

## Answers to Correspondents.

**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 100 a line, under the head of "Business and Personal."

ALL reference to back numbers must be by volume and page.

**S. F. M., of Ill.**—You can make a magic lantern with two fine sets of photographic portrait lenses that will give good sized images.

**R. L. K., of —**—You should be able to get such a spring as you require made in any good machine shop.

**W. H. B., of Va.**—Your suggestion in regard to tramways is not new.

**J. E. B., of O.**—The metallic specimen you sent is pure galena, a valuable ore of lead. The other two are barytes, extensively used for white paint.

**PURIFYING KEROSENE OIL.**—N. L. & Co. can recover kerosene, after using it to remove whale oil and grease, by distillation at a low temperature—say 130° to 150° Fahr. Probably the contaminated kerosene, if in considerable quantity, can be sold to the refiners.—H. G. F., of Va.

**CONDENSATION ON WINDOWS.**—Let J. E. G. double the glass in his show window, leaving a space of one fourth of an inch between each pair of lights. If he wishes to test the above, he can try it on one light or section of his window.—C. H. B.

**DISCOLORATION OF BRICKS BY SMOKE.**—Whitewash with sifted wood ashes; a double handful to the pailful will do the thing nicely. The ashes form a lye that acts upon the soot. A coloring matter can be added if desirable, or the wall might be gone over by a man whose trade is called tucking.—C. H. B.

**WEAR OF SLIDE VALVES.**—If a valve's diameter is five inches and it moves two inches, there is a space of three inches in the center, say over the ports, always covered, and of course always under wear; while there is one inch, at either end of the stroke, that is under wear just half the time. If W. C. would overcome this, he must adopt a cylindrical oscillating valve, which, properly constructed, wears tight.—R. H. A., of —.

**PUMPING WATER A LONG DISTANCE.**—I would inform M. H. P., through your columns, that he can pump water the distance and rise he speaks of, and even further. I can show him a pump that draws the water 280 feet horizontally and 27 feet perpendicularly. It has been in use four or five years, pumping water for a farm yard, and has had no repairs until this season.—E. A. P., of Vt.

**CEMENT FOR AMBER.**—J. R. (query 13, November 18) can cement or mend amber by smearing the surface of the pieces with linseed or boiled oil, and then strongly pressing them together, at the same time holding them over a charcoal fire or heating them in any other way in which they will not be exposed to injury.—C. E. B., of N. Y.

**CANKER IN MOUTH.**—I would say, in reply to F. S. C., let him take one ounce of muriatic tincture of iron, and add four ounces of water, and rinse his mouth frequently with it. He will have no more canker.—G. H. J., of N. H.

**CANKER IN MOUTH.**—In answer to query No. 7, November 18, I would say to F. S. C. that local application will afford but temporary relief in cases of obstinate sore mouth. If his trouble has been caused by the excessive use of bad chewing tobacco, or by the adhesion of tartar on his teeth, let him remove the cause, and then gargle with a strong solution of white copperas (sulphate of zinc), using great care not to swallow any of the gargle, as it is a violent poison when taken into the stomach.—A. B.

**CANKER IN MOUTH.**—If F. C. S. will follow this advice (and I suppose he will not) he will doubtless get rid of the canker, if he means, by that, sore spots about the tongue and mouth. These ulcers, simply symptoms of irritation of the stomach, cannot be cured but by removing the cause. Keep yourself a little hungry, eat no swine's flesh, keep your bowels persistently free by opening diet, do not drink whisky, and you will soon rejoice in a sound mucous membrane.—R. H. A., of —.

**AMALGAMATING ZINCS FOR BATTERY.**—Lay the zincs upon somewhat surface or an earthenware plate, and wet them with diluted sulphuric acid, say acid one part to water twelve parts. Then pour on some mercury and rub it on with the finger. If the mercury rolls up in little round balls, add a few more drops of the acid solution. If S. H. intends to use the solution of sulphuric acid for his exciting fluid, the above will be the proportions of water to acid.—J. F. of Ga.

**WORKS ON METALLURGY.**—S. H. will find the "Manual of Electrometallurgy," by Napier, and "Elements of Electrometallurgy," by Smee, probably the best works on the above subject. The first named volume contains all he will require to know.—J. F., of Ga.

**COLORING GOLD.**—To obtain the red color of fourteen carat gold in plating, prepare a solution of cyanide of gold and cyanide of copper, and the cyanide of copper to the gold solution, until the desired color is obtained. Mode of application: use gold of the desired color. The cyanide of copper is prepared by adding cyanide of potassium to a solution of sulphate of copper until the precipitate at first thrown down is redissolved.—J. S. G. S.

**MATERIALS FOR FILTER.**—R. B. M. wishes to know the best form of filter. I know of nothing better than soft bricks. They will necessarily be put in the form of a partition, laid in cement, so that the water cannot get between them, and allowing the water to pass through the thin way of the brick. This may color the water a little the first time the filter is filled, but after being pumped out, it will be perfectly clear the next time, if the shingles do not color it.—S., of Mass.

**BLACK COLOR ON BRASS WORK.**—I take pleasure in complying with C. D.'s request. Make a strong solution of nitrate of silver in one dish and of nitrate of copper in another. Mix the two together, and plunge in the brass. Now heat the brass evenly till the required degree of dead blackness is obtained. This is the method of producing the beautiful dead black, so much admired in optical instruments, and which was so long kept a secret by the French.—L. S.

**CASE HARDENING.**—In answer to E. N. G., I would say that I have used two kinds of case hardening to good advantage. These two kinds I will term the quick and slow processes. The first is done by heating the article you wish to harden to a red heat, and rolling it in or sprinkling it with prussiate of potash; then return it to the fire and heat to a light red, then plunge it in water. The next or slow method is done by burning scraps of leather to coal and pounding fine; then putting the ash in a sheet iron box in layers with the article which is to be hardened. Begin and end with the coal; place the box and contents in a sharp fire for an hour or an hour and a half; then dump the contents of the box into water. This hardening is used by many gunsmiths to produce the colors often seen on iron gun mountings. It may be polished, if desired.—J. H. H., of Mich.

**AMALGAMATION OF ZINC PLATES.**—Let S. H. immerse his zinc in sulphuric acid diluted by water to about two thirds its former strength, and let it remain until the dirt is removed, and then immerse in mercury. If the amalgamation is not perfect or nearly so, repeat the process; but if it is not perfect, it will make no perceptible difference in the or in of the battery.—G. A. F.

**BLACK FINISH ON BRASS INSTRUMENTS.**—In answer to query in SCIENTIFIC AMERICAN of November 18th for process of blacking brass work, as done on optical instruments, let C. D. procure a spirit lamp or gas jet with large flame and a brass plate, also some nitric acid (not too strong, but strong enough to fume briskly) in which let him dissolve silver and copper in the proportion of a piece of each about the size of a grain of wheat to a quart of acid. If he has much work to blacken, he should have enough acid to dip his work into, after which it should be allowed to drain a minute. It will then be of a rough green color. Then, having the brass plate heating over the lamp, let him lay the article on it; if the plate be hot enough, his work will turn of a dingy, rough, scaly looking black in about fifteen minutes. Then let him take it off and let it get cold. Lastly, rub the surface and polish with a little olive or other oil and a piece of soft leather. If only a few articles are to be blacked, use less acid, and rub it on with a cloth tied on the end of a stick.—D. L. B., of Pa.

**HEATING SMALL STEEL ARTICLES.**—Let P. L. S. place a black lead or common cast iron crucible (capable of containing two or four quarts) filled with lead, on a fire made of charcoal. The crucible should rest upon bars of iron just above the blast. Place a wall of brick around the crucible, leaving sufficient space between the wall and crucible (say six or eight inches) to fill to the top of the crucible with charcoal. By leaving draft holes in the brick wall at the bottom below the grate (made of the iron bars) on two or three sides, there will be sufficient draft to keep the lead hot. Place the shank of the knife blade in the tongs, at right angles with the jaws, and let the tongs rest on the top of the crucible, while the knife blade is submerged in the heated lead. Have two pair of tongs, and put in a cold blade before taking out the hot one to work. Grease the blade with some cheap grease which will prevent the lead adhering to the article. By having two or three pairs of tongs, the articles will heat as fast as they can be hardened. I have used the process for years when in the cutlery business in New England.—S. A. W. of Iowa.

**PUMPING WATER FROM LONG DISTANCES.**—M. W. Q., of Mo., is mistaken in saying that "ten feet horizontal is equal to one foot perpendicular." The distance horizontally from which water is brought to a suction pump is of small consequence, if only the pipe be large enough to reduce the friction to a minimum; because friction is the only obstacle to the conveyance of water to any distance horizontally, if only the air be exhausted from one end of the pipe. All suction pumps that draw the water for a considerable distance horizontally or vertically should have a vacuum vessel. At every stroke of the piston, the entire column of water, of whatever height or length, is put into rapid motion, and if there be no vacuum vessel, the motion of the column is suddenly checked at the end of the stroke, and a great effort is required at the commencement of it to set the column into motion again. A vacuum vessel, which should be of ample capacity, will prevent all shock by the column at the end of the stroke, and all jerk at the beginning of it. I have now four pumps with vacuum vessels, driven by steam, all of them drawing fluids horizontally with great ease, without jerk or shock. The vacuum vessels, in my case, are simply pieces of gas pipe, two inches in diameter and four feet long, joined with the suction pipe just under the pump by an inch and a quarter connection. One pump, with leaden pipe, has a piece of leaden one and a half inch pipe, five feet long, soldered to the suction in the same position. The action is perfect. The longer the distance horizontally, the larger the suction pipe must be to avoid friction.—N. D., of Me.

## Queries.

[We present herewith a series of inquiries embracing a variety of topics of greater or less general interest. The questions are simple, & it is true, but we prefer to elicit practical answers from our readers.]

1.—**RESISTANCE OF BRASS TO PRESSURE.**—How much internal steam pressure per square inch will a cylinder, nine inches in diameter, thirteen inches long, made of twenty-four gage sheet brass, stand?—J. S.

2.—**POCKET ELECTRIC BATTERY.**—Will some electrician inform me if I can make a battery small enough to be carried in a coat pocket, and powerful enough to give an electric light? A mere spark is all that is wanted. What is the best form of battery?—J. S.

3.—**TANNATE OF SODA.**—In the SCIENTIFIC AMERICAN of October 28th, there is an article on boiler incrustation. Dr. J. G. Rogers recommends, as a preventive, tannate of soda; will he, or some one else, inform me what quantity to use, say for a 40 horse boiler using 100 barrels water per day?—E. F.

4.—**GRAPE JUICE.**—Having a quantity of grape juice, in casks, which is now fermenting, I would like to know how to make it into good wine.—M. T. M.

5.—**FITTING MOLDING.**—Can any of the readers of the SCIENTIFIC AMERICAN give me a rule for fitting rake and crown molding, or cornice, that will work to better advantage than sawing it up, which is seldom an easy job, when the jet is wide and the staging is narrow, as is often the case at the corners when jacks are used for a staging?—S.

6.—**BEEES IN WINTER.**—Will bees smother in their hives if they happen to get covered up with snow all winter? My bees are near a fence, on the summer stand, twenty inches from the ground, and the hives ventilated from bottom only. How much honey will a stock consume in a winter?—J. E. R.

7.—**SOFTENING OIL STONES.**—Is there any process that will have a tendency to soften an oil stone? I am a mechanic and have a great deal of trouble in getting a good oil stone, they all being too hard.—C. R.

8.—**GLUE FOR JEWELLERS.**—I would like to know the best glue to use at a watch maker's and jeweller's bench, for general purposes in that line of business. Also the best method of tempering lifting springs for watch cases.—R. K.

9.—**CEMENT FOR MENDING CHINA, GLASS, ETC.**—Can any of your correspondents give me a recipe for making a cement for mending china, glass, etc., which will set quickly, and stand hot and cold water? I have tried every thing for sale and have made quantities of cement from book receipts, but the result is the same. Can a cement be made with soluble glass?—G. H. J.

10.—**PRESERVATION OF BELTING.**—Where can I get the best information in regard to the use, treatment, and care of belting, especially leather belting? I am troubled with the rapid wearing out of belts running at high velocity.—W. L.

11.—**ENAMELING CAST IRON.**—Will some one please give us, through your paper, a practical receipt for enameling cast iron, with such enamel as is put on kettles?—W., BROTHERS.

## Declined.

Communications upon the following subjects have been received and examined by the Editor, but their publication is respectfully declined:

DISCOVERY IN HOROLOGY.—J. M.

FIREPROOF BUILDINGS.—J. R. M.

INCOMBUSTIBLE LUMBER.—E. C.

PERPETUAL MOTION.—A. J. R.

PSYCHIC FORCE.—A. M. L.—J. M. D.

STANDARD TIME.—F. A. S.

WAVE POWER.—U. S.

ANSWERS TO CORRESPONDENTS.—C. H. K.—G. H. S.—J. G. H.

J. R. J.—J. S. G. S.—M. D. C.—T. L. V. D.—W. J. W.

QUERIES.—C. & H.—C. S. & J. M.—G. W.—I.—S. B. A.

## Recent American and Foreign Patents.

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

**HAY TEDDER.**—John K. Collins, of Hartford, Vt.—This invention relates to a new manner of hanging the forks of a hay tedder, and is an improvement upon a patent granted to the same inventor, October 12, 1869. The axle or cross beam of the hay tedder is supported by wheels and made part of a frame, in which are the bearings of a crank shaft, operating the forks. Rotary motion is transmitted from one or both of the wheels to the crank shaft by a gearing chain or other means. The cranks of the shaft pass through journals affixed to the lower parts of rods, the upper ends of which are slotted and connected with a pin, in the forked ends of levers, hinged to the axle or other part of the frame. From the front ends of the levers are suspended, by a pin, the shanks of the fork. The lower part of each shank passes through a tubular guide. The crank in revolving causes the rod to vibrate on the pin, and to impart, by means of the connection, the same motion to the fork. The fork is made self-adjusting to the formation of, and made to drop in actual contact with, the ground, to be most effective in operation. To the lower end of each shank is secured a ferrule, which carries at its lower end a transverse tube. Through this tube is fitted a short rod, around the ends of which wires, constituting the tines of the fork, are wound. The upper ends of these wires are secured in small tubular sockets that project from the sides of the ferrule.

**WALKING PLANTER.**—Nathan Earlywine, of Centerville, Iowa, assignor to himself and Charles A. Davis, of St. Louis, Mo.—This is a machine for seeding, distribution of fertilizers, etc., for corn, cotton, and other crops. The seed or fertilizer may be dropped in a continuous drill, or intermittently as desired for crops grown on hills like corn. The machine is light and graceful in design, and seems a good and efficient one.

**SPARK ARRESTER FOR STEAM BOILER.**—John Gates, Portland, Oregon.—This invention consists in an improved spark arrester for steam boilers, in which the inventor takes advantage of the angle or turn which the air and smoke makes from the horizontal tubes to the perpendicular smoke stack. The greater velocity of the coals, owing to their greater weight, carries them past the lower entrance of the smoke stack to where there is an eddy, or at least insufficient draft to lift them, so that they will fall to the bottom of the smoke box. At this bottom there is a water well. On boats the same may be produced by cutting an opening or slot through the bottom of the boat, so that the coal, etc., will fall directly into the water that carries the boat. The water well may also be provided with two sets of inclined apertures or pipes, through one of which the water enters, while it escapes through the other during the movement of the boat. A constant current of water passes thus through the well, carrying off the coal and sparks. The well may, if desired, be of other construction, so as not to be connected with the bottom of the boat. It may, for stationary boilers or on locomotives, be only a plain water vessel. A wire or perforated screen is set in the smoke box at some distance from the tubes, so that the sparks are thrown under the screen, and are thereby kept from ascending the smoke stack. By this invention, it is claimed, the coals are arrested without making the smoke stack heavy; as the screen is set in the smoke box, with the exhaust above, less volume of vapor is carried through the screen than would be if it were on top, and it is also, therefore, less liable to foul. The coals, when once dropped, never rise again as in other spark arresters, where they dance against the screen until broken fine enough to pass through. The well furnishes good opportunities for getting rid of the blow off pipes and deadening the noise usually made by them.

**PERMUTATION LOCK.**—Samuel C. Weddington, Jonesborough, Ind.—Each tumbler is provided with a circle of holes with changeable pins, and a groove around its periphery. Each groove has a wire attached at one end to the case of the lock, and by the other end to an adjustable nut block on a screw. These tumblers are kept in their proper positions by the tension of wires, and the tension is increased or diminished by adjusting the nut on the screw. Changes in the combination are made by changing the positions of one or more of the pins in the holes of the tumblers. By an arm on the spindle of the knob, the tumblers are turned and the bolt operated. A recess in the bed tumbler receives the arm and gives it a hold on the tumbler. This tumbler is of irregular form, one end reaching to near the edge of the case, to which is attached a rod, the other end of which is attached to a bolt. The bolt is actuated by means of this rod, as the tumbler is turned by means of the arm on the spindle. Each of the tumblers above the bed tumbler is provided with a slot, which admits the stem of a bolt when the tumblers are properly arranged. The shifting tumbler has a recess in its under side, which receives the spindle arm as the knob is pressed in, by which means the shifting tumbler and the other tumblers are turned and adjusted to the proper position for receiving the stem of the bolt. The edge of the shifting tumbler is cut into a succession of arcs of circles corresponding in number with the holes in the tumblers, and is kept in position, and the changes are indicated, by means of a pulley which revolves in the end of a spring lever. In moving or adjusting the tumblers, the arm on the spindle will be in the recess in the shifting tumbler, and the tumblers are put in position by turning the knob, the shifting tumbler serving as a dial, a single mark only for a starting point being necessary. As the shifting tumbler is turned, a click will be heard as the pulley on the spring lever passes from one arc to another, or the friction will indicate its passage, an account of which is kept. The combination being known, the number of arcs indicates the position of the tumbler, and brings the slots in all the tumblers to one position. When this is done the knob is slightly drawn back, so that the arm on the spindle engages with the recess in the bed tumbler; then, by turning the knob, the bolt is drawn back and the door is unlocked.

**SAW SET.**—This is an improvement upon an invention patented by the same inventor, Erastus Y. Clark, of New York City, April 19, 1870, and which is calculated to supply certain defects and perfect the original device. The present invention consists in applying to the saw set a supporting slide for sustaining the saw as it moves across the apron and anvil during the process of setting, by which the narrowest saw may be securely held and guided over the anvil to bring the teeth properly under the action of the punch.

**SEED PLANTER.**—Judging from the activity in this class of improvements, the demand for them must be very large, and almost any invention of the kind that can hold its own with those already in market, or better still, make decided advances on the devices already introduced, is, it would seem, sure of sale. The invention under notice is, like most others of its kind, a combination of movements designed to perform all that others have done, and to supply their deficiencies. The combination is essentially simple, and is, we judge, well calculated to secure approval from agriculturists, providing all necessary adjustments to adapt to different kinds of work. Patented by Ezra E. Chesney, of Bushnell, Ill.

**COMBINED SEEDER AND CULTIVATOR.**—This invention consists in an improved frame on wheels adapted to receive either a cultivating, planting, or seed dropping device. The invention provides for side variation to prevent tearing up rows in cultivating corn, furnishes a convenient seat for the driver, and places the operation entirely within his control, provides for turning at the ends of rows or the passage of stones, stumps, etc.; for regulating the depth of drills, and supplies adjustments for adapting the machine to sowing in drills or broadcast, regulates the proportion of seed to the area to be sown, and in short furnishes all the appliances necessary to perform the operations named with facility and uniformity. The patentee is Jacob W. Webb, of New Athens, Ohio.

**BEE HIVE.**—This new form of bee hive provides for perfect ventilation in summer, and protection of the bees from cold in winter, for the convenient abstraction of honey, and the prevention of injury to the bees from moths. It also provides improved support for the combs, and general facilities for the scientific management of bees. The details cannot well be verbally described. The invention has been patented by William R. Clark, of Piqua, Ohio.

**PAPER FOLDING MACHINE.**—This is an important invention. The folding apparatus is designed to be attached to printing presses to receive the sheets as they are deposited by the fly. It is impossible to describe in brief the ingenious mechanism which accomplishes the desired results and delivers the papers folded from the press; but it is simple and compact, and is, we judge, an important advance in this class of machinery. Mr. Richard R. Gubbins, of Troy, N. Y., assignor to himself, Patrick J. Fitzgerald and Lewis H. Dezouche, of the same place, is the inventor.

APPARATUS FOR CONVERTING MOTION.—Joseph Julien Chenal, of Génis-siat, (Ain,) France.—This is an improvement on that for which a patent was issued to Edward Wadham, dated July 11, 1865. In his invention, a rocking or oscillating lever is widened out, at the point where resistance is applied, into a sectoral slot or frame that is armed with teeth so as to engage with mutilated pinions keyed on a shaft passing through said slot or frame. The frame is, however, so constructed, and the pinions so connected with sleeves that turn backward on the shaft, as to cause considerable friction. This present inventor claims to have obviated by a peculiar construction or arrangement of racks and pinions or toothed disks, as hereinafter set forth. The number of teeth in each disk or pinion is such that, as soon as one ceases to be in gear with its rack, the other will at once mesh with its rack without interruption or dead point. A fly wheel may be fitted on the shaft so as to regulate the motion, which may then be communicated to machinery by any of the known means. Thus the shaft receives a continuous rotary motion, and the action of the two racks gearing alternately, as the lever oscillates, into the partly toothed sectors, (or sectoral pinions,) may be compared to the working of a pinion toothed all round, into which two sectors gear alternately, each on its own side, and moving in opposite directions. Instead of a simple arm, the motive lever may have another arm attached to the other side of the slotted rack frame, thus affording the means of applying additional power, and this second arm will act as a lever of the second kind. Also, in case two arms are used, each of them may have its own slotted double concentric rack frame, communicating motion to two separate shafts; or, the motion of these two shafts may be jointly imparted to one single main shaft—in this case each of the arms of the levers acts both as a lever of the first and second kind. Conversely, by deriving motion from the shaft the continuous rotary motion of the said shaft will communicate an alternate or rocking motion to the lever.

CAT BALLS.—Thomas H. Joyce, of New York city, assignor to himself and Jacob Cohen, of same place.—This invention has for its object to furnish an improved toy for boys, to be used in playing in a manner similar to the game known as "old cat;" and it consists in the toy constructed as hereinafter more fully described. A piece of wood is made in the form of a rectangular pyramid, with the lower part of one side cut off, the face thus formed being the base or bottom of the toy when arranged for play. In the side of the block opposite, from the bottom or cut off part is formed a circular recess, to receive the ball. The ball may be made of wood, rubber, or other suitable material, cork being preferred, as being elastic, and, at the same time light, so that, should it strike a person or thing, it will cause no injury. In playing with this toy the block is arranged with the ball in the recess. The upwardly projecting, or pointed end of the block is then struck a sharp downward blow with a bat or stick, which projects the ball into the air, and the ball must be hit with the bat or stick before it falls to the ground.

SHOVEL HANDLE.—Frank Alsip, of North McGregor, Iowa.—A hand piece is fitted on and secured by bolts or rivets to the lower part of the handle, at or near the upper ends of the straps of the blade. The hand piece projects forward, and its lower end is supported by a brace, the outer end of which is securely attached to the lower end of the said hand piece, and its lower end is attached to the handle at or near the upper end of the blade or plate. By this construction the forward hand of the person using the tool is very greatly relieved of the weight thrown upon it, by bearing down upon the upper end of the handle with the other hand to balance or raise the weight upon the shovel. This invention also relieves the person using the tool from the necessity of stooping so low to lift it as he must with the ordinary construction.

METALLIC CARTRIDGE.—Charles Felix de Dartin and Jules Edouard de Dartin, of Strasbourg, France.—This is an improvement in the class of cartridges so constructed that when the charge is exploded it closes the crevices that exist between the revolving cylinder and the barrel of arms of the revolver class, and at the breech ends of other arms, so as to prevent the escape of gas rearward, and the consequent loss of projective force; and also to produce a cartridge adapted to cause the commencement of the rotation of the ball or bullet before leaving it. To this end the invention consists in providing the front end of the cartridge case with a metallic cap having an aperture for the passage of the bullets, and in forming spiral ribs or grooves on the inside of the said ferrule or lining.

CHAIN LOCK.—Levi F. Cahn, of New York city.—This invention relates to an improvement in the little ornamental padlocks which are applied to watch chains for securing the ends of the same to the garments. The object of the present invention is so to construct and arrange said lock that it cannot be easily opened and removed by thieves, but quite conveniently by its owner. The invention consists in applying the knob above the pivot of the bolt. This will necessitate the pulling of the knob for opening the lock, while heretofore it was made to be pushed. It will be seen that it is much more difficult for a thief to unlock this fastener than those which are opened by gentle pressure against a knob or pin; while for the owner it is equally convenient.

WATCHMAKERS' TOOL.—Leonard C. Butch, of Lancaster, and Augustin F. Thoma, of Piqua, Ohio.—This invention relates to a new and improved tool, adapted for several uses in the watch makers' or repairers' trade, such as holding the balance wheel staff for removing the roller table, replacing the said roller on the staff, "poising" the balance, and holding screws, the said tool being constructed and arranged in a peculiar manner to secure the desired end. The tool as constructed is complete in itself—that is to say, is self-supporting, and does not require to be fastened in a vise, as other tools for a similar purpose have to be.

STREET CROSSING.—John Schley, of Savannah, Georgia.—An endless carrier chain is arranged on suitable pulleys, in connection with an arch. The chain is attached to a car, having a rectangular frame over the top. Four spur wheels, preferably of exactly the same diameter, are attached to the car. On the outside of the frame is journaled one front and one rear wheel, near corners diagonally opposite. On the inside and to the car proper are correspondingly journaled the other front and rear wheel. These wheels are cogged so as to work in suitable racks on rails. In order to obtain greater bearing surface and produce perfect steadiness in the car while moving, the inventor uses, in connection with each cog wheel, a smooth traction wheel, attached fixedly thereto, and intended to run upon an ordinary smooth rail beside the cogged rail. The tracks are of the same length, but each as much shorter at one end than the other as is the distance between the axes of the front and rear wheels. The outside track, on which the front wheel has entered, is as much lower than the one on which the rear wheel runs as is necessary to preserve the axes of the front and rear wheels in a horizontal plane. This continues to the top level of the arch, when the outside track rises to the same plane with the other. Upon the opposite side of the arch the outside track continues upon the top of the arch, while the front wheel track is as much depressed upon the decline as was the rear wheel track upon the incline. The vehicle moves continuously back and forth over the arch, always in a horizontal position, and without being turned around.

COFFEE POT STAND.—Oliver Ferris, of Pawling, N. Y.—The object of this invention is to furnish convenient means for pouring coffee, tea, and other liquids from coffee or tea-pots, or similar vessels, without handling such vessels; and it consists of an adjustable stand or platform, arranged to swing on pivots to an inclined position. The vessel is supported and prevented from slipping off the plate by curved stays attached to the tops of arms so that they move with the plate. The latter is operated by a lever or handle. By this arrangement the coffee pot is elevated sufficiently to discharge all the liquid by simply inclining the plate, as described. This is a great relief to the female presiding at the table. The coffee is less likely to be agitated or rolled, as the movement of the pot is more gentle than when it is handled in the usual manner.

OIL CAN.—Donald D. Mackay, of Whitestone, N. Y. and Cyrus Butler, of New York city.—This is a can for holding and applying oils containing plumbago and other heavy matters not combining with the oil, but which settle down upon the bottom of the can and require to be stirred up and mixed with the oil before pouring it out; and it consists in the application, to the interior of an ordinary spring bottom or other can, of a rotary agitating device, and a crank upon the outside for turning it, the spindle of the crank passing through the shell and gearing with the spindle of the agitators.

SEATS FOR CHAIRS AND STOOLS.—This invention relates to a new construction of upholstered chair and stool seats, and has for its object to simplify the same in such manner that can be cheaply produced, and still retain any desired shape that can be formed of wood or metal, and possessing all the elasticity acquired in an ordinary cushion. It consists chiefly in making the solid part of the seat from a perforated recessed piece of wood or metal, which admits the application of the stuffing from beneath. The stuffing, of hair or other material, is introduced between the bottom and cover, after the latter has been fastened to the bottom through a hole in the center of the bottom. By this mode of stuffing a perfect shape can be produced, and, it is claimed, best workmanship obtained at little expense. Such upholstering was heretofore performed by placing the stuffing upon the plain upper surface of the seat, dispersing it thereon as well as possible, and then stretching the cover over the whole. In this manner a good surface and finish could only be obtained with great difficulty, and with the aid of experts, while the present process can, it is stated, be satisfactorily carried out by ordinary hands.—Fletcher W. Dickerman, of New York city, is the inventor.

PERMUTATION LOCK.—John F. Vinton and George A. Mines, of Brattleborough, Vt., assignors of one third their right to Seymour Field, of same place.—This invention mainly consists in an improved arrangement of mechanism with the bolt, locking dog and its lever, the driving wheel and its inner ring, and a tubular bearing connected with the spindle; the object being to produce a lock simple in construction, not liable to get out of order, and hence reliable in operation, and capable of resisting improper attempts to manipulate it. The nature of the mechanism precludes further description, but inspection of the specifications and drawings gives evidence that the lock is a good one.

PRINTING PRESS.—Berthold Huber, of Williamsburgh, New York.—This is an improved movement for printing presses, which shall be so constructed and arranged as to cause the cylinder and bedplate to move at the same rate of speed while in contact, but will cause the bedplate to move at a greater rate of speed while the cylinder and bedplate are not in contact, thus enabling the cylinder to be made smaller than is possible when the cylinder and bedplate move always at the same velocity. The invention consists in the construction and combination of various parts, including a varying crank, in combination with the guide groove and the cylinder of a printing press for driving the bedplate with a variable motion, and a combination of the levers or equivalent with the bedplate, variable crank, guide groove, and cylinder for connecting the variable crank with the bedplate.

ELEVATOR.—David F. Skinner and Joseph Arnold, of Albany, N. Y.—This invention relates to improvements in elevators; and it consists in a novel arrangement of means whereby a weighted lever of a friction brake, employed to regulate the descent of the platform, may be used to actuate the belt shifter and throw the belt on the fast pulley for raising the platform simultaneously with the releasing of the friction or not, as preferred. Also to throw off the belt or stop the platform simultaneously with the application of the friction brake to hold the platform at any point, the arrangement being such that the friction brake may be released sufficiently to let the platform down without throwing the belt on the fast pulley.

FRUIT BASKET.—Henry Carpenter, of Williamsburgh, New York.—This is an improved fruit basket for sending fruit to market, and for use upon stands, to enable the purchaser to carry away his fruit conveniently and safely, and which may be used for various other purposes. It is formed of three strips, strengthened at the upper edge by a band and in the middle part by a strip or handle extended around the sides and bottom, with additional bands if desired.

WASHING MACHINES.—John Fox, of Farmersville, Iowa.—This invention has for its object to furnish an improved washing machine, simple in construction, convenient in use, and effective in operation, doing its work quickly and thoroughly, and without injury to the most delicate fabrics. A vertical shaft actuated by a spur wheel rack bar and lever causes vertical pins to rotate back and forth within the case, to agitate the suds and clothing. The legs of the case are attached to the case by armed sockets.

COMBINATION LEVER BRIDLE BIT.—Henry M. Cornell, of Brighton, Ill.—This invention consists in forming the bit of two parts fitted together so as to form a single round bit, and arranged to slide one upon the other so that tension on the reins will cause them to extend laterally from the animal's mouth while the bars or loops into which the reins buckle will be drawn toward each other as close as the animal's mouth will permit, producing a strong pressure, and at the same time making a double extension lever.

FOLDING BEDS.—Wendell Wright, of Bloomfield, N. J.—The object of this invention is to so construct a bedstead that it may be folded up in a small space, and at the same time be durable and simple in its parts, applying as well to spring bottom as to other bedsteads. Bedsteads may in this manner be manufactured and finished complete, and packed in very small compass for transportation, or for storing when not in use. The advantages of this improvement must be apparent to all.

HASP LOCK.—George Crompton, Jersey City, N. J.—This invention furnishes an improved trunk lock, so constructed as not to require the front of the trunk to be cut away to allow the lock to be attached. Its principal feature consists in the combination of a pivoted lock bar with the locking jaws which are pivoted to the hasp.

SINGLE HARNESS.—Charles Richard Stewart, Winslow, Me.—This invention has for its object to furnish an improved single harness for attaching a horse to a pair of thills, which shall be more comfortable for the horse, and which will give the horse a better control over the carriage. When the horse is pulling, the breeching will not be in contact with him, and, when holding back, the breast pads will be withdrawn from his breast, so that the only part of the harness that will be constantly in contact with the horse will be the supporting strap.

SEED DROPPER.—Joseph C. Barlow, Quincy, Ill., assignor to Vandiver Corn Planter Company, same place.—This invention is an improved cut off for corn planters and other seeders, to brush off the superfluous grains after the holes or chambers of the dropping plate have been filled, and it is so constructed as not to injure or break the seeds. An arrangement of two angular plates in juxtaposition to one another, and a combination of plates and springs, constitute the features upon which a patent has been obtained.

MACHINE FOR WRING BLINDS.—James H. Nelson, of Little Falls, N. Y., assignor to himself and Byrom K. Houghton, of same place. This invention consists in driving two staples across one another and successively into the slat and strip of a blind; also, in holding the slat; also, in certain improvements upon the operative mechanism, the latter of a nature that precludes a mere verbal description, but which forms a small, compact, and easily operated machine for the purpose intended.

CRUCIBLE FOR MELTING METAL.—Richard Yelding, Detroit, Mich.—The inventor provides the ordinary crucibles of plumbago or other substance with a flue or passage from the bottom to the top, for allowing the heat to act upon the center of the mass of metal contained in the crucible more directly than it otherwise can, the said passage to be surrounded by a shell or tube of the same material that the other part of the crucible is made of. He also grooves, indents, or constructs the sides or walls of the crucible, both inside and out, to form projections, to interlock with the paste or clay or other substance with which the crucible is coated, to cause the said coatings to be retained much longer than they now are, thereby preserving the crucibles much longer, and thus cheapening the cost of melting steel or other metals. He states that he finds in practice, by this improvement, that the crucibles are capable of being used from six to ten times as much as in the ordinary way, and that the metal can be reduced much quicker, and with considerably less fuel in crucibles having the passage through the metal holding space.

CARRIAGE WHEEL.—Isaac E. Bower, Bainbridge, Ga.—This improvement in the construction of the rims of carriage wheels consists in forming the rims of thin sheet iron or steel bent into the form of three sides of a rectangular figure or triangular shape, in cross section, with metal sockets for the ends of the spokes, said sockets being riveted to the tread of the rim when in rectangular form, but, when in triangular form, secured to the apex of the angle, or an extension of the sides meeting at the apex. These rims may be filled with wood rims if preferred, and will hold the said wood rims very securely. The triangular rim may have a vertical rim for bracing the center of the tire, said rim being bolted or secured between the flanges.

BURIAL APPARATUS.—William H. McGavran, Connotton, Ohio.—The object of this invention is to economize labor in the lowering of coffins and the tilling of graves. The invention consists in the arrangement of a receptacle for the earth dug out of the grave, and in the application thereto of a windlass for lowering the coffin. The earth receptacle or box has a slanting, back and sectional removable front, so that after the coffin has been let down the front may be taken off and the earth allowed to flow freely into the grave until the same is closed. The burial box is made of wood or other material, of proper size for holding the earth dug from a grave. The back of the box stands inclined upon a narrow bottom. The front of the box consists of a series of sections or boards which can be removed. The ends of the board shave handles which fit into notches or recesses in the supporting posts of the box. Suitable hooks or catches are applied to the sides of the box for holding the boards in place. In brackets that project from the front of the box are the bearings of a windlass which can be turned by hand. The box is, on wheels, rolled to the place where a grave is to be dug, or is carried thither either together or in pieces, and then put together. The earth dug out is thrown into the box, the boards being put on upwardly as the box is filling. The coffin is placed upon sticks over the grave, as usual. Ropes or bands are then drawn under it and fastened to the windlass, which is turned by hand to lower the coffin into the grave subsequent to the removal of the supporting sticks. The coffin having been let down, the lower board is taken off and the earth allowed to flow into the grave, filling it up. Enough earth will remain on the bottom for rounding the grave. More than the lower board may be taken off if it is desired to still more hasten the operation. By the use of this apparatus considerable labor is saved, so that two men will be enabled to perform the service for which four are now required.

CHAINS FOR WATCHES, ETC.—George W. Clappitt, Attleborough, assignor to Henry F. Barrows, North Attleborough, Mass.—This invention consists in fastening the ends of the staples used for connecting the links of wide gold or other chains by lapping the said ends by each other, and bending or hooking them over the outer row of rings in such manner as to accomplish the fastening by bending only, which saves considerable labor heretofore expended in soldering the ends of the staples together, the said ends being bolted against each other. It also saves the solder and much labor heretofore used in removing the discoloring of the edge of the chain exposed to the heat in soldering; and there are no soldered portions exposed to view, or parts discolored by solder. The final part of the bending is done by a punch struck by a hammer, which delivers a blow upon the chain edgewise in such manner as to shorten the staples and secure the links more closely together than they can be when soldered, thus making a more compact chain.

SEWING MACHINE.—Adam Barth and Nicholas Barth, St. Louis, Mo.—This invention consists in an improvement of sewing machine feed mechanism, the advantages to be gained by which are that it shall dispense with a presser foot, and with the friction consequent to the use of the same, and that it can be used, together with the lower feed, for crimping and ruffling on either side. A vertical slide carries the upper feed wheel, and is attached to a laterally adjustable bar. A wheel is connected by a chain with this upper feed wheel, and is combined with a lever, adjustable rod, and crank arbor, by which motion is imparted to the feed.

CHILDREN'S CARRIAGE.—Chauncey Holt, Jersey City, N. J.—The object of this invention is to provide a children's perambulator or carriage with a drawer, wherein to keep articles of food and other appliances that may be necessary or convenient for use of small children. The invention consists in the application of a drawer to a children's carriage, when arranged in the lower part of the carriage body in guides, and so that it can be operated by being drawn backward, forward, or to the side.

CULTIVATOR.—Jerome H. Tomlinson, of Mount Carroll, Ill.—The object of this invention is to so connect the plow beams with the axle bearings of the wheels that the lateral motion of the plows will be inversely followed by a similar twist of the wheels. By the arrangement employed, it is claimed that the operator has complete power to govern the side movement of the forward as well as the hind end of the plows, and crooked rows can be plowed with greater ease than without this device. The plow requires less care in driving, for the wheels will adjust themselves to keep always in front of the plows. No up or down movement of the plows, only their side movement, will affect the motion of the wheels. Whenever the team gets off the rows, it is only necessary to swing the plows aside, whereby the wheels are set so as to affect the motion of the wheel.

Official List of Patents.

ISSUED BY THE U. S. PATENT OFFICE.

FOR THE WEEK ENDING NOVEMBER 21, 1871.

Reported Officially for the Scientific American.

Table with 2 columns: Fee description and Amount. Includes SCHEDULE OF PATENT FEES: On each Caveat, On each Trade-Mark, On filing each application for a Patent, etc.

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- 121,036.—STEREOTYPES.—F. H. Aiken, Franklin, N. H.
121,037.—REFRIGERATOR.—A. W. Almquist, Long Island city, E. G. Conradi, Brooklyn, N. Y.
121,038.—COMPOUND.—T. Bathy, Smith's Creek, Mich.
121,039.—TIGHTENING TIRES.—H. Beckwith, Grass Lake, Mich.
121,040.—JOURNAL BOX.—J. D. Beers, Phila., Pa.
121,041.—GALLEY.—J. F. Bronson, Waterbury, Conn.
121,042.—WASHER, ETC.—G. R. Clarke, New York city.
121,043.—THREAD RACK.—J. L. Demarest, Elmira, N. Y.
121,044.—COMPOSITION.—J. E. Dotch, Washington, D. C.
121,045.—FELTING MACHINE.—R. Eickemeyer, New York city.
121,046.—HEMMER.—H. A. Ellis, Albany, N. Y.
121,047.—COUPLING.—J. M. & J. Enos, St. Joseph, Mich.
121,048.—HORSE POWER.—L. R. Faught, Phila., Pa.
121,049.—CIGAR LIGHTER.—M. F. Gale, New York city.
121,050.—BRUSH.—H. A. Harvey, Orange, N. J.
121,051.—COUPLING.—J. B. Heverling, Greenville, O.
121,052.—PROPULSION.—J. A. Howell, U. S. Navy.
121,053.—STOVE.—S. Ketchum, Macon, Ill.
121,054.—BASKET.—J. Knapp, Coloma, Mich.
121,055.—LUBRICATOR.—C. Lynch, Detroit, Mich.
121,056.—KITE.—O. Maddaus, Brooklyn, N. Y.
121,057.—BENDING SKELPS.—G. Matheson, Boston, Mass.
121,058.—BENCH, ETC.—E. Milner, Strathroy, Canada.
121,059.—TOOL.—H. F. Moeller, H. P. Brandt, Davenport, Iowa.
121,060.—SCREW BOLT.—F. Mutimer, Rockford, Ill.
121,061.—HARVESTER.—P. Nicola, Massillon, O.
121,062.—SMOKE STACK.—T. B. Phoebus, Memphis, Tenn.