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Apparatus for Diving.

Some experiments of an interesting character have been made in Paris, with a view to test the value of different diving machines and appliances. Four kinds of diving apparatus were tried—those of Messrs. Siebe, Heinke, Cabirol and Ernous. All of these are constructed in nearly the same manner, being composed of a water-proof dress, terminated at the upper part by a cuirass of metal, to which, when on the body of the diver, is screwed a helmet of the same metal, having affixed to it a tube for giving air, the supply of which is kept up by means of an air-pump and a valve for letting off the breath of the diver. One of the experiments tried with Siebe's apparatus, was that the driver can, of his own free will, come to the surface, by removing a part of the weight which keeps him under water. The four divers descended at the same time. One of them remained under water forty minutes consecutively, and the others a somewhat shorter period of time, picking up, during the submersion, several small pieces of metal which had been thrown down.

Improved Stave Machine.

Barrel-making machinery is gradually attaining great perfection, and the entire work of constructing flour and other casks which do not require water-tight joints, has all been done by machinery alone. But wine, ale and water casks have not, as yet, been extensively constructed as might have been supposed, and from one simple fact, which is that all stave-making machinery which gives the necessary bulge and bevel to a stave has hitherto been remarkably expensive, and each machine would only perfectly cut the particular size of stave for which the machine was especially intended, and no other.

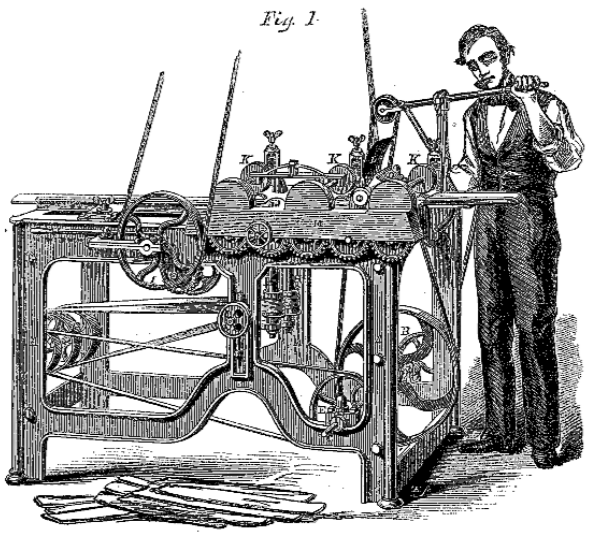
The engravings we are about to describe represent a machine that is capable of cutting any sized stave, and giving each the proper bulge and bevel necessary to make the cask, and its peculiarities and advantages will be appreciated from our description. Fig. 1 is a perspective view, and Figs. 2 and 3 represent the regulating devices separated.

A is the frame of the machine. B the drums on the driving shaft, C, from which shaft power is conveyed to the horizontal cutters, D, one above and one below the stave, and these cut out the bulge—the upper one only is seen in the engraving. This shaft also gives motion by the bands and wheels, E F, to the vertical cutters, G, seen in Fig. 3, and their shafts, H, in Fig. 1. These are the cutters which give the desired bevel to the stave. I is a wheel, receiving motion from the main shaft of the engine, independent of the machine, and drives the gearing wheels, J, all of which, in their turn, give the motion to the feed rollers, K. L is a shield to throw off the shavings, and M a simple covering for the gear wheels, J.

On the bed of the machine, between the two cutters, G, lies the regulating device shown in Figs. 2 and 3, and which form the novelty of the arrangement. I′ is the shaft of I, carrying on it the cam wheel, N, in the groove of which there runs a pin, O, that is the guider of the regulating cam, P. This P is capable of turning on the center, R, as the cam wheel, N, is set on I′, and by so doing it separates the knobs, S, which work in the angular slots, T of P. These knobs are connected with bars, U, (shown by dotted lines) fastened to

McNISH & BUTLER'S STAVE MACHINE.

Fig. 1.



the bearings of G by the bed plates, V; as they are brought nearer together or further apart, they will separate or bring closer together the cutters, G. Over the whole of this fits a hard steel bed plate, (shown at Fig. 2,) and over this the stave is guided by the arrangement to be described. W is the plate of the shape represented; in the holes *k′ k″*, fit the tops of the feed wheels, K′ K″, and in the recesses, X, the cutters, G, work. The plate

Fig. 3

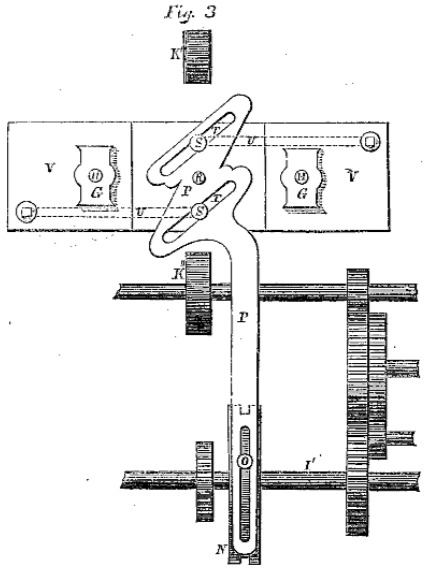
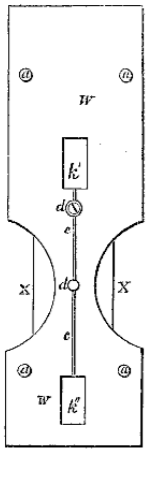


Fig. 2



is fasted down by screws, *a*, and in the center is a V-shaped piece of sharpened steel which holds the stave in proper position while the bevels are being cut; this is shown by *c*, and it is fastened by the screws, *d*, so that it can easily be removed for sharpening.

The operation of this machine is very simple; the stave which is to be fashioned being placed on the plate, W, the feed rollers convey it on, the bevel edges are cut, and then the horizontal ones give the bulge, and it comes out without being once touched or moved by the operator, although every part of the machine is under his immediate control. It is the invention of H. L. McNish, of Lowell, Mass., and one is on exhibition at the Crystal Palace during the Fair.

Any further information may be obtained by addressing McNish & Butler, Lowell, Mass., or at the Crystal Palace.

Plated Goods.

Any metal is capable of receiving upon its surface a thin layer of another metal, and goods so prepared are called plated. Thus iron is plated with copper, copper with silver, and silver with gold, and the plating may be performed by either of two ways:—First, the oldest or amalgamation process, by which the articles are first rubbed over with quicksilver, and when perfectly covered, silver or gold foil is laid on, and rubbed in by a burnisher, and then the whole is subjected to a high temperature until all the quicksilver is driven away when the silvered or gilded goods are polished and finished. The other process is electrotyping, by which means all the metals can be deposited from their chemical solutions on any other piece of metal or conducting body; thus, a leaf, a flower, or animal, by being coated with a conducting substance, can be covered with a thin film from the most delicate coating to one of any thickness, and can be preserved in this air-tight metallic case for any period. An ingenious Frenchman has proposed to embalm human bodies by this means, and there is no doubt it would contribute to the health of our large cities, and be more congenial to the feelings of the friends of the deceased. Nearly all the gold and silver articles of use or ornament are plated in this manner, and for the delicacy of the shade and evenness of deposit, it cannot be equaled. Of the statistics of these and a few kindred branches we can say a word, as for example: the total value of the plate, plated ware, jewelry, and watches exported from England is believed to fall short considerably of $2,500,000. M. Parquin, the greatest manufacturer of plated goods in Paris, or France, (for this business centers quite exclusively in the capital,) who makes to the value of hundreds of thousands of francs per annum, states that while one million and a half is the amount of the internal consumption of France, the internal consumption of Great Britain amounts to thirty millions, or twenty times that of France. The French plated goods are fashioned, not in general with stamps, but, by the pressure of tools upon wood molds in the turning lathe. Some improvements have also been recently made which greatly simplify and facilitate the process of manufacture.

The Poppy.

A letter received at the Patent Office from Germany, says, the poppy is cultivated in southern Germany to a large extent, as a substitute for sweet oil. It has supplanted the use of the imported olive oil wholly in that country. It is further stated that the soil and climate of the New England States is highly suited for the culture of this article, and they might provide the whole Union with sweet oil, and thus save a large sum of money, which goes to France and Italy.

ANOTHER EXAMINER GONE.—We regret to learn that John Galpin, Assistant Examiner in the Patent Office, recently appointed to fill the place made vacant by Dr. Breed's resignation, died very suddenly of typhoid fever. But a few days before, he was in full health. He was highly esteemed as a man and an officer.

Patent Claims

Issued from the United States Patent Office

FOR THE WEEK ENDING OCTOBER 20, 1857.

[Reported officially for the Scientific American.]

BAKERS' OVENS—Hiram Bordan, of New York City: I claim the employment, in an oven, of a system of endless chains, in connection with other machinery, arranged and combined substantially as described, for the purpose of introducing dough, or other material to be baked, into the oven, keeping the same in motion therein, and delivering the same therefrom when baked.

[This oven is described on another page.]

COAL SIFTERS—Samuel Booth, of New York City: I do not claim the different parts composing my improved apparatus, when separately considered.

But I claim, in my improved coal ash sifter, the specific arrangement described, consisting of the inclined screen in such combination with the chute board, which is also inclined, that the impact of the stream of ashes and cinders shall be perpendicular, or nearly so, to the surface of said screen; and this I claim when said arrangement is encased within a tight box having a flap or door to close automatically so soon as the ashes have been poured in, by which construction the separation of the cinders is effected, by the mere operation of pouring, and by which, also, the dust incident to said operation is prevented from escaping, as set forth.

CONSTRUCTING THE TIRES OF WAGON WHEELS—John L. Blinn, of Austin, Texas: I do not claim crawing the ends of the tire together by a screw, so as to reduce its circumference and tighten up the felloes.

But I claim the removable slips or plates, constructed, arranged and held in place substantially as described and shown, for the purpose of producing a complete unbroken tire, as it were, and at the same time affording facilities for decreasing the circumference of the same, and thus tightening up the felloes, without the labor of upsetting, substantially as set forth.

FURNACE—John Case and Isaac Soules, of Amsterdam, N. Y.: We claim the combination and arrangement of the fire and smoke boxes, direct and return flues, the valved atmospheric air orifice, an aperture for the escape of the spent gases, and the fan for maintaining the circulation of the air and gases, arranged substantially as declared.

CORN HUSKERS—George K. Brown, of Moultonborough, N. H.: I claim the rotating drum, D, provided with holding sockets, L, gage plates, I, and clearing teeth, h, and acting in combination with the stationary cutting knife, H, and elastic ribs, E, provided with stripping teeth, m, with or without brushes, n, on their under sides, in the manner and for the purposes specified.

STOVE AND FURNACE GRATES—Wm. T. Coggeshall, of Fall River, Mass.: I lay no claim whatever to applying the grate to its drawer slide in such manner as to enable said grate to be either turned horizontally or tipped laterally, such not being my invention.

But I claim a new mode of combining the grate, A, with its drawer slide, B, viz., by a supporting annulus, C, separate from, and arranged on the slide and made to support the grate, substantially as described, my invention affording a clear ash space under the grate, while it secures the advantage of allowing the grate to be either tipped laterally, or to be turned or vibrated horizontally, as occasion may require.

RUBBERS OF RAILROAD CAR BRAKES—Henry M. Collier, of Binghamton, N. Y.: I do not claim a metallic head or socket to hold a wooden shoe or rubber; nor a wooden shoe or rubber presenting the end of grain or fibre as a friction surface; nor the scrapers, 00; nor a dovetail for securing a removable piece, as heretofore used or described.

But I claim the serrated circular back, V V, of recess in B, and the sliding cap, S, as described, and for the purposes set forth.

BEATING OFF PEANUTS FROM THEIR VINES—Thomas L. Colville, of Wilmington, N. C., and Samuel Shepard, of Nashua, N. H.: We do not claim the described machine, or any portion thereof, when used for other purposes than those designated.

But we claim, first, the machine for beating peanuts from their vines, consisting essentially of the elastic feed rolls, G, the screen, I, and the beating cylinders, B C D and E, operating in the manner substantially as set forth.

Second, We claim the elastic feed rolls, G, operating in the manner substantially as described.

DUMPING WAGON—Mathias Y. Cope and T. J. Cope, of Centerbridge, Pa.: We do not claim dumping at the center of the body by dividing body longitudinally, or furnishing it with a falling hinged bottom, as such arrangements are common, and not useful in common road wagons or carts which require to be used for hauling various objects or materials which necessarily must be dumped from the end of the body.

But we claim the arrangement consisting of the hinged divided body, G G', framing, D D E, bracing, K J, M, sliding locking bar, J, and catches, a a, or their equivalents, substantially as and for the purposes set forth.

[A notice of this will be found on another page.]

SOWING SEED BROADCAST—William A. Chapin, of St. Johnsbury, Vt.: I disclaim the horizontal rotating arms or tubes with their valves and adjustable cam.

But I claim the extension tube, F, and shaker, W, when arranged substantially in the manner and for the purposes described.

VANE FOR WIND WHEELS—Jesse M. Clock, of Atlanticville, N. Y.: I do not claim, broadly, the application of a weight to the wings or sails of a wind wheel, for the purpose of rendering them self-regulating, for this has been done in various ways.

Neither do I claim the sails arranged and applied to the wheels, as shown.

But I claim the vane, I, formed of two parts, a' b', the part b' having an oblique position relatively with the part a', and either hinged to said part a', or attached permanently to it, for the purpose specified.

[By this arrangement the sails or wings may quickly be brought round to the wind in cases of any sudden change in its direction, and they are also self-adjusting.]

STRIPPING LEATHER, &c.—Adolph R. E. Falck and Paul Stoerger, of Newark, N. J.: We do not confine ourselves to form of pencil brush or to tubes: either one may be changed to suit the occasion and application.

Neither do we confine ourselves to any limited number of brushes or tubes.

We do not claim to be the inventors of the individual or separate parts of the described machine for drawing parallel right lines.

We claim the double tubes or pencil holders, G G G, and G', dampers, w w w, and mixers, t t, arranged and operated by the levers, E i, and connection rod, H, which is attached to the wheel, B, in the manner and for the specific purpose substantially as described and shown.

COTTON CULTIVATORS—Daniel P. Forney, of Jacksonville, Ala.: I claim the application of the rollers, I, and brake, K, in combination with the frame, G, and cranks, E and F, substantially in the manner and for the purpose described.

SAWING MACHINE—J. F. Foster, of Jersey City, N. J.: I do not claim the arrangement of teeth on both edges a reciprocating saw, so as to cut in both directions of its motion.

But I claim imparting to the saw provided with teeth on its opposite edges, which cut alternately in opposite directions, a reciprocating lateral motion, in the plane of its longitudinal motion, equal to, and corresponding with, the feeding of the articles to it from opposite sides as specified.

I also claim giving to the way guides in which the saw gate runs, an alternate motion at right angles to the motion of the saw, and equal to the feed motion on each side, substantially as described.

I also claim the combined arrangement of parts, by which the cutting throw of the saw and the feed motion are produced by the same vibrating lever, H, which drives the saw, and are, consequently, always precisely equal, invariably correspond with the motion of the saw, and are varied simultaneously to any extent without disarranging this harmonious agreement of all the motions, substantially as set forth.

SCREENS FOR GRAIN SEPARATORS—Abram Gaar, of Richmond, Ind.: I am aware that a riddle has been made of slats alone; and I am also aware that a screen has been made out of a punched plate: and in some cases that a tongue has been left in the aperture, which was bent upward to direct the blast, but that in this latter case the grain had little or no facility for passing through the apertures. I claim none of these things.

But I claim a screen composed of a thin piece of metal punched with suitably shaped apertures, with narrow strips of metal or wedging acting as and riveted to said plate of metal, and overhanging said apertures at any angle greater than that of the plate, for the purpose of allowing the grain to pass through the apertures of said plate, giving direction to the blast, and at the same time preventing straw or chaff from entering said apertures, as set forth.

WRIST-BAND FASTENERS—Benjamin F. Grinnell, of New York City: I claim the external plate, B, with its connections, d and d', and buttons, e and e', in combination with the spring, f, the whole being constructed substantially in the manner and and for the purpose specified.

STEAM PLOWS—John R. Gray, of Fair Play, Wis.: I claim the screw shafts E E', two or more, provided with right and left threads or flanches, a, and arranged and operated substantially as shown, or in an equivalent way, for the purpose of propelling the machine both in a direct line and laterally, as described.

I further claim the adjustable wheels, N N, when arranged and applied to the machine, as shown, for the purpose specified.

I also claim connecting the arms, Z Z, to the bars W, which are operated or actuated by the lever, T, in combination with the shares, A A', attached to the swinging arms, Z Z, in the manner and for the purpose set forth.

[This plow is described on another page.]

CORN HUSKER—Alden Grulman, of Roxbury, Mass.: I claim the vertical reciprocating knife, C, in combination with the slitting cutter, k, stripping fork, l, and slotted bed, F, arranged and operated substantially as and for the purposes set forth.

[The inventor uses a vertical reciprocating knife, a fork stripper, and other appliances, by which he cuts off the butts, then strips the corn, and discharges the butt from one side, and the husk from the opposite side of the machine.]

WHEEL-WRIGHTS' MACHINE—Chauncey H. Guard, of Brownsville, N. Y.: I claim the arrangement of the respective movements thereof with each other, and with the frame of the machine, in such a manner that the several parts of a wheel may first be separately operated upon, and then be combined with each other, as set forth.

CLOSING FARM GATES—Thomas B. Hand, of Madison, Ind.: I claim the application of the semi-grooved tangent brace by lever with pulleys and weighted cord, for the closing of farm gates, and other similar purposes, (as in the several modes specified) and in such a manner as to secure a great equality and permanency of force, and the amount of which can be regulated at pleasure, and using any material that will answer the purpose.

SEED PLANTERS—P. Hinkley, of Charleston, Ill.: I am aware that distributing wheels provided with spouts, and having seed cells formed in their hubs for distributing the seed into the spouts attached to the wheels, have been previously used, the parts being arranged substantially as those shown.

I therefore do not claim the distributing wheels.

Nor do I claim the universal compensating joints, b.

But I claim placing the distributing wheels, H, in frames, F, the front ends of which are pivoted to arms, D, attached to the rock shaft, C, and having the back ends of the frames, F, rest or bear on the rock shaft, E, when the wheels thus arranged are connected by the universal compensating joints, b, or their equivalents, substantially as and for the purpose forth.

[A universal joint connects the two wheels so that that each can follow any inequality of the ground, independently of the other, and the distributing wheels can be raised from the ground when not at work, or when moving from field to field.]

CARRIAGE SPRINGS—Bold R. Hood, of Clinton, N. C.: I am aware that auxiliary springs have been carried from the center of the reach to the ends of the carriage body, or connected with the transverse springs: therefore I do not claim broadly, the use of auxiliary springs, irrespective of their peculiar construction and arrangement.

But I claim the combination and arrangement of the springs, F F, with the springs, D D, as described for the purposes set forth.

[A description of these springs will be found on another page.]

BENDING FLANGES ON BOILER HEADS—David Howell, of Louisville, Ky.: I claim the employment or use of an annular bed or anvil in connection with a roller or rollers attached to a traversing lever in any proper way, for the purpose of bending down the inner and outer edges of annular plates and thereby forming the flanges of boiler heads, fire rings, and the like, as set forth.

[For information about this machine we refer to page 62.]

PIANOFORTE ACTION—George Howe, of Roxbury, Mass.: I do not claim the Erard action, made either with or without a second escape, as described, and with a double or V spring turning on a center pin, the fly being either hinged to the second lever or to the key.

But I claim the improved action, having a hammer, holder, and fly, arranged, applied to, and operating with the key, lever and hammer, as described, and having the spring, K, applied to the holder and fly in such a manner that it shall be fixed in the former and project towards and rest on the fly projections, and without any joint or pin for the spring to turn on, whereby the spring operates free from noise, and is not liable to get out of place or order.

RAKES FOR HARVESTERS—Samuel Comfort, Jr., of Morrisville, Pa.: I do not confine myself to any precise mode of imparting a vibrating movement to the lever, E.

But I claim operating the rake by means of the vibrating lever, E, ratchet wheel, N, spindle, F, arm, K, spring pawl, P, and rods, L Q and M, in combination with the segment, q, and plate, i, when the whole are arranged and combined for joint operation substantially in the manner set forth and for the purposes specified.

ENDLESS APRONS OF THRESHING MACHINES—Adolph Junge, of Belleville, Ill.: I claim making the slats of the carrier, e, substantially as on the form shown and described, and connecting them by means of a flat band inserted in their ends, so that they will retain and carry the threshed grain, and protect the bands that connect them from being worn by the pulleys that operate the carrier.

HARPOONS—James Q. Kelly, of Sag Harbor, N. Y.: I claim the arrangement of the eye, or point of attachment of the line, D, to the harpoon, and the eye in the slide, G, through which the line passes at different angles on the harpoon when prepared for throwing, substantially as described, whereby a twisting movement is given to the point of the harpoon in the act of being thrust farther into the whale, for the purpose set forth.

I also claim the connecting rod, i, and guide, G, in connection with the sliding socket, C, whereby the advantages of a long socket or bearing are attained, without the disadvantage of a continuous tube, in case of bending the rod or shaft which slides therein, substantially as specified.

PLOWS—J. S. Lash, of Carlisle, Pa.: I do not claim the attachment of the draught rod to a spring, irrespective of the arrangement and manner of applying the spring.

I claim the arrangement of the long, flat and straight spring, C, on top of the beam, and the combination of the same, thus arranged with the draught rod, B, by means of the elbow lever, substantially as and for the purposes described.

[With this arrangement, if the plowshare strikes against a stump, rock or other impediment, the sudden jerk or resistance caused thereby will, instead of coming upon the team, fall upon the spring, and cause it to descend a certain distance, and thus save the plowshare and horses from injury. This appears to be a very simple and useful attachment for plows.]

STEAM GENERATORS—A. B. Latta, of Cincinnati, O.: I claim the application of the pump, E, to a coiled boiler, in combination with the pipes, G, and strainers, D, the whole being arranged and operated in the manner substantially as described, for the purpose of causing the water to circulate through the coils from the lower part of the water jacket, and of separating the steam generated in the coils from the water, and then conducting it into the steam chamber or upper part of the water jacket, and of returning the water unconverted into steam back into the lower part of the water jacket, as set forth.

MANUFACTURE OF COTTON YARNS—S. C. Lister, of Bradford, and J. Warburton, of Addingham, Eng. Patented in England Nov. 23, 1855: We claim an improvement in the process of manufacturing cotton yarn, the same consisting in wetting the cotton roving previous to its being drawn, and in drawing and spinning it while it is in a wet state, such being productive of advantages as stated.

And we also claim in the process of impregnating the roving with water or liquid, and drawing and spinning it while wet, the employment of heated water or heating the water as explained, whereby advantages are gained as set forth.

PLOWS—C. M. Magruder, of Thomasville, Ga.: I claim the polygonal plate, D, in combination with the arm, C, and beam, A, in the manner and for the purposes set forth.

GRAIN CRADLES—Daniel Mifflefon, of King George, Va.: I claim the adjustable fingers, D, in combination with the brace, F, arranged and operating in the manner and for the purpose set forth.

AIR AND VAPOR BURNER—O. F. Morrill, of Boston, Mass.: I do not claim an air and gas burner consisting of a cylindrical tube having a wire gage or perforated disc, or disseminator, and combined with a tube for supplying it with olefiant gas, and being open at each end for common air to mix with the gas, and pass through the disseminator with the gas and be burned therein.

Nor do I claim combining with an air and gas burner, a perforated or wire gauze chimney or tube to extend around and above the same, as this latter has been patented by Wm. F. Shaw.

Nor do I claim a hydro-carbon vapor burner as made of a combination of an ordinary gas burner, a reservoir to hold the liquid hydro-carbon, a wick tube and a secondary burner or tube to heat the wick tube, and vaporize the liquid of its wick, in order that the vapor may pass into the gas burner, and there be burned unmixed with air.

But I claim the combination of the air and vapor burner, E F, of the kind described, with the reservoir, B, wick-holder, C D, and a lamp or burner to operate as and for the purpose set forth, the liquid of the wick, the whole being constructed so that such vapor may be discharged into the air-receiving chamber, E, and be mixed with air therein, and burned with the air so caused to flow upward through the meshes of the disseminator, F, so as to be burned thereon, substantially as specified.

AUTOMATIC CASTOR AND FAN—Ellis & Addison H. Norcyke, of Richmond, Ind.: We are aware that revolving fans operated by clock-work are now in use; such device therefore of itself we do not claim.

But we claim the combination of a revolving fan, C, D, F, F, F, with the castor, A, B, in the manner shown and described.

We also claim operating the castor frame, B, in the manner set forth.

STEAM BOILERS—Wm. Geo. Norris, of Philadelphia, Pa.: I am aware that flues have been constructed with a supplementary combustion chamber forming part of the fire-box, having valves for the admission of the atmosphere, for the purpose of more effectually consuming the gases evolved from the combustion of the furnace. But I disclaim any such arrangement. The chamber in my improvement, between the fire-box and tube sheet, being closed, and for the express purpose of preventing any combustion from going on in actual contact with the tubes, G, of the boiler, and for the purpose of reverberating and thereby equalizing the heat before it reaches the tubes of the boiler.

I claim the combination with the ordinary steam boiler and fire-box of a close chamber separated from the fire-box by a partition or perforated water wall, constructed and operating as and for the purposes set forth.

STEAM PLOWS—E. Graves Olis, of Yonkers, N. Y.: I am aware that plows have been previously attached to endless chains, and I therefore do not claim broadly such device irrespective of the arrangement of the parts substantially as shown.

But I claim attaching the plows, N, to the chains, K K, as herein shown and described, whereby they may be adjusted more or less obliquely to correspond with the oblique position of the furrows, and to allow for the contraction of the chain in passing around the pulleys.

I further claim the teeth, s, attached to the sleeves, v, on the tie-rods, m, and provided with the springs, u, substantially as shown for the purpose specified.

[This is described on another page.]

COAL STOVES—D. Christian Rauh, of Davenport, Iowa: I claim, in combination with the fire-box, D, and its grates, D', and perforated or slotted cone, C, the slides, F, F 2, F 3, F 4, arranged and operating in connection therewith, substantially in the manner and for the purpose set forth.

SWATHING APPARATUS FOR HARVESTERS—Samuel C. Longshore, of Lahaska, Pa.: I do not desire to claim exclusively the depositing of the severed grain or grass on to the ground in a line with the cutters, or the employment of a cone-shaped rake for effecting that purpose.

But I claim the angular rotating rake in combination with the endless apron, and the plate I, with its recesses, i, and projection, k, when the whole is arranged and constructed substantially in the manner and for the purpose set forth.

SEWING MACHINES—T. J. W. Robertson, of New York City: I do not claim broadly the employment of two needles for the purpose of sewing cloth, for they are used in the patents of O. Avery, Oct. 19, 1852, to May 3, 1854.

I claim, first, Forming a seam by passing a loop of thread through the fabric to be sewed; then passing through the fabric and through the first loop, a loop taken from another thread, from the same side of the material as the previous loop; then passing through the fabric another loop from the first thread through its own first loop and the loop of the second thread; thus making a line of stitching which I call "double back stitching."

Second, The arrangement and combination of the needles, I and J, or their equivalents, substantially as described.

CULTIVATOR TEETH—Chas. H. Sayre, of Utica, N. Y.: I claim the method described of securing cultivator teeth formed of sheet metal to the frame, by means of a head or cap piece, constructed in the manner substantially as described.

BREECH-LOADING FIRE-ARMS—C. D. Skinner, of Haddam, Ct., and Dennis Tryon, of Middletown, Ct.: We do not claim the use of a chambered breech-piece, fitted with a slot to slide and swing upon a stationary pin, nor the employment of springs, b and I, to pull back and raise up such breech-piece.

But I claim, first, The employment in combination with the chambered breech-piece operating and controlled by springs and by a screw as described, of the lipped projections, f and g, formed, applied and operating substantially as set forth, to prevent abrasion of the joint between the barrel and chamber, by the act of opening and closing the chamber.

Second, Constructing and applying the hammer and sere in the manner described, whereby when the chambered breech-piece is in connection with the barrel, the tooth or acting point, s, of the trigger is brought under the heel of the sere, but when the chambered breech-piece is raised, the said tooth or point, h, is brought behind the said heel, so that in the former case the trigger is operative, and in the latter can have no other effect than to lock the sere, as set forth.

[See notice on another page.]

COTTON CLEANERS—Jesse Johnson, of Hempstead Co., Arkansas: I claim the construction and arrangement of the main or beating cylinder, N, in such a manner as to have the end, N S, thereof to work in beds or recesses or depressions as at N S N S, formed in the inner surfaces of the sides of the casing, substantially as set forth and for the purpose described.

NAIL MACHINE—J. S. King, of Boynham, Mass.: I claim pointing a cut nail or spike immediately after it has been severed from the nail plate, by compressing its point between the lip, E, and a portion of the outer end of the moving knife, B, substantially as set forth.

CORN HUSKING MACHINES—M. W. Stevens and E. G. Kinsley, of Stoughton, Mass.: We are aware that an endless apron, with troughs, has been used in a husking machine for feeding the ears of corn.

We are also aware that an intermittent motion has been applied to a feeding cylinder, so that it shall stop at each time an ear is presented to the action of a husking cylinder, or to that of a cutting-off knife. We, therefore, do not claim such as our invention.

But we claim the plates, d d and l l, provided with teeth or points for holding the husks, in combination with the pleton or bar, I, knives, v, and H, spring, g, and stop-plate, u, the whole being arranged for operation substantially in the manner and for the purposes set forth.

CHAIN MACHINE—Lauriston Towne, of Providence, R. I.: I claim the forming guide for holding and transmitting the chain during the formation thereof, constructed and arranged as described, or in any other manner which will enable it to perform substantially the same functions.

I also claim giving to the forming guide an angular movement upon its axis, so as to present the chain to the successive links, in such positions that the arms thereof will alternately interlock.

I also claim the double movement of the punch, m, first, to give the outer bends to the links while depositing them upon the forming guide, and second, to finally clinch them, and force the clinch downward to make room for the succeeding links, substantially as specified.

I also claim the arrangement and combination of the carrier, k, die, m, and the forming guide, or their equivalents, so as to first bend the links inward near the extremities of the arms, and afterward to make the bends nearer the center of the links for the purpose specified.

I also claim the slender converging rods or holders, r, r, for holding down the top link while bending the first pair of arms of the link below up over it.

I also claim the arrangement and operation of the slides, a a, or their equivalents, substantially as described, so as to bend and clinch the arms of each link successively by pairs, and cause the succeeding pair or pairs to overlap the preceding one, or in case the links have an odd number of arms, to cause the succeeding arms of each link to overlap the preceding ones singly in succession.

I also claim the fingers, p p, operating as described, for the purpose of forcing and holding down the first pair of arms, so as to enable the succeeding pair to be lapped over them, substantially as specified.

SHADES FOR LAMPS—Wm. Kemble, of New York City, and Wm. H. C. Bartlett, of West Point, N. Y.: We claim the described method of constructing a reflecting light shade—that is to say, having its interior so shaped that all rays shall fall perpendicularly upon the receiving surface, in combination with an extra reflecting surface, by which only the rays shall be deviated into the required direction, substantially as described.

RECIPROCATING MILL SAW—Samuel Tarver, of Augusta, Arkansas: I claim a hollow saw, so constructed as that the dust will pass from it as fast as formed, and therefore consisted in the association of parts described by B, D, E, F, T, H, H, K, K, K, in the drawings and by the two steel plates described in the specification, for the uses and purposes set forth.

PLOWS—D. K. Thom, of Farmington, Tenn.: I claim combining with the ordinary turning plow an adjustable scraper, A A, adjustable laterally and perpendicularly as described.

APPLE SLICER—Nathaniel Thomas, of East Dixfield, Me.: I am aware that apple slicers and cores have been made, which consisted of a tube having straight knives placed radially within, an example is seen in R. Mitchell's patent, April 18, 1838; and I therefore disclaim them.

I claim the construction of apple slicers in the manner described and represented.

[This invention employs two knives so placed that by rotating the apple between them, it is very quickly sliced.]

PRINTING PRESS—John H. Utter, of New York City: I do not claim, broadly, actuating the platen by means of the impression levers, as that has been previously done; neither do I claim giving an impression by means of the leveraged described.

But I claim, first, The combination of the swinging platen, E, levers, g, h, i, and shaft, f, when arranged as set forth.

Second, I claim connecting the inking rollers to the swinging platen by means of rods, p, or their equivalents, in such a manner that the movement of the platen around its center of motion shall cause the inking rollers to pass across the type, when arranged and operating substantially in the manner described.

Third, I claim giving the frisket a motion in an opposite direction to that of the platen during a portion of its movement by the means and for the purpose specified.

COTTON CULTIVATORS—R. A. Vick, of Byhalia, Miss.: I claim the construction and arrangement of the body, B, top-piece, D, and front bar, C, so as to be firmly and

conveniently combined and so that three bolts will unite them together, and at the same time secure the handles, beam and blade thereto, substantially in the manner specified.

MACHINES FOR SPADING LAND—Wm. E. Ward, of Portchester, N. Y.: Having described the mode of construction which I have planned for the application of my invention. I do not wish to be understood as limiting my claim of invention to such mode of application, as other and equivalent modes of construction may be substituted.

Nor do I wish to be understood as limiting myself to the use of the several parts of my invention, as some of these may be used in connection with substitutes for the others.

I claim the mode of operation of the mechanism substantially as described, for imparting the cutting action to the spades as set forth.

I also claim the mechanism for tilting the spades substantially as described, in combination with the mechanism for giving the cutting action to the said spades, substantially as described.

I also claim, in combination with the spades operated substantially as described, the shield plate, substantially as described for aiding in disintegrating and reversing the slices, as they are thrown up by the spades as set forth.

I also claim, in combination with the spades operated substantially as described, the yielding or springing part of the levers for imparting the digging or cutting action to the spades, and the yielding or springing part of the tilting levers as set forth, and for the purpose of preventing the mechanism from being broken, when the spades meet with any obstruction, such as stones.

PLOW.—Noah Warlick, of Lafayette, Ala.: I claim the double-faced plow stock, constructed, arranged and operating substantially as and for the purpose set forth.

CORE SPINDLE FOR CASTING—D. A. Webster, of New York City, and Geo. E. Burroughs, of Lumberton, N. J.: I am aware that core spindles have been made with a wedge stave secured at either end; but do not consider such a mechanism at all practicable in casting heavy work.

We do not claim, broadly, a collapsing core spindle, as we know their use is common; nor do we claim a hollow cylinder composed of staves or their equivalent.

But we claim, first, The combination of a transverse center shaft with the disk followers, B B, and inclined projections, D D, substantially as and for the purpose set forth.

Second, The bottom head, E', constructed as described, in combination with the shaft, A, and followers, B B, substantially as described, whereby I am enabled to cast one end of the tube closed, the whole arranged as set forth.

COTTON SEED PLANTERS—T. W. White, of Milledgeville, Ga.: I claim, first, The arrangement of the finger in relation to the hopper and the plow, so that it will follow in the furrow made by the plow, and elevate the discharge opening for the seed above the ground for the purpose described.

Second, The combination of the plow, the seed coverer and the adjustable connecting rod, m, when arranged in the manner and for the purpose set forth.

WASHING MACHINE—Joel Wisner, of Aurora, N. Y.: I claim the use of the fluted rim, B, on the inside of the tube, the quarter moon, knuckle edge rubber, C and D, the serrated channs, E, with springs, arranged and operating in the manner and for the purposes set forth, made of metal or wood.

SMUT MACHINES—J. A. Woodward, of Burlington, Iowa: I do not claim the curved spout, H, nor do I claim broadly and separately subjecting the grain to two or more separate blasts while passing through the machine, for this has been previously done, and curved blast spouts have been previously used. Neither do I claim separately any of the parts described and forming a part of the scouring device.

But I claim the scouring device formed of the lenter, a, attached to the cylindrical screen, c, in combination with the scouring plate, D, and cylinder, E, formed of a series of rings, a x, placed one over the other, with spaces between them, when the device thus constructed is placed relatively with the blast passage, J I, substantially as described, whereby the grain is thoroughly scoured, and subjected to three blasts, and thoroughly separated from the inferior grain and lighter foreign substances, such as chess and the like.

I further claim the adjustable screens, j, placed in the chamber, K, and arranged relatively with the fan box, H, as shown, whereby the chess and lighter and inferior grain may when of sufficient value be discharged from the machine separately and in a clean state, or when worthless allowed to pass into the fan-box to be ejected therefrom with the finer and lighter foreign substances.

[This smut machine has the scouring device so arranged that it breaks up the smut balls, and leaves them in the best state to receive the action of the blast from the winnowing arrangement.,

AMALGAMATOR—J. A. Bertola (assignor to himself and John Stagg,) of New York City: I claim the machine described, for effecting the complete amalgamation of precious metals from ores containing such metals consisting of a double concave muller with grooved bottom, extending diametrically from side to side of the tub, A, leaving spaces or chambers on each side of it, and revolving in said tub upon a central and vertical axis, substantially as set forth.

MODE OF PRIMING REPEATING FIRE-ARMS—George R. Crooker, of New York City, assignor to Geo. G. Martin, of Brooklyn, N. Y.: I claim the method described of depositing the percussion priming and cutting it off in the recess in the breech, as set forth, constituting a self-priming apparatus, constructed and operating as specified.

MANUFACTURING SEAMLESS FELT GARMENTS—Delos W. Gilchell and L. W. Badger, of Mattewan, N. Y., assignors to "The Seamless Garment Manufacturing Company": I claim, first, cutting the original portion or portions of a seamless article of clothing from a hardened hat, and then so perfectly uniting the edges of the said portion or portions, with each, by felting, that the articles thus formed will be of uniform thickness in every part, and will be of so tenacious a texture, that they will retain their original shape during the ultimate condensing operation of the fulling mill, all substantially as set forth.

ROTARY PUMPS—Henry Pease, of Brockport, N. Y., assignor to himself, John Eckler, E. B. Buswell, and F. Belden, of same place: I claim the valve, n n, constructed substantially as described, that is, hanging the valve eccentrically on the pin, a, to compensate for the natural wear.

The hanger portion or heads of the valve constructed as described, to close the valve before the cylindrical portion reaches the abutment.

The construction of the wearing surface of the valve as described, for the purpose of obtaining a large wearing surface, and securing it from injury while passing the abutment.

WASHING MACHINE—Smith Skinner, of Lowell, Mass., assignor to Wm. H. Skinner, of Lawrence, Mass., and Jacob Nichols, Jr., of same place: I claim the washboard constructed of a number of elliptical slots, or their equivalents, arranged in such a manner that they may tip back and forth as the clothes, if, are pressed and moved on them sufficiently to present their flat instead of their sharp surfaces to the clothes, and be prevented from tipping too far, by wire rods, G, which pass through holes, c (of a larger size than the rods) formed through each of the slats, essentially in the manner and for the purposes set forth.

I also claim the serrated sections, T, or their equivalents in the rubber, so constructed and arranged in combination with the washboard, C, that they can be swung back and forth to rub and wash the clothes, essentially in the manner and for the purposes set forth.

DESIGNS.

SHELF BRACKETS—Irah Chase, Jr., of Boston, Mass.

DESIGN FOR GRAVE BORDERS—Irah Chase, Jr., of Boston, Mass.

CLOCK CASES—S. B. Jerome, of Waterbury, Conn.

COOKING STOVES—G. Smith, and H. Brown (assignors to Leibrandt, McDowell & Co.) of Philadelphia, Pa.

PARLOR STOVES—G. Smith and H. Brown (assignors to Leibrandt, McDowell & Co.) of Philadelphia, Pa.

STOVES—G. Smith and H. Brown (assignors to Leibrandt, McDowell & Co.) of Philadelphia, Pa.

[For the Scientific American.]

The Sea and One of its Contents.

Sea water contains iodine, but in such an exceedingly small quantity that to obtain one pound, two million quarts of water must be evaporated. Iodine is as indispensable to the existence of marine plants as sulphur and phosphorus are the necessary ingredients of terrestrial vegetation. They have so strong an affinity for it that, separating it from the floods around them, they appropriate it to themselves as a solid element. Iodine was first discovered in the ashes of marine plants, from which vast quantities are obtained at the present day.

In the earliest periods of history, men residing on the sea-coast were in the habit of taking the sea-weeds brought to the shore in immense quantities by the waves, and reducing them to ashes for the purpose of obtaining soda. If from these ashes a lye is formed, soda will crystallize from their solution. But at a certain stage of the concentration, crystallization ceases, when the lye would be thrown away as useless, and with it a valuable amount of iodide of soda, for the iodine is much more easily dissolved than the soda, remained dissolved in the lye.

Courtois, a soap-boiler in Paris, threw a quantity of sulphuric acid into a lye of this kind in which crystallization had ceased, and he must have been surprised to find that by the addition of sulphuric acid to a larger amount of lye, the atmosphere of his room was filled with violet vapors of a peculiar odor. These violet vapors were the iodine; thus occurred the discovery of one of the most interesting bodies of inorganic nature.

Courtois in time became acquainted with several of the properties of iodine, but could not, as may be supposed, follow up his discovery; still he showed his good sense by communicating these wonderful facts to those who could appreciate them. By the masterly hands of the most celebrated French chemists marvelous qualities were brought to light which had long been hidden in the waters of the ocean. On reading the journals of those days, we find almost on every page investigations on the subject of iodine, as if every one would claim some of the honor of its discovery, or would at least aid in examining its properties.

The manner of preparing iodine at the present day is very nearly the same as at the time of its discovery. It is chiefly obtained from the ashes of sea-plants. In the lye of these ashes iodine is found connected with salt-bases, from which, by means of sulphuric acid, it is made to evaporate in violet-colored vapors. These vapors are gathered in a cool glass receiver, and condensed as black graphite-like crystals. As iodine is found in the ashes of sea-plants, it was a very natural thought to examine the sea-water itself for iodine. Distinguished chemists failed to trace the existence of iodine in sea-water, and it might have never been discovered had not a sensible re-agent been afterwards found out. This is the starch-paste which, with iodine, forms the blue compound.

The sensibility of the starch re-action upon iodine hardly has its equal in analytical chemistry. Water containing one-millionth part of starch turns violet when mixed with iodine. Thus was the way prepared for the discovery of iodine in every place—all formations of the organic and inorganic kingdoms were tested for its existence. It was soon traced in several wells, aye, even as accompanying ingredients of the air! indeed, it is difficult now to name a single product of nature which is totally destitute of iodine. While many were investigating the nature of the new body and its existence in nature, the great mass of the people inquired "What is it good for?" and, indeed, as people generally only recognize the value of anything by the advantages arising therefrom, these questions do not surprise us.

Iodine soon overstepped the narrow limits of the chemical laboratory, and its first application was medical. From the fact that it was present in all those remedies which have been celebrated in curing the goiter, it was thought that the benefit might arise from iodine alone. Coindet, a physician in Geneva, was the first who made a direct application of it. His success exceeded his highest expectations, so that iodine, applied internally and externally in all possible ways, has since played an important part as a true specific in the materia medica. It is a remarkable fact that all wells containing iodine spring from the tertiary mountains, whereas we would suppose their origin much deeper.

Used as a medicament alone, the consumption of iodine could not be very great, as it is administered in very small doses; and it soon entered the arena of technics with unexampled success. The brilliant and varied hues produced by single combinations of iodine are made available in the art of painting as well as in the dyer's shop. But the glorious production of photographs has assured to it an imperishable place in the history of technics. From being exhibited as a rarity in small glass receivers, iodine has now become a staple article of trade. In France alone 7,000 pounds of iodine are produced, at 20 francs per pound.

As iodine is now so generally used, a word of caution in regard to its poisoning properties will not be out of place. Taken in large doses it destroys the mucous membrane of the stomach, and causes sudden death. The daily inspiration of vapors of iodine effects a slower but not less fatal poison. Exceedingly small doses of iodine poison slowly like mercury or lead, its effects being entirely imperceptible until the system is pervaded thereby and ruined.

We have in this instance made the sea give up one of its treasures, let us hope that we shall shortly make it give up more.

G. GLEIWITZ.

What it is.

MESSRS. EDITORS:—In your paper of Sept. 26th, you say that one of the savans of the scientific convention held at Montreal insisted that coal was not of vegetable origin. You state that all geologists at the present time say that it *is*, and you "should like to know how he accounts for the gigantic ferns and monster pine trees that are found in nearly all coal formations? Soft coals are full of these, while anthracite contains comparatively few of these marks."

Let me answer one question by asking another: Why is it that the woody fibre is mostly at right angles to the stratification of the coal, and why is it, that the leaves and more delicate parts of the ferns lie parallel with the stratification? I will endeavor to make a few suggestions, though perhaps in doing so I may prove that I am neither a geologist nor a savan.

Does not the late demonstration of making oil from coal prove the non-vegetable origin of it? It strikes me that it does; can you produce the same or similar products from wood? I doubt it.

My view of the nature of coal is simply this, that it is the production of the interior of the earth, that it is a liquid, and like all fluids, takes the lowest positions; and the woody fibre and leaves found in coal are of that character that is produced in low and shady positions, giving them a rapid growth and consequently comparative spongy texture, such as they seem to be; and like the forest of the present day, trees are found prostrated, others much inclined. Now if a fluid or semi-fluid should take position in a valley or hollow, where there are trees and plants, it naturally follows that this fluid would act as a matrix to all bodies within it.

We have the fact demonstrated, that wood placed in streams of water, containing siliceous matter, iron &c., will often in lapse of time become changed in its character according to the substance in the water, still leaving its woody fibrous appearance, and so perfect indeed that the kind of wood can be told. Now is it absurd to say that the material composing coal would not act in a similar way; we find that a change or transmission of the particles of wood does take place in other substances, and why not in such a penetrable substance as coal is made of?

I have heard it stated by those who have visited coal mines that they have seen a portion of the coal in a semi-fluid condition, a thick unctuous substance—a fact I can readily believe because we would naturally suppose such a thing possible. I would ask, do not the Petroleum or rock oil wells suggest the source of our coal? is there anything so unreasonable in the suggestion that it cannot be entertained by our savans and geologists?

But there is one suggestion that naturally comes up: if coal is produced from the interior of the earth, and is a fluid, cannot we find by the process of boring, the location of some of the deposits of that fluid, and do not the Petroleum wells, now used I think in Virginia, demonstrate this? If so, then I contend, singular as it may seem, that there is no great stretch of the imagination when we say that it is possible for man to control in some manner the location of coal beds.

L. T. WELLS.

Cincinnati, Ohio, October, 1857.

[The ingenuity displayed by the above correspondent in his arguments has induced us to insert his letter, although we by no means agree with his inferences. His only tenable argument is, that you cannot produce Petroleum from wood; this is true, but wood in its change into coal undergoes many chemical as well as physical changes, and as a result of these changes there is a substance from which Petroleum can be produced. In chemistry there are many parallel cases, and we are afraid his idea that coal is "the production of the interior of the earth" is very indefinite as well as unsound.—ED.

Barrel Manufactory.

An establishment of this kind has been recently put into operation at Kasoog, N. Y., by the proprietors of the Metropolitan Mills of New York City. They employ some forty hands, and turn out finished stock for 500 barrels daily; the method of manufacture is rapid and very systematic; the logs are first put upon a saw mill and sawed into plank about four inches thick, (the slabs are used for heading,) and the plank are cut into thirty inch lengths, then steamed and cut into staves; the staves while wet are passed through a machine which finishes both ends at a stroke, and they are then passed through the dry kiln, which is the main feature of novelty in the business. The wet staves piled on cars enter one end of the kiln, and are taken out at the other end thoroughly dry. The drying is accomplished by keeping up a strong and constant blast of hot air upon the staves, by means of a large blower placed in connection with the boiler surface, in such a manner as to make a draught upon the fire, and discharge the whole heat of the fire divested of smoke into the kiln. Such is the rapidity of drying that each day's work is dried perfectly in twenty-four hours, so that to-day a log may be taken from the stump and to-morrow be made up into thoroughly seasoned barrels ready to pack. After drying, the staves are jointed upon a machine which finishes both edges at the same time; they are then packed in bundles of one hundred each, ready for shipment. The heading goes through the same kiln, and is afterwards finished up and turned in rapidly working lathes. The heads are then packed in barrels for transportation.

ENGINEER-IN-CHIEF.—Samuel Archibold has been appointed to the position of Engineer-in-Chief of the Navy, in place of Daniel B. Martin. Mr. Archibold has been stationed at the Philadelphia Navy Yard for the last two years. He entered the service in May, 1843, and has been at sea over ten years.

New Inventions.

The Electric Telegraph.

The Electric Telegraph is democratic. It was originally designed to be an instrument through which governments might communicate, and it was slow in being placed at the convenience of the people of large cities; but now from the centers of population it speaks alike for the rich and great, or poor and humble, with equal indifference. And behold! lastly, it is to be applied for the advantage of the poor fisherman; certainly this is wonderful, to aid the operations of the fisherman by the application of electricity.

In the *fiords* of Norway, where the herring fishery is the principal support of the entire population, it is necessary that when a shoal of herrings arrive, all the fishermen should instantly have it made known to them that they may quickly have their boats in readiness. To have the boats so arranged around the bays or fiords that the fish cannot regain the open sea is the aim of the fishers. Disappointments have often occurred from the intelligence of an arrival coming too late; and the government of Norway has established along a distance of over 124 miles (the length of coast frequented by the herrings), a submarine telegraph, with numerous land stations at sufficient intervals, to communicate with the villages inhabited by the fishermen. When a shoal is perceived making for any of the fiords, a telegraphic despatch is sent to the fishermen, and they are in readiness for the taking almost as soon as the herrings are in the fiord.

When we turn the application of science to the profit and benefit of the poor inhabitants of our globe, we demonstrate its true importance and grandeur.—*L'Invention.*

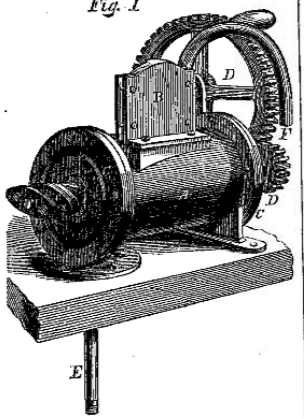
Improved Rotary Pump.

This form of pump is supposed to have some advantages over the common lift pump; and rotary ones are coming into more general use, on account of the regularity of their action and simplicity of their parts. The one herein described is an alleged improvement on the old form—the novelty consisting in the taper form of the screw, which is not so liable to wear as the ordinary shape, and also by pushing it along, it can readily be kept water-tight; and it will pump as well when the rotation is slow as when it is quick.

Fig. 1 is a perspective view of the whole, and Fig. 2 is a section through the whole, still showing the working parts in perspective. Similar letters refer to the same parts in each.

A is the barrel of the pump, B the box containing the piston, C the ends containing suitable collars, *c*, through which the axle of

Fig. 1

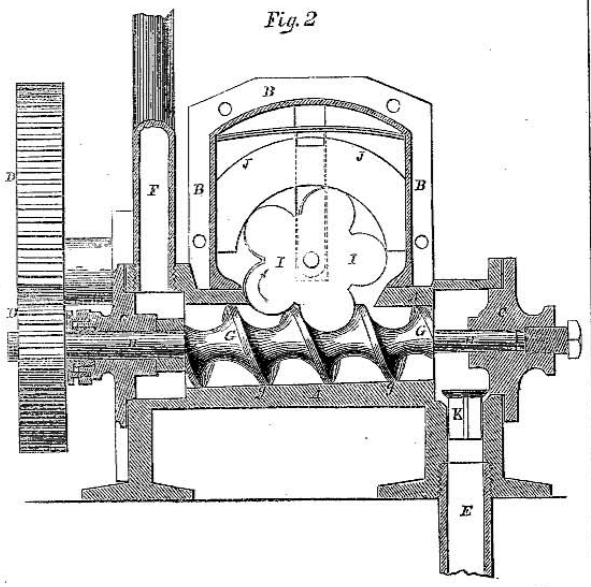


the screw passes, and D the gearing by which it is worked. E is the suction pipe, and F the delivery. In Fig. 2, G is the screw, the edge of whose thread, *g*, is cut plane and true, so that it fits water-tight into the taper barrel, A, and H is the shaft of the same, which is connected with the gear wheels, D. I is the piston, the shape of whose periphery corresponds with the interval in the pitch of the screw, and it rotates in the direction indicated by the arrow. J is the cut-off arrangement, which is kept in position by a piece (indicated by the dotted lines), from one of whose ends a pin passes through the center of I; K is a valve that prevents the water from flowing back when not in motion.

The operation is very simple; when the

RAMSDEN'S ROTARY PUMP.

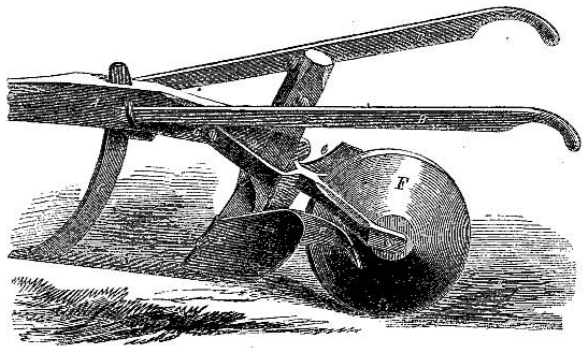
Fig. 2



screw is turned, to use a popular expression, it draws the water up the suction pipe, and brings it in contact with the piston, which forces it along the screw, and up the delivery pipe; of course, the quicker the screw is rotated, the more water will be ejected, and the better the whole will work; but at whatever rate it is turned, it will draw up a proportionate quantity of water. It was patented the 9th of June, 1857.

For further particulars address Robert Ramsden, South Easton Furnace, Pa.

ROUTT'S DRAIN PLOW.



One of the great difficulties experienced in the use of drain plows in damp and marshy lands is that they tear away the ground, and even when they cut it smoothly, there are no means of pressing the sides of the furrow firm, so that often the whole furrow has to be batted down with a shovel and trimmed up by a laborer, thus taking away much of their value as labor-saving machines. The device we are now about to describe nearly if not entirely does away with this difficulty, and the method employed is extremely simple, being nothing more than the large wheel, F, seen in our engraving, which is a perspective view of the complete plow.

A is the beam, and B B the two guiding handles. G is the coulter which is square at the cutting point, to give a flat and smooth bottom for the water course, and D is what may be called a polisher or presser, as it finishes off the base by sliding along it after having been cut by the coulter. E is the share, and *e e* two adjustable pieces, one on each share, for clearing the refuse mold away. F is a heavy cast iron V-shaped wheel, which, following in the furrow, firmly presses the sides into a good, compact and clean water course. It is hinged at C, so that it can follow any inequalities that may occur in the furrow. This is especially applicable for damp lands; and, indeed, wherever a drain plow is required, this one will be found serviceable.

It was patented July 14, 1857, and is the invention of A. P. Routt, of Somerset, Va., from whom all further particulars and information can be obtained.

Statistics of Coal.

In Great Britain, during the year 1851, there were raised about 35,000,000 tuns of coal, and the value was about $30,000,000 at the pit's mouth and $70,000,000 at the place of consumption. There was then invested in the coal trade a capital of $44,000,000.

It is calculated that the coal of England is of about two-thirds the value of all the precious metals raised annually throughout the world, and the mean annual cost of iron melted in England by British coal is $35,000,000, so that the coal and iron which is made available in Great Britain is of more worth than all the gold and silver of South America, California and Australia. The worth of our own coal is almost too vast to be estimated, and our iron is unlimited in its supply, but by some want of good management on our part, British coal and iron is still able to compete with us on our own soil.

British Appreciation of American Ingenuity.

It is pleasant to us, denizens of the New World, clearers of forests, explorers of territories as yet unknown to any but the red man, navigators of rivers whose length we measure by hundreds not by tens of miles, builders of cities in places where, a few years ago, naught was heard save forest sounds—the growl of the bear, the hissing of the snake among the leaves, and the woodman's ax—but in each of which now stands a mighty metropolis, whose streets groan beneath the weight of traffic, and whose wharves' sides are crowded with ships of every clime—it is pleasant to us, we say, to carry our thoughts three thousand miles away, and find that all our labor, toil, and their glorious results, have been appreciated in the Old and Mother Country. We have been led to these remarks by reading the report of a paper read before the Liverpool Polytechnic Society by Mr. T. R. Arnott, at their first meeting this season, on "The Inventions in use in the United States," and a brief condensation of this paper we shall now give. Mr A. was surprised at our river steamers, and the *Metropolis* delighted him beyond measure; he told his hearers that on the Mississippi the Americans have 800 steamboats running, and that he had traveled 1,500 miles in seven days for twenty dollars! He explained the dexterity exhibited by the pilots, and gave some statistical information of our traffic that astonished his audience. On our railroad system he said much, and although he found some faults, he thought that, on the whole, there was much for British railroads to copy, especially as regards the cars. The locomotives attracted his attention, but the "camel engine" was his greatest object of admiration. The hydraulic dock he thought was a master-piece of ingenuity and inventive faculty; and the water-works of Fairmount and Croton made him thoroughly perceive that he was traveling in a country whose basis was the civilization of the nineteenth century; and lastly, the American telegraph system, and the mode of conducting the United States Patent Office, were, he said, examples to the world; and he concluded by expressing his admiration of the matter-of-fact, inventive mind of America.

This is as it should be. We like educated foreigners to come among us, and if we can teach them anything, they are heartily welcome to the information, and we are not too proud to learn in return. We have, by our inventive genius, gained a position in the history of the world unparalleled in the records of nations; let us keep it. Let no panic or crisis stop this, at any rate, but let us, by still working in the onward and improving path, show that we can rise even superior to adverse circumstances, and, if need be, change a national disaster into a public good.

COSTLY PROJECT.—According to the accounts published in the *Gaceta*, of Salvador, the engineers of the Honduras Railroad Company are busily engaged in their surveys, and by the estimate already made by some of those gentlemen, it appears that the work will cost twenty-five millions of dollars, instead of ten, as estimated by Mr. Squier.

WINE REVENUE.—France (says the *Moniteur Vinicole*) contains about 5,000,000 acres of vineyards, which are estimated to yield about 80,000,000 barrels of wine annually, or about two barrels for each inhabitant; the aggregate worth of this vintage is about $600,000,000. It should be borne in mind that the greater portion of this immense product is consumed by the French people.

Bills on all banks which are current at the places from whence sent are still received at par at this office for subscriptions, and for agency fees on applications for patents.

Scientific American.

NEW YORK, OCTOBER 31, 1857.

Progress of Engineering Science.—Motors.

Last week we made a trip up the North river, with a committee of the American Institute, on board the *John Fitch*, a side-wheel boat, driven by an engine the invention of Mr. F. B. Blanchard. The motive agents of this engine are steam and the gaseous products of combustion, both of which are used in the same cylinder to act on the same piston, the steam being used on the low-pressure or condensing principle. The employment of the gases of combustion in a manner to obtain useful effect from all the heat generated in the furnace (a great quantity of which escapes from the chimney of an ordinary steam boiler) has attracted the attention of several scientific men, and some experiments have been made, both in this country and in Europe, in combining the products of combustion with steam, to be used in the steam engine; but so many difficulties have had to be contended with in controlling the temperatures, that no practicable results have heretofore been obtained. Mr. Blanchard's improved system of operation and very ingenious improvements in the generating apparatus, promise to be very successful, as they not only effect a great economy in fuel by the very perfect combustion obtained, but, by the very perfect arrangement and proportion of his heating surfaces, the temperature of the gases is so controlled, that their advent to the engine at a temperature that would prevent proper lubrication with oil, is prevented. As, in consequence of proceedings now being taken to secure European patents, it might be prejudicial to Mr. Blanchard's interests to give a full description of his improvements, we will reserve that for some future number of our paper, and merely give a brief statement of the performance of the boat and engine. The *John Fitch* is a boat of 251 tuns, 155 feet long, and 25 feet beam—a proportion of beam to length not calculated for great speed—wheels 22 feet 6 inches in diameter. The trip from New York to Sing Sing (32 miles) occupied 2 hours 31 minutes, the return trip 2 hours 29 minutes; thus, it will be seen, the average speed was about 13 miles an hour, the engine making, on an average, 18 turns per minute. Coal consumed in both trips, including that used while laying at the dock at Sing Sing for 1 hour 15 minutes, with the chimney open, (in which condition the consumption is almost as great as while running with the furnace closed up) was 2,178 pounds, every charge being weighed; this, most of our readers will understand to be an extremely small quantity. This is the first engine Mr. Blanchard has built, except a small one for experiment, and it is under as perfect control as an ordinary steam engine; and we think he has every reason to be satisfied with the result. Mr. B. has a high-pressure engine in the Crystal Palace, but having had to take it apart to get it in, some delay has resulted in re-erecting it.

Captain Ericsson is again in the field, with a hot-air engine of improved construction, the subject of a recent patent. We have seen one, but not while in operation, in a small pleasure boat owned by J. B. Kitching, Esq., the enterprising merchant who was, we believe, the principal shareholder in the caloric ship *Ericsson*, and who still hopes to see the use of steam, as a motor, superseded by air. In this engine the regenerator has been discarded; and, in place of the supply pump of the old caloric engine, another piston, in addition to the working piston, is, by some exceedingly ingenious mechanism, made to do duty in the working cylinder, to obtain a supply of air to the heater, to act upon the working piston. The air in this engine is not compressed before being heated, but all the power is derived from its expansion by heat. Mr. Kitching advertises, in another column of this paper, to supply small engines for pumping, hoisting, or manufacturing purposes. We have never been of opinion that hot air can supersede steam as a motor, but we think that this new engine is certainly free from some of the objections to the old one, and that if anything practically valuable is to be made out of hot air, as a motive power, this experiment is a step in the right direction. We shall take occasion to examine this engine more critically, and while under operation; and we will refer to it again at some future time.

The Steamship Adriatic.

"Hope deferred maketh the heart sick," says the proverb, and it is one which very correctly describes our feeling on learning that an important portion of the engines of the splendid steamer *Adriatic* is to be again remodeled. Little has been said of this ship for several months, but a large number of men have been at work both day and night, urging forward the completion of the valves and valve motions which were to take the place of those removed. It will be recollected that this admirably modeled and staunchly constructed ship has been lying at our docks considerably over a year to allow of the completion and preliminary trials of her engines—operations which do not usually require more than two or three months. She was even advertised to sail as long ago as November of last year, and the merchants of Boston it will be recollected sent a petition asking her owners to allow her to visit that city if there should be sufficient time before she was to take her place in the line. Whenever the long and narrow new steamship *Persia*, belonging to the rival British line, made a quick trip, far surpassing anything on record, we were accustomed to believe that we had a ship *nearly ready* which would catch, and as we fondly hoped, leave her far astern. But we have thus far been disappointed. The *Adriatic* was provided with newly invented valves and valve motions which, although they had worked well on a smaller engine, absolutely failed to answer the intended purpose, or any other useful one, in this instance. After months of experiment and alteration, attended with continual breaking down, these important parts were formally discarded, and the ship, or rather this portion of the job, was transferred to the charge of another engineer. The new party was to construct new valve chests and valves, and new valve gear, and was to have the ship ready for sea on the 12th of September last. She was advertised to sail on that day. The advertisement was subsequently altered to the 26th of the same month. The ship was towed around to the usual dock of the ships of her line, but although externally she presented the usual appearance of a ship fully rigged and finished, and although the fact that steam was raised in her boilers was on several occasions very apparent, still she did not start even on a trial trip, and we have now the unpleasant duty of recording the total failure of this second great effort. The new valve gear has been rejected, and a great part of it has been already removed from the ship.

The completion of the engines appears more distant than it did a year or fourteen months ago. But matters are not in an absolute dead lock. The cylinders themselves are good, and very compactly and admirably arranged. The valves adopted in the latest series of experiments are the same as are in general use on most of our ocean steamers, and are believed to involve no peculiar difficulties on account of their size. At our latest advices the prospect was again hopeful. The engines have, it appears, been again placed in the hands of their original constructors, the proprietors of the Novelty Works, who are fitting them with valve gear similar to that which has been several years in successful use on the steamship *Arago*. We hope, though we acknowledge to some hesitation in saying it, that another "few weeks more" will allow her to prove her qualities on the ocean to the satisfaction of the millions who are interested in her success.

Our Troubles and their Causes.

Within the short space of four years, this country has been twice thrown into convulsions. One fine morning in the month of July, 1854, the inhabitants of this city awoke and found out by the newspapers—those useful vehicles of information—that one of the Railway Kings of the country had turned out to be a great rascal. Everybody, it may be supposed, hurried down to Wall street in double quick time, to look after the stock market, and to see how much bogus paper they chanced to possess. Railroad stocks, which had previously sold at extravagant prices, fell in the market like rotten trees before the wind; and, as if by magic, fortunes invested in those securities vanished into thin air, carrying ruin into many business circles and sorrow into many previously happy homes. It was then all at once discovered that railroad stocks were uncertain and deceptive—that the companies had borrowed money to pay dividends; and by sundry other acts disgraceful and dishonorable even to an age of recklessness in speculation, the whole financial fabric was shaken, and the general interests of industry and enterprize were paralyzed. Every man distrusted his neighbor, and snail-like withdrew each into his own shell.

On the 24th of August last, the Ohio Life & Trust Company (an old institution, originally projected by a few Eastern capitalists) announced its suspension. The country had just about emerged from the calamities of 1854, and it was confidently expected that an era of good times had commenced, when the sudden failure of this old and honored institution shook the confidence of mercantile credit to such an extent that hundreds of our heaviest business firms have since gone down—some of them to utter ruin—for the want of ability to get money to pay their debts.

We are now, to all appearances, recovering from this sudden attack, confidence begins to re-appear, and it is believed that the life-blood of business will, before long, course through its accustomed channels.

The banks, in this instance, have been the convenient scape-goats, and the public have charged them with having caused these dire evils, and thus the vicissitudes of changing fortune have fallen in a measure upon them. This easy method of shifting responsibility may be all very well, but the truth is that the reckless expenditure of money for the indulgence of foreign luxuries, and the general system of credits for which there must come a pay day, have combined to bring these evils upon us. No doubt we shall soon recuperate; the natural spring in the American character, together with the immense productive power of the country, forbid the supposition that our troubles can be anything more than temporary ones. It is, therefore, all folly to charge one set of men or class of institutions with having produced our pecuniary embarrassments. Reactions in business are inevitable, and seem necessary to check over-trading and over-speculation. The hand of an overruling Providence is clearly seen in this afflictive lesson; and the sooner we learn to regard its teachings, the sooner shall we surmount our present monetary misfortunes.

Ships' Compasses.

A number of sea-captains, editors, and other persons, were specially invited on Tuesday, the 20th inst., to witness experiments with the common compass, and with an improved compass invented by Calvin Kline, (who received the first prize at the Paris Exhibition—over Dent, of London,—for his American chronometers) of 92 Wall street, this city, and which was patented on the 17th of March last. The object of the improvement is to prevent local attraction affecting the needle of the compass: and it consists in surrounding the card of the needle with a simple thin hoop of soft iron. This hoop is connected, both above and below the needle, with circular shields of iron wire gauze, which encompass the card and the magnet of the compass; but the invention is based on the hoop alone. By taking a bar of steel, and presenting it to the pole of the common compass outside of the card on which it is fastened, the latter was made to follow the bar round about, and thus revolve on its vertical axis. The iron hoop was then put on the compass, and the bar presented in the same manner; under this test the magnet was not moved—it still pointed to the magnetic meridian—thus showing that this simple device is a very excellent preventive of local attraction affecting the needle. This was a practical operation—the production of a certain result: and a theory of the cause, whether right or wrong, does not affect the result itself. It is believed that the magnet induces polarity in the iron hoop, and that the lines of magnetic force outside and inside of this hoop become radial, and of equal intensity, and thus the needle cannot be directed from its true meridian by large bodies of iron, such as machinery, and the iron of which the hulls of many ships are now constructed.

A remedy for local attraction in the compass, especially for steamers and iron ships, has long been a grand desideratum, because many vessels have been lost by being steered out of their courses and run upon shore, through their compasses being affected by masses of iron. We were informed that Kline's improved compass had been tried for several voyages on the steamship *Vanderbilt*, and that of several on board it was the most reliable. These compasses are now being manufactured by Tuttle & Bailey, 301 Pearl street, this city. Every invention which insures, in the least degree, the safety of vessels at sea, is of vast consequence, as it regards the protection of life and property.

An Encouraging Feature.

A correspondent informs us that the "Newark (Ohio) Machine Works have generously presented every apprentice in their employ with a subscription to Vol. XIII, SCIENTIFIC AMERICAN," and he remarks that "a manufacturing company whose policy dictates so enlightened a consideration of the interests of their apprentices will be guided through the present financial revulsion by a spirit of intelligence and wisdom which will prove adequate to the emergency. A careful examination of the weak places in their business, a judicious retrenchment at every practicable point, and thorough and complete co-operation of their employees, will inevitably carry them 'across the Rubicon' and ensure success beyond."

We certainly hope that the above may prove true. The affairs of the company above mentioned have always been judiciously managed. It deserves success.

A Rare Chance

For those who use extra exertion to procure subscribers for the SCIENTIFIC AMERICAN. Our prizes must be paid on the 1st of January, and, as yet, the competition for them is nothing like what it was last year. This is undoubtedly owing to the severity of the times, and some of the competitors will be surprised to receive three times as much money as they have sent in to us! Yet, judging from present appearances, this is not unlikely to be the case, and we assure our competing friends that we do not intend to *suspend*; they shall surely receive the amounts to which they will be respectively entitled on the 1st of January. If the largest list does not exceed ten subscribers we shall promptly pay over the $300, 2d, $250, etc. Who will exert themselves to get these liberal prizes?

THE MISUNDERSTANDING between the Russian government and Col. Colt, in regard to the delivery of a large quantity of Minie rifles, has been determined by the referees against the latter. So far as we know, it is the first case in which any government ever consented to refer a private claim to arbitrators. Under our government, meritorious claimants oftentimes suffer great injustice for want of a simple and fair mode of proceeding like this.

The Twenty-ninth Annual Fair of the American Institute.

SIXTH WEEK.

Owing to the rain which has fallen this week, and the "panic" combined, the attendance at the Crystal Palace has been thinner than usual: but on Tuesday, the 20th ult., a larger assemblage than we had ever seen in the Palace, greeted the Hon. N. P. Banks, of Massachusetts, who delivered an address on the agricultural, manufacturing and commercial interests of the United States. In the course of the speech he made some interesting and important statements comparing this country with others in the Old World. He said:—

"In Holland, in 1841, the product of agricultural industry was $181,000,000; that of manufacturing industry, $144,000,000; and the estimated products of commerce, $65,000,000; thus of $390,000,000, commercial industry gave but little more than a sixth part, while manufactures and mechanics afforded 37 per cent of the entire wealth of the State. In France, in the same year, the product of agriculture was $800,000,000; manufactures, $400,000,000; commerce and navigation, $268,000,000. Of an industrial product of $1,466,000,000, that of commerce is but 18 per cent, while the mechanic arts furnish a third of the amount. The industrial product of England in 1840, was $630,000,000, and of all other pursuits $855,000,000. Allowing to commerce a fifth of the aggregate, as in the case of Holland or France, or even a quarter part, it is still far below that of manufactures and the mechanic arts.

"Neither in England nor the United States, in the census of 1850, is the product of commercial industry separately stated, as was the case in both countries in 1840; but it is safe to assume the same proportions, and, first, as to the number employed. There were, in 1840, 1,000,000 persons engaged in the United States in manufacturing and commercial life, of which less than one-third were in commerce. The same proportions are found in New England for the same year. In 1850, there were 2,400,000 employed in agriculture, of the white male population over fifteen years of age, and $1,596,000 in commerce, trade, mining, manufactures, and the mechanic arts. Deduct from this million and a half, 338,000 persons, free and slave, who were employed in mining, commerce, ocean, sea and river navigation, it leaves one million and a quarter of free manufacturers and mechanics—just half the number engaged in agriculture, and three-quarters of all other pursuits. Their industrial product is fabulous. That of agriculture for the present year is not less than two thousand millions; of manufactures, fifteen hundred millions; and in commerce a thousand million dollars—and this accompanied by an unexampled energy, and a specie basis for its trade in the country, that, at the close of the present fiscal year will amount to nearly three hundred million dollars. Nothing less than panic will persuade the world that such people are poor. From these facts I state the elements of national prosperity to be:—First, agriculture; second, manufacturing and mechanical industry; third, commerce."

Again, in speaking of the triumphs of commerce and finance, he remarked that:—

"Their financial chiefs are not unworthy of comparison with warriors, statesmen and philosophers—the Rothschilds and Barings of the Old World, and Girard, Astor, Peabody, Lawrence and Cooper, of greater fame in the New, under whose direction industry thrives, colleges of science and art, and public libraries are established."

On the history and dignity of mechanical pursuits he told us that:—

"The founder of mechanical science is no less a man than Archimedes. He discovered the inclined plane, the pulley, the screw, and the lever, to which the ancient mechanicians reduced all mechanical powers. The labors of Galileo, as a mechanic, are considered to be higher proofs of his transcendent genius than his discoveries in astronomy. He suggested the pendulum, and its application to the measurement of time. The Marquis of Worcester imparted to the world its first knowledge of the power of steam. Sir Christopher Wren was no less distinguished for his mechanical inventions than for St. Paul's Cathedral—the imperishable monument of his genius as an architect. Newton gave an importance to astronomy it had never attained by the application of mechanical laws to the phenomena of the heavenly bodies. Coulomb discovered the nature and law of friction. The clustering stars have no brighter luster than the undying names of those who have applied the discoveries of these founders of mechanical science to the inventions of modern times, as Watt, Fulton, Whitney, Morse, Hoe, Adams, and many others.

The influence of mechanical inventions upon social life is inappreciably great, and, as an agent of civilization, all other pursuits fade before it. We can measure the importance of recent agricultural improvements—of railroads—of the telegraph—the daguerreotype and photograph—of the cotton gin that creates the cotton crop. The sewing machine will work as great a change in the family as railways have in communities and States. We have seen at this exhibition a perfect watch, unsurpassed in beauty of workmanship and for service, that is made by machinery, and under one roof, where the roughly swedged materials are fashioned into the perfect watch in the hours intervening between morning and evening—an achievement never before attempted in any part of the world. And I understand that machinery is in progress of construction that will secure the manufacture of as perfect time-keepers, at a cost of three dollars, as are now imported at a cost of three hundred."

We proceed to notice a few of the remaining novelties in the Fair, commencing with the

SPOKE MACHINES.

The first that forcibly strikes us is one exhibited by Landphere & Remington, of Erie, Pa., which is a neat and perfect specimen of its class, and compares favorably with the celebrated Blanchard Spoke Machine, one of which (manufactured by the Newark Machine Company, Newark, N. J.,) is also on exhibition. The peculiarity of Landphere's is that it planes the stuff longitudinally by means of two sets of rotary cutters, arranged above the timber to be turned, and having their bearings in swinging frames, that rise and fall, according to the profile of a plate over which they pass. Another profile plate causes a transverse movement of the cutter shaft in its bearings.

A combined Shingle Sawing and Planing Machine is exhibited by Tupper, Banker & Co., of Boston, that supplies a shingle which has long been wanted; the objection to ordinary sawn shingles is that their rough surfaces cause them to hold water, and by being always damp, they curve up, split and decay much sooner than the shaved or planed ones. By Tupper, Banker & Co.'s device which is an ordinary shingle sawer, having a rotating vertical plane set on one side of the saw, and against which the block has to pass before reaching the saw, it smooths one side. The machine works rapidly, and the attendant says that it will throw off nearly one thousand shingles per hour.

A case of beautiful wood-working tools are exhibited by E. & J. Kingsland & Co., Eagle Works, Keeseville, N. Y., consisting of chisels, gouges, plane irons, axes, etc.; and we know not which to praise the most, the quality of the articles, or the taste with which they are arranged.

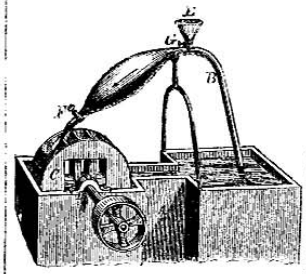
J. Matthews, of New York, exhibits a great variety of soda water apparatus, in the way of generating cylinders, condensers, bottling apparatus and fountains, all displaying great strength and elegance in their construction.

IRON TRADE.—In Wolverhampton, the head-quarters of a portion of the iron manufacturing district of England, the weekly transactions in that metal average above $6,000,000.

Perpetual Motion.

We had really thought that men were beginning to get wiser, and that we had heard the last of this chimera; but we were mistaken, for the following is an exact copy of a letter we received a few days ago, and as it is a curiosity, we publish it and insert an engraving of the diagram which he encloses. The letter runs thus:—

MESSRS. EDITORS:—I could write you a long letter about how I discovered perpetual motion; but to come to the point, I *have* discovered it! Below is a sketch of it. Please examine, and tell me if I could get a patent for it.



A is a box made to contain the water. B is a peculiarly shaped syphon; the water being made to run out of the short arm, but the water being heavier in the short arm, it flows readily. C is like any other water wheel, and is suspended on pivots, D D. E is a funnel by which the syphon is filled. G is a cock to prevent the air from getting in, and F is a stop-cock to shut the water off to prevent its working. The arrows show the way the water runs.

Please answer as soon as received, and oblige, yours truly, * * *

The simplest student of the laws of hydrostatics will at once see the fallacy of this, as the water cannot be made to flow from the shorter arm of the syphon, whatever be its weight, as the syphon does not depend on the weight of water in the delivery arm, but on the pressure in the receiving one. It is not, as our correspondent seems to suppose, a pulling force, which drags the water over, but a pushing force, which sends it through the syphon; and whatever be the form of the "peculiarly-shaped syphon," it cannot work, and does not require the stop-cock, F, to prevent it from so doing. We need scarcely add that a patent could not be obtained for it. We hope our correspondent will turn his inventive genius in some direction more profitable, both for himself and the community, than seeking after that *ignis fatuus*—perpetual motion.

Palladium.

This is one of the metals found in the ore of platinum. It resembles platinum in color, appearance, difficulty of fusion, and in being very malleable and ductile. Its density is 11·8. It is slowly attacked by nitric acid, but dissolves readily in aqua regia. There are two oxyds. Several alloys of palladium are known. The alloy with iron is brittle; and in the proportion of 1 per cent, it is said to improve the quality of steel for certain cutting instruments. It destroys the color of gold. One part fused with six parts of gold forms a white alloy, which, from its hardness and durability, was employed for the graduated part of the mural circle constructed by Troughton for the Greenwich Observatory. Electroplating with palladium is in some cases useful, is readily accomplished, and is used for chemical apparatus.

The Scientific American at a Discount.

Having on hand a large number of sets of Vols. VI. and VII. of the SCIENTIFIC AMERICAN, we will forward them by mail, complete, and stitched for binding, at $1 per set and the postage (25 cents), which must be prepaid. Bound copies of the same volumes will be forwarded by express, or sold at the counter of the office of publication, at $1 50 each.

Bakers' Ovens.

H. Berdan, of New York City, has invented certain improvements in bakers' ovens, whereby the process of baking may be rendered continuous for any desired length of time. The dough is placed on trays or other suitable receptacles supported on carriages which are conveyed by upright endless chains through the oven, and it takes these carriages just so long a time to pass through as is necessary to effect the baking of the bread. The oven-doors are also made to open and shut and the carriages introduced into and withdrawn from the oven automatically at regular and proper intervals, and the heat of the oven is always maintained at a uniform degree. The American, English, French and Belgian patents of this invention have been obtained through the Scientific American Patent Agency.

Carriage Springs.

This invention is designed to effectually prevent injury to the ordinary elliptic spring by the pitching or longitudinal vibrations of the carriage-body, and also renders riding over rough and uneven roads an easy and pleasant exercise. The arrangement is very simple, and presents a neat and handsome appearance, and at the same time produces a structure which is firm and not liable to get out of repair. The improvements claimed are two auxilliary springs coiled in opposite directions in the path of vertical scrolls, and a horizontal central pin or support of the reach, and attached by their outer or terminating ends, one to the front and the other to the rear elliptic springs of a carriage. This device is the invention of B. R. Hood, Clinton, N. C.

Dumping Wagon.

The wagon invented by Messrs. M. Y. and T. J. Cope, of Centerbridge, Pa., has the body made in two sections by cutting it transversely near the center of its length. By dividing the body half the load can be dumped at the center by one part, while the other can dump at the end. The object gained is that there is no occasion to shift or slide the body back as there is when made long in order to dump the load. Two different materials can be carried in this wagon and separately dumped when required.

Breech-loading Fire-Arms.

C. D. Skinner, of Haddam, and D. Tyron, of Middletown, Conn., have invented an improvement in breech-loading weapons, which consists in a novel combination of means for bringing up and securing the chamber in close connection with and liberating it from the barrel, and in guiding the same. There are also certain means of preventing the possibility of the fail of the hammer and consequent discharge of the weapon, while the chamber is raised up and out of line with the barrel.

Steam Plows.

E. Graves Otis, of Yonkers, N. Y., has invented a new steam plow; the invention consisting in the employment of an endless chain of plows and harrows, arranged and applied to a steam traction engine, whereby a simple and practicable implement is obtained.

John P. Gray, of Fair Play, Wis., has also invented a new steam plow, which does away with the use of the traction engine, and thereby renders it lighter and more manageable; the motive arrangement being two right and left screw shafts working in the ground. It might be called a land propeller.

Beading Flanges on Boiler-heads.

By the employment of an annular bed or anvil in connection with rollers attached to traversing levers, flanges may be turned or bent down both on the outer and inner edges of annular metal plates for the formation of boiler-heads, flue rings and similar uses. It is the invention of D. Howell, Louisville, Ky.

Acknowledgments.

We have to thank Commander Thos. J. Page, of the U. S. Coast Survey, for maps of the mouths of the Panama, Uraguay, the Salado and Colastine, surveyed by him in the *Waterwitch*, 1853.

Correspondents

G. P. T., of Me.—We do not know of any one engaged in putting up ground charcoal.

J. P. L., of ——.—If you will inform us where you reside, we will write to you in regard to your life-boat improvements.

J. E. H., of N. Y.—Photographic paper is prepared by laying the best glazed paper on a solution of nitrate silver in the proportion of one fluid ounce of water to forty grains of the nitrate. This is then left to dry in the dark, and after exposure to the direct action of the camera, or being used as a printing paper from glass, it is washed first with common salt, (30 grs. to 4 oz. of water,) and then 1 oz. of hyposulphite of soda to a half pint of water.

I. T., of Canada.—We do not think there is any encouragement for you to offer your plans of fortifications to the consideration of our government. There is no harm, however, in a trial. Address your inquiries to the Secretary of War, Washington, D. C.

B. D. S., of Va.—Oysters require a continual supply of fresh water, and will only live where the waves are always washing over them. You could not rear them artificially.

S. C. B., of Tenn.—Ordinary tar is a good material for painting the chimneys of steamers; but should gas-tar be obtainable, it is superior.

F. J. T., of Va.—Your theory regarding the induced current interfering with the action of the Atlantic Telegraph is without foundation, and has no experimental facts to support it. You should never base a theory on conjecture, but always have direct experiment to give weight to your argument.

F. C., of Cal.—We thank you for the list of subscribers you have secured for us in the Golden State. We shall be ready to prepare your application for patents on receipt of your models. When sending them you will please to state the advantages you claim over other machinery for the same purpose.

J. T., of Pa.—Small pinions, or gearing, when little strength is required, may be cast from a composition of pewter and tin, melted together. For small models such material will answer very well.

D. M., of Pa.—There is no novelty in your corn-stalk cutter. The placing of two drums or cylinders at equal distances apart, with spikes or teeth inserted for the stalk to pass between, is not patentable. The "feed" in Daniels' machine for cutting fuel, illustrated in a back volume of this paper, represents the same device.

A. R., of Pa.—We do not know who manufacture zinc candle molds.

A. Y., of Pa.—The fluid lamp of Peters & Shrop's we have never seen, therefore we cannot say whether it is non-explosive or not. The sewing machines which are sold for ten or fifteen dollars use a single thread, and make what is called the "chain stitch."

J. C., Jr., of Ill.—Your plan for a steam plow is unlike any we have seen. Your sketch and description is too imperfect to enable us to express an opinion of its merits.

G. T. B. E., of Me.—You can procure a valuable work on drawing from Blackie & Son, 113 Fulton street, New York.

L. H. C., of Mich.—Under the circumstances, the throwing of the engines was very good. The publication of the figures will not, we think, afford general interest.

J. B. Z., of Iowa.—It has been asserted by many that when iron is not heated above 212°, it has no injurious effect upon the air. This is not improbable, but it has not been fully determined by experiment. We have no doubt that the use of porcelain stoves would be less injurious than iron; but a patent could not be procured for a stove of this character. Brick and earthenware stoves have long been in use in France, Germany, and Russia.

J. P., of Ill.—At the time your patent was issued we gave a notice of it, as you will perceive by reference to the claim as published.

H. M., of Ohio.—We cannot recommend the sewing machine to which you refer, having never seen it in operation. As a general remark, the very low priced machines are to be avoided until their practical qualities are fully ascertained.

J. E. R., of Va.—We cannot inform you as to the exact date when india rubber was first brought into use here. Dr. Priestly, in 1770, mentioned that he had just then seen (in London) this substance—"an article exactly adapted to the purpose of wiping from paper the marks of a black-lead pencil." A small piece of this caoutchouc curiosity cost a sum equal to seventy-five cents. Its multifarious uses for other purposes were then totally unknown.

B. F., of N. Y.—The art of breathing flame was practiced before the Christian Era. Modern jugglers perform the operation by rolling together some flax or hemp, so as to form a ball the size of a walnut. The juggler acts it on fire, and allows it to burn till it is nearly consumed. He then rolls around it, while burning, some additional flax, and thus the fire may be retained for a considerable time. The sparks are feeble, and by inhaling air through the nostrils will do no harm. We never tried the experiment, and cannot advise any one to undertake it, lest he might get his nose burnt.

D. D., of N. Y.—The method of manufacturing oxalate of ammonia is extremely simple. You first make a hot saturated solution of oxalic acid, and then neutralize it with carbonate of ammonia; when cold, the oxalate of ammonia crystallizes out in long colorless rhombic prisms. If you want to have them very perfect, it is best to use a glass or earthenware vessel, as metallic ones are liable to discolor them; you should also suspend a piece of stick in the solution for them to crystallize upon. Let the solution cool slowly.

H. E. S., of Pa.—Maps may be varnished with picture varnish, or by applying four or five coats of isinglass size, letting each dry well before applying the next, and giving a full flowing coat of Canada balsam diluted with the best oil of turpentine.

G. W. B., of Conn., wishes information as to the best method of stripping silver from brass and copper daguerrean plates.

J. Spratt, of Cincinnati, O., wishes to obtain an apparatus suitable for perforating cloth in the piece. We do not know the object our correspondent has in view; but perhaps some of our readers will understand his wants.

D. H. P., of Texas.—We are inclined to think that the attachment of weights to the Atlantic cable would not in any way be an improvement, as, although it would cause it to descend slightly quicker, it would not overcome the curve.

D. B. M., of Conn.—We know of no better way for you to bring your invention before the public than to have engravings of it inserted in our columns. The expense of engravings will not exceed $15, and they will appear in 20,000 copies, which are distributed among the inhabitants of every civilized country in the world. We prefer that you would send a model or machine from which to make the drawings; but if you cannot do so, send us your Letters Patent, and we will make drawings from them, if it is possible to do so correctly. The engravings will be yours after we are done with them, and will be useful in printing circulars, &c.

H. R. N., of N. Y.—We can, of course, secure you a patent in England for six months, for a smaller sum than we can for three years. Send to our office for a circular of information.

N. O. D., of Canada.—If you are an American-born citizen, you do not lose your rights as an American by your protracted residence abroad. The patent fee in your case is only $30.

J. R., of Wis.—The machine of Landphere & Remington, of Erie, Pa., is a good one for turning spokes. The Newark Machine Co., of Newark, N. J., manufacture the celebrated Blanchard machine.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, October 24, 1857:

J. R., of La., $22; J. H. C., of Ohio, $350; J. L. E., of Mass., $30; J. P., of N. Y., $10; D. E. H., of Ill., $25; J. M., of S. C., $25; S. M., of Ohio, $30; J. D. S., of Vt., $10; W. K. S., of La., $25; W. S., of Ohio, $30; P. De L., of N. Y., $30; A. D., of N. C., $25; D. D., of Pa., $30; R. N. W., of Ohio, $30; J. R. H., of Me., $30; R. H. & Co., of N. Y., $140; L. S., of Miss., $25; W. C. W., of N. Y., $92.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 24, 1857:

J. R. H., of Mo.; D. E. H., of Ill.; J. R., of La.; U. R. V., of Pa.; J. L. E., of Mass.; J. W., of Pa.; J. M., of S. C.; W. K. S., of La.; J. B. J. V., of France; A. A., of N. C.; L. S., of Miss.; J. C., of N. Y.; W. S., of Ohio; W. C. W., of N. Y.

Literary Notices.

THE AMERICAN HOUSE CARPENTER, A TREATISE ON THE ART OF BUILDING AND THE STRENGTH OF MATERIALS.—By R. G. Hatfield, Architect, New York. Wiley and Halsted, publishers. The "seventh edition" of this work is almost an entirely new book, for it contains many new and useful propositions and problems in Geometry, several additional examples of the orders of Architecture, plans for a city house, and new designs for cornices. The principle feature of this book—the section on "Framing or Construction"—is almost entirely new, and the previous details are so much extended as to form a treatise on the strength of materials. The principles of Mechanics applied to the construction of houses are here extensively exhibited and full practical rules deducted therefrom. The rules for determining the dimensions of posts, girders, beams, &c., and particularly of roof timbers, are deduced directly from a consideration of the various forces in action and the manner of resistance of the material. Rules are given for each of the principal varieties of roofs. The rules for compression, tension, and cross-strains are arranged in algebraical form, in tables for ready reference, but are also all written out in words, with examples. An important part of this section is a series of tables showing the results of experiments on American materials, reliable data long wanted by builders, who, when determining the dimensions of beams, &c., to be constructed of American materials, have had to depend on European experiments. The work has an addition of 150 new pages, 80 new cuts, and has been altogether thoroughly revised.

CATALOGUE OF THE AMERICAN INSTITUTE, BROADWAY, NEW YORK.—While we have a number of large libraries in the city, of a general or miscellaneous character, and several devoted to law, medicine and theology, a library adapted to the wants of the inventor, the artizan, the manufacturer and the farmer still remains to be established. The American Institute, which was incorporated for the promotion of agriculture, commerce, manufactures and the arts, has turned its attention to this, and promises to supply the deficiency. We notice that large and important additions have recently been made to the library, and that these additions have been, almost exclusively, expensive works upon machinery, agriculture and manufactures, in fact, just the works that we want in our practical community. We sincerely hope that they will receive the reward of their useful labors, in a good attendance and attentive readers.

THE ECLECTIC MAGAZINE.—W. H. Bidwell, Editor, 5 Beekman street, New York, for November, contains some excellent articles, one on "Isaac Watts, the great lyric poet," and another on Michael Angelo and his contemporaries, being especially worthy of attention. It is embellished with a portrait of Miss Agnes Strickland, a good likeness and well engraved.

TERMS OF ADVERTISING.

Twenty-five cents per line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

*** All advertisements must be paid for before inserting.

TO MANUFACTURERS OF AGRICULTURAL IMPLEMENTS.—The Remics Corn Drill furrows, plants, covers and pulverizes two rows at a time in any kind of soil; the yield is ten per cent more than when planted in hills. One hundred have been sold, and give extreme satisfaction. Thirty-four acres have been planted in one day. They afford the builder a large profit, are sure sale, and require but little outlay for tools or stock. I will sell the rights or lease privileges to build and sell. Address D. C. HENDERSON, No. 69 West Sixth st., Cincinnati, Ohio.

IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of twelve years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office. Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office, 128 Fulton street, New York. Our branch offices are corner of F and Seventh streets, Washington, D. C.; No. 66 Chancery Lane, London; 29 Boulevard Saint Martin, Paris, and 3 Rue Thevreinne, Brussels. Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, etc., may be had gratis upon application to the principal office or either of the branches. Communications and remittances should be addressed to MUNN & CO.,
No. 128 Fulton st., New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the office, a marked degree of promptness, skill, and fidelity to the interests of your employers.
Yours, very truly, CHAS. MASON.
August 14, 1857.

ERICSSON'S CALORIC ENGINE.—THE subscriber, agent for the patentee, has the satisfaction of informing the public that this remarkable motive engine, requiring no water, absolutely free from danger of explosion, extremely economical in fuel, and requiring no engineering attendance, has just been perfected. As this Engine is of universal applicability (its motive agent being atmospheric air) but a few of the purposes for which it is suitable need be enumerated, viz.: working ships' pumps and hoisting gear for loading and unloading cargo, working pumps for supplying, villages with water, and for purposes of irrigation, working printing presses, supplying motive power for the various operations of the farm-yard, sawing wood, filling cisterns, &c., for private establishments; driving mills for grinding coffee and other spices, working hoisting-gear for warehouses, &c. Coppersmiths, potters, wood-turners, and similar artizans, who cannot afford to employ engineers and steam engines, will not only find in the Caloric Engine a ready engine to do their drudgery, but also one that, while it may be left without attendance for hours, will warm their workshops and cook their food at the same time that it supplies motive power; mineral coal, wood, peat, or charcoal being all suitable for fuel. For filling cisterns of private houses, a gas-burner produces sufficient heat for actuating the Engine. The subscriber is ready to execute orders forthwith, and will be glad to afford all requisite information on the subject.
JOHN B. KITCHING,
No. 37 William street, New York.

PUMP, PUMP.—CARPENTER'S ROTARY Everlasting Pump; the only durable pump for all uses—cold or hot water, liquor, oil, &c. A few 10-inch, well made, for sale cheap. Address D. C. HENDERSON, Sandusky, Ohio.

CORK AND BUNG CUTTING MACHINE—Conroy's patent. One State right for sale. For specimens of work and further information, apply to the patentee, E. CONROY, 94½ Union street, Boston, or to J. W. FROTHINGHAM, 80 South street, New York.

A NEW AND SCIENTIFIC INVENTION.—DR. Cheever's Galvano-Electric Regenerator.—Patent issued January 15, 1856. A circular relating to the use of the instrument, embracing a general treatise of atony of the spermatic organs, the result of which tends to softening the medullary substance of which the brain is composed, may be had gratis, and will be sent to any address by mail by their indicating a desire to receive it. All letters should be directed to Dr. J. CHEEVER, No. 1 Tremont Temple, Boston.

STEAM PUMPS, BOILER FEED PUMPS, Stop Valves, Oil Cups, Cocks, Steam and Water Gages, sold by JAMES O. MORSE & CO., No. 79 John street, New York.

NOW OPEN AT THE CRYSTAL PALACE —Day and Evening, from 9 A. M. until 10 P. M.—the Twenty-ninth Annual Fair of the American Institute. This unequalled display of the products of our National Skill and Industry is now open for inspection. Dodworth's Cornet Band will be in attendance every evening, and on Tuesday and Friday evenings of each week will perform a grand Instrumental Concert by programmes. Champnes's moving Panoramas of the Rhine will be exhibited each day at noon, at 4 P. M., and on Monday and Saturday evenings at 8 o'clock.—Members can procure their tickets at the Palace.

LAP-WELDED IRON BOILER TUBES.—Prosser's Patent.—Every article necessary to drill the tube-plates and set the tubes in the best manner. THOS. PROSSER & SON, 28 Platt st., New York.

BOILER FLUES—ALL SIZES, AND ANY length desired, promptly furnished by JAMES O. MORSE & CO., No. 79 John street, New York.

BALL'S OHIO MOWER—WITH OR WITHout the Reaping Attachment. For territory or shop rights apply to SAXTON & ROFF, Canton, Ohio.

WROUGHT IRON PIPE—PLAIN AND GALVANIZED, sold at wholesale, by JAMES O. MORSE & CO., No. 79 John street, New York.

EXCELSIOR STEAM PUMPS, DIRECT and Double-Acting, manufactured and sold at 55 and 57 First st., Williamsburgh, N. Y., and 301 Pearl st., New York. May be seen in operation at J. O. Morse & Co., 79 John st., New York.
GUILD, GARRISON & CO.

HARRISON'S PATENT ADJUSTABLE CIRCULAR SAWS, for Tonguing and Grooving. Also Highfield & Harrison's Patent Adjusting Saw for grooving. Shop, County or State rights for sale. Apply to WM. H. HARRISON, 705 Lodge Alley, (rear of Masonic Hall), Philadelphia.

MACHINERY.—S. C. HILLS, NO. 12 PLATT street, New York, dealer in Steam Engines, Boilers, Planers, Lathes, Chucks, Drills, Pumps; Mortising, Tenoning, and Sash Machines; Woodworth's and Daniel's Planers; Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c.

CLOCKS.—TOWN CLOCKS OF ALL SIZES, also Regulators for Jewelers, Railroad Offices, &c., believed equal to any made. Dials for illumination. VOSBURGH & CO., Agents, 122 Liberty street, New York. JOHN SHERRY, Manufacturer, Sag Harbor, N. Y.

FORBES & BOND, ARTISTS, 89 NASSAU street, New York, Mechanical and General Draughtsmen on wood stone, &c.

STEAM ENGINES, STEAM BOILERS, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y.

WEST PHILADELPHIA CHEMICAL WARE Pottery.—Acid and fire-proof ware of all shapes and sizes, up to 280 gallons, made to order; warranted to resist acids of all kinds, and stand changes of temperature, from extreme heat to cold.
MORO PHILLIPS, 27 North Front st.

SECOND-HAND MACHINISTS' TOOLS—Consisting of 20 Engine Lathes, 9 Iron Planers, 4 Upright Drills, Hand Lathes, Chuck Lathe, Gear Cutters and Vices, all in good order, and for sale low for cash. For particulars, address FRANKLIN SKINNER, 14 Whitney avenue, New Haven, Conn.

WOODWORTH'S PATENT PLANING MACHINES, of every kind and all prices. A large assortment on hand; and I am prepared to construct any machine to order, from ten days to two weeks, and guarantee each machine to be perfect in its construction, and give purchasers entire satisfaction. The patent has expired, and will not be renewed. I make this business exclusive, manufacturing nothing but the Woodworth Machines, and for that reason can make a better article for less money; and with my fifteen years' experience I fully guarantee each machine to come up to what I am willing to recommend, that is, that each machine shall be more than equal to any other manufactured for the same price. JOHN H. LESTER, 57 Pearl street, Brooklyn, N. Y., three blocks above Fulton Ferry.

ENGRAVING ON WOOD AND MECHANICAL DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, New York, Engraver to the Scientific American.

SAWS.—HOE & CO.'S PATENT GROUND SAWS, Plastering Trowels, &c., can be had, wholesale and retail, at the principal hardware stores, at the salesrooms of the manufacturers, 29 and 31 Gold street, or at the works corner of Broome, Sheriff and Columbia sts., New York. Illustrated catalogues, containing prices and information interesting to sawyers generally, will be sent by post on application.

NEW HAVEN MANUFACTURING CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn."

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $220. Address New Haven Manufacturing Co., New Haven, Conn.

WASHINGTON IRON WORKS—MALLERY, RAINS & CO., and HIGHLAND IRON WORKS—STANTON, MALLERY, RAINS & CO., of Newburg, N. Y.—Are extensively engaged in manufacturing all kinds of Steam Engines, Machinery and General Mill Work. They are also partners of the firm of STANTON, SNOW & CO., Car Wheel Manufactory, Newburg, N. Y., and are prepared to furnish Railroad Cars and Car Wheels of superior construction. From the cheapness of real estate and reasonable price of labor, as well as their great facilities of transportation by two railroads and the Hudson river, they are enabled to fill orders at the lowest prices and on the most reasonable terms.

MACHINERY.—STEAM ENGINES, ENGINE Lathes, Iron Planers, Woodworth Planers, Saw Mills, and a variety of other machinery, for sale very low for cash, to close consignments, by
A. L. ACKERMAN,
163 Greenwich st., New York.

PEARSON CROSBY'S PATENT RE-SAWING MACHINES.—The Crosby patent for re-sawing lumber, having been re-issued April 28, 1857, and having purchased the right to the same for the State of New York and Northern Pennsylvania, the subscriber is prepared to sell rights to use the machines in the greater portion of the above named territory, and also to furnish the public with these machines. Having re-built my machine manufactory—which was destroyed by fire on the 9th of February last—I continue to manufacture and have on hand for sale, Woodworth's Patent Planing Machines, from $160 to $320, and of a quality unequaled by any other manufacturer. Also the separate parts of the machine, namely, planing knives, side tools, side cutter heads, cylinders, &c., as well as the above named Crosby Re-sawing Machines. JOHN GIBSON,
Planing Mills, Albany, N. Y.

HONEY, HONEY, HONEY, HONEY—Every family should have GARDNER'S way for making honey—costs only six cents a pound. Read his advertisement.

RECIPE FOR MAKING ARTIFICIAL HONEY, —As good in looks and taste as that made by bees, and which does not cost over six cents per pound—sent for $1. Address N. H. GARDNER, Prince Dale, R. I.

MACHINE BELTING, STEAM PACKING, ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mech anical purposes. Directions prices, &c., can be obtained by mail or otherwise, at our warehouse, NEW YORK BELTING AND PACKING COMPANY, JOHN H. CHEEVER, Treasurer, No. 6 Day street, New York.

WELCH & GRIFFITHS—ESTABLISHED 1836—Manufacturers of Improved Patent Ground and Warranted Extra Fine Cast Steel Saws, of the various kinds now in use in the different sections of the United States and the Canadas, and consisting of the celebrated Circular Saw, Graduated Cross Cut and Tenon, Gang, Mill, Pit, Segment, Billet and Felloe Saws, &c., &c. For sale at their warehouse, No. 43 Congress street, Boston, Mass.

OIL! OIL! OIL!—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent, and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe.

Science and Art.

Improved Mode of Manufacturing Sheet Metal.

H. W. Wimshurst, of England, has invented a method whereby he is able to manufacture lead foil quickly and economically. The patentee also proposes to apply his improvements to the manufacture of sheet metal of various kinds, using, however, only three metals or alloys fusible at a low temperature. The lead, while molten, is run from a hight into a die box, fitted with lips, so adjusted that a free longitudinal space is preserved between them for the exit of the metal. The pressure from above will cause the metal to exude between the lips in the form of a thin sheet, which is then conducted to adjacent pressing rolls, whereby it is reduced to the required thinness.

Heat and Cold.

We are daily in the habit of associating the idea of cold with running water. Poets have called water "the cool and limpid stream," "the cool and bubbling brook," and other expressions of a kindred nature; but, great as is our respect and admiration for poetry and poets, we must now dispel the prevailing notion regarding the coldness of streams and brooks.

At a late meeting of the British Association for the Advancement of Science, a paper was read on this topic by George Rennie, F. R. S., who, in alluding to his former paper on this subject, read before the section last year at Cheltenham, stated that the subject of the mechanical or dynamic force required to raise a given quantity of water 1° Fah. had been the object of the researches of philosophers ever since Count Rumford, in his celebrated experiments on the evolution of heat in boring guns, when surrounded by ice or water, proved the power to raise one pound of water one degree, which he valued to the dynamic equivalent of 1.034 lb. M. Maya was the first who announced that heat was evolved from agitated water. The second was M. Joule, who in 1842, announced that heat was evolved by water passing through narrow tubes, and by this method each degree of heat required for its evolution a mechanical force of 770 lbs. Subsequently, in 1845 and 1847, he arrived at a dynamical equivalent of 772 lbs. These experiments have since been confirmed by other philosophers, such as Seguin, Helmholzt, Froment and Favre, on the continent. In the present paper, Mr. Rennie stated that his attention was called to the subject by observing the evolution of heat by the sea in a storm, and by the heat of water running in sluices. He then constructed an apparatus not unlike a patent churn, and by means of agitating water therein, was able to raise the thermometer several degrees.

This would seem to be the acme of investigation, and we hope to hear more on this subject; for if it should become of any practical value, persons may—we say *may*—roast meat at a spring, and light a segar in a bucket of water!

Improved Coupling for Cars.

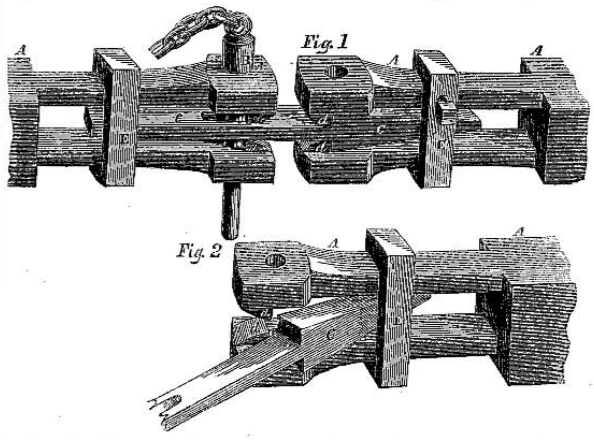
The too frequent accidents which happen to railroad trains by the engine getting off the track, and then dragging all the cars after it, have called the attention of the inventor of this improved car coupling to a method of remedy, and we are about to describe the result of his investigations and cogitations.

Fig. 1 show the couplings when attached, and Fig. 2 the position when out of line, or when the first car has got off the track.

A A are the couplings which are permanently attached to the car; B a pin which passes through holes in the couplings and through the coupling joint, C, which is made with a wedge-like projection on the end, the flanges of which catch corresponding ones worked inside the couplings shown at *d*.

The action is very simple, being as follows: The first car is fastened to the coupling joint permanently by means of the pin, B, passed through a slot in it, and the piece, E, prevents it from shaking out. The after car is attached by means of the wedge-like catch on C, and so long as the cars keep on the track, this keeps its hold and pulls the after car along;

PROSSER'S CAR COUPLING.



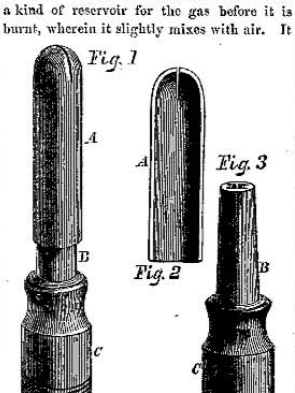
but should the former car, either by getting off the track or other means be at any angle with the after one, the joint will assume the position shown in Fig. 2, and thus release itself, and not as with an ordinary coupling drag the whole train with it. If this device be attached to the engine and all the cars of a train, should the engine itself get off the track, the cars and the passengers they contain will be safe; or should the first car, from carelessness on the part of the person joining them, stick in any place, the others would be released, and so passengers might ride without fear of their lives as at present.

It was patented July 21, 1857, and for further particulars apply to the inventor and patentee, Wellington Prosser, Kendall, N. Y.

Gates' Gas Burner.

This is an improvement on the ordinary gas burner, and the inventor states that it will save one-third of the gas; and one of them placed on an ordinary four feet burner will give the light usually afforded by a six feet one.

The invention consists in the metallic cap, A, Fig. 1, which is seen divided in Fig. 2; this may be placed over the ordinary fish-tail burner, B, Fig. 3. This metallic cap being fitted on to the common burner intervenes a kind of reservoir for the gas before it is burnt, wherein it slightly mixes with air. It also gets heated to nearly the burning temperature, so that no heat is wasted, and the solid particles in the flame quickly become red hot, thus giving the illuminating power; and it may also act as an equalizer of pressure, and prevent the jumping which is sometimes noticed in ordinary burners. C is the part of the burner that screws on to the gasolier or bracket.



Further particulars and information may be obtained by applying to the inventor and patentee, Asa D. Gates, Binghamton, N. Y. Patented June 30, 1857.

Is the Sun Inhabited?

Sir John Herschel concludes that the sun is a planet abundantly stored with inhabitants; his inference being drawn from the following arguments:—On the tops of mountains of sufficient hight, at an altitude where clouds very seldom reach to shelter them from the direct rays of the sun, are always found regions of ice and snow. Now, if the solar rays themselves conveyed all the heat on this globe, it ought to be hottest where their course is least interrupted. Again, aeronauts all confirm the coldness of the upper regions of the atmosphere. Since, therefore, even on our earth, the heat of any situation depends upon the aptness of the medium to yield to the impression of the solar rays, we have only to admit that, on the sun itself, the elastic fluids composing its atmosphere, and the matter on its surface, are of such a nature as not to be capable of any excessive affection from its own rays. Indeed, this seems to be proved from the copious emission of them; for if the elastic fluids of the atmosphere, or the matter contained on the surface of the sun, were of such a nature as to admit of an easy chemical combination with its rays, their emission would be much impeded. Another well-known fact is, that the solar focus of the largest lens thrown into the air will occasion no sensible heat in the place where it has been kept for a considerable time, although its power of exciting combustion, when proper bodies are exposed, should be sufficient to fuse the most refractory substances. Thus from arguments based solely on the supposed physical constitution of that luminary, he deduces the somewhat astonishing idea that the sun is inhabited.

Alloys of Silicium.

This substance, of which hitherto not much has been known, was brought into notice at a recent meeting of the French Academy of Sciences, when they were shown some miniature bronze cannon, in which, instead of tin as one of the components of the bronze, silicium was used. That is, instead of 11 per cent of tin, 5 per cent of silicium entered into the composition. The properties of the new alloy are said to be quite remarkable. In hardness and tenacity it resembles iron. It also has great ductility; and its fusibility will allow it to be applied to many uses to which bronze is not adapted. Copper and silicium give other alloys of different properties, according to the proportions. That which contains 12 per cent of silicium is very hard, and breaks with a white fracture resembling that of bismuth.

Zinc has been found to dissolve or alloy with silicium, the same as aluminum does, with this advantage, that the silicium can be extracted in a perfect state, by reason of the volatility of the zinc, or its solubility in acids. Thus, to obtain beautiful specimens of crystallized silicium, put into an earthen crucible at red heat in the fire a mixture of three parts of fluo-silicate of potash, one part of zinc, and one part of sodium in small pieces, and maintain the same temperature for some time. Then let the crucible cool slowly, and break it, after the contents are completely solidified; you will find a mass of zinc, pervaded throughout, and especially at the top, with long crystalline needles of silicium, chaplets of regular octahedrons interlacing with each other. To separate them from the zinc which envelopes them, it suffices to dissolve the latter in hydrochloric acid. This process is preferable to any hitherto known. The process which gives the alloys of copper and silicium is the same, with the substitution of copper for the zinc.

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