convenient insertion or removal of a number of advertisements as the firm styles, nature of business and addresses, and the like, whereby the same can be inserted and displayed permanently in some public place, and so arranged that any one of the said advertisements can be readily removed or substituted by other or different advertisements.

DOOR LOCK.—S. A. Green, Lexington, Ind.—This invention consists in the mechanism of a lock for doors. The key hole in the lock case is dispensed with and the lock rendered difficult to open without the key.

SPOKE TENONING MACHINE.—Calhoun & Collins, West Lebanon, Pa.—This invention is for the purpose of cutting the tenons of wagon-wheel spokes and consists of a simple and effective combination of mechanism for the purpose.

LAMP CHIMNEY CLEANER.—N. A. Vurgason, Brooklyn, N. Y.—The object of this invention is to provide a simple and efficient implement for cleaning the chimneys of kerosene lamps.

VANTILATED HAT.—M. S. Watkins, Mansfield, Texas.—This invention relates to a new and improved method of forming hats whereby the same are better ventilated, and conform more perfectly to, and fit more comfortably on the head of the wearer.

AXE.—J. W. Hill and R. W. Green, Bradford, Pa.—The object of this invention is to provide an axe with a separate and removable cutting edge whereby the latter may be readily removed when rendered unfit for further use from wear or other cause and a new cutting edge substituted therefor, thus saving the pole or main body of the axe.

BELTING, ETC.—Thomas Standring, Fort Richmond, N. Y.—This invention relates to a new and improved method of constructing belting, or traces, or other straps now made of leather only, or of any one material, whereby the strength of the same is greatly increased.

CONSTRUCTION OF SHEET-METAL CANS.—Conrad Seimel, Greenpoint, N. Y.—This invention relates to a new and useful improvement in the construction of sheet-metal cans, designed more especially for rolling coal oil or petroleum for export or domestic use. The invention consists in a novel and improved way of constructing the seams of the can whereby great strength is obtained with economy of manufacture.

RAKING DEVICE FOR HARVESTERS.—K. H. C. Preston, Manlius, N. Y.—This invention relates to a new and improved raking device for harvesters, and it consists of a platform constructed in the form of the section of a hollow cone, and using in connection therewith a revolving rake and beaters, constructed, arranged, and operating in such relation with the platform, whereby the cut grain may be automatically raked from the platform by very simple and economical means.

DEVICE FOR DESULPHURIZING ORES.—R. Plummer, Brooklyn, N. Y.—This invention relates to a new and improved device for desulphurizing ores, and it consists in the employment or use of a revolving retort placed in a furnace

and communicating with a flue, all being so arranged that the base metals contained in gold ores may be oxidized and the gold set free so that the latter may be amalgamated and separated from the foreign substances of the ore.

CAST IRON PIERS.—William B. Porter, Plattsmouth, Nebraska.—This invention relates to a new and useful improvement in cast iron piers for bridges, etc., etc., and it consists in casting the same in tubular sections connected together by vertical screw rods strengthened by tubes, the piers being filled with concrete.

CLOTHES WASHING MACHINE.—Joseph Osterhout, Rock Island, Ill.—This invention relates to a new and improved clothes-washing machine of that class in which corrugated rollers are employed in connection with an endless band or apron. The object of this invention is to obtain a washing machine of the kind specified which will not injure or tear the clothes and which will at the same time operate in the most efficient manner.

SULKY PLOW.—A. R. Stanley and Henry W. Ensign, Shullsburg Wis.—This invention relates to a new and improved plow of that class which are commonly termed "sulky plows." The invention consists in a new and improved means for regulating the depth of the penetration of the plow into the earth so that furrows of greater or less depth may be made if desired, and also in a novel manner of attaching the plow to the carriage and the arrangement of the same, whereby said plow may be liberated or thrown out of the ground, whenever necessary, by a very simple manipulation.

TOOL REVERSING CUTTING MACHINE.—S. D. Tripp, Lynn, Mass.—This invention relates to a new and improved machine for cutting out pure fabrics or stock, various articles which have curved sides, such, for instance, as the soles of boots and shoes, and it consists in having the stock to which the cutters are attached arranged in such a manner that in the operation of the machine, the cutters may be reversed so that reversed curves may be cut consecutively, and also the position of a cutter changed or reversed at each cut so as to admit of economy in stock, the heel of one sole being at side the or the front portion of the adjoining one.

WASHING MACHINE.—Ross and Adamson, Day's Store, Pa.—This invention relates to a new and improved method of constructing washing machines, whereby the clothing to be washed is more conveniently held upon the rubber and is more thoroughly and easily washed. It consists in a jointed clamp or holder attached to the end of an arm by staples so as to form an universal joint, said arm being so connected with a treadle as that the necessary pressure of the clothing upon the rubber in the tub is produced by the foot of the operator pressing upon the same, whereby the washing of clothes is effected without the necessity of the operator putting the hands in or the hot water or suds.

HAME FASTENER.—John Koch and Daniel Seacrist, Columbia, O.—This invention is for the purpose of connecting the lower ends of hames and for tightening the same, thus dispensing with the usual buckle and strap, or simple string or thong and supplying instead, a simple, effective, and easily operated device, by means of which harness hames may be drawn upon the collar with the requisite degree of tightness, and fastened securely thereon.

BORING TOOL.—James C. Millerd, River Point, R. I.—The object of this invention is to provide a simple and effective tool for boring out holes in castings and other iron work. It consists in general terms of a pair of steel cutters or boring plates held in a mortise or rectangular eye in the end of a metal shank and arranged at right angles to the axis of the shank, so that the said boring plates will pass in contact with each other when being set out or in by an adjusting screw.

GUNPOWDER.—G. A. Numeyer, Altenburg, Germany.—This invention relates to the improvement in the manufacture of powder for fire-arms and blasting purposes, producing an explosive powder more powerful than the ordinary powder now in use.

WAGON AXLE.—G. S. Garth, Mill Hall, Clinton, Pa.—This invention consists of two frictional bands one of which is formed with a dove-tailed annular slot, fitting upon a dove-tailed collar formed on the axle arm at the shoulder of the same. The bands are cast on the axle arm and a roof any suitable antifriction metal as brass composition or babbitt metal.

ROTARY PUMPS.—John Poppe, Greenpoint, N. Y.—This invention has for its object to simplify the construction and improve the operation of the improved rotary pump, patented by the same inventor, December 5, 1867 and numbered 71,766.

HAND MILL.—Edwin Alsop, New York city.—This invention has for its object to furnish a simple, convenient and effective hand mill which shall be so constructed and arranged that it may be used for grinding coffee, spices, grates, seeds, dye stuffs, oil and water colors, etc., and which shall not be liable to break or get out of order.

HAND SPRING FRAMES.—J. W. Burkhart, Cameron, Mo.—This invention consists in an arrangement of the spindle upon a vibrating arm pivoted to the frame of the machine at one end, and borne upon the upper end of a vibrating lever whose lower end is also pivoted to the frame, and is arranged to be adjusted with reference to the spindle arm, so as to elevate or depress the spindle, and for the purpose of tightening the belt; and it also consists in providing a double grooved pulley on an adjustable support, over which the belt from the main driving wheel passes to the multiplying wheels in such a manner that the belt in crossing itself will not wear, and so that it may be adjusted toward or from the driving wheel, also for tightening the first belt.

NEW PUBLICATIONS.

ELEMENTS OF NATURAL PHILOSOPHY. A Book for Beginners, by W. J. Kolfe and J. A. Gillet. Boston: Woodworth, Ainsworth & Co.

The above is the title of a work which, so far as general style of publication and beautiful illustration are concerned, is adapted to the purpose for which it was written. It has, however, important defects. The subject of electricity is not touched upon, notwithstanding its great importance, while the subject of sound, of less practical utility, is extended to considerable length. We notice some errors in definition also; for instance, the common balance is described on page 5 as a bar turning upon a pivot in its center, etc. The accompanying engraving represents it in the same faulty manner. In the appendix the subjects of the origin, transmutation, and conservation of force are discussed, which if not intended for the same class of pupils as the rest of the work, would have been better omitted, or the space it occupies used to supply the deficiencies of other parts of the work. If intended for beginners, we submit that it is not a subject fitted for them, even after they have acquired the limited knowledge of physical forces they are likely to obtain from a study of the former portions of the work. Other features of the book, especially its use of the French system of weights and measures, we can commend, and notwithstanding the criticisms we have felt it our duty to make, we think it perhaps as nearly perfect as most books of a similar character.

AMERICAN WATCHMAKER AND JEWELER. By J. Parish Steele. New York: Jesse Haney & Co., 119 Nassau st. Price 25 cents.

This is a convenient pocket manual, one of a series which Mr. Haney is publishing under the title of "Trade Manuals." It contains many receipts, and directions for doing work, the value of which will be better estimated and appreciated by practical watch and clock makers than by us. We commend this little manual to our readers who are interested in the subject on which it treats.

THE WINE-MAKER'S MANUAL. By Charles Remelin, author of the Wine-Dresser's Manual. Cincinnati: Robert Clarke & Co., No. 65 West Fourth street.

A small but complete and thoroughly practical work, containing full instructions for the manufacture of all domestic wines, whether from grapes or other fruits; also directions for the manufacture of cider, with full directions how to bottle and keep both wines and cider, how to manufacture imitation champagne, etc. Price \$1.25. Some remarks on the manufacture of cider extracted from this work will be found in a future number.

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 "Business and Personal."

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

W. L.—All persons who travel about to sell patent rights must obtain a Revenue License.

E. H. L., of N. Y.—When a telegraphic cable is broken earth currents are formed each way from the break. The resistance of the entire cable being known, the resistance of the two portions gives the data for calculating the position of the break. A more minute description than this, or an explanation of the methods for telegraphing in opposite directions over the same wire would necessitate the use of diagrams, and occupy much space.

T. V. J., of Mass.—The diamond cuts the glass. No electrical agency is concerned in it so far as has ever yet been shown. Many have believed however that there is a molecular change produced in the glass under the action of the diamond which makes a fissure deeper than the cutting edge of the crystal penetrates. This however has never been proved.

S. M., of N. J.—According to Bourne, the superheating surface usually given in marine engines is too large. This accords with our own experience and observation.

A. J., of Del.—We believe the first iron vessel ever constructed was a boat of 32 tons burthen, built by John Wilkinson of Broseley in Shropshire, England, to be used on the Severn River in 1787.

R. T., of Vt.—The so-called mosaic mixture is made of equal parts of tin, bismuth, and mercury. It is used for various ornamental purposes.

R. S., of Ill.—The hemp, (cannabis Indica) from which hasleesh is obtained, is supposed by many to be a variety of the common hemp, the properties of the plant being modified by growth in tropical climates.

A. R. B., of Mo.—The rails in steam railways have a convex upper surface to adapt them to the shape of the car wheels. The shape of the carwheels is such that in running around curves, the outer wheel runs on a larger circumference, and the inner one on a smaller circumference, thus preventing the wheels which are fixed to the axle from scraping. The wheels are fixed to the axle for convenience in oiling, and also so that the oil may be retained over the bearing and thus prevent heating between stations. The latter could not well be done did the wheel turn on the axle. Thus you see your friend is at least partially right, in his statement that the shape of the rail is to be referred primarily to the necessity of keeping oil over the bearings.

Business and Personal.

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

Asahel Wheeler's siccobast has peculiar merits not possessed by any other dryer for paints. Its powers are at least three-fold greater. It is perfectly neutral, causes raw linseed oil to dry quicker, harder, and with more gloss than boiled oil, and yet retains its natural elasticity, and resists the forces of the elements much longer.

Wanted—a party to furnish checkers from a hard, smooth composition. Address "Checker," care E. H. Bennet, 57 Cedar st.

Wanted—address of all parties who furnish patented household small wares to the trade. Box 1901, Boston, Mass.

For sale—a new engine, 16x24, just finished. For full description address Albertson & Douglass, New London, Conn.

Wanted—a machine for making chalk or fishing lines. Address box 3064, New York Postoffice.

Cal.—Broughton's graduating lubricators, oil cups, and gage cocks are to be had of O'Connor Bros., San Francisco, and Gillig, Mott & Co., Sacramento.

The Ready Roofing Co., by mistake, was advertised as being at No. 1, Maiden Lane. The correct address is No. 81 Maiden Lane.

Horse hay forks, etc. Send circular to Wm. Loudon, Fairfield, Iowa.

S. C. Sumner's pat. stencil frame, with movable letters, 7 Water st., Boston. A grand thing for marking any name needed on boxes, bbls, etc.

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

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.

The toy Boomerang.—See Advertisement.

A foreman for a machine shop wanted,—one who has some experience in the business and can bring good recommendations. Address D. A. Brown & Co., Fisherville, N. H.

Wanted—a master mechanic capable of superintending a locomotive and machine shop. One thoroughly accustomed to managing men required. Address box 116 New York postoffice.

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

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

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

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

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

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

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

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

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

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