

light-hearted and cheerful and fond of amusement, and particularly polite and attentive to strangers. The Spaniard, muffled within the folds of a huge cloak, appears dull and taciturn, and being naturally suspicious, he seems reserved and manifests no interest in what is going on around him.

The towns are a fitting type of the Spanish character, and many of them have stood unchanged for centuries, apparently unconscious of the stirring activities in the world beyond, but steam and electricity have at last crossed the Pyrenees, and entered these abodes of mournful desolation, and sooner or later a newer and better civilization will reanimate them into a new existence.

The people pride themselves upon their ancestral renown, and in the Basque Provinces they claim to be the descendants of Noah and Tubal. Their antiquity is well attested by the rudeness of their agriculture and the few, uncouth implements which they employ. The plow is made of the trunk of a crooked tree with a lower branch sharpened and faced with a thin sheet of iron. The trunk forms the beam, and lies obliquely between the heads of the mules or oxen, no chains or traces being used. Heavy, ugly-looking stuffed collars are placed upon the necks of the mules, in front of which there is also a strong wooden yoke, similar to an ox yoke, but instead of bows it is provided with two long wooden pins at each end, to prevent it from slipping off the neck. This yoke is then fastened to the plow beam, or to a cart tongue, by means of a long rope twisted several times around both and then passed under the fore legs of the animals; and thus equipped the plowman holds in his right hand the upturned end, which forms a handle, and with whip in the other, the soil is thinly skimmed over, and after the corn is planted, I should judge from its sickly appearance and the thick covering of grass upon the ground that it was left to take care of itself. In some portions of Spain the plow is not used to open the green sward. It is not sufficiently heavy for that purpose, but the labor is done by men working in gangs, who use a heavy, long-tined fork or spade, which is raised above the head and forced down into the turf. They all raise the implement at the same moment, and throw it violently into the ground. Women usually follow with hoes, to break the clods—truly a curious sight, and an evidence that their claim to relationship with Noah is tolerably well founded.

The topographical character of northern Spain is somewhat peculiar. It is interspersed with bare, desolate-looking mountains, scattered about in promiscuous disorder; timberless, fenceless plains, and some apparently fertile valleys; poor villages of low stone houses or huts, covered with red tile—windows often without glass; a huge church of rough stone wholly destitute of architectural symmetry and effect; peasants dressed in fancy costume; men, women, priests, donkeys, dogs, and hogs make up the picture of a country nowhere better portrayed than by their own author of Don Quixote and Gil Blas. The domestic architecture of Spain belongs to a ruder age, but the country is especially distinguished for the grandeur and magnificence of its ecclesiastical edifices, as also for its many interesting remnants of walls, towers, and fortifications of the Roman, Moorish, Gothic, and Castilian periods. For example, in the dull, decayed old city of Burgos, a place of less than twenty thousand inhabitants, there is an old cathedral erected by King St. Ferdinand in the thirteenth century, which is one of the most sublime Gothic structures to be found in Europe, and strikes the mind of every beholder with wonder and astonishment. The exterior effect of this noble building is much injured by its unfavorable location and the mean buildings which have been erected close to its side walls. Nevertheless the principal front is exceedingly fine and the spires and pinnacles rise most beautifully in richly carved open work, so that on a clear night the stars may be seen glittering through them. The interior is in the form of a Latin cross, 300 feet long, 213 feet wide, and 193 feet high. Independent of the magnificent central nave with its elaborate ornamentation and fine retablo, or high altar, there are two lateral naves and fifteen distinct chapels, some of which are as large as an ordinary church; besides these there are also extensive cloisters, and other church appurtenances, the whole containing fine tombs, sculptures, and paintings of ancient date.

At the time of our visit morning mass was being celebrated in all the chapels and also at the high altar by upward of twenty priests and groups of worshippers, chiefly women veiled in black, were kneeling upon the cold marble pavements, and so far as the outward eye could discern they were offering up devout prayer either at the shrine of the Virgin or before a carved embodiment of a suffering God.

There are several very curious relics in this cathedral which are held in high veneration by the inhabitants of Burgos. For instance they have the Christe de Burgos, a wooden image of Christ which was, according to their traditions, carved by Nicodemus, a ruler of the Jews, shortly after he and Joseph of Arimathea had buried our Lord. It was rescued from a box found floating in the sea. The hair, beard, eyelashes and thorns are real, and the image is said to sweat on Fridays, and even to bleed on certain occasions. The image is dressed up in an embroidered petticoat after the modern fashion. There is also an image of St. Cecilia, a recumbent figure, to which is ascribed the special virtue of curing aches and pains about the head. The devotees of this saint bring their tresses to the shrine under the belief that by so doing they will be cured of the headache. This faith in the virtues of a wooden saint is much more sensible than the more common one that resorts to the advertised nostrums of quacks, which flourishes no where so extensively as in our own country. Here is also to be seen the famous old trunk of Mio Cid, the legendary hero and poet of Spain, who being short of money to prosecute his campaign against Valencia resorted to the sharp financial dodge of filling the box with sand and

pledging it as so much gold to the Jews for a liberal loan of hard cash. The bones of the Cid and of his faithful heroic wife Jimena are carefully preserved in a walnut case. The dust is corked up in a beer bottle and is shown to strangers in a room fitted up as a chapel in the old town hall. In this same building is also preserved the first throne of the kings of Castile, a very common old wooden arm chair. Burgos has several very extensive monasteries and convents which are no longer permitted to flourish in Spain as in former times.

At Valladolid, formerly the capitol of Castile, once an imperial city, now much reduced in circumstances, we visited the old house where Christopher Columbus died May 20, 1506. It is a plain two-story building, stucco front the lower story striped to imitate stone, the upper painted to imitate columns with scroll work capitals. On the outside just above the door a carefully sculptured medallion has been inserted which represents the head of Columbus, a globe, anchor, scroll, and a horn of plenty. Underneath are the words "Aqui Murio Colon," "Here died Columbus." A large old building called the Audiencia, now used as a court house, contains the room where Ferdinand and Isabella were married Oct. 18, 1469. It is a very plain apartment with an altar at one end before which it is supposed that the royal couple pledged their marriage vows. Phillip the II., of Spain, was also born here in an old brick palace now deserted and opposite to this is the house once owned and occupied by the learned Gondomar, who was ambassador of Philip IV. to the Court of James I., King of England. The poor old dwelling of Cervantes, author of Don Quixote, is one of the lions of the place and bears his sculptured head. Valladolid is an interesting spot to all Americans, but very few even of those who travel in Spain ever take the trouble to visit it. Like many other Spanish cities its ancient glory has departed, and it appears to have retired from active business.

The railway between Irun and Madrid is a stupendous piece of engineering, and but for the enterprise, skill, and capital of a French company, Spain would have remained isolated, a sort of political fossil whose glory reverts to the buried centuries of the past.

There are upward of seventy tunnels on the line, of which one that pierces the Guardarama mountains is three thousand feet in length, cut through granite mixed with gneiss and other crystalline schists. The cars are comfortable and good order and regularity are as well maintained as upon European lines, in spite of the grumbling tourists and letter writers of England, who, according to John Murray, do more growling than any other traveller. S. H. W.

The Patent Office.

With the additional force of newly-appointed examiners, and the extra hours of duty performed by all the examiners, the accumulated work of the Patent Office has been nearly brought up. There are now but few classes that are more than a few weeks behind in examination, while most of the rooms are entirely cleared of back cases.

As an indication of the enterprise of the Patent Office, see the long list of patents reported in these columns every week. We received from Washington by a single mail last week official circulars of allowance of FIFTY-ONE patents, all solicited through this office.

MANUFACTURING, MINING, AND RAILROAD ITEMS.

The percentage of female operatives to males, in all the mechanical operations carried on in this city, is 37-18; in Philadelphia, 44-81.

It is stated that Mr. Winans of this country has proposed to buy the Mos cow railroad, so long in the market and recently offered to the Russo-French company by the Government. He is willing to pay 25,000,000 roubles (\$19,700,000) within a year, besides undertaking to amortize a former loan.

The Turkish government is trying to turn to account its forests and mines but the want of means of communication in the interior is an almost insurmountable barrier. So in spite of the great mineral wealth of the country no one will take the mines. One forest district in Bosnia has been however sold, and is expected to yield \$100,000.

Operations on the railroad which is being built to the summit of Mount Washington have ceased for the season. A new company have been organized fixing the capital at \$200,000. A little over a mile of the road has been constructed and it is expected that the balance will be finished next year.

Crescent employs 9,950 workpeople. The blast furnaces there turn out 130,000 tons of pig iron annually, while the forges produce 100,000 tons of wrought iron in the same period.

In the ordinary method of manufacturing alloys of copper and zinc, the copper is first melted and into the molten mass the zinc is introduced in a solid state. By a late English patent it is proposed to melt both metals, pour the melted zinc into a ladle situated near the melting furnace, and afterwards pour the melted copper into the same vessel, the mixture is then stirred, and the combination takes place, the heat which is evolved in the act, raising the sensible temperature of the alloy and preventing the undue cooling which would result but for the said evolution.

A Mr. Sibert of Staunton, Va., has, it is stated discovered a process for converting iron ore directly into cast steel by a single operation in an ordinary furnace. This gentleman is now laying a number of steel rails made by this process on the track at Staunton and we may hear more from them hereafter.

Since the closing of the war the gold field of Georgia is again engaging attention. In former years the yield of gold was so large that Government established a mint at Dahlounga, Lumpkin county, in the western part of the State. Orders have been recently given to have this mint which was necessarily closed during the war, opened again. Three large ingots of gold from the Levis gold mine valued at \$4,500 the product of one week's work at the cost of \$1,100 were recently exhibited in Washington.

The process of galvanizing iron, as practiced in one of the leading establishments of Philadelphia is as follows:—Selected sheets of iron after being trimmed to requisite size and cleaned by a weak acid solution, are rolled smooth, then dried in an oven and each sheet placed in contact with zinc. Both metals are raised to unequal heat and thus fusion is effected. The regulation of the heat necessary to metallic combination is a point of nicety and care.

The highest elevation ever reached by the railroad is a point on the Pacific road, 8,340 feet above the ocean level or more than four thousand feet higher than the summit of Mount Cenis.

Twelve hundred tons of steel rails have been substituted for iron ones on the Boston and Providence railroad. At Roxbury they have been in use for upwards of a year, at a point when one hundred and twenty trains or locomotives pass over them daily but there is as yet no perceptible wearing away. Iron rails had to be relaid seventeen times a year at the same place.

The rapid growth of the town of St. James, in Missouri, shows what railroads are now doing in developing the country. St. James, on the line of the Southwest Pacific Railroad, was laid out in 1830, but owing to the war but few buildings were erected for several years. In 1856 the population amounted to about 1,300. Within a year past there have been erected, or put under contract, as many new buildings as the town contained last year.

About 25 miles from Santa Fe, New Mexico, is an extensive bed of coal which has been pronounced by experts true anthracite, and is so far as yet discovered the only anthracite deposits west of the Alleghany mountains.

Not less than thirty thousand French Arizans are employed in the manufacture of artificial flowers, and the trade in this line amounts in value to \$3,000,000 every year. America is the best customer of France in the articles demanding in the same time \$1,000,000 while \$800,000 worth finds a market in Prussia. England consumes \$600,000 worth, Germany is a customer to the extent of \$400,000, and Italy for somewhat less.

Recent American and Foreign Patents.

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

LEACHING TAN BARK.—Charles Korn, Wurtsborough, N. Y.—This invention relates to a new apparatus for leaching tan bark and consists in the use of a vat which is provided with various compartments which are connected in such a manner that the tanning liquid will continually circulate through the same in any required order or succession.

STEAM VALVE.—R. A. Filkins, North Adams, Mass.—This invention relates to a conical valve which has a perfectly smooth lower base or face and which rests on a seat in which the channels for the steam passage are arranged. A passage is provided in the valve which when brought in line with the steam pipe connects the two parts of the same while otherwise it can be so set that the passage will be completely or partly interrupted as may be desired.

WATER INDICATOR FOR STEAM BOILERS.—R. A. Filkins, North Adams, Mass.—This invention relates to a device by which the height of the water in a steam boiler can be instantly ascertained without the use of faucets or taps and which, when the water in the boiler descends below a certain line, will blow an alarm whistle and notify the attendants of the fact.

PLUMBERS' AND PAINTERS' LAMP.—George Wanier, New York city.—This invention relates to a new lamp for creating a powerful flame similar to that produced by means of the ordinary blow pipe. Its object is to have a self-acting blow pipe and to produce a flame which can be used by painters for burning old paint on doors, etc., prior to applying the fresh paint.

DISTILLING APPARATUS.—Theodore Gründmann, Cleveland, Ohio.—This invention relates to a new and simple device for distilling, condensing and cooling mash, beer, cider or other suitable liquid adaptable more particularly for distilling on a small scale. The invention consists in arranging above the retort a small vessel into which the vapors pass and whence they are conducted to the cooler.

SCAFFOLD.—Clark Robinson, Rochester, Minn.—This invention relates to a portable scaffold which is to be used by painters, carpenters and masons, and which can be raised or lowered at will to any desired height by the parties standing upon the platform of the scaffold.

CARRIAGE.—Ephraim Soper, New York city.—This invention relates to a new construction of the front support of carriages and its object is to allow the application of C-springs to the front part of carriages and also the strengthening of the top bed and upper transome plate. The invention consists chiefly in the use of a front perch which is secured, or swivelled to the back bar and extends to the under side of the carriage to which it is pivoted, thus doing away with the through perch and still permitting the use of C-springs which are fastened to the back bar and top bed and from which the front end of the carriage body is suspended.

DOOR SPRING.—Josiah J. Mackey, South Brooklyn, N. Y.—This invention relates to a new and improved application of a spring to doors for the purpose of preventing the slamming of the same as they close.

MACHINE FOR STACKING HAY.—William Loudon, Fairfield, Iowa.—This invention relates to a new and improved device for stacking hay whereby several important advantages are obtained over other devices hitherto devised for the purpose and a great saving in labor effected.

SPINDLE BOLSTER.—Francis A. Sterry, Canton, Mass.—This invention consists in forming an annular recess in the top part of the bolster in which is placed an absorbent for the oil and also in cutting slits through the central portion of the bolster through which the lubricating oil passes to the spindle.

HOLDER FOR HORSES.—John P. Reynolds, Mirabile, Mo.—The present invention relates to a holder for horses while being shod which holder is constructed in such a manner and so applied to the horse as to occasion no injury to him and without the least danger of accident or injury to the person operating upon or shoeing the horse.

TAG.—Frederick G. Sargent and Norman H. Bruce, Graniteville, Mass.—This invention consists in so preparing such surfaces of the said metal wire as are in contact and held by the folded over paper with a coating or covering of paint or fibrous or other material suitable to allow the said wire and card paper to become firmly united and joined together with the use of glue or gluten or other proper adhesive material, and also to enable the string around such wire or metal to be similarly fastened thereon.

LIFE PRESERVER.—D. H. Heyen, New York city.—This invention consists in combining an elastic air-tight tube with a broad substantial belt thereby effectually protecting the air tube from injury and rendering its application to the purpose intended much more easy than where air tubes or vessels are attached directly to the body of life preservers without such support.

COMBINATION OF AN ALARM AND LOCK.—Ezekiel Tracy, Kansas City, Mo.—The present invention consists in so combining an alarm with a lock and arranging it in connection therewith that in unlocking the lock an alarm will be set free and sounded and thus the approach or entrance of burglars or other parties indicated to the occupants of the premises or room where the lock is applied.

PESSARY OR SUPPORT FOR THE UTERUS.—Mrs. Emiline T. Brigham, Philadelphia, Pa.—This invention consists in combining with a pessary which may be made of India-rubber or any other suitable material of the proper shape a coiled, spiral or other suitable-shaped spring support of a length sufficient to pass through and out of the mouth of the vagina where at its outer end it is secured to the person by straps or other suitable fastening or holding means or devices. The object of the spring support is to hold the pessary against and about the mouth and neck of the uterus and thus to support the same, the spring shape causing it to produce an elastic support thereto and one most comfortable and easy to the wearer.

DOUGH KNEADING MACHINE.—Samuel Emmore, Stouchburgh, Pa.—This invention relates to a new machine for mixing and working dough, and consists in the use of an axle provided with stirrers; a screw thread is formed near one end of the axle, at one bearing, so that when it is revolved it will receive a combined intermittent, rotary and reciprocating motion.

HITCHING STRAP.—Thomas B. Chambers, Newtown, Pa.—This invention relates to a new manner of arranging the strap for hitching horses to posts, or other stationary devices, and consists in the use of a chain or strap, secured with its ends to the rings of the bridle. The hitching strap, which is fastened to the halter, is passed through this chain or strap, and is tied to the post.

TRANSMITTING AND CONVERTING MOTION.—Nathaniel Thompson, Farmington, Mich.—This invention relates to a new and improved means for transmitting and converting motion, a reciprocating motion being converted into a rotary one, and vice versa. The invention is an improvement on the double rack and pinion, which is an old and well known means for imperfectly effecting the result specified, but which by this improvement is made to operate in a satisfactory manner.

SCREEN-GUARD ATTACHMENT FOR CULTIVATOR PLOWS.—G. Brain, Springfield, Ohio.—This invention relates to a new and improved screen-guard attachment for cultivator plows, whereby clods of earth are prevented from being thrown upon the plants, and a greater or less quantity of fine earth thrown upon or around them, as may be required.

TRUCK.—Wm. P. F. Beggs, Philadelphia, Pa.—This invention relates to a new truck, which is so arranged that its front running gear can be turned short, although its platform is quite low. The invention consists in dividing the truck platform into two parts, of which one forms the main platform, resting upon the rear axle, while the other part is secured upon the fifth wheel, and holds the king-bolt, in the ordinary manner.

THRILL COUPLING.—James P. Collins, Troy, N. Y.—This invention relates to a new and improved mode of securing thrills to axles, whereby a very strong and durable connection is obtained, and one which will admit of the thrills being very readily attached to and detached from the axle, all play and rattle and casual detachment of the thrills avoided.

BALING PRESS.—Jackson Gorham, Bairdstown, Ga.—This invention relates to a new and improved baling press, of that class in which the platin is operated by means of levers arranged on the toggle principle. The invention consists in a modification of the construction of the arms of the levers, and also in a novel manner of attaching the rope of the levers to the operating or driving shaft.

MILL PICK.—Uzzel Stewart, Berlin, Wis.—This invention relates to a new and improved mill pick, of that class which are provided with an adjustable cutter. The invention consists in a novel construction of the pick and the manner of securing the cutter in the stock thereof, whereby the cutter may, with the greatest facility, be adjusted to compensate for wear.

LAMP CHIMNEY.—E. B. Requa, Jersey City, N. J.—This invention consists in a new and improved shape or form of the chimney, whereby the same is kept at an equal distance from the flame all around, and the usual contraction of the chimney above the flame avoided, whereby the chimney is subjected to a uniform degree of heat all around, and the liability to breakage greatly reduced.

CLOTHES WASHING MACHINE.—Eli Hunt, Shelburn, Ind.—This invention relates to a new and improved clothes washing machine, of that class which are provided with a rotary clothes receptacle. The invention consists in placing a rotary clothes receptacle, having a periphery composed of slats and provided internally with lifters; the clothes receptacle being placed within a suitable suds box and arranged in such a manner that the clothes, as the receptacle is rotated, will be passed through the suds, raised or lifted out therefrom, and allowed to drop from the top of the receptacle into the suds, to be again passed through it, which operation effectually cleanses the clothes.

CULTIVATOR.—Jared W. Sanford, Byron, Ill.—This invention relates to a new and improved cultivator, designed for general purposes, so as to be capable of performing all the various kinds of work now done by cultivators. The invention consists in a peculiar construction and arrangement of parts, whereby the end above specified, with a strong, economical and durable implement, is obtained.

MEDICATED BALSAM COMPOSITION.—L. F. Griffin, New York city.—This invention relates to a new and useful medical composition for curing sprains, bruises, swellings, sore throats, pains in the side and limbs, weakness of the back, ague in the face and breast, rheumatism, gout, neuralgia, and other affections.

GRADING AND EXCAVATING.—T. C. Hammond, Nicolaus, Cal.—This invention relates to an improved grading and excavating machine, and is intended for the grading of road beds for wagons and railroads, and for embankments to be used as dykes or levees for the reclamation of overflowed lands. It is also adapted to the excavation of open cuts for road beds, and to the excavation of canals and ditches for drainage, irrigation, and navigation purposes.

HOISTING DEVICE FOR TRUCKS.—Nathan Albertson, Plainfield, Ind.—This invention relates to a new and useful improvement in a device for raising logs, rocks, or other heavy objects, to be moved on a truck.

ATTACHMENT TO CARRIAGES.—Jackson Gorham, Bairdstown, Ga.—The present invention relates to an attachment to carriages, or more especially buggies, the object of which is to simplify the fastening of the traces and hold-back strap thereto, and the unfastening of the same therefrom, which result is satisfactorily accomplished.

PILL AND OTHER BOXES.—George H. Hawkins, New York city.—This invention has for its object to furnish an improved box for containing pills and other things, which shall be simple in construction, more reliable in use, and manufactured at less expense than the ordinary paper boxes now in use for such purposes.

FLOURING MACHINERY.—Martin Cosgro, Peoria, Ill.—This invention has for its object to improve the construction of flouring machinery so as to take out the fine bran and red particles from the flour while passing through the bolt.

PORTABLE DERRICK.—Chatham B. Wright, Belmont, Ohio.—This invention is designed to improve the construction of portable derricks, intended more particularly for stacking hay, so that they may be more convenient and effective in operation, the derrick revolving automatically to carry the hay over the stack and to return the empty fork to its former position.

ROTARY PUMP.—John Poppe, Greenpoint, N. Y.—This invention has for its object to furnish an improved rotary pump, designed especially for use on shipboard, but equally applicable for use in other places, and which shall be simple in construction, effective in operation, and not liable to get out of order.

SPRING BED BOTTOM.—D. G. Chapin, Galena, Ill.—This invention relates to a spring bed bottom, and consists in the means adopted for fastening the coil to the slats.

LOG WAGONS, CARTS, AND SLEDS.—G. S. Pigott, Central Station, West Va.—This invention relates to an improved log wagon, cart, or sled, and consists in an upright frame arranged on the axletree or roller of a common log wagon or cart or on the cross piece of a sled.

CRANE.—A. L. Batten, Topsham, Vt.—This invention relates to an improved crane especially designed for the purpose of taking sugar pans from the arch. It consists of a gallows crane set in a convenient position in the sugar factory, so that its arm may extend over the pans on the arch, and capable of being swung round to any position desired.

WHEEL.—Julius M. Bailey, Indianapolis, Ind.—This invention relates to an improvement in wheels, and consists in the employment of a wedge-shaped piece of metal keying between the felleys and secured to the tire by a screw bolt, by screwing on which the tire can be tightened on the rim of the wheel; also of a bed or socket wherein the end of the spoke can be stepped and a wedge driven home to tighten the spoke as it gets loose.

TEA KETTLE WITH A SWINGING LID.—C. C. & S. J. Hare, Louisville, Ky.—This invention relates to a new and useful device for attaching a swinging lid to a tea kettle, and consists in connecting the lid to the kettle by a pivot on one side with a curved slot in the lid fitted on the ear of the kettle, so that it shall be held in place by the hall and turn either way horizontally, for the purpose of opening and closing the kettle.

BLEACHING VEGETABLE OILS.—Theodore Leonhard, Paterson, N. J.—This invention relates to a new and improved method of treating linseed and other vegetable oils in the process of bleaching and preparing the same for paint and other purposes.

SAFETY POCKET AND CLASP.—Joseph Colton, New Orleans, La.—This invention relates to a new and useful device for protecting money, watches, and other articles of value from the depredations of pickpockets.

PORTFOLIO FOR NEWSPAPERS, PERIODICALS, MUSIC, ETC.—John C. Clarke, Jersey City, N. J.—This invention has for its object to furnish an improved portfolio, so constructed and arranged that the periodicals, etc., may be easily attached, securely held, and readily removed when desired.

LACING FOR BELTS.—David P. Davis, New York city.—The present invention relates to an improved lacing, more especially intended for machine belts and bands, and the lacing is composed of two parts of similar construction, with each part formed of a cross bar having a series of arms made of a hook shape at their outer ends, so that the parts can be interlocked together, the hooks of one part with the cross bar of the other, and thus if by their arms they are passed through suitable slits or openings made at the proper points in the belt or near its ends, the two ends of the belt will thereby be secured or fastened together, and in such a manner as to bring the strain upon the lacing through the thickness of the belt, in lieu of in the direction of its length and that of the slit through which the arms to the fastener pass

WATER ELEVATOR.—H. Norris, Spencer, N. Y.—The water elevator embraced in the present invention consists of a reservoir placed at the bottom of a well or cistern, but with a space below sufficient for the water to pass into it, connecting with which reservoir is a tube extending up to the top of the well, where it is provided with a suitable discharge nozzle or spout. This reservoir is provided with a loose and movable bottom having in its center a valve plug of sufficient weight to fall through the bottom, which valve plug is provided with a rod or stem extending up through the center tube to its upper end, where through a chain or other line hung to it and passing around a pulley, turning in suitable supports, it is connected to and with a treadle lever.

MUSKETO NETS FOR WINDOW BLINDS.—George W. Miles, Philadelphia, Pa.—This invention relates to an improvement in the arrangement of a musketo net or gauze in connection with a window blind for the purpose of excluding musketoes, flies, and bugs without interfering with ventilation.

MACHINE FOR IRONING OR SMOOTHING CLOTHES, TEXTILE FABRICS, ETC.—C. R. Hoyt, East New York.—In the machine embraced by the present invention the clothes or fabrics to be ironed or smoothed are properly laid upon an endless traveling apron or belt, and by it carried to the ironing roller employed for smoothing the same, which roller is heated in any suitable manner, the frame in which the endless travelling apron is arranged and moves, being so hung that when desired in consequence of the seams in the garments or for any other reason, it can be depressed sufficiently to relieve such portions of the garments from the pressure of the ironing roller, without interfering, with the travel of the endless apron.

WOOL CARDING MACHINE.—S. C. Philbrick, Rockville, Conn.—This invention relates to improvements in the construction of card machinery and consists in applying additional rolls in connection with the first breaker cards and changing the position and run of the clothing in one of the feed rolls, whereby the machinery is rendered much more effective in operation.

ANIMAL EXTERMINATOR.—M. V. Nobles, Elmira, N. Y.—This invention relates to a new and improved method of exterminating the animals or vermin which infest dwellings or buildings, or which prey upon vegetation, or which are in any manner a source of damage or annoyance to housekeepers, farmers, horticulturists, or others.

SASH SUPPORTER AND FASTENER.—James R. Hall, Georgetown, W. Va.—The present invention consists in a simple and novel attachment to sash or window frames for the support and fastening of the sash thereon, at any desired point in its play or movement.

MARINE CLOCK.—A. J. Goodrich, Waterbury, Conn.—The present invention relates to the movement regulator of marine clocks, and it consists in making the same of one piece in lieu of three, as heretofore, the advantages of which are that it is more simple and more durable than the three part regulator; cannot get out of repair unless broken; is easily made, there being no holes to drill, no wire to be straightened and cut, or welding to be done.

EXHAUST FOR MILL STONES.—David Baird, Bloody Run, Pa.—In this invention the hot air, etc., is exhausted from around the mill stones, through a pipe in which a current of air is established by a fan.

MILL STONE DRESS.—A. N. Garland, West Charleston, Vt.—In this invention the furrows are made wide, shallow, and smooth, one edge being cut clear and sharp. Between the furrows, the surface near the center of the stone is smooth, and at other parts of the stone is cut like the face of a file. A new method of bosoming the stone is also used.

SNOW PLOW AND TRACK CLEARER.—Michael J. Cogh, and M. E. Russell, Mobile, Ala.—The object of this invention is to furnish a cheap and effective arrangement for clearing the track of snow and other similar obstructions, which can be attached to any car and adjusted, regulated, and operated by persons on the car.

CHIMNEY.—E. S. Phelps, Jr., Wyand, Ill.—This invention relates to chimneys used in connection with stoves or furnaces, and consists in providing a new support and means of cleaning such chimneys.

CASTING METALLIC PIPES.—Benj. S. Benson, Baltimore, Md.—This invention consists in the use of an anchor of improved form and construction, which does not scratch or wear the mold.

YARD MEASURE.—Joseph Douglass, McConnellstown, Pa.—This yard stick has a handle at one end, and two projecting flanges, which mark the terminations of the measure, which may be a yard, a foot, or other distance, within the reach of the expanded arms.

FLOW.—S. T. Denise, Red Bank, N. J.—In this invention an inverted conical roller, in front of the mold board, and above the plow point, is rotated on its vertical axis by means of a small roller gearing with it, under the plow.

COMPOSITION FOR COVERING WOODEN BUILDINGS, BRIDGES, ETC.—Joseph Heckel, Decatur, Ill.—The composition which is the subject of this invention is designed to render wooden structures fire proof, and to protect them from the action of water and of the weather. It is also designed to be used as a paint, instead of white lead paint.

MILL SET.—T. C. Ball, Bellow Falls, Vt.—In this invention, which is designed for circular saw mills, a table slides back and forth under the head block, having a rail attached to its upper surface, which slides between two pins, projecting downward from the knee. The rail, being inclined at an angle of thirty or forty degrees from the perpendicular to the head block, causes the knees to advance or recede as the table moves in one direction or the other. Several of these tables are connected by a rod, which is operated by a novel reversing arrangement.

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

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

J. I. of N. Y., asks what will remove nitric acid stains from the hands. Soap and Indian meal bran or pumice stone with rubbing.

J. H., of Mass., replies to the question of S. A. G., of Ind., in No. 22, current volume, how to procure a bright deposit in electro-plating. "A French authority says: Add to the silver bath sulphuret of carbon or an alkaline sulphuret which will cause the silver deposit to be as brilliant as if carefully burnished."

J. M. S., of Ky.—"What is the best recipe for painting a blackboard on a plastered wall?" Lampblack from which the grease has been burned mixed with benzine or turpentine will serve the purpose. Oil or Japan in the paint will give a gloss and make the board too smooth, neither of which is wanted. A blackboard should be of a dull lusterless black.

S. F. G., of Conn.—"What is the average indicated horsepower of the best locomotives, such as are employed on passenger trains; what do they weigh and what amount of water is evaporated per hour?" Passenger engines of about 33 tons weight of good design and in good order have run off from 750 to 800 I. H. P., and will boil off or evaporate about 8,000 lbs of water per hour.

W. W. McM., of Ala., says:—"I want some information in regard to the link motion. What is the rule, if any, to find the throw of the eccentric, the lap of valve over the ports, and the required travel of valve to cut off at any point in the stroke to as short as six inches?" The best plan in order to become practically acquainted with the properties and peculiarities of the link motion is to lay it down, valve and all, full size, on a drawing board. Or, better still, to make pasteboard or wooden models from which may be obtained any measurement desired.

D. W. S., of Robesonia Furnace, says.—"Our hot oven contains 50 pipes through which the blast is forced into the stack. The oven is heated to 600° and the blast is supposed, after passing through the 50 pipes, to leave the oven at the same temperature. Now will doubling the number of pipes without increasing the temperature of the oven increase the heat of the blast after passing through the oven?" If your blast, after passing through the 50 pipes of your oven is heated to 600°, which is also the temperature of the oven, no further elevation of temperature of the air is possible except by increasing that of the oven; hence, if you increase the number of pipes nothing is gained. But we do not think the blast is as hot as the oven; its temperature may be raised by increasing the heating area over which it must pass before entering the furnace.

J. P. J., of Mass.—"Blow holes" in iron castings can be filled with a mixture of lead, 9; antimony, 2; and bismuth, 1. This resembles cast iron in color and expands in cooling.

H. S., of Ohio, asks how mill or other saws can be repaired and asks if silver solder will do. We have seen a large muley saw which was broken soldered with the following composition: Silver, 19 pennyweights; copper, 1; soft brass, 2, melted under a coat of charcoal dust.

O. A. F., of N. Y.—"Will 120 degrees fire test petroleum burn longer than that of 110°? Will an alcohol lamp placed in an air-tight vessel continue to burn until it burns out all the oxygen? How far will a common wooden pump draw water and have the water follow up the sucker (movable valve box), as fast as the lever was forced down measuring from the sucker to the surface of the water?" Oil of a high fire test is heavier than one of a lower grade and will burn longer in a lamp. An alcohol lamp burning in a close receiver will be extinguished before it exhausts all the oxygen. The pressure of the atmosphere at the sea level will raise a column of water about 33 feet; the kind of material in which the column is contained not affecting the result.

J. C. D., of N. H.—"How can I soften ivory to color and press into molds?" In three ounces of nitric acid mixed with fifteen ounces of water put the ivory to soak. In three or four days the ivory will be soft.

W. S. P., of N. Y.—"Can you give me a recipe for coloring gut strings (as those used on a harp) black or red?" We know of no way of dyeing them without injury to the material. Probably a varnish or paint would serve the purpose.

J. H., of Mass., asks how he can deposit gold and procure a rich color without the brassy appearance which he at present obtains. If the plating is on silver and not very thick it will have a light color, as gold when thin is more or less transparent. A deposit of copper before the gold is deposited will give a deeper color; but probably if the gold deposit is thick enough there will be no trouble in producing the proper color without the copper.

C. S., of Minn., asks how he can tin a copper kettle from which the tin has been worn by use. He is so remote from any large place that he cannot get it done. But's "Tinman's Manual" says, "boil the copper vessel with a solution of stannate of potassa mixed with tin borings, or boil with tin filings and caustic alkali or cream of tartar. In a few minutes a layer of pure tin will be firmly attached."

I. V. J., of N. Y.—"Can you give me some idea of the method of generating carbonic acid gas such as is used for so-called soda water, with the proportions of material used and gas obtained?" Carbonic acid for soda water is commonly generated by mixing marble dust with an equal weight of sulphuric acid. Marble contains over 40 per cent of carbonic acid. A cubic foot of carbonic acid weighs two ounces.

Business and Personal.

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

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

Allen & Needles, 41 South Water street, Philadelphia, Manufacturers of Allen's Patent Lamina, for removing and preventing Scale in steam boilers.

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Toy Manufacturers will please send their address to Edward Fitzki, Quartermaster General's Office, Washington, D. C.

The Patentee of a new rule wishes to make arrangements for its manufacture. Rule and Scale Manufacturers will address Thomas Carter, 81 Third street, Louisville, Ky.

S. W. Gardiner, Newark, N. J., practical machinist, having a shop of good tools, desires to correspond with those who wish work in his line.

To Iron-pipe makers and Gas Fitters—send price lists of cast-iron socket pipes, dry and wet meters, service pipe, etc., to E. Moody, C. E. Omaha, Nebraska. Quantity required large.

Important to Manufacturers—see advertisement on inside page, of Broughton & Moore's valuable patents and tools for sale. Mr. Broughton has patented all his inventions through this office, therefore we know what his inventions are, and can recommend them as practical.—Eds.

Manufacturers of Circular Saws and Turbine Wheels please send circulars and price lists to Abner Hart, Guysboro', Nova Scotia.

A Young Man desires employment in some situation where a good Scientific and Mathematical education, with a knowledge of drafting, of the principles of mechanism, etc., would be of service. Address A. R., Webster, Me.

H. N. Winans, 11 Wall st., New York, an authority on the subject of Incrustations, proposes to save 10 to 30 per cent of fuel and all the expense of cleaning boilers, by using his Boiler Powder, which removes any sized Scale, and prevents new formations. 12 years' use proves it no humbug.

Inventors and Mechanics interested in the wonderful process of reproducing oil paintings by mechanical means should order our "Journal for Popular Art," the first number of which will be mailed free. Address L. Prang & Co., Boston, Publishers of "Prang's American Chromos."

EXTENSION NOTICES.

A. M. Sawyer, of Athol, Mass., having petitioned for the extension of a patent granted to him the 7th day of March, 1854, for an improvement in machines for splitting rattans, for seven years from the expiration of said patent, which takes place on the 7th day of March, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 17th day of February next.

Warren Gale, of Peekskill, N. Y., having petitioned for the extension of patent granted to them the 7th day of March, 1854, for an improvement in the gage of straw cutters, for seven years from the expiration of said patent which takes place on the 7th day of March, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 17th day February next.