[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING OCTOBER 14, 1856.

REGULATING THE DRAFT OF STEAM BOILERS—Pliny E. Chase, of Philadelphia, Pa.: I claim the apparatus substantially as described, when constructed and arranged so that the action of the steam in the boiler, B, when at or above the maximum pressure desired will cause the draft through the fire box, F, to be reversed, and pass down through the fire, and again resume its former course in the opposite direction when the pressure is reduced to the minimum, for the purpose specified.

MANURE DISTRIBUTOR—J. W. Barnes, of Murreesboro', N. C.: I claim the hinged side, a', combined with the hinged bottom, as set forth.

PUMP—William T. Barnes, of Buffalo, N. Y., and Jacob Barnes, of Oakville, Canada West: We claim, first, the employment of the priming reservoir, U, or its equivalent, which is connected to the pump, T, and fills it with water by the action of the pump, which water is held by the supporting box, V, or its equivalent, and can be discharged to prime the pump by pulling the cord, W, or its equivalent, for the uses described.

Second, we claim the combination of the levers, G G, with the piston rods, E E, and the connecting rods, H H, and rocking beam, K, in manner shown for the purposes set forth.

GRAIN SEPARATORS—Joel W. Cormack and Ferdinand C. Walker, of Quincy, Ill.: We claim the cylindrical cheat box into which the air tube enters, arranged as described, and for the purpose set forth.

We claim the flanges, i, and funnel, k, or their equivalent, in combination with the tube, C, for the purpose of creating the spiral or whirlwind blast in a grain separator, as described.

AXE POLES—David P. Estep, of Pittsburg, Pa.: I claim the manufacture of axe poles by compressing one half only of the axe pole at each operation between dies or swages of the shape described, projecting from the face of the rolls in which they are set, so that the axe pole can be inserted and withdrawn without coming in contact with the rolls, in combination with the use of the adjustable guide, g, either attached to the dies or separate therefrom, for the purpose of applying the pressure necessary to form the axe pole, in such a manner as to leave any excess or deficiency of iron in the head of the axe pole, thus securing exact uniformity in the two sides of the axe pole, and enabling axes of various size to be made from the same dies, by simply adjusting the distance of the rolls and the guage, substantially as described.

HARVESTERS—Carlos W. Glover, of Roxbury, Conn.: I claim attaching the finger bar, E, to the guide box, B, which is fitted over the flanch, b', of the driving wheel, A, as shown, the guide box having the two shafts, C D, attached to it, by which motion is communicated to the sickle from the driving wheel, and the bar, F, attached to the finger bar by hinges or joints, k, and the guide box, B, to the rod, H, the whole being arranged as shown, for the purpose set forth.

[This invention consists in a peculiar construction whereby the machine is greatly simplified, made to work with a light draft. All the parts which require to be adjusted are located within reach of the driver's seat.

STICKING PINS IN PAPER—Walker B. Bartram, of Waterbury, Conn.: I claim, first, the separator and spacer, composed of a series of bars, y y' y", etc., having a simultaneous movement at right angles, or nearly so, to the line of pins in the pin feeder, to the line in which the pins are inserted, and a movement one after the other in a direction parallel or nearly so to the said line, and operating substantially as and for the purpose set forth.

Second, the construction of the driver, L, with recesses in its face to receive the heads of the pins and act in conjunction with the paper after the points of the pins have penetrated it to serve the purpose of guiding the pins straight and parallel through the paper, thus enabling the holder to be opened to make room for the driver, substantially as described.

Third, the stop, Y, acting in combination with the separator and spacer, substantially as described, to retain the pins behind the separator and spacer after a number sufficient for one row has been taken from the feeder by the separator and spacer, but to be moved away by the separator and spacer

Fourth, the bar, Q, operating in combination with the forceps, o o, substantially as described, to form a second holder below the principal holder, P P*, and more perfectly secure the upright and parallel position of the pins during the commencement of the driving operation.

[It would be difficult to describe the above invention without engravings. It possesses several advantages over the pin-sticker machines in common use, among which may be mentioned the following; Owing to the peculiar manner of separating the pins and carrying them towards the devices by which they are placed in the paper, it is almost impossible to leave out a single pin from a row, while in the machines in common use, in which the pins are taken one at a time by the separator, so many pins are missed that much time is lost in supplying their place by hand. Second, the work is much more easy and simple for the person in charge of the machine, and a much greater amount of work is performed in a given time. Third, the pins are held more firmly in the paper, owing to the crease being held closed by forceps during the insertion of the pins through it, and afterwards slightly opened by the tension produced on the paper in drawing it through the machine, which causes the paper to bite upon the pins. Fourth, the sharp front edge of the crease produced by the forceps gives the paper a neater appearance. This improvement is an important and valuable one.]

OPENING AND CLOSING FARM GATES—Dennis E. Fenn, of Tallmadge, O.: I do not claim lifting the gate so as to unlatch it by the same movement or device, which causes it to swing open, as I am aware that such an arrangement is not new.

But I claim the cam, P, with its alternate elevation and depressions in combination with the arm, H, and double-jointed hinge, G I, arranged and operating substantially as described.

FIREMEN'S LADDER.—Domenico Giambustiani, of Washington, D. C.: I claim the combination of the folding foundation frame, e e', with the detachable single ladder sections, a a' b b' c c' d d', as above described, and for the purpose stated.

PUMPS—Edwin T. Ligon, of Richmond, Va.: I do not claim a reciprocating piston working in a pump barrel, and provided with two valves, when said barrel is furnished with two on each side of the piston, and only one eduction pipe—my pump, as described, having two induction passages, and one eduction passage—each stroke or vibration of the piston, when the pump is elevating a liquid, causing such liquid to be drawn at once through both induction passages, and be discharged out of the central discharging chamber of the piston.

But I claim the combination and arrangement of the two induction passages or branches c d, by valve chamber D E, their four valves F F, G G, the receiving and delivering chambers g g, f, their four valve openings, i i i i, provided with a separate valve to each, or one vibrating plate, K, made to operate between them, substantially as specified; the piston being provided with an eduction opening or passage, and the whole being arranged and made to operate within a cylindrical case, A, essentially as specified.

I do not claim a valve made to operate in connection with two valve openings only, or so as to close them alternately.

But I claim combining and arranging four valve-openings, i i i i, with one vibrating plate, K, as described, so that it may vibrate between them, and opposite sides of it, and cover two of them, at the termination of each of its vibrations.

ESCAPEMENT MOVEMENTS FOR AUTOMATIC FANS—Don J. Mozart, of Xenia, Ohio: I claim in combination with sectional scape-wheels, D E, the banking-pin, M, meeting the sections thereof at each vibration, substantially in the manner and for the purposes set forth.

HANGING RECIPROCATING SAWS—John H. More, of West Troy, N. Y.: I claim, first, the hinged-jaws, J J, and screws, e e e.

Second, I claim the finished faces on the jaws, J' J', of the fixed body of the stirrup, in combination with the hinged-jaws, and for the purposes set forth.

PORTE-MONNAIES—John L. Mason, of Germantown, Pa.: I claim the construction of the whole of the pockets of a porte-monnaie, or other article of a similar character, from a single piece of leather, by a system of folding, substantially as described.

[The above invention is applicable to porte-monnaies or any other articles of similar character, which contain pockets. It consists in forming every portion of any number of pockets, from a single piece of leather, or other material, by a system of folding which gives greater strength and durability than the modes of construction generally adopted. The common mode is to form the sides and bottoms of the pockets of one piece, and the ends thereof of two other pieces. A saving of labor and material is effected by this improvement, and a better article produced.]

SAWING STONE—John North, of Middletown, Conn.: I claim sawing two inclined sides of a slab of marble or stone at one operation; the two inclined reciprocating saws, connected with one and the same rotating driving-shaft, by the oblique connecting-rods, c c', each rod having four joints, as set forth; the whole being arranged and operating in the manner and for the purposes set forth.

ADJUSTABLE STIRRUP FOR SAWMILL PITMEN—S. C. Norcross, of Dixfield, Me.: I do not claim the bolts, E, by which the stirrups and pitman are secured to the saw.

But I claim the manner of attaching the stirrup to the pitman, substantially as set forth, whereby its position on the pitman, and consequently the length of the pitman, may be varied, for the purpose of altering the position of the saw, with respect to the log.

SUBMARINE EXPLORING ARMORS—Lodner D. Phillips, of Chicago, Ill.: I claim, first, a submarine armor with which the explorer can be wholly invested, composed entirely of metal, having free and easily moving jointed-limbs, and from within which the explorer may give motion to the armor and operate the external means as set forth.

Second, connecting with such armor a collapsible exterior vessel, so united with the interior air-chamber, as to allow of its being inflated, and buoy up the armor, as described.

Third, arranging the rods for operating the external tongs or nippers, within the tubular arms, as set forth.

BENDING METAL PIPE—J. Perkins & W. H. Burnet, of Newark, N. J.: We claim the mandrel, substantially as described, with the traversing roller *h*, or its equivalent, for bending coils of metal pipe, and in combination therewith, the furnace, in the manner and for the purposes set forth.

CYLINDERS FOR COTTON GINS AND MACHINE CARDS—John L. Tuttle, of New-York City: I claim the manner described of making cylinders for cotton gins, or for carding or cleaning engines, viz., by introducing the fluid metal, which is to unite the teeth to the cylinder between the cylinders, a d, and through the openings e, into the space i, which unites the whole into one rigid mass, and avoids the danger of irregular flowing of the melted metal, as set forth.

GUIDES FOR WORKING BUTTON HOLES—Otis Avery, of Bethany, Pa.: I do not confine myself to the use of the spiral groove in the tube to give a rotary motion to the tweezers, as that motion may be given by making a twist or screw to the tweezers, or they may be revolved by the thumb while in the act of moving the tweezers back and forth to catch the thread.

I claim the combination of the sliding plate with the revolving tweezers, operating and arranged substantially in the manner and for the purpose set forth.

CANAL BRIDGE—Balaam G. Anderson, of Chillicothe, O.: I claim constructing the bridge of three parts, B C C, the parts, C C, being connected by joints, F, to the part, B, and having their supports, D, provided with rollers, a, which work on curved ways, E, at the bottom of the canal, substantially as described, for the purpose set forth.

[The above consists in having the bridge made of three parts, one of which is permanent, and forms one half the bridge, and consequently extends half way across the canal. The other half of the bridge is divided lengthwise into two parts, which are connected by joints to the stationary part. The two parts last mentioned rest upon supports, which have rollers in their lower ends, said rollers working upon curved ways at the bottom of the canal. The two jointed parts of the bridge may be opened or thrown around when necessary, so as to allow boats to pass through and also close, so as to form a perfect and entire bridge at other times.]

PAPERING PINS—Lydia Atwood and C. O. Crosby, administrators of Charles Atwood, deceased, late of New York City: I claim fabricating a new article of manufacture, called diamond pin-cushions, by sticking pins in ranks or rows through a staple or U-shaped piece of paper, the heads of the pins projecting sufficiently far to allow the pins to be easily and conveniently withdrawn by the fingers for use. The pins being inserted upon two planes of the paper, with the heads projecting beyond the points a suitable distance to protect the points of the pins from being doubled or blunted, all the other portions of the pins being protected by the paper and sustained by it at a short distance from the heads and points by the paper making a solid mass of pins set in diamonds with regard to each other, but not in contact, and which usually contains the requisite quantity of pins for an ordinary paper for toilet use in a small compass, as specified and represented.

EXCAVATORS—James Bourbin, of San Francisco, Cal.: I claim the application of any number of shovels required, and working from one center on the circular principal, also the different appliances by which the shovels are directed in their different movements, as described.

STICKING PINS IN PAPER—Lydia Atwood & C. O. Crosby, administrators of Charles Atwood, dec'd., late of New York City: I claim the vibrating nippers, V, armed with a knife or double inclined plane for separating the pins, turning them from a vertical to horizontal position, as specified.

Second, I claim the straight inclined conductor, K, when combined with the nippers, V, with their separating points, as carrier, as described.

Third, I claim the lipped driver, K, for driving the pin along a railway or bed laterally into the groove to be stuck into the paper, when it acts upon the pin before the vibrating nipper lets go its hold.

Fourth, I claim the lateral driver or its equivalent, for the purpose of delivering the pin under the spring holder, y, as a means of controlling the pin until it is inserted into the paper.

Fifth, I claim the combination of the sticking driver, P, and its guiding groove with the vertical crimping bars, when the bars permit the paper to pass over their ends vertically in the process of sticking pins.

Sixth, I claim the feeding rollers, Y" z", or their equivalents, for the purpose of holding the paper and controlling it at such a distance from the guiding rollers, x' x' x", as will allow the paper to pass up and down without moving the spools while the rollers are in motion.

Seventh, I claim the rollers and carriages which control pins and the paper, for the purpose of moving the paper forward intermittently, and up and down intermittently, to space off the rows of pins, and to space the distance between each succeeding pin in the same row, the ends of the paper resting on spools, Y" z" dissected from the machine.

UTERINE SUPPORTERS—William Provines, of Columbia, Missouri: I claim the combination of the ball and the valve apparatus, described in the manner and for the purposes set forth.

BEE HIVES—Charles Pawling, of New Pittsburg, Ohio: I claim the arrangement of the bee entrances H H, with the moth entrances f f f, and moth receptacles E F G P, when located as set forth and described, and for the purpose stated.

WASHING MACHINES—Jacob Purkey, of York, Pa.: I claim the reciprocating corrugated or fluted board or rubber C, in combination with the rollers, J; the rollers being attached to the chains, I I; the board or rubber, and rollers, being arranged and operating as shown and described, for the purpose specified.

[The foregoing improvement consists in the employment of a vertical wash-board, which moves up and down between a series of rollers. Said rollers are attached to chains which yield when the clothes are put in between the rollers and board.]

APPLYING TAN LIQUOR TO HIDES—Samuel W. Pingree, of Methuen, Mass.: I do not claim the separate use of any of the chemical materials mentioned, for the process of tanning, as I am aware that all of them have been before employed, and particularly, I do not claim the neutralization of the alkali, by the use of sulphuric acid, preparatory to the introduction of the hides into the tanning liquor.

But I claim the use of the catechu and the sumac, and alum, with reference to the application of the bark or strong tanning liquor, as stated, and so as to produce effects as set forth, and in the order as specified, when the hide is tanned with the hair on it.

SPRING BED BOTTOMS—Chas. Schroder, of New-York City: I claim the arrangement of springs laying horizontally, and connected together in the manner and for the purpose specified.

WHEELWRIGHTS' MACHINE—John Sitton, of Williamston, S.C.: I do not claim the several devices described separately: but I claim them when combined and operated as specified.

FINISHING CASTER WHEELS—Philos B. Tyler, of Springfield, Mass.: It will be obvious to all mechanicians that stamping between dies the two surfaces of a piece of metal, is not new, and I lay no claim to such an operation, or to corrugating the disk of a wheel which is old; but the smoothing of the surface of a caster wheel or roller, on the plate or disk connecting the hub and rim, and condensing the metal in the operation, instead of removing it, has never before been done to my knowledge; its advantages are obvious—it prevents spoiling any of the castings by imperfect manipulation—it greatly strengthens the disk a, hardening it, and making it stiffer, and insures an equal thickness in all its parts, or a proportional thickness as desired; the disk can be smoothly finished and corrugated, as easily as if it were a plain surface, and the expedition and cheapness with which the operation is performed, greatly reduce the labor and cost of the manufacture of the article.

I do not claim the process of stamping or swaging, as they are well-known devices, and are used for various purposes, such as making rail-road wheels of wrought metal, and other articles.

But I claim finishing caster rollers, and like articles made of cast metal, by stamping them in dies, substantially in the manner and for the purposes described, whereby in finishing, the disk is hardened, and its thickness determined with exactness, insuring the maximum amount of strength with the smallest weight of metal.

COTTON GINS—John L. Tuttle, of New-York City: I am aware that a guard or shield, which might be termed a straight-edge, though not thin enough to pass under the seeds, has been used; but do not know that a roller, such as described, has ever been used in connection therewith, so as to completely keep back the seeds, which my invention does completely.

I do not claim the knocking-roller and straight-edge when used separately, with the toothed-cylinder, as they have been thus used.

But I claim the combined use of the straight-edge and roller, for stopping and returning the cotton seeds to the breast of the machine and allowing the fiber only to pass through, substantially as set forth.

FORMING HAT BODIES—James S. Taylor, of Danbury, Conn.: I do not claim a perforated cone or exhaust, either of which are well-known devices used in machinery for forming fur hats; neither do I claim a picker to pick up or blow the fur on to the cone, as that is a well-known device used in machinery for picking fur, wool, or cotton. Neither do I claim moistening or wetting the hat preparatory to removing it from the cone.

But I claim the revolving feed-table, in combination with the picker cone and exhaust, operating in the manner and for the purpose set forth.

I do not claim the principle of wetting or moistening the hat when formed, on an exhausting cone, for that is a principle well-known; neither do I claim the combination of currents of air, and the currents of numerous jets of hot water, in the hardening or wetting process, as that is a combination found in D. Barnum's patent, July 1, 1851.

But I claim the combination of the revolving brush, arranged as described, with revolving perforated cone, for the purpose of moistening the fur as it is thrown up on the cone, substantially in the manner described.

CARD TEETH FOR MACHINE CARDS—John L. Tuttle, of New-York City: I am aware that R. Kitson, in his patent of Nov. 11, 1851, represents a tooth of soft iron and of small wire, with a cross-section resembling the cross-section of my card-teeth—this I do not claim.

But I claim the making of card-teeth by giving to steel wire, the form described, and substantially in the manner set forth, so that when set, and a surface ground on them, the same grinding shall form the sharp points thereon.

NAIL MACHINES—Perry A. Wilbur, of New Castle, Pa.: I claim the arrangement of the cutting, griping, heading, and delivery apparatus, with regard to the nail-plate feeder, so that the whole may be operated from one cam shaft, substantially in the manner set forth.

FASTENING FOR GATES—Smith Young, of Milton, N.Y.: I claim the employment of two pivoted spring catches on the post B, in combination with a stationary central stop, b, and two hand levers, F F', on the front edge of the gate, substantially as and for the purpose set forth.

[The above improvement is intended for gates which open in two directions, inward and outward. The invention consists in providing a fixed tongue on the front edge of the gate, and two spring catches on the post, against which the gate closes. Said catches are arranged at a short distance apart, so as to leave a space between them for the tongue, on the gate, to fit in and hold the gate, when closed.]

CLEANING EMERY WHEELS—Stephen A. Whipple, of Shaftsbury, Vt., and Heman Whipple, of Port Richmond, N. Y.: We are aware that rollers partially immersed in water or other fluid, have heretofore been used for a variety of purposes, therefore we do not claim the same.

But we claim the use of the roller D, revolving in contact with the water, and the superincumbent wheel F, substantially as and for the purpose set forth.

FELLING TREES—Simon Ingersoll, of Greenpoint, N. Y.: (assignor to Farmers' and Mechanics' Manufacturing Co., of same place): I claim attaching the saw O, to he bar M, which is connected with the levers J J, L L, and bars K, I, as shown, the bar I, being connected with the spring R, the whole being arranged as described, for the purpose set forth.

[This invention is now on exhibition at the Great Fair of the American Institute, Crystal Palace. An engraving and full description will be found in our paper of 27th of September last, being No. 3 of present volume.]

BRACE FOR CARRIAGE SPRINGS—Thomas Dutton, of Washington, D. C., (assignor to John R. Elvans, of same place): I claim the combination of the brace rod, with the toggle-joint and lever, or any of their equivalents, substantially in the manner, and for the purpose set forth.

PICTURE CASES—Alfred P. Critchlow, of Florence, Mass., (assignor to A. P. Critchlow & Co., of same place): I do not claim a hinge of common construction, or one having each of its leaves bent at a right angle, so that it may be inserted in a mortise made in the side of a case or box.

But I claim the application of a hinge of a daguerreotype or picture case, molded of a plastic material, or made of a frangible substance or substances; said hinge being made with each of its leaves bent twice, as set forth, and so applied to the halves of the box, that it may embrace two contiguous sides of such halves and be independent thereof, and extend or lap over and be fastened to the top and bottom plate of said box, substantially as described.

CHIMNEY COWL—Thomas W. Chatfield, of Utica, N.Y., I am aware that a patent was granted to Braer & Simonds, June 13, 1854, as also one patent to F. Emerson, July 3, 1847, as well as other patents and rejected applications: wherein the use of cones is described, which I do not claim.

But I claim the improvements I have made upon said patents and rejected applications, by the use of two inverted funnels B B, and D D, together with the short cylinder C C, arranged as described.

SALT EVAPORATORS—James L. Humphrey, of Syracuse, N. Y.: I claim, first, the arrangement of the furnace, the closed evaporating vessel, the flues, D D, the blower, F, and the chimney, H, whereby the products of combustion are drawn through the evaporating vessel below the surface of the liquid to produce evaporation of heat, and afterwards driven in the opposite direction over the surface of the liquid to produce further evaporation and carry off the evaporation to the chimney, substantially as described.

Second, the scraper, K, fitted to the flues and pipes which pass through the liquid in the evaporating vessel, to operate substantially as set forth.

[The above improvement consists chiefly in an arrangement whereby the heated products of combustion from a furnace are drawn, by a blower, through flues passing through a closed evaporation vessel below the surface of brine, or other liquor, and by the same blower are forced back again, through the vessel, over the surface of the liquor, and into the chimney of the furnace. The heat from the furnace is thus used to effect evaporation both below and above the surface of the liquor, and the draft of the chimney is employed to carry off the evaporation. The improvement consists, further, in a scraper fitting to the flues below the surface of the liquor, and having a movement back and forth along the tubes, to remove the deposit which is caused to incrust itself upon them by crystalization, and which, if not removed, would prevent the heat being rapidly conducted to the liquor.]

SPRINGS FOR SIDE SPAR WAGONS—M. G. Hubbard, of Penn Yan, N. Y.: I claim the mode described of combining the two semi-elliptic springs with the side spars of light wagons by bringing one above and the other below the end of said spar.

ANTI-FRICTION BUSHING FOR SHIP'S BLOCKS—Jas Kelly, of Sag Harbor, N. Y.: I claim the described mode of constructing the bush, by riveting the head within the cylinder, and the annular grooves, d d, for the reception of the bearing rings, E E, of the rollers, for the purposes specified.

PLOWS—Samuel A. Knox, of Worcester, Mass.: I do not claim the formula or rule, by which the form of the working surface of the mold board is determined or obtained, as I have only described such rule or formula as a mode of determining and defining the form which does constitute my invention, that it may be distinguished from all other forms of mold boards known prior to my invention.

I claim the form of the working surface of the mold board of plows, substantially such as described, and composed or combined of the several characteristic features specified.

GIMLET HANDLES—Guillaume H. Talbot, of Boston, Mass.: I do not confine myself to the particular arrangement or rag wheel gearing represented.

But I claim the application within the stock or handle of the gimlet, or other tool or instrument, of an arrangement of ratchet or rag wheel gearing, operating substantially as described, so as to enable the tool or instrument to be rotated in either direction, at the pleasure of the operator, by turning the handles back and forth in opposite directions, and at the same time pushing it from or pulling it towards him—the direction of the rotation being

varied by the pushing or pulling of the stock or handle.

[The above invention consists in the application within the tool stock or handle, of such an arrangement of ratchet or rag-wheel gearing, as will enable the tool or instrument to be rotated in either direction at the pleasure of the operator, by turning the stock or handle back and forth, in opposite directions, and at the same time pushing it from or pulling it towards him. By pushing the handle from him the tool or instrument may be rotated in one direction, and by pulling it towards him may be rotated in the opposite direction. It forms a highly useful and convenient instrument.]

ARRANGEMENT OF THE THILLS OF VEHICLES—Noah Warlick, of Lafayette, Ala.: I claim the swinging frame composed of bars a, and b, and braces c, adapted to the reception of either thills or pole, substantially as and for the purposes specified.

RAILROAD CAR COUPLING—John C. Ward, of Charleston, S. C.: I make no claim to a tumbler where a partial rotation effects the coupling, when such rotation is produced by hand; neither do I claim the fastening produced by the rotation of either socket or link, and known as the "bayonet joint" fastening.

But I claim the weighted arm A, stud H, and slide-catch B, in combination with the partially rotating tumbler, when said tumbler constitutes the securing socket, constructed, arranged and operating substantially as described, for constituting a self-acting car-coupling.

RE-ISSUES.

ARTIFICIAL STONE—St. Jullien Ravenel, of Charleston, S. C. (Patented Aug. 12, 1856): I claim the composition of marl and slaked lime, substantially in the proportions specified, for producing an artificial stone, or a substitute for stone and bricks.

SELF-SEALING CANS—Robert Arthur, of Philadelphia, Pa. (Patented Jan. 2, 1855): I claim, first, a vessel made with a groove to surround its mouth, prepared with cement, and ready for hermetically sealing, but to hermetical sealing itself I make no claim.

Second, I claim the employment of elastic packing, arranged and retained by a groove of an acute form, or whose sides are in close proximity, in the manner and for the purpose described.

BORING MACHINE—Arcalous Wyckoff, of Elmira, N.Y. (assignee of Wyckoff & Morrison, of same place.)—Patented Sept. 25, 1855: I claim, first, the tubular or hollow auger or bits, D, as constructed, having the cutting lips of the bits approach the center, and yet separated from each other, boring without the use of a screw on the end of the bit, for the purpose of preventing the bit from following the grain of the wood.

Second, I claim the worm ..., operating on its own axle, and independent of the revolution of the auger or bits D, for the purpose of clearing away the chips, as set forth.

[This invention is now on exhibition at the great Fair of the American Institute, Crystal Palace, N. Y. We shall shortly illustrate it by an engraving from a working machine.]

DESIGNS.

STOVES—Hudson E. Bridge, of St. Louis, Mo.

Electro-Plating with Aluminum.

[Concluded from page 31.]

No. 7. *To plate with an alloy composed of Aluminum and Nickel.*—We form a bath of alumina according to the solution No. 3, and we attach a pole of nickel, with which we work the bath, supplying the alumina in solution from time to time. A strong battery power may be used for the baths of nickel, but they will work with various powers. Or we add to the bath of alumina a bag of the oxyd of nickel, which we prepare in the following manner:—

We dissolve nickel by nitro-muriatic acid, say one part muriatic and two parts nitric, and precipitate by ferro-cyanide of potassium; we then wash the oxyd, and it is ready to be placed in the bath. If this bath be used with a platinum pole, both the oxyds must be supplied from time to time; if with a nickel pole, the alumina alone must be supplied in solution. Or we take about 4 oz. of nickel, which we dissolve with nitric acid, and precipitate with carbonate of potassium; we then take the oxyd so produced, with about 4 lbs. of carbonate of ammonia, and 4 gallons of distilled water, to this we add about 1-4 lb. of the oxyd of alumina, prepared according to No. 3, boil in an iron vessel, filter the solution, and then it is ready for the bath, which we work with a nickel pole.

No. 8. *To plate with Aluminum and Copper.*—We dissolve alum in water, and precipitate either by carbonate of potassium or carbonate of ammonia; we then filter the alumina, then take the alumina and roast it upon an iron plate until dry; we then place about 4 lbs. of cyanide of potassium in an iron crucible, and completely melt it; we then add about 1 lb. of the dried alumina, and melt this with the cyanide; we then add (by degrees, so as to avoid too violent an ebullition,) about 1 lb. of carbonate of soda, and we fuse these three ingredients together about one minute, at a red heat; we then take about 1-2 lb. of the sulphurate of copper, which we add to the fused alumina, and again fuse it with copper, until both are melted, then turn it out on a slab; then place the compound in about four gallons of water, boil it, and filter it, and the solution is ready. This solution should produce a deposit of reddish purple, having the red color of copper influenced by the aluminum. This bath may be worked with a platinum or a copper pole. In the former case the bath must be replenished with the oxyds of both metals; in the latter case, with alumina in solution only.

No. 9. *To plate with Aluminum, Copper, and Zinc.*—We take half a pound of the sulphate of zinc, which we fuse with the alloy of alumina and copper, as described in No. 8, introducing the sulphate of zinc next, after the copper has been fused with the alumina, and we then proceed to complete the solution as in the foregoing. We then try the bath, to ascertain if there has been a change in the color from the former red color, produced by the bath of copper and alumina, to a color more resembling gold or brass. If it be not sufficiently changed to a yellow tint, which should be the effect of the sulphate of zinc, we add some oxyd of zinc and a further portion of cyanide of potassium. It is preferred to work this bath with a pole of brass, supplying alumina in solution from time to time; and we have found the same results from various powers of the battery.

No. 10. *To plate with an alloy of Aluminum, Silver, and Tin.*—The bath of alumina is made in the same manner as No. 4, with the exception of using 8 lbs. of cyanide of potassium in lieu of 4 lbs. We then take 8 oz. of metallic tin, dissolve it with nitro-muriatic acid, precipitate with salts of tartar, and dry the oxyd; we then melt the cyanide of potassium in an iron pot. We then fuse the alumina and carbonate of soda, as described in No. 4; then add the oxyds of silver and tin to the hot liquor, let it remain a few minutes, dissolve it in about four gallons of distilled water, boil the solution, filter it, and it is ready for the bath. This solution may be worked with a platinum pole, in which case the oxyds of all the metals must be supplied; or it may be worked with a pole of silver and tin, in which case the alumina alone must be supplied, and a moderate battery power should be employed.

No. 11. *To plate with Aluminum and Iron.*—We use a bath of alumina, prepared as before named; then take sulphate of iron and dissolve it with water, precipitate with salts of tartar, filter it, then take the oxyd of iron, and add to the solution of alumina, in the proportion of about 1 lb. of the oxyd of iron to 4 gallons of the solution of alumina; boil them together, filter, and the solution will be ready for use. This bath may be worked with a platinum pole, and the strength of the bath is sustained by adding the oxyd of aluminum and the oxyd of iron from time to time. If aluminum or the alloys of aluminum with other metals be required in a solid state, it or they may be deposited, as before described, on a metal which melts either at a higher or lower temperature than the aluminum, or the aluminum and its alloys, or upon a metal that is harder than the deposit, and the deposit can then be separated by heat or by scraping, and the aluminum or aluminum and its alloys, so obtained can be consolidated by processes already known.

The Steam Frigate San Jacinto.

MESSRS. EDITORS—In reading the first number of this volume of the SCIENTIFIC AMERICAN, we noticed the remarks about the *San Jacinto*, and believing that you have no wish to do us an injustice, we send you the following information:—The present machinery of the *San Jacinto* was completed by us in July, 1854, and up to the present time (propeller excepted) has given entire satisfaction. The first propeller was seriously injured (while at the Navy Yard here, previous to her trip to Europe) by being suddenly stopped, when making thirty-three revolutions per minute, by a large timber floating into the propeller well. As the injury was not visible, the ship sailed, and broke a blade when going to the Baltic. On docking the ship it was found to be the injured blade that was lost, and a previous fracture of considerable magnitude observed. The subsequent breaking of the second and third blades followed as a natural consequence the breaking of the first. The present reports of the breaking of the machinery are all untrue, and are based on the following circumstance:—After steaming to China, they left for Japan; just after leaving port a slight jar was observed in the propeller and on examining it, it was found that the key which held it on was becoming loose. As there was a dock in China where it could be secured and none in Japan, the engineer advised returning to port, and hence the various reports as to her breaking down, etc.

In sending you this information we have no desire to be ourselves known in print, but simply to give the facts of the case.

MERRICK & SONS,
By B. H. BARTOL.

Philadelphia, Oct. 11th, 1856.

[For the Scientific American.]

Growing the Chinese Sugar Cane.

MESSRS. EDITORS—As the Chinese Sugar Cane is attracting the attention of the community, and as it is likely to be of great value to the farmers of the United States, and as you have given us an article on this subject in No. 1, Vol. XI, of the SCIENTIFIC AMERICAN, I thought I would write down and send you the result of my own experience in the growth of this plant.

Some time during the last winter I obtained about three hundred seeds of the "Sorgho Sucre" from the Patent Office, which I planted on the 1st of May last, on land that had been cleared three years ago. I laid the field off in checks three feet apart for corn. In some of these hills I planted the seeds of this sugar cane, dropping eight seeds in a hill, making thirty-seven hills in all. I worked the cane precisely as I did the corn, giving it three plowings and three hoeings. In four months from the time the seed was planted the cane was fully matured. It then measured ten feet six inches high, and one inch and three-eighths in diameter at the butt end. The joints average twelve in number to the cane, measuring from six to eleven inches long, the shortest at the bottom and the longest at the top. As soon as the seed was ripe, another head of seed put up out of the second joint from the top, and in a short time grew as high as the original head, though not quite so large. By the time the seed on this head began to turn dark a third head sprung up from the third joint, which was about the size of the last head, and now a fourth head is making its appearance from the fourth joint. Where this shooting forth of new heads would end, if no frost should come to kill it, I cannot tell. The roots, where I cut off some of the canes some time ago, are sending up new sprouts, some of which are four inches high. I am of the opinion the Sorgha Sucre is a perennial plant, and would grow all the time if there were no severe cold to kill it. It appears to surpass anything we can plant in producing fodder for cattle. There are commonly twelve leaves on a cane, and these measure, on an average, three feet long, and three inches and a half broad. We commonly plant two stalks of corn in a hill. I had eight canes in the same space, each cane producing full as much fodder as one stalk of corn. At this rate, which is to me matter of fact, one acre of cane will produce as much fodder as four acres of corn. But I am persuaded that I might have planted the cane in drills of three feet apart, dropping eight seeds in every space of eighteen inches, and by this means have eight times as much fodder as corn would produce.

One head of seed that I picked up at random measured three gills, and one gill contained eight hundred seeds. I then selected a large head, and measured it, and found it to contain four and a half gills of seed. The 37 hills that I planted produced three pecks of seed, this, after drying it two days in the sun, weighed 32 pounds. I had no mill to squeeze the cane, in order to make experiments in syrup and sugar. I made a little roller, which I thought might press out some of the sap, but it was a failure, for want of sufficient power. It flattened the cane, but did not press out the sap, of which the cane appeared to be full. I twisted a joint in my hands after being flattened with the roller, and obtained about half a gill of sap, which was as sweet as any of the sap of the sugar cane of the south. I intend, Providence permitting, to plant at least half an acre next spring, and procure a proper mill and boilers, and make a thorough experiment.

JOS. MCKEE.

Juno, Lumpkin Co., Ga., Sep 1856.

[For the Scientific American.]

The Action of the Galvanic Battery.

In S. B. Smith's answer, on page 19, SCIENTIFIC AMERICAN, to M. Vergnes, I was surprised to see him attempting to prove his theory of the electric current taking the surface of fluids in preference to descending into them, by stating the well-known fact of the positive pole in solution being more rapidly dissolved at the top than at the bottom, when in reality this action arises from a totally different cause. It is well known to chemists that all metallic solutions, if allowed to stand, become more dense as you descend below the surface, from the fact that the heavier portions of the fluid settle to the bottom until the lowest stratum becomes nearly or quite saturated with the metallic salt, and finally crystalizes on the bottom of the vessel, while the top of the fluid is comparatively free of metal. If a solution of cyanide of silver and potassium be set aside for twenty-four hours, it will be found, upon examination with the proper instrument, to contain 50 per cent. more silver at the bottom than at the upper stratum of fluid. If any person will examine a negative plate in a battery after an action of a few days, he will find the silver deposited two or three times heavier at the lowest extremity than at the upper. Now the reason why the positive pole is more rapidly dissolved at the upper part is this: The solution being nearly saturated with metallic acid at the lower portion, there is little or no free solvent to attack the positive plate at that point, while, on the contrary, at the upper part of the liquid there is a large quantity of free cyanide ready to take up the metal when the action begins. In the process of precipitation, the lower part of the liquid, instead of supplying itself from its own part of the positive plate, is actually being fed from the top, and by a close examination the two currents can be distinctly seen with the naked eye, the one saturated and slowly descending from the positive pole, and the other having deposited its burthen of metal, rapidly rising to the top to again receive its load of precious metal, thus producing a continual circuit, as long as the action goes on. This inequality of density in metallic solutions is more distinctly seen in a sulphate of copper solution than any other. If the positive plate be set flat down at the bottom of the solution, and the negative at the top, and left in action a few hours, it will be found that the top of the liquid is entirely robbed of metal, while the bottom is so completely saturated that large crystals are forming upon the positive pole, and entirely obstructing the electric current—crystalized metallic salts being non-conductors.

JAMES POWELL.

Cincinnati, O., Sept. 30, 1856.

[We have also received a letter from Geo. H. Guild, of Lexington, Ky., on this subject, confirming the statements of Mr. Powell. He says:—

"Having had several years' experience in the silver plating business, I believe the plate is decomposed according to its density, and in no case yet, where I used a plate of uniform density, have I found it more decomposed at the top than at any other point of its contact with the solution, Mr. Smith's assertion to the contrary notwithstanding. I have specimens with the center entirely gone, others with the lower corners and edges gone. Mr. Smith scouts the idea of the irradiation of electricity being governed by the same laws as those of light and heat. If there is no irradiation to electricity, how is it that an object subjected to the silver plating process is plated with a uniform coat at the lower extremities, as well as at the surface without regard to the size of the silver plate immersed?"

Stove Polish.

As the period has arrived for the polishing up of stoves for winter use, we have a good word to say in favor of the polish prepared this year by Quarterman & Son, No. 114 John street, this city. Excellent though their former polish has always been, they have made a decided improvement on it this year; it far surpasses anything of the kind we have hitherto tried.

The steamship *City of Savannah*, sprung a leak on the 12th inst., off Cape Hatteras, and soon sunk; officers and crew were all saved.