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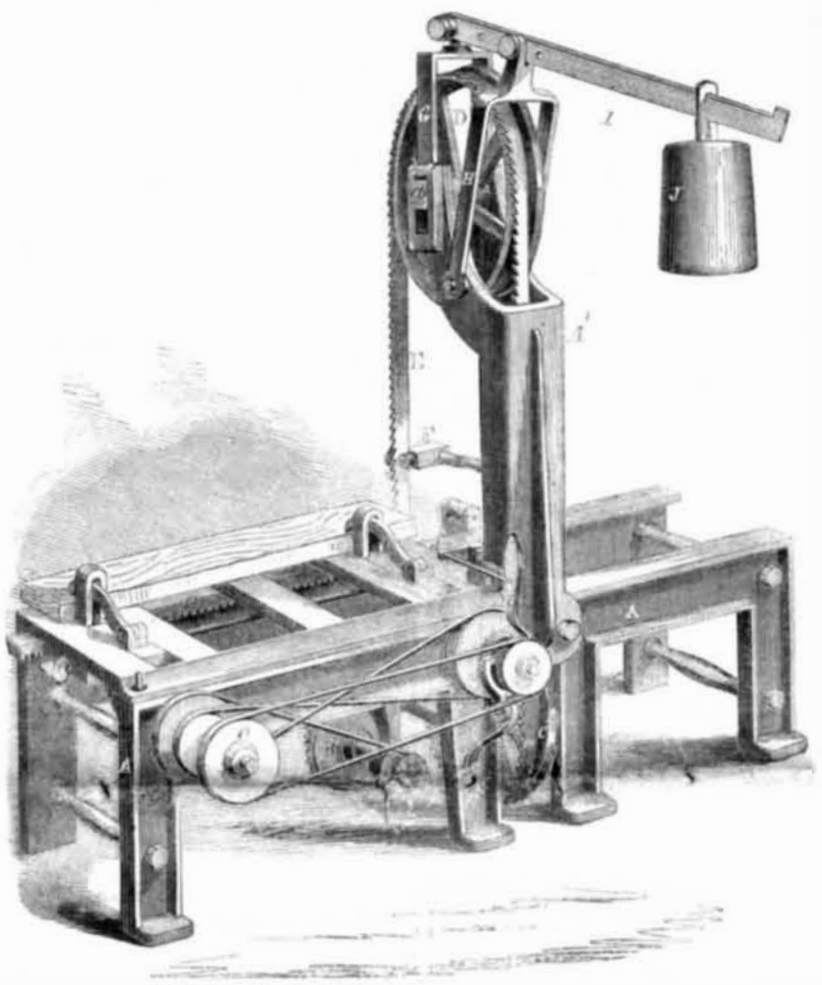
The Peach Tree.

This tree is a native of Persia, and has been cultivated in Asia and in the south of Europe from time immemorial. Linneus divides the peach into two varieties, the "true peach" and the nectarine—the one separates freely from the stone, the other does not, and is generally designated as the clingstone. There are several varieties of these two divisions, some have smooth and some rough skins; and there are instances on record of peaches and nectarines occurring on the same branch. It was introduced by the earliest colonists and found well adapted for our soil and climate a change, however, has come over the peach during the last twenty years; it does not seem to be so hardy nor so long lived as formerly; it is subject to unfavorable atmospheric influences and also to the attacks of insects which soon diminish its productive power and shorten its days. The cause of this is not well understood, and a preventive for its rapid decay has not yet been discovered. During the past two years the peach crop has been an entire failure both in quantity and quality, and large peach orchards in various sections of our country, once yielding good and abundant crops, are now blasted and barren. A discovery which would restore this luscious fruit-bearer to its former vigor and fruitfulness would be of incalculable importance. At this season of the year—entering upon spring—we urge our horticulturists to give this subject that attention which it deserves.

As peach trees blossom early in the season, they are subject to injury from late frosts; this was the case in many districts in 1858. Dwarf trees may be protected from such frosts by netting laid over them, but it would be too expensive thus to cover large trees. The small green-fly and mildew often attack peach trees, and very few persons ever try to remedy this evil, although tobacco and sulphur water is a perfect cure. Take a pound of tobacco, and pour five gallons of boiling water upon it, pour off the clear, and stir in two pounds of sulphur. When cool, apply it to the trees with a syringe or a garden-engine in the evening, then shower the trees next morning with soft water. Such applications may be required twice a week for three weeks before the cure is fully effected, but by perseverance the desired result will be secured. Most farmers seem to act upon the principle that if their fruit trees do not take care of themselves, they may die if they choose. This is not the feeling, for cultivating peach trees, at least. Some strenuous efforts should be made to restore this tree to the condition and character which it once possessed.

CAMERON'S SELF-ADJUSTING BELT-SAW.



The principal reason why belt-saws are not in more general use is because, in many machines hitherto devised for carrying them, there has been something faulty about the arrangements which compensated for the expansion and contraction of the saw as it heated or cooled. That the belt-saw is really efficient and of great utility, a moment's consideration of the following points will show:

There is no time lost in the upward motion of the saw, as in reciprocating ones, the belt cutting continuously, the kerf being less than half its diameter, thus saving power, and the power is capable of being used more advantageously than in a circular saw, which may be considered as a lever, working to a disadvantage and throwing great strain upon the arbor, and the kerf is less than one quarter the width with a belt that a circular requires. Some persons not versed in the adhesion of substances to each other, especially the "hug" of belts on pulleys, are inclined to think that the belt would be apt to allow the driving wheels to slip under it and not rotate it when there was any work on, especially if the surface of the wheel be polished like the belt itself. This is a fallacy as our mechanical readers well know, and the adhesive power of polished steel to polished iron, when one is a band and the other a pulley, is very great; more than this, if the belt be 6 inches in diameter and the circumference of the wheel be 18 feet there would be an atmospheric pressure of nearly ten tuns making the belt "hug" the pulley. The steel does not easily lose its elasticity from the motion; and every tooth comes in for its share of the work unlike the reciprocating, in which only two feet or less is of use; when a belt-saw breaks, it can be spliced easily and thus a saw may be thoroughly used up, and not have to be thrown away in the event of an accident.

This narrowness of kerf, too, is an item of great importance. The assignee (a cutter of lumber) informs us that he has now at his mill a belt-saw, a gang of reciprocating saws, and circular saws, all running, and that he can get as much lumber out of 400 feet of timber with the belt-saw as he can out of 500 by either of the other ones. From these observations it will be seen that we have an object in view, and it is to call the attention of our readers to the subject of our engraving—a perfectly self-adjusting belt-saw—invented by David A. Cameron, of Butler, Pa., and patented by him, March 21, 1854. He is since deceased, and John Whitbeck, of Warwick county, Va., has now the control of the patent.

The adjustment is effected in the following simple manner:—The upper belt wheel, D, has its bearings in boxes, *a*, attached to a frame, G, and capable of sliding in grooves in the end of the standard A'; this frame, G, is suspended from a lever, I, whose fulcrum is another frame, H, also capable of moving; a weight, J, can be placed on any part of I, to exactly balance the strain on the saw, E, and produce the proper tension for driving it through the work with ease. As the saw expands the weight, J, draws the upper wheel up and tightens the saw, and the moment it contracts from cooling, it allows the wheel to accomodate itself to the shortening. Each belt wheel, D and C, (the lower one, C, receiving the power) is provided with an adjustable rim that can be adjusted by screws to keep the teeth of the saw always off the wheels. A guide, F, above the timber and one below keeps the saw straight while cutting.

The other parts of the machine are similar to many other sawing machines; the frame, P, carrying the timber to the saw, the timber being held by dogs, L, that are moved to regulate each cut by the shaft, *b*, and have cog-wheels, and a rack on their under surface. The frame, P, is moved, and the timber fed to the saw by the wheel, B, the pulleys, N, O, and a cog-wheel and rack, the frame bearing the rack. A pin at each end of P, catches a little lever, *d*, when it has got to the end of its path, and throwing *d* out, moves the lever, M, and the shipper attached to it thus instantly changing the motion of the frame.

The whole is remarkably simple and well arranged; any further information will be given by the assignee upon being addressed as above. His Post Office address is Yorktown, Va.

A New Hydro-carbon.

Paragraphs have been floating the rounds of the press for a year or two past, in regard to a peculiar bituminous mineral said to be found in great abundance in some parts of South America.

Mr. F. H. Southworth, of Rio Janeiro, has recently sent us a sample of this mineral by the hands of W. N. Ely, of Stratford, Conn. In color it is a light brown, break with clear lines of fracture as if formed by successive deposits, and has the appearance of lime saturated with crude oil and submitted to a moderate pressure. It burns readily when held to a jet of lighted gas, and gives off a smoky flame and emits an odor resembling bituminous coal, leaving a residue principally of lime. Mr. Southworth informs us that it has been known to exist for five years past on the banks of the navigable river Acarahy, about 40 miles south of Bahia. He applied it for the first time to the manufacture of gas, in April 1858, and it produces about 7 cubic feet to the pound—a greater amount than is obtained from any cannel coal known to us. It contains, however, too much of free carbon to burn with a clear flame, but in making gas by the "Aubin system" in Rio, Mr. Southworth introduces minute jets of steam into the retort, the oxygen of which unites with the fixed residue, and liberates sufficient hydrogen to make a clear and smokeless light. He has been awarded by the Emperor a large mining grant for several years, and millions of tons can be obtained with very little trouble. He believes it will yet be employed largely for distilling coal oil, and that it will also become a substance of large export to various countries for fuel.

It is undoubtedly a rich bituminous substance, but it is far more bulky than cannel coal, and never can be exported so cheaply in our judgment. As a cleanly material for burning in parlor grates, we have never seen any asphalt to equal it.

CURIOUS CALCULATION.—A coal miner in Lancashire has made the following calculation. The quantity of coal raised annually in Great Britain is 68,000,000 tuns; if this were excavated from a mine 6 feet high and 12 feet wide, the excavation would be 5,128 miles, 1,090 yards in length. Or, if formed into a solid globe the diameter would be 1,549 feet. Or if piled into a square pyramid, whose base was 40 acres, the hight would be 3,356,914 feet.

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 22, 1859.

[*Reported officially for the Scientific American*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

SOYTHE SNATHS—S. B. Batchelder, of Lowville, N. Y.: I claim the arrangement of the hooks, D D, screw, E, ring, C, and plate, B, with slot, F, and sliding block, G, the whole being constructed for joint operation, in the manner set forth and described.

WHEELS FOR TRACTION ENGINES—Wm. Bray, of Folkstone, England. Patented in England Dec. 31, 1856: I claim constructing traction engines with driving wheels, with blades or teeth, which are capable of being protruded and withdrawn, substantially as described.

SUBMARINE TELEGRAPH CABLE—F. J. Bridges, of New York City: I claim the braided or plaited coat covering, or layer, for conductors, cords, or cables, for electric telegraphic purposes, as set forth.

METALLIC BANDS FOR BALING—George Brodie, of Little Rock, Ark.: I claim preparing the hoops or bands for tyeing before they are passed around the bale, by bending one or both ends of the hoops or bands, and placing in the inside of each band a suitable prepared metallic pin similar to those I have already described, around which pins the bent end of the hoops are securely pressed, for the purpose of keeping the pins in place, and also making the ends of the hoops wider or thicker as the shape of the connecting links used may require.

I also claim forming the connecting links like those shown.

I also claim bending one or both ends of the hoop or band, as shown in Figs. 11 and 12, around the outer ends of the connecting link, thereby strengthening the ends of the link, and preventing it turning or getting out of place, and the tie from untyeing.

I also claim making metallic hoops for bending bales, with a tie on each side of the bale, for the uses and purposes expressed.

I also claim using strips of cloth, paper, or other suitable material, under the metallic hoops, as shown, for the purpose described, substantially as set forth.

FASTENING FOR SHIRT STUDS, &C.—Barnes Clayton, of Philadelphia, Pa.: I am aware that a fastening for studs has been used before, consisting of two vertically moving levers turning upon pivots in the back piece, and jointed to a sliding stem on the front piece, so that by simply pushing the latter inward, or pulling it outward, the said levers are caused to open or shut together accordingly, as in Wilcox's patent of April 14, 1857: therefore I do not claim such a combination of devices.

But I claim a stud fastening, consisting of the stem, e, rigidly fixed to the piece, a, of the back, that the vertically moving lever plate, f, and the screw stem, h, fixed to the front or ornamental part, A, the same being constructed and arranged to operate together as set forth, and for the purpose of fastening the stud in place, so that it cannot be pulled out or removed therefrom, without first rotating the screw, b, as described.

ADJUSTABLE DENTAL SWAGES—E. H. Danforth, of Jamestown, N. Y.: I am aware that compound dies, or dies composed of several pieces of metal clamped together, have been used for swaging sheet metal into form, and I therefore do not claim the compound swaging die; but I am not aware that in swaging sheet metal for any purpose, the grooves of sheet metal have been filled with malleable metal, and then the sheet subjected to complete or final swaging.

What I therefore claim is, forming the labial and the lingual curve of dental plates, for the inferior maxillary alveolar ridge by swaging it into form with the compound die and malleable plates in the curve of the plate, as set forth.

INSTRUMENT FOR ASCERTAINING THE DISTANCE BETWEEN ITSELF AND THE TARGET, WITHOUT CHAINING—B. D. Villeroi, of Philadelphia, Pa.: I claim the addition, by means of a screw of a tube, containing the lens, and divided throughout its whole length by a vertical partition, or diaphragm. At the extremity of this tube next the eye-piece is placed a ring containing a bisect lens, D E G K, the two halves of which are equally inclined on opposite sides of the vertical plane, perpendicular to the axis of the telescope.

CORN-HUSKERS—H. A. Doster, of Bethlehem, Pa.: I claim the arrangement and combination of the lever, D, with the adjustable roller, A', so that when the roller, A', is adjusted, the distance between the cam, i, and the fulcrum of the lever, D, will be correspondingly changed, as and for the purpose shown and described.

[This invention relates to an improvement on a corn-husking device, patented by this inventor and S. A. Skinner, Nov. 17, 1857. In the former machine, two rollers were employed, armed with teeth and grooved circumferentially so that as the rollers were rotated, the husks would be stripped from the ears, and drawn between the rollers, the latter repelling the denuded ears in consequence of the angle of the bite being too small to grasp the ears, which were fed by hand, thus rendering the attendant liable to being injured by the rollers catching his hand. The present invention consists in the use of a guard-board attached to the machine and arranged relatively with the rollers, so that the ears of corn may be fed to the machine with great facility, and as rapidly as the machine can husk them, without subjecting the attendant to the least danger.]

WEATHER STRIPS—John L. Faber, Senr., of South Hadley, Mass.: I claim, first, The bar G, in combination with the parallel vibrating links, a a, when said bars so arranged as to fall by its own weight, and be forced against the door by the closing of the latter, as set forth.

Second, The combined arrangement of the several strips, and their attachments, to close up the frame sides of the door, as described.

FILTERS—John Fitch, of Seneca Falls, N. Y.: I do not claim the ordinary cask or tub filters, with pot or reservoir filled with charcoal, or other filtering material, the same having been known and used.

But I claim the combination of the cylinder, B, constructed and partly filled, as described, with the outside case, A, having the perforated plates and the filtering material disposed and arranged as described, by means of which the fluid to be filtered is made to pass through the filtering material for a greater distance, and a more perfect purification effected. I also obtain, by the same combination, a convenient mode of cooling the fluid, and also of cleansing the filter, without deranging its parts, by means of reversing its action in the manner described, the whole constructed and operating in the manner and for the purposes mentioned.

COFFEE MILLS—R. B. Fitts, of Philadelphia, Pa.: I am aware that a single crushing cylinder has been employed before, in combination with a horizontal grinding cylinder, fitted with an adjustable shell or concave, the said crushing cylinder rotating at a slower speed than the grinding cylinder, for the purpose of crushing or grinding coffee; therefore I do not claim such a combination.

But I claim the cylinders, B and B, in combination with the grooved cylinder, C, and its adjustable concave, D, the whole being constructed and arranged together beneath the hopper, A, so as to operate in the manner and for the purpose set forth and described.

FLY-WHEELS FOR ROLLING MILL MACHINERY—Jacob Geyser, of Alleghany, Pa.: I do not claim any particular shape, or form, or material for the construction of the rim of a fly-wheel, as great variations can be made in this respect.

But I claim constructing the rim of a fly-wheel hollow, with partitions, in such a manner that when the heavy materials are piled in, laid in concrete, it may be held stiff and steady, as described.

I claim using any heavy and hard material, along with suitable cement, to fill up such a rim, when constructed and operating as and for the purpose described.

LETTER ENVELOPES—Emanuel Harmon, of Washington, D. C.: I claim the method or process of preparing letter envelopes, ready ruled in the process of manufacture, substantially in the manner and for the purpose set forth.

DOUGH ROLLING MACHINE—John Hecker and William Hotline, of New York City: We do not wish to be understood as making claim to the use of cylinders for rolling dough, as these have long since been applied to the rolling of dough.

But we claim the combination of an inclined endless apron for receiving and returning the dough, substantially as described, in combination with the cylinders for rolling the dough, substantially as described.

We also claim, in the above combination, the curving in of the apron around the upper roller, or the equivalent thereof, substantially as described, for the purpose of returning the dough to the feed table, substantially as described, in combination with the cylinders for rolling the dough as described.

And we also claim the rotating screen, as described, in combination with the arrangement of cylinders for rolling and working the dough, substantially as and for the purpose described.

And, finally, we claim, in combination with the rotating screen, as described, the hopper and apparatus therein, for insuring a regular supply of flour, as set forth.

FILTERS—A. Jaminet, of St. Louis, Mo.; I claim, first, Circulating the water to be filtered through tiers or courses of pipes, arranged within a drum, having a current of waste steam passing through it and then passing said water into separators for further circulation, and of depriving it of mud and other foreign matters.

Second, Arranging the separators, C C1 C2 C3 C4 C5, within the steam drum, B.

Third, Making the apparatus self-cleansing, at intervals, by operating the valves at the bottom of the separators and filterers, by levers, acted on by toothed disks, ratchet wheel and pawl, or their equivalents, actuated by the automatic movement of the clear water trough in tipping, or tilting, to discharge essentially as set forth.

Fourth, Controlling the automatic discharging action of the clear water trough, by means of a flutterer, or float, arranged therein, and serving, by connection with an unlocking lever, a stop piece and catch, or hook, to hold the trough from prematurely filling.

MAKING ORNAMENTAL CHAINS—James Launcelot, of Cranston, R. I.: I claim the method described of weaving a chain from sheet metal, by forming the base of each link into a geometrical figure, and by bending each arm, longitudinally, at the same angle as one of the outer angles of the base, so that a cross-bar on the extremity of the next proceeding link shall, when bent down, bear against the angular side of two of the arms of the next succeeding link, and thereby enable the chain to withstand a strain nearly equal to the cohesive strength of the metal of which the links are formed.

MODE OF MARKING AND ORNAMENTING PAPER—Thos. Mackenzie and Albert Trochsler, of Boston, Mass.: We claim, as an improved article of manufacture, paper for writing, printing and other purposes, having indelible marks or designs stamped thereon, by condensing the fibers thereof by pressure, as shown and described.

[By this invention impressions of a similar kind, but more sharply marked than water-mark, can be obtained in paper after it has been manufactured. By it autographs, &c., that cannot be produced by the water-mark with any degree of accuracy, can be perfectly reproduced in the paper, so that the invention will become useful for the identification and prevention of forgery of letters or other documents, checks, bank-notes, or, in fact, any papers of value.]

MOTIVE POWER—Chas. Mans, of Danville, Pa.: I do not claim the use of wheels and pinions, driven by weights, nor two wheels gearing into the opposite sides of a pinion or third wheel, in order to distribute the strain on the teeth, for these devices are known.

But I claim the arrangement of the drums, D and c, wheels, E and c, pinions, P and c, fly-wheel, R, and sectional weights, w, when the whole are combined and operated as described.

BREECH-LOADING CANNON—James H. Merrill, of Baltimore, Md.: I claim, first, The combination of the breech-piece and frame, so that the former may move back and forth, and have its bore raised up and lowered on the latter automatically and fastened or locked, substantially as described.

I also claim, in combination with the screw, for running the breech-piece forward and backward, the mechanism for lowering and raising the rear of said breech-piece, substantially as described.

POST-OFFICE HAMMER-STAMP—Ezra Miller, of Janesville, Wis.: I claim a Post-Office marking stamp, which has its handle running parallel, or nearly so, with its marking face, or faces, substantially as and for the purposes set forth.

DEVICE FOR EQUALIZING THE TENSION OF WATCH SPRINGS—J. J. Parker, of Marietta, Ohio: I claim making and constructing a barreled cog-wheel, or drum, for time-pieces, or for other purposes, so as to equalize and regulate the power of a spring, in manner and form, as substantially set forth.

ENVELOPE—S. E. Pettee, (assignor to the North American Paper Bag and Envelope Manufacturing Company) of Philadelphia, Pa.: I am aware that an envelope has been made, with a narrow fold at the side; but in that case, the fold is carried down the sides of the back and flap, as well of the body of the envelope, and the fold of the back is pasted to that of the body, having a stiff projecting piece in the interior of the envelope, very inconvenient and objectionable, totally useless and unnecessary; such a form I distinctly disclaim.

But I do claim the form of envelope blank described and represented, whether cut from a continous roll of paper, or from separate sheets.

FAUCET—James Powell, of Cincinnati, Ohio: I claim the described arrangement of the cam, F, flanges, J and J', longitudinal slot, i, and spurs, K, combined and operating in the manner and for the purposes set forth.

ROTARY ENGINE—T. T. Prosser, of Fond du Lac, Wis.: I claim a wheel with a spiral passage diminishing in size, from the center to the periphery, in the purpose substantially as described.

HEELS FOR BOOTS AND SHOES—Joseph Read, of Philadelphia, Pa.: I am aware that composition heels have been made and used before, but their construction and mode of application heretofore involved either an increase of weight over leather heels, or an objectionable difficulty in securing them properly in position on the boot or shoe, which has prevented their adoption by the trade.

I therefore do not claim, broadly, making composition heels for boots and shoe, nor do I claim the described mode of securing them to the soles.

But I claim a composition heel for boots and shoes, consisting of the composition, A, molded into the form of a heel, with the concavity, m, in the upper side of the same, as described, and the leather lift, or bottom piece, B or B', in combination with the leather edge piece, c, applied and secured thereto, substantially as set forth, the said heel being adapted for subsequent application to a boot or shoe, as described, and for the purposes specified.

AMALGAMATOR—H. P. Russ, of San Francisco, Cal.: I claim portable or movable cups or cones of copper, galvanized, or amalgamated with quicksilver inside, or manufactured of other materials, such as wood, cast iron, etc., to be placed in holes in sluice boxes, or other apparatus used in mining for the precious metals, substantially as and for the purposes specified.

PUMP—L. B. Schafer, of Baltimore, Md.: I am aware that shear levers have been used in different machines, and I therefore do not claim any part of my ship pump separately and for itself.

I claim the arrangement for operation together of the pump barrel, A, shear, C, link, D, hand brake, E, and piston rod, I, substantially as and for the purpose set forth.

BRICK MACHINE—J. T. Schuffenecker, of Keokuk, Iowa: I make no claim to the hopper of the machine, nor to the manner of grinding and working the clay, But I claim, first, The safety openings, D, in combination with the quadrant, C, arranged and operating in the manner and for the purpose specified.

Second, I claim the shutter, B, operated by the fork, R, spring, S', and bar, L, in the manner represented.

Third, I claim the manner of leveling the mortar in the molds by means of the two scrapers, A and A A, as shown in the specification.

INSTRUMENT FOR ENLARGING PHOTOGRAPH—David Shive, of Philadelphia, Pa.: I do not claim broadly the use of an illuminating lens, in connection with a camera.

But I claim the arrangement of the illuminating lens, F, in the usual open end of a photographic camera, supported in connection with the adjustable paper holder, C, upon a stand, D, substantially as described, so as to operate in the manner and for the purposes specified.

CASTING AND ANNEALING ARTICLES MADE OF SCORIA—William H. Smith, of Philadelphia, Pennsylvania: I do not confine myself to the precise details described and represented, as various modifications can be made in the process and apparatus, without affecting, substantially, the principle of my invention. Nor do I claim any of the processes and apparatus, separately, except as stated below.

I claim, first, The construction and use of the horizontally revolving casting wheel, B, for facilitating the casting of slag and similar mineral products.

Second, The construction of an annealing chamber, having various modes of retaining and regulating the heat therein, viz: by a series of dampers, by the construction of grooves and troughs in the walls, in connection with the flauges and dippers of the bed, D, with or without the use of sand, by the devices at the ends of the wagons, and by the uses of the ante-chambers, substantially as described.

Third, The use and combination of a series of rollers, with a traversing bed, substantially as described for imprinting an entire pattern of different colored figures.

Fourth, The construction and employment of segmental sliding molds, as shown, or of similar character, and the mode of arranging and working the same, substantially as described.

GAS BURNING STOVE—James Spear, of Philadelphia, Pa.: I claim the combination of the sled, E, in the door frame, F, with the ring, M, and the cylinder, B, and the body of the stove, A, as constructed in the manner and for the purpose set forth.

APPARATUS FOR SKIMMING THE SURFACE OF THE WATER IN STEAM BOILERS—A. M. Sprague, of Mobile, Ala.: I claim the surface skimmer, B, constructed, arranged and operating substantially as described and for the purpose of removing the sedimentary water from the upper water surface of steam boilers.

CAR COUPLER—C. E. Stevens, of New York City: I claim the combination of the yielding support within the mouth of the aperture of railway car boxes, with one or more blocks inside and the annular flange outside the said boxes, when said parts are arranged in relation to each other, substantially as described, to effect the coupling of the boxes automatically, by the action of straight links and locking bolts, in the manner specified, and for the purposes set forth.

MODE OF FASTENING SHEETS OF PAPER TOGETHER—E. S. Swartwout, of Utica, N. Y.: I am aware that metal plates have been used for fastening in various ways, in the construction of book clasps, carpet bags, harness, etc., I do not therefore claim, irrespective of construction, any such devices.

But I claim the new and improved article of manufacture, the metallic clasp, A, in combination with the perforated metal plate, B, for fastening together legal and other documents, constructed as described, in the manner and for the purpose substantially as specified.

CHEESE PRESS—Charles Taylor, of Little Falls, N. Y.: I claim, first, Attaching the one end of the press bars, l l, to the bottom of the box, K, and the other end of the crank pin on the wheel, L, as set forth, whereby I am enabled to shorten the movements of the follower, and have an excentrically operating press, compactly arranged, as described.

Second, I claim the spring bed piece, q, and the spring, P P, acting upon the wheel, L, on the extreme upward movement of the follower, and thus upholding the follower, as described.

FILTER—Louis Tilliers, of West Morrisania, N. Y.: I am fully aware of the existence of what is known as the "Phelpses Patent" granted in 1855, in which the claim is for the uses of discs for filtering purposes, formed of rolled wire gauze. I am also aware that charcoal and other materials I employ, are not new, for the same purposes; but I am not aware that an apparatus constructed in the peculiar manner mine is, has ever been known, or used prior to my invention of the same.

I therefore a Hygienic Purifier, constructed in the manner described, operated as described, and for the purpose set forth.

PADDLE WHEEL—Nathan Thompson, of Bridgeport Conn.: I claim the arrangement and combination, in the manner shown and described, of the triangular floats, D, with the arms, C, to prevent the formation of the vacuum, the lifting of back water, etc., as set forth.

[This improvement in paddle-wheels consists in making the floats of the form of a triangular prism, by which many advantages are obtained over common flat floats.]

METHOD OF SECURING BITS IN THE STOCK—William Tucker, of Blackstone, Mass.: I claim the application or arrangement of the screws, d e, and the segmental button, g, with respect to the bit, or boring tool socket, and to operate with or on the tool substantially as specified.

CARPET FASTENER—C. F. Spencer, of Rochester, N. Y.: I claim a carpet fastener made of a single piece of plate metal, of triangular or three-pointed form, one point, b, serving as the shank, to be driven into the floor, another point, d, as the hook for receiving the carpet, and the third point, a, as a head so shaped as to enable the fastener to be driven with facility into the floor, all substantially as specified.

SHINGLE MACHINE—W. P. Valentine, of Fond du Lac, Wis.: I do not intend to limit myself to the especial mechanical devices employed in my machine, as these may be somewhat varied and yet accomplish the same result. I am aware that small chisels have been placed upon the convex side of a thick saw flange for the purpose of cutting away splinters, to prevent the latter from catching behind the spreader.

I am also aware that single machines have been fed by hand at a varying rate of feed.

I claim, first, varying the rate of feed, by the mechanical means set forth, so as to feed the lumber to the saw, more rapidly, during the first half of a cut, when the saw has the highest velocity, and slower during the latter half of a cut, in order to keep the saw constantly at a uniform velocity.

Second, I claim the use of the two carriages, P and P', operating in the particular manner described, for the purpose of cutting alternately, on both sides of the saw, thus keeping the saw constantly at work, and preventing the loss of time, or power, whilst the lumber is returning with the carriage to be ready for the next cut.

Third, I do not claim the concavo-convex saw, or the planes upon its surface, as separate mechanical devices; but, I claim the concave saw and the planes in combination with the saw carriage, for giving rake to the saw, and for sawing and planing shingles at a single operation, substantially as described.

Fourth, I claim the arrangement of springs, S S, and S' S', the head blocks, R R, and R' R', and the spreaders, C C, and C' C', for alternately holding and dropping the shingle block, substantially as set forth.

MACHINE FOR HEADING BOLTS—B. C. Vanduzen, of Cincinnati, Ohio: I am aware that toggles have been used for operating punches, dies etc., and arranged in various ways, and I therefore do not claim, broadly, the use of toggles for operating the heading die, F, and die, J.

But I claim the arrangement and combination of the adjustable spring fork rod, G, lever, H, upper lever, b, and heading die, F, substantially as shown and described, for the purpose of regulating the movements of the lever, H, and die, F, and controlling the size given to the head of the bolt.

[In this invention a peculiar heading device and clamp are so arranged that the blank while being headed may be firmly clamped, the clamps or dies being rendered capable of being adjusted so as to render sure a perfect contact with a requisite degree of pressure at all times, and the heading device so arranged, that it may be adjusted to form heads of different thickness and a requisite length of the blank of which the head is made, and commensurate with the size of the required head, allowed to pass with the recess or chamber of the die where the head is formed.]

ODOMETER—Haskel Walker, of Hartford, Vt., (assignor to himself and B. P. Driggs) of Fairlee, Vt.: I claim the peculiar arrangement of the parts thereof, by which an actuating tooth upon the hub of one of the wheels of a carriage will cause each revolution of said wheel to uniformly impart a small portion of a revolution to the shaft, K, of the odometer whilst the spring, l, by its action against the faces of the angular portion of said shaft, will accurately govern and control the movements thereof, substantially as set forth.

CONSTRUCTION OF SAW TEETH—W. A. Wilson, of Berlin Falls, N. H.: I claim combining the planing with the sawing tooth, so that the cutting edge of the former shall be in rear of, and at about right angles to the back of, the latter having the throat between, as set forth and shown.

BRICK MACHINE—I claim the arms, B B, in combination with the slides, A A, provided with the lever, C, and tappet, c, for operating the molds, M, as described.

POT-HOLE COVERS FOR COOKING STOVES—L. E. Clow, (assignor to C. H. Ramson & Co.,) of Albany N. Y.: I claim a cover, or division plate, constructed of two perforated plates and the unperforated rim, or ring, as set forth.

IRON RAILROAD CARS—Joseph Davenport, (assignor to himself and C. M. Russell) of Masillon, Ohio,: I claim the combination with the platform or bottom of a railroad car, of a laterally and longitudinally supporting truss brace, when said brace consists of a four sided frame, s s t t, a series of transverse ties, B, and transvere diagonal braces, C C, a central longitudinal skeleton, or diagonally braced girder, A c d b b, and bearing plates, or shoes, D D g g, substantially as and for the purposes set forth.

[It will of course be safer for the traveling public if railroad cars can be constructed entirely of metal, consistent with durability, simplicity and lightness. By the use of this invention they can, and we shall hope to see some iron cars very soon.]

MOLE PLOW—W. P. Goolman, (assignor to himself, S. B. Morris and W. Hollingsworth) of Dublin, Ind.: I claim the arrangement substantially as set forth, of devices for producing or preventing lateral curves in a drain by a justing the presentation of the mole independently of the point of draft.

WATER CLOSET—Darius Wellington, (assignor to C. A. Wellington) of Boston, Mass.: I claim the arrangement and combination of the hollow valve rod, F, perforated at d d, cap, G, basin, B, pipe, H, tube, H, and reservoir, I, as and for the purpose shown and described.

[The object of this invention is to dispense with the mechanism hitherto employed below the basin, and substitute a simpler and efficient device for allowing the excrement to escape freely and also to retain the cleansing water at a suitable hight in the basin so that the soil pipe cannot become choked or any effluvia escape from it through the basin into the room in which the water closet may be.]

ADDITIONAL IMPROVEMENTS.

BEDSTEAD FASTENING—Oliver Robinson, of Rochester, N. Y. Patented Dec. 28, 1858: I claim constructing the locking bolt, A, of a flat or rectangular form, so as to work against the surface of the sideboard C, to obviate the reducing of the bearing surface of the recess of the wrench, B, and hold the parts to the required position without the usual guide-pin, substantially as described.

I also claim elevating the hooks, j, above a right line through the center of the bolt, A, substantially as and for the purpose set forth.

I also claim uniting the point, i, of the circular wedge with the stock of the wrench, whereby greater strength and a better adaptation to the recess or seat of the same is secured, substantially as described.

I further claim adapting the cam, l, or raised part of the wrench lever to pushing and holding forward the bolt for ready connection with the pin, f, substantially in the manner described.

RAILROAD CAR STOVES.—James Spear, of Philadelphia, Pa. Patented June 1, 1858: I claim the combination of the openings, A, in the side-plate, F, with the back fire-plate, B, in connecting tube, C, with the center plates, D and E, constructed and combined in the manner and for the purpose set forth.

Second, I claim the openings, f f', in side-plate, F,

with the center plate, F, constructed in the manner and for the purpose set forth.

Third, I claim the flue or opening, L L, from the front plate, H, to the top plate, I, constructed in the manner and for the purpose set forth.

COOKING STOVES—James Spear, of Philadelphia, Pa. Patented July 7, 1857: I claim, first, The combination of the cone damper, J, with the smoke-pipe, H, and the top plate, D, constructed in the manner and for the purpose set forth.

Second, I claim the combination of the head or deck collar, L, with the cold air pipe, G, and the smoke-pipe, H, constructed in the manner and for the purpose set forth.

MACHINE FOR MAKING AXES—Jonas Simmons, of Cohoes, N. Y. Patented March 1, 1853: I claim the groove, G, the arm, X, with the tenons, T or T2, in combination with each other, substantially in the manner and form and for the purpose set forth in the specification.

DESIGNS.

PARLOR COOKING STOVE—David Hathaway (assignor to Fuller Warren & Co.), of Troy, N. Y.

COOKING STOVE—A. C. Barston, of Providence, R. I.

Science of Electric Conductors.

MESSRS. EDITORS:—I understand, from what has been published on the subject, that the reason why the electric current is retarded in an ocean cable, and why telegraphing is so slow under water, is owing to the cable being formed with a wire or metallic sheath outside of the gutta-percha insulating material. It is said that this construction of cable converts it into a long Leyden jar, that becomes so charged as to resist the subsequent impulse of the electric currents required for making words and signs. If I am right, then this resistance will be avoided by dispensing with the outer wire shield, and making the inner wire stronger, by Mr. Allan's plan, as noticed in the last number of the SCIENTIFIC AMERICAN. R. R.

[While Mr. Allan's cable seems to embrace a correct principle for decreasing the resistance by enlarging the size of the conducting wire; it contains no feature for preventing induction entirely, although he does not use an outer metallic sheath. Our correspondent is mistaken in reference to his views as to the cause of the resistance—called *induction*—in submarine cables. This will exist in all cables having a metallic wire inside, and an insulator like gutta-percha, or any other such substance, between the wire and the water. A Leyden jar is formed by surrounding an insulating substance, like glass, with a conductor on each side, and arranging them in such a manner as to receive electricity. The gutta-percha of the telegraph cable is the substitute for the glass in the Leyden jar; the wire inside is the metallic conductor, and the water outside being also a conductor, it converts the cable into a long narrow Leyden jar, although no wire sheath may be used. The electric jars now employed for experiments are coated inside and out with metallic foil, but the principle is the same whether water or metal is used for the conductor. There is no known principle whereby the rapid transmitting character of a submarine cable can be improved, but by enlarging the interior conducting wire. A most gross violation of sceintific principles, was committed in making the Atlantic Cable with a very small conductor, and the reason we will endeavor to explain. A small wire on a long circuit requires electricity of great intensity to overcome the resistance; this intensity causes induction in the same proportion. If we double the diameter of a conducting wire, its mass is quadrupled; it has four times the conducting capacity. With such a wire, the intensity of the electric current can be lowered one-fourth, and the inductive resistance will be thereby diminished in the same ratio.

We have thus explained the law in relation to induction in submarine telegraph cables, in such a manner that all may understand it. From these remarks it will be apparent, that the reports which were propogated a few months ago, about Hughes' and other instruments being capable of transmitting messages rapidly through the Atlantic Cable, were entirely devoid of truth. Neither rapid nor correct messages can ever be sent through long lines of submerged wires, unless these are of large diameter and well insulated. We have seen it stated in a contemporary that a deep sea cable is now being manufactured for Professor Rogers, at Baltimore, and that its whole diameter will only be one quarter of an inch—the wire being a very small copper conductor. Such a cable will be constructed upon the most unscientific principles and must prove a failure. This is a subject with which many men, professedly scientific, appear to be perfectly ignorant.

Coal Oil for Lubricating Machinery.

As practical information is the most reliable, we take pleasure in publishing the following, as nothing on the subject of such an experimental character has been presented to us before:—

MESSRS. EDITORS:—As you are devoting some attention to coal oils in the columns of the SCIENTIFIC AMERICAN, it may interest some of your readers to have the practical experience of one who, for over two years, has used the "lubricating oil."

My plan is to submit everything to a practical test claiming to be an improvement, and happening to be in Louisville, Ky., at the the time of the receipt of the first barrel, I procured a small quantity, and used it upon light machinery, where it was entirely satisfactory. A short time after, when getting heavy machinery, I was told that it would not work well on any but light machinery, but on testing it on an engine-shaft with 3,500 pounds on it, I found it to work just as well as on the lightest machinery. After a continued use for fifteen months on the same machinery, I find it perfectly free from gum, the polished portions wiping off as clean as though they had not been oiled. Journals becoming hot from inattention have been *run* until they were cool with nothing applied but the coal oil. In every respect, my experience pronounces it superior to the best sperm for oiling machinery. J. L.

Smith's Mills, Ky., March, 1859.

Our correspondent's experience, however, does not meet all the conditions of proof in regard to the superiority of such oil. We believe the only correct method of testing oil is by the machine adapted for the specific purpose, called the "oil-tester."

Graphite for Timber.

MESSRS. EDITORS:—I have read many articles in your paper on "the preservation of timber," upon which subject I submit the following. In regard to the proper period for cutting, the writer has not such knowledge as would authorise him to speak decisively, and he will therefore leave that point to the better informed.

But the proper period for cutting being determined, and if the logs be allowed to soak until the decaying influences within shall have been extracted, timber can be preserved against the injurious action of the atmosphere, by being properly covered by that mineral carbon, *graphite*. This mineral, being the purest carbon, is an anti-septic of the strongest character; it adheres well, and is insensible alike to heat and cold, to acids and alkalies; and it neither contracts nor expands under the influence of weather. It will exclude moisture and worms, for worms will no more attack graphite than they would charcoal. Roofs painted sixty years since with graphite, do not require repainting. A post properly covered with graphite and planted in the earth with graphite close around it, would last indefinitely, if properly prepared before painting. If the paint be properly made and properly applied, it will form a coating as bright and polished and smooth as burnished steel, and if thus applied to the bottoms of vessels, neither grass nor barnacles will adhere, and the vessels will glide smoothly through the waters.

The French Government having, by experience, found this mineral to be the best preservative of iron from rust, the Marine Department has issued a general order directing ordnance to be covered with it. Graphite is the basis of the "Lacker" which is used in our navy; the less there is of anything elsein it, except graphite and pure linseed oil, the better. P. G.

Philadelphia, March, 1859.

Unreliable Recipes

MESSRS. MUNN & CO.:—Having got a recipe out of a recipe-book for making blue ink, and being curious to try the experiment to make it, I tried it but found it did not answer.

The recipe runs as follows: "Disolve indigo in sulphuric acid, and dilute it with eight times its weight in water." I mixed all up as stated above and found the acid to leave the paper white all around the writing, and the following day the water was at the top and the indigo at the bottom of the bottle.

Can you inform me through your correspondence column, how I can mix it so as to make it come out right? And oblige,

Yours respectfully,

H. D. WILSON.

St. Louis, Mo., March 16, 1859.

[We publish this for the purpose of giving a few words of advice, as we frequently receive letters of this character. A very great number of the recipes and processes described in books, are unreliable. Their authors appear to have been mere collators, not practical chemists—hence their ignorance of the subjects which they treat of. Our correspondent can make good blue ink from sulphate of indigo, if he neutralizes the acid it contains with chalk. The following is the proper method of making it:—Take four ounces of strong sulphuric acid, and add gradually to it an ounce of finely pulverized good indigo, stirring the mixture well for two or three days. Now add four ounces of water, then chalk, until effervescence ceases. The clear liquid is now poured off, a little dissolved gum added, and the ink is fit for writing. The fibers of cotton or linen of which paper is made, have no affinity for the sulphate of indigo, hence the failure of our correspondent's ink. A blue ink superior to that described can be made by disselving ground Prussian blue in a weak solution of oxalic acid, and adding a little gum arabic.

The Climate of Australia.

There are days and, in some years, whole weeks together, of delightful weather, cool and bracing as the spring in England, but more exhilarating. Excepting about twenty-five extremely hot days, and sixty disagreable wet and cold days, the weather throughout the year is indescribably pleasant, the air is balmy and bright, scarcely a cloud is visible, and the sun looks down from the deep blue sky in unveiled splendor. Day and night are ofequal length throughout the year. The sun never remains above the horizon more than fourteen and a half hours, or less than ten and a half; and as twilight does not linger in these latitudes, the changes from day to night and from night to morn, are to Englishmen unpleasantly abrupt. The nights are enchanting. The southern constellations shine forth from the hard dark heavens in unrivaled brightness, and the halo-ed moon pours her chastened radiance on the plains and hills with suchrefulgence that everything for miles around is distinctly visible. The light of both the sun and moon is more intense than in Britain. I should say the difference is as five to three.—*F. Lancelott, Esq.*

Bottles to Prevent Poisoning.

A bottle to prevent accidental poisoning has recently been patented in England. Its design is peculiar, and as it is intended solely to contain poison, there is no danger of mistaking the character of its contents. The bottles are provided with an entirely new contrivance, the effect of which is to make it impossible to pour out the contents otherwise than very slowly. The very deliberate and cautious action which is produced will, it is believed, prevent anyone from taking over-doses of medicine; while it is difficult to imagine a case in which a person could pour out and take the whole contents of one of these bottles in mistake for something else.

Insoluble Silicate for Wood.

There can be no doubt but the silicate of soda applied to wood renders it incombustible, and were it not soluble in water, and liable to be washed off with rains, it would be well to coat all wooden structures with it. To apply it for such purposes, and to make it insoluble is a desideratum. This can be done as follows:—Soak the articles to be coated in the silicate of soda, or if they are too large to do this conveniently, then apply it with a brush, so as to fill all the pores up. When dry, wash it with a solution of the chloride of calcium. This causes an insoluble silicate of lime to be formed in the pores of the wood, which adheres to it, and also the chloride of soda (common salt), which is washed away.

Literary Notices.

NEW AMERICAN CYCLOPÆDIA, VOL. V.—CHA-COU.—D. Appleton & Co., New York.—In noticing this work, as each volume makes its appearance upon our table, it is somewhat difficult to avoid making use of nearly the same expressions that we have employed on former occasions, as each new volume only tends to confirm the high opinion we have already formed of it, and strengthens our faith in its able editors. In the present volume, the "Life of Henry Clay," by Horace Greeley, (as we learn from an appended list of contributors) is one of the best articles. It is a model of biographical writing, and the political and personal are so well blended that the reader takes the one with the other, and enjoys them both; rising from the perusal not with an impression of Clay as a statesman, orator, or man, but with an idea of him as a whole. This, we think, is the aim of true biography. The articles on Chemistry, Chromium, and similar subjects, are well written and up to the times, which is rather a rarity with what may be called "dictionary science." If the new American Cyclopædia keeps as good as it is at present, during its growth to completion, no American need be ashamed of its national title, but rather point with pride to many new features which grace its pages, the best of which is its living biography. We should advise all who possibly can to become possessed of it, for it is a truly relishable work, and many an hour that would otherwise be wasted can be wiled over its pages, culling information, as the bee wanders amid the flowers, enjoying the beauties but accumulating the useful.

THE ANNUAL OF SCIENTIFIC DISCOVERY; A YEAR-BOOK OF FACTS IN SCIENCE AND ART.—Edited by David A. Wells: Gould & Lincoln, publishers, Boston. A portrait of Professor O. M. Mitchell decorates the volume for 1859 of this important annual. We are not aware that there is any work published on this continent which contains so much varied and useful information as the one before us. It forms a complete library within itself of scientific knowledge, and by its aid we are enabled to trace the progress that science makes in battling with the storms that ever assail the mariner who ventures on Sir Isaac Newton's Ocean of Truth. The magazines and periodicals of the whole world are made to contribute any record of a discovery that may appear through their columns, and from our examination of the book we should say that few, if any, facts had escaped the eye and attention of the editor. An obituary of persons eminent in science for 1858 is added, and a list of books, pamphlets, &c., on matters pertaining to science, and published in the United States during the same year, making it exactly the book that every one wants and should obtain.

THE AMERICAN JOURNAL OF EDUCATION.—Edited by Henry Barnard, L.L.D., published at Hartford by F. B. Perkins, and in New York by F. C. Brownell, 413 Broadway.—Our public and private educational arrangements are undeniably very good; but like all sublunary affairs, they might be better, and to collect information concerning other systems, to compare, select and suggest improvements is, we believe, the object of this quarterly. We say believe, because our opinion is founded on the contents of this number and not on the prospectus, and very efficiently and ably does it fulfil its mission. It is illustrated with steel engravings, and is, without exception, the best purely educational publication in the Anglo-Saxon tongue.

PECK'S ELEMENTS OF MECHANICS.—Published by A. S. Barnes & Burr, John street, New York.—This is a neat and excellent elementary work, by Professor Peck, of Columbia College, and is intended for colleges, academies and high schools. It is a clear and able exposition of the principles of mechanical philosophy, and is just such a class-book as has long been a desideratum for certain grades of scholars in our institutions of learning.

MECHANICS AND ENGINEERS' BOOK OF REFERENCE AND FIELD BOOK.—A new edition of this able and useful book—edited by Prof. Hackley, of Columbia College, and Chas Haslett, C. E., published by W. A. Townsend & Co., of this city—has just been issued. We are really glad to see it, as this is a good indication that it is appreciated as it deserves to be. It is formed for the pocket, and with it an engineer becomes a walking encyclopedia of valuable information.

THE DEMOCRATIC AGE.—Edited by C. Edwards Lester, 41 Park-row, New York.—The current number of this able magazine contains many excellent articles, "Our New Home in Italy" and "Prescott's Histories" being about the best. The number of small articles is very great, and they are all interesting and well written.

NORTH BRITISH REVIEW.—Published by Leonard Scott & Co., Gold street, New York.—The number for this quarter of the above periodical is very able and interesting. Its leader is on French Algerine literature. It contains a review of De la Rive's "Electricity," and several other accomplished essays.