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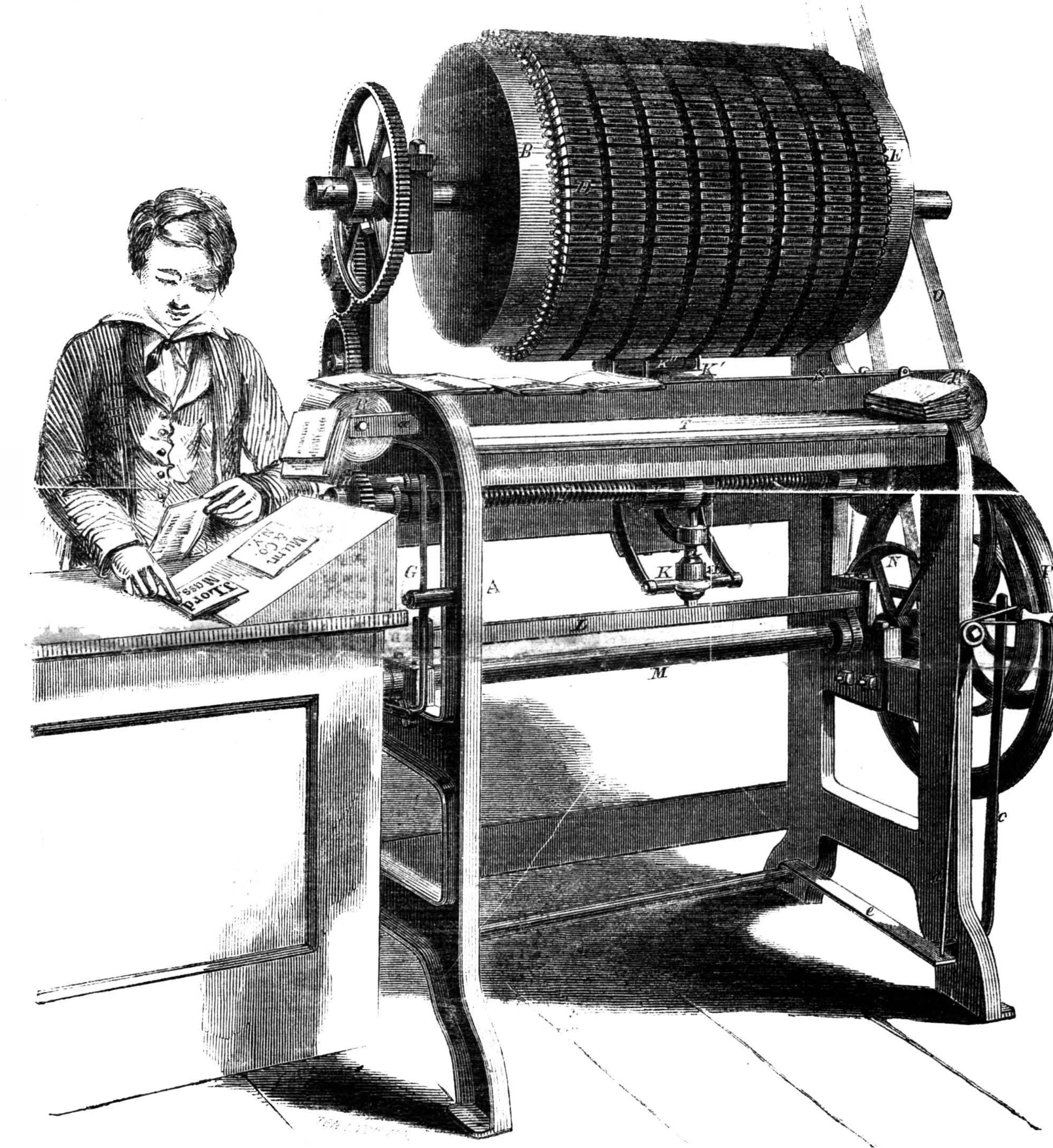
Curious Agricultural Notions.

M. D. Urcle, a French botanist, assumes that wheat is not an annual but a biennial plant, and he has adopted a new method of cultivating it, so as to bring it to perfection according to his views. The ground for the reception of the seed is first well manured, either before winter or at the beginning of spring, to receive the seed between the 20th of April and the 10th of May, this time being chosen to prevent the chance of blossoming during the year. But the time of sowing may be advanced from year to year. Each grain is sown separately, allowing a large area of ground if the soil is rich, but diminishing according to its sterility. It is deposited in rows, in holes at regular distances, from nine and a half to twenty three and a half inches asunder, in each direction, the holes in one row opposite the spaces in the next. Each hole is to contain four or five grains, two and a half inches asunder. When the plants have attained a hight of four inches, all but the finest one in each group are pulled up, and the single one is then left for the harvest of the succeeding year. This curious process is stated to increase the produce greatly, but in our opinion it will not pay the expenses of its three year's cultivation, in comparison with annual cropping.

New Machine for Addressing Newspapers.

The brown paper wrapper in which the SCIENTIFIC AMERICAN is delivered to its subscribers, has to have the address of the person written upon it in legible characters, so that the postmaster shall know to whom the paper is to be forwarded. This not only costs a large sum, increasing, too, with the popularity of the journal, but often, as the wrapper-writer's hand becomes tired, his writing becomes less and less distinct, and the address is not very legible. To save expense, on the one hand, and to always give a legible address on the other, James Lord, of Pawtucket, Mass., has invented the machine which is the subject of our engraving. Perhaps the best way of concisely giving the reader an idea of the machine will be to describe its operation at once.

LORD'S MACHINE FOR ADDRESSING NEWSPAPERS.



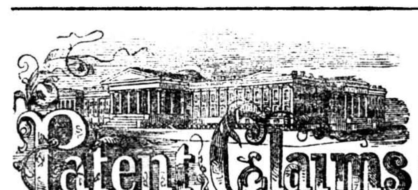
Motion being given to the shaft, M, with its fly wheel, P, by the band, O, an oscillating motion is given to a lever and pawl, G, to force them upon a ratchet wheel and so move the screw shaft, I, and wheel, H, with which the ratchet wheel is connected, sufficiently to bring a type box, D, on the printing cylinder, B, containing the name and address desired to be imprinted, immediately over the platen, K′. The drum, B, is mounted on an axle, C, and supported in the frame, A; and spirally around the periphery of the drum are placed a number of boxes, D, containing types, each forming a separate subscriber's name. The types are secured in the boxes by set screws, E, and the drum is rotated by the wheels, F, from the shaft, I, in such a ratio between the motions of each that the drum, B, is rotated just the width of one box, while the platen and inking rollers are moved enough to give each separate address a firm and level bed. This is done by attaching them to a nut, J, that is placed upon I, from which also projects the bars, K, carrying a small piece with a hole through it, through which passes the small spindle, *a*, that can be secured in any position by the set screw, *b*. *a* bears upon a level bar, L, and as *a* is moved higher or lower, the pressure of the inking rollers and platen is regulated; J acting as a fulcrum between them.

One of the inking rollers has a slot in it, and is placed on a shaft provided with a rebate running the whole length of the machine. This shaft is rotated from N, and this distributing inking roller can slide along it with the others, still be rotated, giving the ink from the "doctor" to the roller that inks the type. An endless band, S, passes over two rollers, R and R, and across the machine, on to one end of which the papers to be addressed are fed, and as they come under the type box a separate name is printed on each, and they are passed away by the endless band on to a table, where they are gathered up and folded by a boy. The endless band, S, is raised above the table, T. By a simple signal arrangement, and having the subscribers' names grouped together in Post-offices, the last name in a list for any Post-office will give a signal to the attendant. The arm, Q, is used to keep a ratchet attached to the driving wheel and that on the shaft in gear, to move or stop the machine, the piece, *c*, tending to keep it out; and by the cord, *d*, and treadle, *e*, the motion of the machine can be controlled by the foot.

The only trouble is setting up the subscribers' names and address, and then fixing them in the type boxes, after which, the endless band has only to be fed with wrappers or newspapers and it carries them one by one under a shield, in which there is a hole the size of the platen, so that only one name is printed at once, and the rest of the paper is kept clean, and the addressed papers or wrappers are then carried away to be folded and mailed. The number of cylinders will of course depend on the number of subscribers and the number of editions published at the office, but the one machine will do for all. In our view many of the parts which aid in attaining these results are not to be seen, but there is enough shown to give a general impression of what the machine is like, and any further and technical particulars can be obtained by addressing the inventor.

It was patented Sept. 7, 1858, and noticed on page 11 of the present volume of the SCIENTIFIC AMERICAN.

A FORTUNATE INVENTOR.—We have just learned, says the New York *Observer*, by a private letter from Paris, that Professor Morse has received in Paris the first instalment (100,000 francs) of the testimonial of the ten European Powers.



Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 30, 1858.

[*Reported officially for the Scientific American.*]

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

KETTLES FOR TRYING OILS—J. L. Alberger, of Buffalo, N. Y. : I claim a horizontally-placed cylindrical boiler or tank, surrounded by a steam jacket, or having the steam admitted directly into it, when said boiler or tank is capable of being turned over in its cradle, and have all its contents run out at the man-hole, as described, and this I claim whether said boiler be used in connection with a condenser or without it, substantially as set forth.

CURTAIN FIXTURE—Thomas C. Baldwin, of Newton, Mass. : I claim the detaching chamber, b, and passage, i, in their combination and arrangement with the journal bearings of the two bearing blocks, G H, and with the rotary friction ratchet, its spring and the pulley being arranged at one end of the curtain roller, substantially as described, and for the purpose specified.

I also claim the arrangement of the rotary friction ratchet spring and the pulley at one and the same end of the curtain roller, or so that the said ratchet may turn on the journal projecting from the said pulley, in manner and for the purpose and to obtain the advantage as described.

TACKLE BLOCK—W. B. Barnard, of Waterbury, Conn. : I do not claim inventing a bushing provided with friction rollers, in a pulley or tackle block, for the purpose of diminishing friction, for such device has been previously used.

But I claim a tackle block, having its bushing, B, secured and adjusted to the pulley, A, by means of a nut, C, as shown and described.

[This is an improvement in what are known as the anti-friction tackle blocks—those which are provided with a bushing containing friction rollers. The invention consists in a novel way of securing the bushing in the pulley, so that it will be firmly secured therein, effectually prevented from turning, and at the same time have no tendency to weaken the pulley—an objection generally attending other anti-friction blocks.]

TOOL FOR CUTTING KEY SEATS IN WHEELS AND PULLEYS—James Barton, of Cleveland, Ohio : I do not propose any particular mode of driving this shaft through wheels and pulleys, as I may do it by means of any of the mechanical powers with which sufficient force may be obtained.

But I claim the employment of the shaft, A, provided with a series of cutters, which are adjustable, the two being so arranged that by pressing them through the hole or bore of a wheel or pulley, a key seat is finished parallel with the bore, as is fully set forth.

Second, The employment of a tapering circular step or wedge between the cutter shaft and the bore of the wheel or pulley on the opposite side from the cutters while the kev seat is being cut, for the purpose of cutting a tapering key seat, as is fully described.

SEED PLANTERS—James F. Beckwith and Adin G. Gage, of Alabama, N. Y. : We claim, first, The combination of the raising lever, L, when arranged as described with the marking wheel, for the purposes set forth.

Second. The combination of the cranks on the axle of the marking wheel, when arranged as described with the markers, whereby the exact positions of the measuring recesses in the seed-deliverer are indicated to the driver.

PIPE TONGS—James R. Brown, of Boston, Mass. : I do not claim making one jaw of a pair of pipe tongs adjustable in distance from or with respect to the other, by means of a screw.

But what I claim in the crossed lever jaw pipe tongs is, the described arrangement and application of the adjusting screw with reference to the fulcrum pin, the slot, and the hooked jaw lever, the same being for the purpose as specified.

PHOTOGRAPHIC PLATE SHIELD—Henry Bryant and R. D. O. Smith, of Washington, D. C. : We do not claim the application of the door to the plate shield, for that has been used before

But we claim the application of the bent wire or its equivalent, substantially for the purpose of opening and closing the door on the inside of the camera, in the manner and for the purpose as described.

SCISSORS—Joel Bryant, of Brooklyn, N. Y. : I am aware that scissors have been made with rigid plates of metal vibrating upon their blades, for the purpose of holding and keeping the edges of the blades in contact with each other, as in John Allender's scissors.

But I am not aware that scissors have ever been provided with springs in any way or manner, for the purpose of forming a joint that will produce and retain a uniform pressure, preventing the necessity for tightening the blades, and obviate the result of wear from use, as described and set forth ; consequently, disclaiming all other modes of constructing scissors—

I claim the exclusive use of scissors when provided with a spring or springs connecting with the rivet and blades, substantially as described, and for the purposes set forth.

APPARATUS FOR ASSORTING EGGS—Henry Burt, of Newark, N. J. : I claim the arrangement of the perforated surface, b, for receiving the eggs and excluding the light, as described.

I also claim the mirror, d, in combination with the above, arranged substantially and for the purpose specified.

[This invention was illustrated and described on page 96, this Vol., SCI. AM.]

FIRE ENGINES—Lysander Button and Robert Blake, of Waterford, N. Y. : We claim placing the cylinders diagonally to the line of the rockshaft, substantially in the manner and for the purposes set forth.

We do not claim contracting the air vessel at its base or its point of attachment to the water ways or channels of fire engines.

But we claim combining with the horizontal water way or channel, i, the air chamber, d, divided into two compartments by the contraction, r, at or about one-half the hight of said air chamber above its base or point of attachment to said water way, substantially in the manner and for the purposes set forth.

We claim in combination with the hour glass contraction of the air chamber, the ring enlargement, s, of the rockshaft, as set forth.

EXTENSIBLE LIFE RAFT—Calvin Furbush, of Kittery, Me. : The flexible joints I do not claim, as they have been before used.

I claim the combination of the diagonal braces, g, sleeves, i, and guide bars, l, with the tubular floats, a, in the manner set forth, and for the purpose specified.

SEWING MACHINES—S. S. Burnet and William Broderick, of Chicago, Ill. : We do not claim the arrangement of spring pressure pad shown in the patent of A. H. Boyd, said arrangement employing a spring for keeping the pad in contact with the cloth, while we employ a spring simply for throwing the pad out of contact with the cloth.

We claim, first, The employment of the rocker, F, in combination with the cranks, I J, of the driving shaft, and the needle bar or slide, C, in the manner substantially as specified, for giving the required motions to the needle bar to accomplish the formation of the loop, and simultaneously allow the shuttle time to pass through the loop before the loop is drawn tight, and thereby accomplish the interlocking of the two threads. and the drawing of the stitch tight on the cloth, as set forth.

Second, The employment of an auxiliary adjustable thread guide, N, in combination with the rocker, F, and stationary thread guide, N' N', in the manner substantially as specified, for the purposes of governing and adjusting the amount of thread for each stitch.

Third, The employment of the segment friction plate N3, hung on a horizontal axis, and constructed and operating as described, with or without index pointer, f, in combination with the thread guides, N1 N2, substantially as specified, for the purpose of causing a greater or less tension upon the upper or needle thread.

Fourth, The employment of a vertical sliding unyielding pressure bar, P', formed of two pieces, m n, which are right and left screw-tapped, and coupled together by an adjustable link nut, l, in combination with a jointed pivoted feeding and holding-down pad, O o, and a vertically and laterally-acting cam, s t, of the rocker, in the manner substantially as specified.

[The arrangement of this machine is very different from other double thread or shuttle machines in use. The downward motion of the needle to supply the thread for a stitch, the partial upward motion to bow or loop the thread, the second downward motion of the needle to open the loop for the free passage of the shuttle through it, and the complete upward movement of the needle to form the stitch on the cloth, are effected by simply a rocker-arm combined with the driving shaft. The amount of thread supplied is controlled simply by an adjustable arm of the rocker. The tension is regulated in the most perfect manner by an adjustable segment wheel, so arranged that the thread bears on a greater or less surface, as the necessity of the case may require. The feed is effected by any anti-spring pressure pad ; the pad being combined with the rocker arm, so that it is forced down rigidly upon the cloth at one stage of the operation, forced forward at another, and then released and thrown upward by a spring. We certainly regard this a most excellent machine ; and as to the value of the patent, no remarks are necessary, as this will be evident from the comprehensive character of the claims.]

HARVESTERS—Nicholas Clute, of Dunnsville, N. Y. : I claim the construction and arrangement of the several parts, substantially as described, for the purpose of allowing the ends of the rakes to pass over and around the reel, in the manner and for the purpose specified.

I claim the pulley, O2, when arranged to tip or vibrate the rake teeth at the top of the inclined plane, as described, and release the grain and straw, and let it fall into the trough or box, substantially as specified.

CUT-OFF VALVES FOR STEAM ENGINES—J. M. Colman, of Milwaukie, Wis. : I claim the arrangement and combination of the flap valves, c c', valves, B B', jointed toes, h h', rods, i i', levers, K K', and governor, G, as and for the purposes shown and described.

[This invention consists in a certain mode of applying flap valves to operate in combination with slide valves, whereby the former are rendered capable of cutting off steam from the slide valves suddenly, at such point in the stroke of the engine as may be determined by a governor, or other adjustable contrivance.]

PUMPS—Asahel Cooley, of Springfield, Ill. : I disclaim suction chamber, A, cylinder, B, and air chamber, C, as they do not differ materially from others in use.

First, I claim the parts, E G F s and c c c, composing the piston and its valves, when combined with the hollow piston rod, D, substantially as described.

Second, I claim the parts, H K and I, constructed as described, when combined with the hollow piston rod, D, for the purposes and in the manner described.

HOSE COUPLING—James C. Cooke, of Middletown, Conn. : I do not claim flanges or locking parts having one-half of the coupling provided with a male, and the other half a female part, as I am aware that such is not new.

Neither do I claim, broadly, making both halves of my coupling alike.

But I claim the female parts, a a, in combination with the male parts, c c, arranged and made to operate substantially for the purpose specified.

ARRANGEMENT OF CUTTERS FOR TURNING HUBS—George Cooper, of Berlin, Wis. : I claim the arrangement in the same machine of the adjustable preparatory and main cutter stocks, D E, furnished with suitable cutters, in combination with any ordinary turning lathe or revolving centering shaft, substantially as and for the purposes set forth.

[This improvement is designed for use in connection with a centering lathe. The preparatory and finishing cutters stand opposite the space existing between the two cone centers of the lathe, and are arranged so that the preparatory cutters can first be brought into action to reduce the hub block to the form of a hub, and then the second set of cutters, to finish or complete the hub. By this invention, a hub complete can be turned out by simply subjecting the block to the action of two sets of cutters, one set of which move out of the way when the other comes into operation. It appears to be a good machine for the wheelwright.]

MODE OF SECURING THE ENDS OF RAILWAY BARS—Christian E. Detmold, of Orange, N. J. : I claim the described mode, or any other substantially the same, of joining rails at their ends to form continuity thereof, without the use of chairs or plates, of bolts or rivets, or of any other fastenings, by inserting iron joint pieces of such shape as to fit into slots in the shanks of two contiguous rail ends, and at the same time afford a support to the head of said rails, whereby the rails are permanently kept in the same vertical and horizontal planes, and are allowed to expand and contract, substantially as set forth.

ASH AND GARBAGE SAFE—William Gee, of New York City ; I claim the combination in a close case of the two chests, F E, with rollers, I I I I, Fig. 2, and arms extending from foot, C, Fig. 1, attached to the case, B B, the top being ornamented ; also the mode of securing the said chests and case, as described, and for the purposes set forth.

MACHINE FOR MAKING WINDOW-BLIND SLATS—Isaac W. Gere, of South Granby, N. Y. : I claim a machine that will take a rough slat as it comes from the bolt, and automatically pass it along to, and past the series of mechanical devices that will plane, dress, and form the tenons thereon, and complete the slat before it leaves the machine, substantially in the manner described and represented.

FURNACES OF STEAM BOILERS—F. P. Dimpfel, of Philadelphia, Pa. Patented in England, May 24th, 1856 : I claim the passages through the water spaces entering the combustion chamber or extension of the furnace, as described,

I also claim the means, substantially as described, for providing for the perfect consumption of the finer particles of fuel and products of combustion, as set forth.

STEAM TRAP—Frank Douglas, of East Liverpool, Ohio : I do not claim the combination of a valve or valves with a float, to act as a steam trap, or for any purpose where the escape of water is to be provided for, but the escape of steam prevented.

But I claim, first, The arrangement within the box, A, of the horizontal cylindrical chamber, C, the two disk valves, E E, with their interposed adjustable stem, f, the levers, F F, and connections of said levers with the float, substantially as set forth.

Second, The spherical float guard, H, applied within the box, A, and in relation to the inlet passages, h h, substantially as and for the purpose set forth.

[This invention consists in a certain mode of applying and arranging two disk valves and the connections on the same with a float ; and it further consists in a guard applied to protect this float from the action of the steam.]

SEEDING MACHINES—Warren Drummond, of Woodbridge, N. J. : I claim the elastic rollers, K, arranged relatively with the slides, J, to operate as and for the purpose set forth.

[In this machine there are two improvements—one in the seed-distributing device, and the other in the means for raising and lowering the front part of the machine, so that the shares may, when necessary, be raised free from the ground. The invention is designed for planting seed in hills or drills, more especially for planting in hills and in check rows ; and the improvement in the distributing device is intended to prevent its choking or clogging, and also the breaking of the seed as the seed cells are drawn under with the cut-off—a contingency which frequently occurs with the ordinary seed cut-off.]

BLIND OPERATOR—L. N. Fay and William Mason, of West Warren, Mass. : The spirally flanched plate, F, and segment worm wheel, G, have been previously used, but arranged in a different way from the plan shown and described ; said plate, F, and worm wheel, G, will be found described in Letters Patent granted to us, and bearing date August 4th, 1857.

We therefore disclaim the plate, F, and segment worm wheel, G, when considered separately, or irrespective of the attachment connected thereto, for adjusting the blind slats, a.

But we claim the spirally flanched plate, F, and worm wheel, G, when attached to the sill, A, and used in connection with the slotted bar, H, stop, q, and the slat-adjusting device formed of the arms, j K, shaft, i, and spring, o, the whole being arranged to operate as and for the purpose set forth.

[The object of this invention is to obtain a simple device whereby a window-blind, by simply turning a knob, may be opened, and also retained at any desired point, without raising the sash. The blind slats can also be adjusted, or opened or closed, by turning the same knob when the blind is closed.]

HOT AIR FURNACES—Jno. R. Fergusson, of Brooklyn, N. Y. : Disclaiming the devices used, separately considered—

I claim the combination and arrangement of the various parts, as described, for the purpose specified.

I also claim the evaporation pan, L, in the hot air chamber of the furnace, when made adjustable vertically for the purpose specified, as set forth.

DEVICE TO PREVENT INJURY FROM RUPTURE OF THE MAIN SPRING OF WATCHES—David Bucklin Fitts, of Holliston, Mass. : I do not claim simply making the barrel separate from the main wheel, or any other gear of the "train" of a watch.

But what I claim consists both in the separation of the barrel and the main or other gear wheel of the train, so that the two can revolve independently of each other, as described, and the application thereto, substantially as specified, of mechanism described, and termed a "reverse motion," the same being for the purpose as explained.

SEDIMENT COLLECTOR FOR STEAM BOILERS—Hiram H. Havens, of New York City : I do not claim a vessel and blow cock in which there are vertical openings, as these have been used, and do not collect the sediment, by the ebullition throwing the same over horizontal edges.

I am also aware that a dish or horizontal vessel has been located below the surface of the water to receive the ebullition, therefore I do not claim the same, but in this instance no provision was made for a variation in the change of water-level, and unless the alternate edges and openings rise above the water, and are so formed that scum or sediment once thrown over by the ebullition cannot escape, the object sought will not be accomplished.

I claim the vessel, a, fitted with a blow-off pipe, in combination with the rings, e e, or their equivalents, presenting alternate horizontal edges and openings from the highest to the lowest water gage or level, for the purposes and as specified.

SEWING MACHINES—Albert H. Hook, of New York City : I claim the combination of the levers, m n, arm, k, spring, o, and cam, p, constructed and arranged substantially in the manner and for the purpose set forth.

SEEDING MACHINES—R. W. Hunt and M. Kennedy, of Galesburg, Ill. ; We are aware that seed-dropping slides have been previously used, in which cut-off plates have been attached to cover the tops of seed holes while the lower ends are opened, and we therefore do not claim such device.

Neither do we claim, broadly, the levers, m n, for retaining the seed so that it may be dropped from the lower ends of the tubes, g.

But I claim arranging the levers, i, and plates, j, which form the dropping device, with the levers, m n, in the tubes, g, as described, whereby the above-named parts are rendered capable of being operated simultaneously by the simple action of the bars, u, on the ends of the levers, i.

[This invention consists in a novel means employed for operating the seed-distributors, and in a peculiar arrangement of the seed boxes and tubes, whereby the same, when necessary, may be readily raised and lowered by the operator. The invention is more specially designed for planting corn or maize, but may be used for other seeds, as they can be dropped in check rows, or planted closely in drills.]

SHUTTER-FASTENER—John McGerrah, of Philadelphia, Pa. : I claim the application of the brace to the under leaf of an ordinary hinge, and the nut as a continuation of the axis of the segment on which revolves the upper leaf of the hinge, which is secured by the brace and the pin securing the embrace of the brace and nut.

SUPPORTING INSULATOR FOR LIGHTNING RODS—N. N. McLeod, of St. Louis, Mo. : I claim so cutting the groove in the edge of the glass as to form the elliptical body shown at A', Fig. 1, whereby the insulator is attached to the building in the manner described.

And I also claim the combination of the two straps, d d, with the glass, and with the pointed conductor, constructed and arranged substantially in the manner set forth, for the purpose specified.

PRINTING PRESS—David E. James, of Utica, N. Y. : I claim the arrangement and combination of the leverage, as described, through which the operations of the press are performed, including the use of the spring, S, which permits the extension of the lever, q, while the carriage is at rest, as described.

I also claim, in combination with the said arrangement of leverage, the swinging post, V, and its connection with the lever, O, as described, the whole being arranged and operating substantially the manner set forth.

PUMPS—A. L. Keeports and George Palmer, of Littlestown, Pa. : We claim the combination of the main pump, r, with the reservoir, a, and ascension pipe, b, elastic spring valve, V, the whole arranged in relation to the proportions existing between the valves and pipes, operating as described, and for the purposes set forth.

CORN PLANTERS—David Ladd, of Dearborn, Mich. : I do not claim as my invention any of the mentioned parts of this machine separately.

But I claim the peculiar arrangement of the frame, A, shafts, B B, axle, C, with cavities, a a, wheels, D D, box, E, plows, F F, tubes, G G, scrapers, H H, rod, I, attached to axle, C, when made and used as described, and for the purposes set forth.

SEEDING MACHINES—Daniel Markham, Austin S. Markham and David Eldred, of Monmouth, Ill. : We do not claim, broadly and separately, the wheels, i, provided with buckets, j, for distributing seed, for they have been previously used.

Neither do we claim a board or plate, I, so placed relatively with the hopper, as to receive the seed and scatter the same, for such board or plate has also been used, as also has the perforated slide bar, G, which we consequently disclaim.

But we claim the arrangement of the rotating shaft, F, provided with distributing wheels, i, having buckets attached, the slide bar, G, the plate, I, and adjustable strips or bottom, h, substantially as shown, whereby seed may be planted from the same seed box, either in drills, check rows, or broadcast, as may be desired.

[In this seeding machine, the seed-distributing devices are arranged in one and the same hopper, and the deflecting plates, seed-conveying tubes and shares are arranged so that the seed may be planted in check rows, in drills, or broadcast, as may be desired.]

PRESERVATION OF FLESH FOR FOOD—Nathan B. Marsh, of Cincinnati, Ohio : I am aware that the arteries of animals have been injected with saline and aromatic solutions in such manner as to fill the capillaries and veins, for the purpose of curing and flavoring the flesh.

But I am not aware that saline fluids have ever been transmitted in a current through the arteries, capillaries, and veins, so as to insure permanent action of the saline matters upon the flesh.

Nor am I aware that refrigerant fluids have ever been used or injected for the purpose of abstracting the animal heat ; nor am I aware that that object has ever been accomplished by injection ; consequently, I do not claim the filling the arteries, capillaries, and veins of animals with saline or aromatic solutions *per se*.

I am also aware that animals have been killed by knocking on the head, and then wounding the heart by a knife thrust from above the sternum, or through the parieties of the chest, in such manner as necessarily to wound important arterial branches, and divide the extremely vascular tissues of the lung.

But I am not aware that animals have ever been bled or slaughtered by cutting in the median line, or opening the chest, and then wounding the heart or its vessels.

Nor am I aware that animals have ever been bled by opening the abdomen, and then incising the *unacava* or *aorta* ; consequently I do not claim bleeding the animals by wounding the heart *per se*.

First, I claim preparing carcasses for injection, and injecting the same, in the manner set forth.

Second, I claim the injecting or transmitting of the saline solutions at a temperature below or above the freezing point, or thereabout, as set forth, so that the flesh may be cooled from within outward.

Third, I claim the injection of portions of the carcasses, as well as the whole beast, with the solutions indicated, in the manner set forth.

SCREW-NECK BOTTLES—John L. Mason, of New York City : I claim a screw-neck or nozzle of a jar or bottle in combination with a groove separating the thread from the shoulder of the bottle or jar, as described.

I also claim a screw on the exterior of the neck of a bottle or jar, in which the neck extends above the screw thread, and the thread vanishes into the neck of the bottle or jar, substantially as described.

GAGE COCK—Richard L. Mills, of Lancaster, Ohio : I do not claim, broadly, the invention of the double valved stems, so arranged that when one valve is withdrawn from its seat, the other shall be drawn into its seat, and thus stop the escape of steam, without packing, for I am aware that such devices are old.

But I claim the arrangement and combination of the lining tube, C, and cap, E, containing the adjustable seats, c g, with the double valve stem, D, as and for the purposes shown and described.

[By a certain arrangement of two conical valves on a screwed stem, in combination with a female screw and a peculiar way of arranging two conical seats within the cock, all packing for the stem is dispensed with, and yet the escape of steam around the stem when the cock is open, is effectually prevented.]

APPARATUS FOR HOLDING SHEEP—S. Minnick, of Hopewell, Ohio : I claim the adjustable couches, D E F and D' E' F', in combination with the neck piece, I, and extension levers, M L, arranged and operating in the manner and for the purpose set forth.

VALVE GEAR OF STEAM ENGINES—Edward Moran, of New York City : I claim operating the valves by means of a valve guide, D, substantially as described, the movements of which are regulated by projecting cams, arranged as described.

I also claim the reversing apparatus, as and for the purposes set forth.

I also claim presenting and withdrawing the cams that give motion to the guide, so as to bring the cams into motion at the proper time to produce the desired valve motion, as specified.

VALVES OF STEAM ENGINES—Alden R. Morrill, of Northfield, Vt. : I am fully aware of the inventions or devices claimed in the United States patents numbered 11,607 and 10,454 ; I do not claim such.

Nor do I claim a piston valve having two heads.

Nor do I claim arranging a steam chest between two cylindrical valve cases, each of which not only has a passage leading from its outer end to the steam cylinder, but a separate eduction passage, the same being as shown in the United States patent numbered 13,276.

What I claim is, my improved construction and arrangement of the valve case, its induction and eduction ports, with respect to the steam chest and the double-headed piston, made in manner to operate within such valve case, substantially as described.

I also claim, when the valve case is made tubular and open at both ends, as described, making it separate from the steam chest, and so as to rest on the bottom of the latter, and confining it therein by means of screw bolts, s s, extending through the top plate of the steam chest, and made to rest on the said valve case, essentially as described.

I do not claim the application of safety valves within a steam chest and to a covering plate and slide valve, in manner as shown in the said patent, No. 11,607, that is, so that the steam, in order to move the safety valves, has to pass through the slide valve.

But I claim my improved arrangement of the safety valves and their conducting passages with reference to the double-headed or slide valve, in which arrangement the steam, in passing to the safety valves in order to raise them, does not pass through the double-headed piston or slide valve, but through passages, x x, arranged on the opposite sides thereof, as described.

MACHINE FOR CUTTING CURVILINEAR SURFACES ON ANGULAR PIECES OF WOOD—George Muller, of Sacramento. Cal. : I claim a convex plane bit, with edges beveling inward toward the center, for cutting smooth chamfers of any shape on the edges of railing for express wagons, or on other pieces of wood, and the stand or rest connected therewith in the same machine by means of jaws movable in the frame; the rest or stand may be secured in any desired angle toward the plane to obtain a chamfer of any desired depth and bevel, and also of different shapes.

UNDER-DRAIN PLOWS—James Nevison and Edward Nevison, of Morgan, Ohio : We claim the adjustable weighted roller, o, in combination with the plow and drags, as set forth, and operating conjointly, for the purpose described.

AUGER FOR WOOD—Martin Norris, of Broad Brook, Conn : I claim the attachment applicable to the common auger, bit, or other boring tool in use, and adjustable in the manner and in connection with said auger, or other boring tool, substantially as and for the purpose specified.

SECURING THE ENDS OF RAILWAY BARS.—John F. Peabody, of Salem, Mass. : I claim the improved mode of constructing the chair and rails, the same consisting in making the said chair with the two reverse dovetailed recesses, and the rails with dovetails to enter such recesses, the whole being arranged substantially as and for the purpose described,

I also claim constructing the dovetailed recessed flanch cap, with a projection extending below it in connection with making the base plate of the chair, with a recess to receive such projection, the same being in manner and for the purpose specified.

LADIES' HOOP SKIRT—S. Peberdy, of Philadelphia, Pa.: I claim the combination of a spiral stay, with the fabric, which constitutes a lady's skirt, when said stay is formed by winding a flexible strip or rod made of one piece, or of a series of pieces spliced or united together continuously round the skirt from the bottom to the top of the body of the same, substantially as and for the purposes set forth.

VALVE GEAR OF LOCOMOTIVE ENGINES—Chas. J. C. Petersen, of Davenport, Iowa : I claim, first, Connecting the eccentric ring, from which the slide valve is operated to the spring which rests on the journal-box of the axle, on which the eccentric plate or cam fitting into said ring is fastened, so that the up-and-down motion of the axle has no influence on the motion of the slide valve, the whole being arranged substantially as described.

Second, In combination with the eccentric ring attached to the spring, I claim the arrangement of the cam, F, in connection with rods, J and L, and the rocking piece, K, whereby the slide valve is thrown wide open, before the piston has accomplished one quarter of its stroke, and which rods and rocking piece are so constructed that the motion of the slide valve may be reversed by raising the hook, e, from one step of the rocking piece to the other one; the whole being arranged and constructed substantially as set forth.

[In this invention the slide valve is operated by means of an eccentric ring, which is connected to the spring resting on the journal box of the axle, to which the eccentric plate or cam working in said ring is attached, so that the motion of the slide valve is not changed by the up-and-down motion of the axle. This eccentric ring is connected to a rocking piece with two steps, one below and the other above the pivot on which it rocks, so that the motion of the slide valve may be reversed by changing the position of the rod which connects the valve with the locking piece from one step to the other. The cut-off valve is also operated by an arrangement of arms, so placed in combination with a slide that the point at which the steam is cut off may be changed by raising or lowering the slide.]

PASTING APPARATUS FOR BAG MACHINES, &c.—S. E. Pettee, of Mansfield, Mass. : I am aware that rolls placed in open bottoms of vessels have been used, said rolls having cavities or cells to convey the paste to the paper: these I do not claim.

But I claim controlling the flow or draft of the paste when carried from a reservoir, by a wheel or roll placed in a passage through the bottom of said reservoir, the roll receiving its motion from the passage of the paper under it, when said controlling is effected by means of the piece, D, and screw, E, in the manner and for the purposes set forth and described.

STEAM ENGINES—Rufus Porter, of Washington, D.C.: I claim furnishing steam-engine cylinders with balance valves, E F, combined with lifting shafts, G, and so arranged that hoth induction and eduction valves communicate with the same port, substantially as described.

I also claim, in combination with balance valves, arranged as described, so connecting the induction valves to a governor, by an arrangement of mechanism substantially as described, that the said induction valve shall be so regulated by the governor as to admit into the cylinder such quantities of steam as shall be required to maintain a proper and uniform motion of the engine.

PUMPS—O. W. Preston, Jr., of Corning, N. Y. ; I do not claim the application of springs to valves, except in the use of single springs, in connection with double valves acting alternately to close double eduction ports of pumps : therefore—

I claim the employment of the elastic band, u, or its equivalents, serving to close the valves, t t, and also as a means to keep said valves in place, substantially in the manner and for the purposes specified.

I also claim the construction of the piston, B, with the concave cleft plates, d' d,' in combination with the packing disks or rings, b b, and double adjusting piston rod, c k, all arranged substantially as and for the purpose set forth, at the same time disclaiming all other modes designed to effect similar purposes, not substantially equivalent thereto.

BRACE POST FOR FIELD FENCES—Cornelius Quackenbush, of Huron, N. Y. : I claim the arrangement of the supporting braces, B B, and connecting brace, C, pivoted together and combined with the fence sections in such a manner that the weight of the fence continually acts in firmly supporting and clamping together the sections, substantially as specified.

HARVESTERS—Wm. Schnebley and Thos. Schnebley, of Hackensack, N. J. ; We claim, first, The arrangement and combination of the pendulous lever, E, and slide, G, with the scolloped wheel, B, as and for the purposes shown and described.

Second, Securing the frame, J, to which the finger-bar is attached to the main frame, by means of the universal joint, L, and the bar K, fitted in the guide, l, on the main frame, or an equivalent arrangement, so that the sickle may rise, and fall bodily to conform to the inequalities of the surface of the ground, and at the same time be rendered capable of being placed directly over the main frame to facilitate the transportation of the machine, substantially as described.

[In this machine the motion of the sickle may be checked or stopped when desired. The sickle may be also raised or lowered, or retained at any desired hight from the ground, and is so connected to the machine that the latter may be readily moved from place to place without operating the former.]

STOP GATE FOR CANALS, &c.—J. W. Sprague, of Rochester, N. Y. : I claim, first, The use of the revolving frames, A A, and their combination with the cross timbers, B C D E, and with the planks, H I.

Second, The use of the revolving lever, O, in connection with the check chain, T, as described.

CRIMPING BOOT SOLES—Bradford Stevens and Lorenzo Stevens, of Stoughton, Mass. : We claim the said article or boot sole crimper made of the bifurcated and grooved block, or its equivalent, and the holders applied thereto, substantially in manner and to operate as specified.

CORN-SHELLING MACHINES—G. W. Tolhurst of Liverpool, Ohio : I do not claim placing the levers or jaws, D D, on an inclination with the face of the machine, nor do I claim the press rollers, F F, knowing they have been before used, but the power for feeding in the ear of corn to the shellers in other machines has been given by the operator's hand until it reached the press rollers, when it was finished by a rotary motion being given to the press rollers for that purpose, the jaws being insufficient to feed. I use the press rollers only to keep the cob from revolving while it is being acted upon by the feed wheels and shellers, no power being applied to my press rollers : therefore—

I claim the combination of the spur wheels, D", D", D" D", with the levers or jaws, D D, these several parts being constructed, arranged, operated and operating in the manner and for the purpose specified.

STRAW CUTTERS—Peter Van de Sande (assignor to himself and Martin Vanderwerf,), of Rochester, N. Y.: I do not claim a rotating cutter wheel, with knives or cutters attached, so arranged that the cutters work against the mouth of the feed-box, as this is an old device.

But I claim operating the feed rollers, I and J, by means of the worm, H, on the shaft of the cutter wheel, when combined with the adjustable feed gate, K, pressure plate, L, and weighted lever, M, for regulating the pressure of the feed, and preventing the choking of the rollers, and keeping the straw uniformly compressed at the point of cutting dur ng the progress of the knife, substantially as set forth and described.

SEEDING MACHINES—John W. Vandiver, of Shelbyville, Mo. : I do not claim the seed distributing device formed of the perforations, C, in the bottoms of the seed boxes in connection with the perforated vibrating plates, F; nor do I claim the bars, L, hinged to the frame, A, with markers, M, attached to serve as guides for keeping the rows parallel at equal distances apart; neither do I claim the rollers, K K, with concave peripheries, nor the covering shares, p, for the above parts have all been previously used.

But I claim the bars or rods, j, pivoted within the said conveying tubes, E, and having elastic plates, l, l, attached, the upper ends of said bars or rods being connected with the vibrating plates, F, of the seed distributing device, substantially as and for the purpose set forth.

[By a peculiar construction and arrangement of the furrow shares in connection with a seed-scattering device placed within the seed conveying tubes, the seed may be scattered in the hill as it is dropped, so that the seed of each dropping will be planted in the hills at suitable distances apart most favorable for its perfect growth and cultivation.]

PROPELLER—Washington Van Dusen, of Philadelphia, Pa. : I claim the arrangement and combination of the frame, D, block, B, paddles, A, cranks, G, rods, H, and slots, S, substantially as and for the purposes shown and described.

[This invention provides for and gives additional strength to the blades or propellers, and enables them better to overcome any resistance they may meet with.]

APPARATUS FOR HOISTING AND STORING ICE—H. Van Steenburgh and Joel Egnor, of Catskill, N. Y. : We do not claim the use of inclined planes, with endless chains to carry the ice up in the direction of the plane, but we claim the method of transporting ice upon inclined planes, by carrying the ice up between parallel endless chains, having bars extended between said chains, to hold the ice and propel the same; the planes being pierced with openings, for the passage of the ice to the successive stories of the ice-houses and the propelling bars being so arranged that the descending bars shall not interfere with the free passage of the ice through the openings in the plane.

We further claim the use of the hatches described, to close the openings in the plane, in order to permit the ice to pass beyond a lower to an upper story of the ice-house the whole apparatus substantially as described and set forth in the specification.

MACHINE FOR PLATING NAIL HEADS—William H. Van Gieson, of Newark, N. J. : I do not claim the construction of the die and punch for closing the shells upon the heads of the nails; neither do I claim the arrangement of several such dies in an intermittently rotating table, as such construction and arrangement have been used in machines for the same purpose; neither do I claim the inclined grooved nail feeder with the slides at its lower end for taking out the nails one by one, as its equivalent may be found in several machines for other purposes.

But I claim, first, Combining the stop pawl, f', of the intermittently rotating die table, J, with the dog, c, which give motion to the said table, by means of a link, f 3, applied to produce the operation of the dog in combination with the pawl and the two series of ratchet teeth on the said table to lock the table, substantially as described.

Second, The pair of receiving jaws, N N, with their cavity, l, to receive and retain the nail while they are closed, applied, and operating in combination with the nail feeder and the intermittently rotating die table, substantially as described.

Third, The combination of a shaking apparatus for bringing the shells rim-upward and a curved conductor U, for overturning them in their passage through it, applied substantially as described, to permit and ensure the deposit of the shells crown-upward in the dies.

Fourth, The combination of the pincers, r r, and the plunger, u, operating as described, in relation with the conductor, U, to take the shells therefrom, and deposit them in the dies.

Fifth, The combination of the discharging plunger, x, and the stationary hood, y, having a descending spout, Y', with the intermittently rotating die table, J, substantially as and for the purposes set forth.

Sixth, The stop motion, consisting of a feeding rod. 27, suspended from a spring-catch 24, attached to the bar, which throws the machine in and out of gear and operated substantially as described, by means of a cam, H, on the main shaft, acting on a spring, 33, connected with the said rod in combination with a stationary stop, 26, or its equivalent, substantially as described.

Seventh, The arrangement of the nail-feeding apparatus, the shell-feeding apparatus, the shell-closing punch, the discharging apparatus, and the stop motion relatively to the intermittently rotating table, substantially as described.

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

MANUFACTURE OF HARD RUBBER—T. J. Mayall, of Roxbury. Mass., assignor to himself and G. N. Davis, of Boston, Mass. : I am aware that the molds in which articles of hard rubber have been vulcanized have been rubbed with olive oil to prevent the adhesion of the material, but this will not accomplish the end which I have in view, and I do not lay claim to such use of the oil.

But I claim the use of olive oil when incorporated with other materials in the manufacture of hard vulcanized rubber as described for the purpose specified.

AIR ENGINES—H. M. Paine, of Worcester, Mass. : I claim the simultaneous moistening and refrigerating of the air previous to its entrance into the pump in combination with the modifying valve, P, substantially in the manner and for the purposes described.

HINGE FOR WINDOW BLINDS—Thos. E. Williams, of Washington, D. C. : I claim the catch bar, i, and catch, m, in combination with the cavities, c, d, and f, and hinge, substantially in the manner and for the purpose as set forth and described.

CULTIVATORS—Wm. Willmot, of Wilmington, Del.: I claim the arrangement and combination of the bars, G G 1 G 2, bars, H, adjustable weights, I, chains, J, bars, L, and handles, B, as for the purposes shown and described.

[A series of teeth or shares are attached to stocks which are pivoted to the frame of the machine, and used in connection with adjustable weights and chains, whereby the depth of the furrows may be regulated as desired, and the teeth or shares, when necessary, retained above the surface of the ground. The invention also consists in the employment of a reversible bar, with markers attached, to ensure the furrows on drills being made at equal distances apart.]

MACHINES FOR DISTRIBUTING GUANO AND OTHER FERTILIZERS—Elijah Wagner, of Westminster, Md. : I claim the combination of the stirrer, d, and the feeder, e, operated in different directions and at different speed, the two being arranged in the manner and for the purpose specified.

RAILROAD CAR BRAKES—Asa D. Whipple, of Elmira, N Y. : I do not claim the manner of securing the armature, G, to the shaft, c, by means of a loose collar and bar; but I do claim them in combination with the spring for a new purpose, viz., a mode of varying the intensity of the connection of the armature with shaft, c, and allowing that connection so give way when the resisting force is sufficient to prevent the car wheels revolving and causing them to slide.

I also claim the improved method of communicating the motion of the car wheels to their brakes through the medium of electro-magnetism, consisting substantially of the spring jaws, P P and W W, and of the insulated rings on the axis of the magnet, arranged and operating in combination with the said magnet and adjustable armature, in the manuer and for the purposes specified.

HAY AND COTTON PRESS—Henry Barnes, of Blairsville, Pa., assignor to himself and N. G. Macrum, of Pittsburgh, Pa. ; I am aware that eccentric pulleys attached to a movable axis have been used for obtaining a progressive power, but I am not aware that a geared cam or eccentric placed on a stationary axis and used in connection with a rack attached to the follower rod has been employed for such purpose. I do not claim, therefore, broadly, the employment or use of an eccentric or cam for the purpose set forth.

But I claim the arrangement and combination of the geared eccentric, F, inclined rack, E, and follower rod, D, substantially as and for the purpose shown and described.

[This invention relates to that class of presses which operate with a progressive power, that is to say, the speed of the follower decreasing and the power correspondingly increasing, as the article is gradually compressed. The invention consists in having a rack attached to the follower rod, and a geared cam or eccentric working therein, so that the desired result is obtained by very simple means.]

RESTORING WASTE VULCANIZED RUBBER—H. L. Hall, of Beverly, Mass., assignor to the Beverly Rubber Company: I claim the method of restoring waste vulcanized rubber, by grinding it to a fine or powdered state or otherwise, then submitting the same in a close or proper vessel to the action of steam. direct upon the rubber or in connection with water for the space of forty-eight hours, more or less.

SEWING MACHINES—Charles Raymond, of Brattleborough, Vt., assignor to Willford H. Nettleton, of Bristol, Ct. : I claim the arrangement of the adjustable rack, N, having a reciprocating and vibrating motion and operating in combination with the pinion, o, and feeding weel, q, to regulate the feed in the manner described.

I also claim the slide, u, carrying the looper, 13, and provided with the slot, 16, receiving the pin, 15, on the bar, x, that is formed with the carrier, 14, for the second thread, whereby the thread carrier, 14, is actuated by the reciprocations of the looper, 13, substantially in the manner and for the purposes specified.

WEAVERS' SHUTTLES—N. J. Willis, of Lawrence, Mass., assignor to S. Chase, of Brooklyn, N. Y., and G. A. Fuller, of said Lawrence : I claim the improved manufacture of weavers' shuttles, made substantially as described, viz., of separate nose blocks, and a hard rubber or undurated vulcanized caoutchouc shell or body, or equivalent, cast or molded on the nose blocks, arranged substantially in the manner as described.

MACHINE FOR CUTTING DOVETAIL MOLDINGS—Solander Withington, of St. Louis, Me. : I claim the combination of the saws, I' I and J' J, with each other, and with the two saws, K' K, in the manner described, the two saws, J' J, being set in a diagonal plane, in the manner and for the purpose set forth.

And I also claim adapting and arranging the carriage, C, with the described combination of saws, for the purpose specified.

And I further claim the arranging of three saws, K', I' and J', in the carriage, B, by which the machine is adapted to cut the different lengths of stile.

RE-ISSUES.

SAW MILLS—Hazard Knowles, of New York City. Patented Sept. 28, 1852 : I claim so guiding the movements of the saw as to cause it to advance in the line of its plane as it descends, for the purpose of properly distributing amongst the teeth of said saw the cutting action which may be exerted thereby upon the material operated upon, substantially as set forth.

I also claim arranging the ways of the saw gate in such a manner with relation to tbe feeding apparatus that the amount of feeding movement imparted to the carriage will always be in perfect harmony with the amount of cutting action exerted by the saw, substantially as set forth.

I also claim arranging the compound parts of my improved saw mill in such a manner that the amount of cutting action exerted by the saw can be speedily varied, whilst it is in motion, from its maximum performance down to nothing, and *vice versa*, substantially as set forth.

CHURN—James Macnish, of Berlin, Wis. Patented April 20, 1858 : I claim expressing the butter from the globules or sacks of milk or cream by friction, such as rubbing, washing or grinding, when accomplished in any manner equivalent to that specified.

FELTING FOR COATS, HATS, &c.—M. Osborne, of New York City : I claim the method of manufacturing acticles of wearing apparel of which wool or other similar animal fiber constitutes a larger part, as set forth.

ADDITIONAL IMPROVEMENT.

COTTON GIN FEEDERS—Jedediah Prescott, of Memphis, Tenn., late of Rockford, Ill. Patented Oct. 13, 1857: I claim the endless apron, B, revolving adjustable toothed bar, C, rotary bush and toothed cylinder D, and grating, E, combined and arranged substantially as and for the purpose set forth.

[A cotton-gin feeder was patented by this inventor Oct. 13, 1857, and the present invention is an improvement on it. The object of the improvement is to accomplish in a more thorough manner the work performed by the patented feeder above mentioned—to wit, the feeding of the cotton in a very even manner to the gin, and at the same time separating dust and other foreign substances therefrom.]

DESIGN.

IRON FENCES—Edwin Gomez, of New York City.

Improved Weighing Scales.

American weighing scales have obtained a world-wide reputation, and their manufacture has become a most extensive and important branch of business. A set of weighing scales in the Conservatory of Art in Paris, and held to be standard authority in that city, so celebrated for art and science, were made by an American mechanic. Such triumphs in the mechanical arts gratify an honest national pride, and stimulate us to notice and acknowledge every improvement relating to this and all kindred arts. We experienced much pleasure, during the present week, in visiting the warehouse of F. E. Howe, recently opened at No. 438 Broome st., near Broadway, this city, for the exhibition and sale of the patent scales of Strong & Ross, which were illustrated and their principles fully described on page 369, vol. XI., SCIENTIFIC AMERICAN. Since the publication referred to, they have secured a deserved popularity, and within the past three months, no less than seven first class premiums have been awarded to them, at as many State Fairs. During repeated trials they have never failed of success, and in testing one designed for weighing 20 tuns, we found that we could vibrate the balance lever at any point of the platform by the weight of a single ounce. One of 200 tuns' capacity, on the Morris Canal at Washington, N. J., has weighed 248,000 tuns of boats this season, and has given great satisfaction. They are made of all sizes, of various forms, and adapted for every purpose in weighing. The large platform scales possess the important advantage of not requiring a deep pit, by dispensing with the underbracing levers, while they are very simple and durable in construction and arrangement. They are all manufactured at Brandon, Vt., in the large factory of J. Howe; and from an inspection of the workmanship, we infer that they are made of the best materials and by skillful mechanics.

Seeing at Certain Distances.

The earth being globular, at a certain distance, even though our vision can reach much further, its form will prevent us from seing objects. It has been calculated that at six hundred yards an object one inch high cannot be seen in a straight line; at nine hundred yards, two inches; at fourteen hundred yards, five inches; at one mile, eight inches; three miles, six feet. In leveling, it is usual to allow the tenth of an inch in every two hundred yards—eight inches in a mile for convexity.

Preservation of Stone.

A writer in the London *Builder*, while noticing the extraordinary preservation in which St. Paul's Cathedral in that city is, informs the readers that the architect, Sir Christopher Wren, exposed all the blocks to the action of the weather for some time previous to their being used. By this means only good stones were employed, and the edifice is sound and strong. We wonder how this plan would suit modern contractors and builders.

Coal Mines in Greece.

The French geologists, who wander over the whole earth, picking up fossils and specimens, on which to found new theories and fresh hypotheses, wherewith to astonish the world, have discovered coal in Greece, and a company is now working them. They are situated about a mile from Comus, and are expected to be very profitable.

WHAT NEXT?—In France they have commenced making chimneys for boiler-furnaces, houses, and steamboats, of papier-mache saturated with bituminous matter, because, says the *Journal de l'Eclairage au Gaz*, they are superior to iron for strength, hardness, and difficulty of oxydation. This, it strikes us, is one of those steps forward which are made up of two backward.

MONUMENT TO A GEOLOGIST.—A Grecian Doric column and statue is about to be erected at Cromarty, Scotland, to the memory of that true geologist and brilliant writer, Hugh Miller.

New Inventions.

Machine for Covering the Heads of Nails.

There had never been any machine which could be called automatic for the above purpose, until the one that we are about to notice, invented by W. H. Van Gieson, of Newark, N. J., and on which a patent was granted this week. In this machine, the nails and the shells or caps for covering or plating their heads are conveyed singly from separate hoppers or boxes, to a series of dies in an intermittently rotating table, on which they are carried in rapid succession under a punch, by which the shells or caps are closed upon the nails. They pass, by the rotation of the plate to a plunger by which the finished nails are discharged from the dies, to bring the dies in condition to receive new nails and shells, as they are severally brought by their rotation to the feeding devices from which the nails and shells are supplied. Should any nail get in a die without a cap, the machine will stop, until the accident is remedied, and its perfect automatic action will be appreciated when we mention that all that has to be done by the operator is to fill the two hoppers, one with caps or shells and the other with nails, then apply the power, and carry off the covered tacks as they drop rapidly from the machine.

Sewing Machines in Europe.

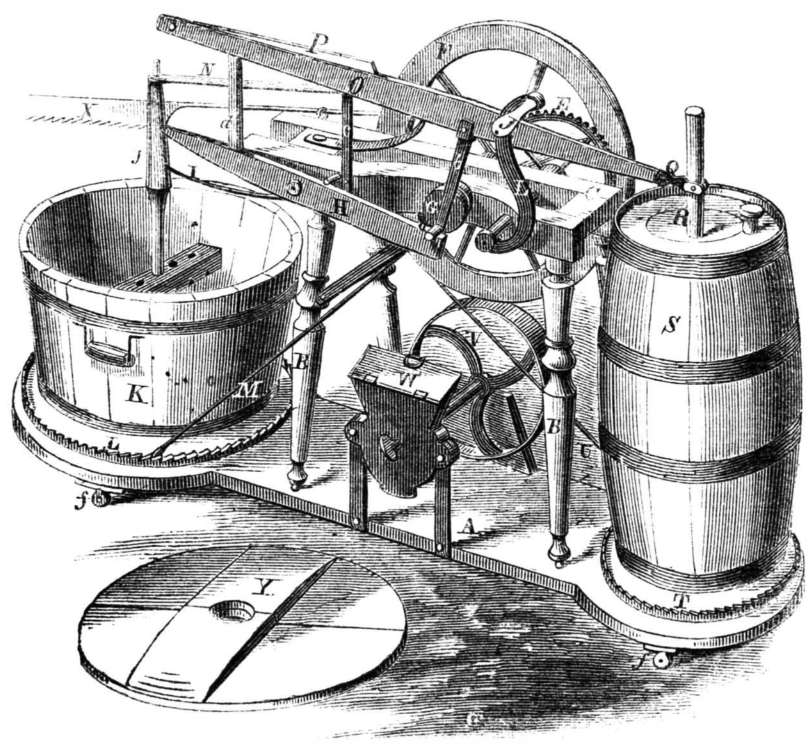
At the recent meeting of the Association for the Advancement of Social Science, held at Liverpool, England, Dr. Strang, statistician of the city of Glasgow, read a paper on the above subject, in which he described several kinds of these useful machines, and stated that there were nine hundred of them now in operation in the city to which he belonged. He passed a high encomium on their usefulness, and the benefits which had accrued from their introduction. They had been the means of increasing the production of sewed work, and while they had done this, the most unprofitable kinds of hand-needlework only had been displaced, and they had tended to increase rather than diminish the wages of those engaged in this sphere of labor. These machines, in the city of Glasgow, afforded proof of benefits conferred upon those whose hand-labor they had superseded, because the girls who attended them are able to earn twice the amount of wages they had previously been able to make by hand-sewing.

New Churn and Washing Machine.

When will wonders cease? We have had combinations of all kinds, and nearly every machine or process has been added to some other by the genius of inventors; so that operations which were once long and tedious, have become easy and quick. Last of all, we have the combination illustrated in our engraving of a churn, washing machine, coffee mill, and saw, so that by turning a single crank, a person may make his butter, wash his clothes, knead his bread, grind his coffee or corn, and saw his wood! If this is not a marvel, we humbly ask "What is?"

Let us see how all these operations are accomplished. On a piece of board or artificial floor, A, are mounted four legs, B, supporting a frame, C, through which is placed the axle or shaft of the crank, L, and handle, J. This crank turns the cog wheel, E, and fly wheel, F, from which a band can be carried over the band wheel, V, and thus operate the mill, W. The saw, X, is placed on a crank on the wheel, F, so that by its rotation, the saw, P, has a back and forward motion, suitable for sawing, given it. On the shaft of F is a wheel, G, carrying an eccentric pin, *a*, that operates the lever, H, and so raises the stamper, J′, of the washing tub, K. This washing tub is placed on a circular bed provided with ratchet teeth, L, so that the pawl, M, hinged to a crank on the axle of F, continually turns it, as does also the pawl, U, to the platform, T, on which the churn, S, is placed. The cover, Y, is placed over the washing tub, which can be used for other purposes when anything is to be done in it. The stamper or washing piece, J′, is pressed down by the spring, N, and it is kept in position by the piece, I, so that while the tub and its contents turn, J′ remains in the same position, so that every part is washed. To the lever, H, is attached by the link, *b*, the rock shaft, O, connected at Q, to the dasher of the churn at R, so that that is given an up-and-down motion while the churn is made to revolve, and every part of the cream comes under its action, and butter is quickly made. The rock shaft is guided in its movement by a slit in it, through which passes a piece, P, secured by supports, *d c*, to the frame, C.

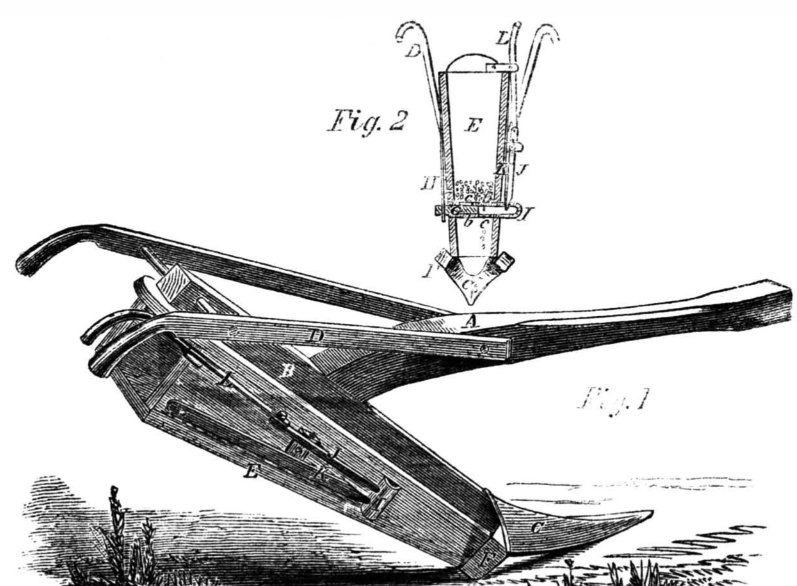
SWAN'S CHURN, WASHING MACHINE, &c.



Either of these parts can be disconnected, so that all or one can be used together, and the work of a household performed at once, or at separate times, as may be most convenient. The machine moves on castors, *f*, so that it can be easily transported from place to place, and on the whole it may be considered as one of the most convenient household appliances yet devised by the ingenuity of inventors.

The inventor is Moses Swan, of Potter Hill, N. Y., who will be happy to furnish any further information upon being written to at his address. The patent was granted August 17th, 1858.

ROSE'S SEED-PLANTING PLOW.



In the various departments of husbandry, plowing and sowing have generally been considered separate and distinct—two processes involving double labor and trouble, but in the invention which we are about to describe they have been joined, and sowing and plowing are performed at one operation. The inventor—J. H. Rose, of Versailles, Ill.—patented it August 17, 1858.

Our engravings fully illustrate its construction, Fig. 1 being a perspective view, and Fig. 2 a section of the plow.

A is the plow beam, B an inclined bar attached to the back end of the beam, and having a shovel share, C, on its lower end. D D are the handles by which the plowman guides the plow. To the back of B a box, E, is attached, nearly equal in length to B, and extending a short distance below it, between diagonal flanches, F, placed directly behind the share, C, and which act as covering shares to the seed. G is a rectangular slide bar, that passes horizontally into one side of the box, E, and has its outer end attached to a spring, H, whose tendency is to keep the bar, G, within the box, being secured to the outer side of the box, and the position of bar, G, is regulated by a set screw against which the spring bears. I is a bent seed slide, which is formed of a metal plate bent so as to form the parallel strips, *b b*, between which G is snugly fitted, the strips, *b b*, being allowed to slide over bar, G. *b b* have apertures, *c*, made through them—one through each. These apertures, however, do not register with each other, but are placed sufficiently out of line to allow G to cut off the communication between them. The outer end of the seed slide, I, is attached to a lever, J, that is pivoted to the outer side of the box, E. A spring, K, connected to the outer side of the box has its lower end fitted in the slide, I, and the upper end of lever, J, is pivoted to a lever, L, the upper end of which is in close proximity to one of the handles; K, having a tendency to keep I within the box, E.

The operation will be readily seen. The box, E, is filled with seed, and as the implement is drawn along, the operator guides it by the handles, D. The share, C, forms the furrows, and seed is dropped at any time, at the will of the operator, by actuating the lever, L, and consequently the slide, I.

The operation of the seed slide is as follows:—When the slide, I, is thrown inward, the opening, *c*, of the upper strip, *b*, will be over the bar, G, while the opening, *c*, of the lower strip, *b*, will be open. The reverse is the case when the slide, I, is forced outwards; the opening, *c*, in the upper strip, *b*, is off from the bar, G, and the lower opening, *c*, within the side of box, E. It will be seen, therefore, that the space between the two strips, *b b*, of slide, I, forms a seed receptacle or chamber into which and from which the seed is alternately received and discharged, and it will also be seen that by adjusting the bar, G, by means of a screw, the amount of seed discharged at each movement of the seed slide, I, may be regulated as desired, for the bar, G, may be so adjusted as to expose the whole or a portion only of the openings, *c*. The seed is dropped into the furrow formed by the share, C, and the seed is covered by F.

The seed-distributing device arranged as above described, and connected with a plow, forms a simple and efficient implement, easily kept in repair, and well adapted to planting all seeds that are deposited in hills, and the quantity deposited may be regulated with facility.

The inventor of this useful contrivance will furnish any further particulars upon being addressed as above.

Honored in the Observance but not in the Breach.

So said *not* Shakspeare, but so say *we* in reference to the matter now before us, and this leads us to do an act of justice, namely, to thank our friends—North, South, East, and West—for the generous response which they have made to the appeal we made to them, to organize clubs of subscribers for the Scientific American. Our subscriptions have come in finely since the new volume; yet we still maintain that we ought to have a much more extended list of names for a journal so generally useful to every branch of industry; and we venture once more to appeal to our friends to aid our circulation still more. If all our readers would only send one single subscriber—a seemingly easy task—our list would soon be doubled. Who will try to form a club? Who will get his neighbor to take our paper? Who will confer a great favor upon us—one we shall highly esteem—by sending in a list of names of those of their acquaintances who may be likely to want our paper, for instance, inventors, manufacturers, mechanics, millers, millwrights, chemists, engineers, architects? If our friends will furnish us with the names, we shall be able to send them specimen copies, and thereby they may be induced to take what is acknowledged to be "the best paper of the kind in the world."

New Appointments at the Patent Office.

We are happy to chronicle the appointment of H. P. K. Peck, of Ohio, to a First-examinership in the Patent Office. Mr. Peck is a lawyer of fine attainments, and will no doubt fill his new situation creditably. His experience in the Office, as assistant to Mr. Baldwin, for two or three years past, renders him conversant with the official routine.

Captain Herbert, formerly connected with the Patent Office, and who knows the duties of the department perfectly, has been re-appointed First Assistant-examiner.

Scientific American.

NEW YORK, DECEMBER 11, 1858.

"The Wonder of the Age."—A New Light!

A pamphlet has been put into our possession bearing the above high-sounding title, in which we find some very extravagant expressions regarding the "Neubian oils" for which a patent was issued to Levi L. Hill, of Greenport, N. Y., on the 15th of June last. It is stated that "it is a most interesting and important discovery," by which "the air we breathe is made to light and heat our dwellings, cook our food, and carry our burdens." The latter two allusions refer to its employment as fuel for domestic purposes, and for generating steam. Such proposed applications of these oils tend to throw ridicule upon them, as from the description which we shall present of their manufacture it will become transparent to all that they must be very expensive as a fuel in comparison with coal. The processes described in the specification for obtaining the oils referred to are, in substance, as follows:—

Some coal tar and crude turpentine, in equal parts, are first heated together, and treated with five per cent of sulphuric acid, then washed with hot water to remove the free acid, after which they are placed in a still, submitted to a temperature of from 150° to 112°, and some hydrogen gas and air forced into the still through tubes. The vapor which passes over in this distillation is condensed in the usual manner, and forms a fluid denominated "No. 1." Another fluid, designated as "No. 2," is made by placing one ounce of zinc, two of sulphuric acid, and four of water, in a deep jar, then pouring upon these, three and one-half pints of crude rosin oil, one quart of coal naphtha, half an ounce of Canada balsam, one-eighth of an ounce of camphor, and one quart of benzole. These substances are closely confined in the jar for several hours, then decanted off, and treated with chalk, to neutralize the free acid, after which the fluid becomes clear by repose. Another liquid—"No. 3"—is obtained by distilling india rubber in a retort at 600°, condensing the vapor and obtaining crude caoutchoucine, which is twice distilled afterwards at lower temperatures, and a very volatile hydro-carbon fluid obtained. These three fluids, Nos. 1, 2, and 3, are afterwards mixed together in different proportions, and form the "Neubian oils A, B, C, and D," claimed in Mr. Hill's patent; the caoutchoucine being only claimed as combined with these, because it is a well-known chemical.

The proportions of mixture are as follows: One quart of No. 1, two of No. 2, and one ounce of No. 3, are mixed together, then agitated and allowed to rest for three days, when the clear is decanted, and becomes "Neubian oil A." To such a quantity thus made, from one pint to one gallon of naphtha or benzole is added, and forms "Neubian oil B." By adding from ten to fifty per cent of caoutchoucine (No. 3) to oil A, "Neubian oil C" is obtained; and by combining A with ten per cent of rosin oil, twenty per cent of naphtha, and ten per cent of turpentine, "Neubian oil D" is the result.

This new light has been exhibited from Boston to Buffalo, has been in use for some months in the office of the Hudson (N. Y.) *Daily Star*, and we have recently examined it in this city, at the Odd-Fellows' Hall. The fluid (or Neubian oils) is placed in a vessel, through which air is blown by a self-acting pair of bellows, thus vaporizing and mixing with the fluid, and carrying it off through tubes to the burners. The light thus produced, when we saw it burning, was very good, but no better, we think, than the benzole light made in Mace's apparatus, illustrated on page 153, Vol. X, Scientific American.

No patent has been issued for the apparatus, or the means of vaporizing hydro-carbon fluids by forcing air through them, as such "air-gas lights" are quite old. The claims of Mr. Hill are two in number, one embracing the use of caoutchoucine combined with the Neubian oils, and the other claiming the oils A, B, C, and D. The oils are somewhat of a harlequin compound, similar in their nature to a mixture of naphtha and absolute alcohol; and from the processes and ingredients required in making them, any person may be able to form a very good idea of their comparative economy as a gas light.

In the pamphlet referred to, it is stated that the air we breathe is burned, and persons unacquainted with chemistry have been rather puzzled by such an expression, and have considered this a new discovery. The air in this light performs the very same office as in burning common gas or any oil; it supports combustion. In the one case, it is first mixed with the hydro-carbon gas as in Hill's apparatus; in burning common gas, it is supplied at the burners. Hill's burners, therefore, require to possess, and have, much larger orifices than the common burners.

The objections to air-gas lights are, first, the liability of the fluid vapors to congeal in cold weather; hence the apparatus and tubes must be kept at a temperature of from 60° to 70°. The benzole light operated very well in some situations during warm weather, but failed during winter. The second objection to them is, that as all atmospheric air contains a certain amount of moisture, that which is blown through the liquid and mixes with the vapor is liable to be condensed in the pipes in cold weather, especially at the elbows or bends, forming hoar-frost, and ultimately choking up the passages. This evil might be remedied by making the air pass over absolute alcohol before it is mixed with the Neubian oil vapor, as the alcohol has a very great affinity for water, and would absorb the moisture.

In our next issue we shall describe the oils made from tar by C. Mansfield, and which were employed several years ago for producing an "air-gas light" similar to the one we have just described.

Do Something for Truth.

How beautiful is truth! No time can be inappropriate for learning it; no season unfitting for its reception. The day chants forth its bold, free songs, and the night is luminous with its broad light. It started as a spring at the creation, and has been widening as a river with the centuries that have elapsed. All mankind enjoy it; and the more truth, whether natural or revealed, there is in a nation, the more truly happy are that people.

True happiness consists, not in immediate personal pleasure, but in the possession of knowledge; which simply means the accumulation of facts—the amassing of truth.

Peculiarly beautiful and essentially sublime are the truths of science, for they admit of individual verification on the one hand, and bring us into a closer acquaintance with the Deity, by demonstrating to us the grandeur of his works, on the other.

Few can study unmoved the wonders of insect existence; and observe, with microscopic aid, the seeming infinity of life, and note how perfect and complete are creatures whose size is measured by *thousandths of inches*, each in its sphere fulfilling all the necessities of its being, with equal, if not often superior, completeness to man; and to whom a drop of water is a world, a teacupful a universe. Nor can any one peer into the vast and seeming illimitability of space, and view the twinkling stars, whose distance we compute by *billions of miles*, or the planets obeying, in their orbits, the same law which governs a pebble's fall, without feeling awe and devotion for the Creative Intelligence, and wishing to investigate these wondrous objects in the pleasant fields of nature.

But, happily for us, all the truths of science do not require such grand or minute subjects for our contemplation, in order that we may learn them, for around every household fire, in every family circle, at every meal, and during all our daily avocations, plenty of mysteries occur which require as careful examination and patient thought for their complete elucidation, before they are placed among the facts that are proved, as did the steam engine or the atomic theory.

The age has gone by when the ordinary circumstances by which we are surrounded require to be catalogued, but the age has come, in which causes must be assigned for every effect; and to discover "the reason why" of some phenomena should now be the aim of every intelligent individual.

The men who lead the van of knowledge have plenty of work on hand; and it is for the people in their winter's leisure to learn and spread what may be truly called "home truths." In chemistry, in physiology, in geology, and household economy, in fact, in all the sciences, there is much to be done; and we should like to see the people prove the value of the knowledge they have already received, by paying an interest, by adding information—truth—of every kind into the common fund. By so doing, each person would not only be contributing to their own and others' happiness, but would also be, in the truest sense, furthering the glory of the Divine Being.

Animal Heat—Carbon and Oxygen.

In an able lecture, delivered by the Rev. Dr. Storrs, of Brooklyn, in the Cooper Institute, on the 25th ult., on "The Influence of Climate on Civilization," he seemed to attribute much of the vigor of the northern races to the food required by their climate. The idea conveyed seemed to be an endorsement of the popular theory of animal heat, which is inculcated in all the common books on physiology. These compare the lungs to a furnace, in which air and carbon are brought into chemical union in producing heat. This theory is simple, and somewhat beautiful, but not correct. The combustion of our food-fuel does not take place in the lungs, in the same manner that the fire is produced in the furnace; the food of man is not fed into his lungs, neither does the oxygen of the air combine with the food or carbon in the lungs, but passes into the blood through their membrane tissue; carbonic acid and moisture being given out in exchange. All our food undergoes a chemical change, before it reaches the lungs in the form of blood, and the warmth of the body comes from the organic processes which make and unmake the animal tissues. These facts, which should be familiar to all, lay the axe at the root of the common furnace theory of animal heat.

Man requires the same elements for his food in all climates. The northern races eat much fat, which is almost pure hydro-carbon; the inhabitants of tropical climates eat gums and sugars, which are just as rich in carbon. Some castes of Hindoos in India live exclusively on vegetables; the Caffres of hot South Africa are the greatest beef gormandizers in the world.

The temperature of man is 98° in all seasons, in the hottest and coldest climates. A change of this uniform temperature of the human body is the sign of disease. Man preserves his standard temperature in the tropical and arctic regions in virtue of this peculiar organism which adjusts itself to varying circumstances, but the means by which it does this is still involved in much obscurity.

Testimonial to a Photographer.

A short time ago the artists who color, in oils, water or pastel, the photographs of Mr. J. Gurney, of this city, presented him with a handsome gold-headed cane. The occasion was the opening of a new gallery, at 707 Broadway. The specimens on exhibition on the occasion were very fine, and not only proved the excellence of the photographs, but also the genius of the artists.

The Winans Steamer—Our Answer to the Builders' Communication.

Last week we promised to answer the interesting communication of Messrs. Winans, and we now proceed to fulfil our pledge.

There is little doubt that the engines and mechanical portion of the work will be well constructed, and arranged in the best manner; but still, no matter how perfect it may be, it is still *liable* to accident, and the dependence of placing sails on the smoke-pipes to keep the vessel's steerage, is surely too small a one for the safety of human life. She may be days or weeks unobserved on the ocean, and unable to proceed to any port for repairs, and the very propelling wheel itself, with its guard, offering a projection against which the waves can exert their force and give the vessel an increased oscillation, will augment in some measure the danger of the position. Our reason, and we believe it a good one, for advocating that every steamship should be equipped as a sailing vessel as well, is, that she may be, as far as human ingenuity can place her, beyond the disastrous results which follow an accident to her vital part, if she be not provided with an immediate and nearly equal substitute. Too many ships provided with steam and sails have already been lost; let us, therefore, rather add to, than take from, the appliances of safety and means of locomotion. This is the vindication of our first objection.

In objection 2, when we used the word "unstable" in reference to its shape, we meant that, notwithstanding the actual strength of the parts, the form was not conducive to steadiness in the water. For example, many buoys have been constructed of a circular cross section, and secured to the bottom of the sea; as forms for opposing the force of the waves, they are stable; but so *unsteady* are they, that their rolling motion is made to ring bells, and thus warn the mariner of danger. The shape is a good one for *floating* merely, but necessarily a bad one for maintaining a perpendicular position in a mobile fluid.

It is no matter how far down the ballast, machinery, anchors, &c., are placed, they only act as the bob or weight of a pendulum, and so long as they can move as freely to the one side of a perpendicular line as they have been caused to depart from it on the other, their action is very little towards hindering the rocking of the vessel. The steadiness of a vessel in our opinion should depend as much or more on the lines and section than upon ballast or cargo. To depend on the rudders as a means of securing steadiness is unwise, because they are always liable to be carried away, but still it shows the advantage of what should not have been neglected—to wit, a keel. Again, the cigar-boat gradually tapers towards it extremities, thus increasing its tendency to be *on* the waves, and not *in* the water, which is manifestly no position to secure a ship's steadiness in rough weather.

The belief which Messrs. Winans put forth in answer to the third objection, of course, experiment only can demonstrate; but we would wish to impress upon the reader that there are two considerations which should be taken into account by a ship-builder when choosing a model for a swift vessel. First—"What is the best model to most easily overcome the resistance to be met?" This is very important. Second—"What is the best model to most *safely* overcome the resistance to be met?" This is more important still. Messrs. Winans will agree with us in this, especially in a vessel designed only to carry passengers and the mails, and the most eminent nautical engineers have decided in favor of the "wave-line," but are, like ourselves, ready to be taught better.

Objection 4 is answered ably, but without recollecting that a long, narrow ship, beyond certain limits, does not admit of sufficient strength in its construction to resist the action of the waves in rough weather; and hence, although Messrs. Winans are correct as regards the harmony of the forces of the waves, it is impossible to conceive a vessel, "sixteen feet beam and several miles in length," built sufficiently strong to maintain its form. To carry out and extend the proportion between the length and beam, it is necessary that the form should admit of a straight floor, and not tapered to both ends from its center. We must confess that we cannot see how the round form will prevent the rolling without a keel, and we are inclined to think that if the length be increased in proportion to the diameter beyond certain limits, the action of the waves will be to twist the vessel and rupture the plates. What that proportion is remains yet to be seen; but the fact stated by us, that "long and narrow ships have been found to roll too much already," still holds good; and, although we are not prepared to say that "the increased length being abeut 50 per cent, the tendency to roll will increase in equal ratio," yet we do hold the doctrine that there is a point of relation between the diameter and length of ships beyond which it is dangerous to go. But Messrs. Winans' steamer, although not 50 per cent, will, we think, roll, owing to its taper form and absence of keel.

To objection 5, Messrs. Winans' answer is very satisfactory, and there is no doubt that a perfectly fireproof vessel is a desideratum, and here is the true improvement of the whole, namely, constructing it all of iron; but why this peculiar form should be better adapted than a safer one, for an entirely iron constitution we do not see, unless, perhaps, it is that it could not well be constructed of wood.

To support our sixth objection, sweeping as it is, let us briefly say that we cannot see much chance of success for a vessel unsteady in its shape, whose lowest part is a point and not a line—too accommodating to the motion of the waves to be a comfortable dwelling, without sufficient deck room to give the passengers that free and spacious walk in the open air, so desirable at sea, being nearly all machinery, and of an internal shape which must waste a great quantity of room.

Being asked to give our opinion on some other points than those previously mentioned by us, and we will now state our views on the subjects proposed in the last paragraph but one of their communication.

The hull of Messrs. Winans' steamer is a duplex cone, 180 feet long, 16 feet in diameter at its center; the form converts its floor into a curved beam, with a tendency to oscillate upon its center, in its mobile element. The resisting strains in a longitudinal direction will be transmitted from the extremities and concentrated within a very small space at the center, thus causing great instability at that part. It appears evident to us, that had its middle been a prolonged cylinder of 60 feet, its carrying capacity would have been much greater, with the same submerged sectional area, and the strains would have been distributed over a far greater amount of space. This would have given it greater stability, avoided oscillation, and imparted greater steadiness either under steam or sail. In a vessel like the cigar ship, in which curves are substituted for straight lines in the bottom, a keel is indispensible, to improve its lateral resistanee, and yet no keel is provided for it whatever. A deep keel, fore and aft of the center, appears to be positively necessary to give it greater stability.

We do not like the conical entrance or bow of this vessel; we prefer the clipper wedge bow with hollow water lines. In a rough sea the teudency of this vessel will be to bury itself in the water; hollow water lines would have tended to lift it gently above the waves. Much stress has been laid upon placing the center of gravity of this vessel "low down;" this is undoubtedly right for a rough sea, but there is something due also to the correct position of the center of gravity, which seems to have been overlooked by its builders. In swift birds and fish this is placed at two-fifths the distance from the forward extremity, —three-fifths from the stern—in order to counteract and balance the extra resistance which the fore part of the body meets in passing through the air and water. The center of gravity in this vessel is placed at the middle, and although it is low, yet it cannot prevent lateral play, owing to its absence of keel and want of prolonged breadth at the center.

The position of the propeller is not good; it should have been situated where nature has placed it upon a swift fish, at its stern. Screw propellers, with fine lines aft, are faster than those with full lines, and swift fish have always long tapering extremeties in front of their propelling agent. In this cigar ship the order of nature is inverted, the propeller being placed where the lines are fullest—in the wrong place—it will therefore carry dead water just behind the wheel, and cause negative slip.

The propeller is a wheel extending around the whole circumference of the vessel, and is about eighteen feet in diameter. There was not the least necessity for such an amount of propelling area. A screw of eighteen feet diameter is sufficient for the *Himalaya*—a steamer of 3,500 tuns displacement—a ship of ten times the capacity—and one of the swiftest in the world. By experiment, it has been found that a very small proportion of propelling area is sufficient, and any excess tends to absorb the power. One great advantage of the common screw propeller over the paddle wheel is its very limited size; now, it appears strange to us, that this very advantage should have either been contemned or overlooked in the design of this small vessel; with its huge screw wheel, it must offer a great amount of unnecessary resistance.

This vessel is 16 feet in diameter at the greatest breadth of beam; and if we allow one-half of this to be submerged, it will have an immersed midship section of nearly 100 square feet; we give the even figures, which are not far from the mark. It has two boilers to drive the machinery, each with 1,500 square feet of heating surface—37 to each foot of grate. As there is no power in the engines apart from the boilers, the two boilers will be 300 horse power—allowing ten square feet for each. The form of this vessel being given, with this power, we are asked, "What will be its speed?" We would like to obtain a formula to enable us to calculate this exactly; but when eminent nautical architects and engineers have been disputing upon this very point for many years and are still divided in opinion, we will only pretend to give something like a plain approximate estimate.

In comparing the value of the performance of one steamer with another, Atherton, an English nautical author and naval architect, uses the following formula:—$V^3 D^{2\cdot 3} \div I H P = C$. Armstrong, another shipbuilder and author, uses the formula:—$V^2 D + I H P = C$. These are very different; both cannot be correct; and as they are applied to vessels of tried forms, are inapplicable to the cigar ship. Armstrong, however, gives us other data, in a table based upon the unit that 25-horse power and 100 pounds of coal produce a speed of five miles per hour for every 100 square feet of immersed mid-ship section. The cigar steamer has this amount of immersed mid-ship section exactly; therefore by the formula $V^2 D + I H P = C$, her speed should be nearly 17·30 knots per hour in smooth water. This result is nearly in accordance with that of direct resistance, allowing nothing for friction; therefore we think no steamer can come up to this standard of dynamic value; yet it has been applied to common steamers of good model. The direct resistance would be as follows:—The power exerted by the engines of 300-horse power during one hour is equal to the moving of 594,000,000 pounds of water through a space of one foot. In one mile of water of 100 square feet area—represented by the mid-ship section—there are 33,000,000 pounds which becomes the divisor of the horse-power of the engines, and gives 18 miles per hour for this vessel, with her engines. Will the cigar steamer come up to this standard, with its immense power for such small carrying capacity—nearly twice the amount of common steamers? Its speed in smooth water will be much greater than in the sea, and will probably reach 15 or 16 miles per hour; but in a rough sea it will be so much burdened with the head pressure and oscillation, that it will not average more than nine or ten knots per hour. These are our opinions; they are not given to make a *point*, or in the way of carping at the enterprise of Messrs. Winans', as we wish them success, and would be glad to find ourselves in error, and that they had achieved a great improvement.

Iron Girders—Neutral Axis.

MESSRS. EDITORS—In your journal of the 27th ult., M., of Baltimore, says in support of the theory of a neutral axis in a beam that when it "attempts any deflection from the strain of the load, the top flange *will* suffer from compression and the lower one from tension, gradually diminishing in intensity as they approach each other, the point where the two are expended must necessarily be free from strains, and therefore *is* correctly called a neutral axis." If M. will carefully examine my article No. 4, and the diagram accompanying it, I think he will there find good reason for supposing that instead of the intensity of the strains diminishing as they approach each other, the tensive strains remain constant, while the compressive strains *increase* gradually as they approach the tensive tie, as there stated. Or, remove the tie, and substitute abutments, then see if the intensity of the pressure will not increase towards the ends as it approaches the abutments, or ties. If so, then, of course there can be no *neutral axis* where the forces are *expended*, as M. supposes.

M. admits that "the parallel rib and flange girder" is not perfect, but thinks the facility afforded in manufacture a sufficient apology for the excess of material. This argument of "facility" to justify a waste of one-third of the material in rectangular girders is not good, when as before stated, they cost two-sevenths per pound more than the compound girders. BENJAMIN SEVERSON.

Baltimore, Dec. 2, 1858.

Soluble Glass.

MESSRS. EDITORS—I entertain a very unfavorable opinion regarding the uses of soluble glass, and hold a negative opinion to the conclusions and statements contained in the article signed "F," on this subject, in the SCIENTIFIC AMERICAN of the 6th ult., page 70. I purchased some of this substance, for which I paid $1 50 per gallon, and it does not answer for the purposes set forth in the communication in question. I have tried it as a varnish, and consider it worthless, because the surface to which it is applied cannot be washed. It is not suitable for a cement, or for coating surfaces exposed to the weather, either to render them fire-proof, or for any other protective purpose, because it is soluble, and rains wash it off. It is stated in the article referred to that it is a good substitute for soap, thus admitting its solubility in water, and its unfitness for coating boards, stone or brick on the outside of buildings. It never can take the place of oil as a vehicle for paint, because the real virtue of oil is its insolubility—the very opposite of the silicate of soda. E. W. D.

Norwich, Conn., December, 1858.

[After a coating of the silicate of soda has been applied to the surface of an article, and has become dry, it should be washed with very dilute muriatic acid. This operation will remove the alkali from the silica, which will be left adhering as an insoluble coating. The muriatic acid and the soda will combine together, and form common salt, which will be removed from the surface by the first shower. Without some such treatment, the silicate of soda, it appears to us, cannot withstand the action of rain.—EDS.

Notes & Queries

*** PERSONS who write to us, expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

J. L. M., of Ind.—By coating glass with the albumen of eggs, or liquid gum arabic, it will remain transparent, and you can write upon it with common indelible ink made with nitrate of silver.

A. M., of Pa.—The varnish for maps and pictures is made by dissolving Canada balsam in rectified turpentine. Use equal parts of balsam and turpentine, place them in a bottle in a warm situation, and shake it frequently for about a week, when the varnish is fit for use.

C. H., of Ohio.—We cannot "adopt measures to protect you against infringers" other than to secure a patent for your invention. We hope you will succeed in getting the means to prosecute your case without delay.

P. M. E., of N. C.—You had better address a letter of inquiry to F. Kuhlmann, Lille, France.

G. B. B., of Iowa.—India rubber boots and shoes are made with india rubber softened by heat, and mixed with some substance containing sulphur, after which they are submitted to a heat of 300° in an oven. Naphtha dissolves india rubber. The vulcanizing process is secured by the patent of Chas. Goodyear.

N. B., of C. W.—You want a hard quick-drying varnish, therefore gum lac dissolved in alcohol will be the most suitable. Copal varnish is made by dissolving fused copal in boiling linseed oil. It does not dry quick enough for your purpose.

C. F. & G. S., of Conn.—Strong cold soap suds, we believe, will answer as a hardening liquid for your steel tools. It is a medium liquid between oil and water.

PENCIL LETTERS are not welcome. We hope all our correspondents will bear this in mind. We have now a letter from a correspondent written with a leadpencil, which we shall be obliged to throw away, inasmuch as in some places the scribbling is unintelligible.

L. W., of Conn.—Your advice concerning the Atlantic Cable, which was dictated by the *spirit* of Franklin, is fallacious, and the information very old. It would be almost impossible to lay a cable the thickness you describe. With all respect to Benjamin Franklin's ghost, we think he should know better than to rap out information on a subject with which he is perfectly unacquainted, as the peculiar kind of electricity by whose means we telegraph, was not discovered until many years after his death. If you should have any more talks with this spirit, and he gets garrulous on telegraphs, just turn the conversation on to lightning conductors, on which subject he will be more at home.

B. S., of Md.—You are in error in regard to the name of the author of the article referred to in your communication.

A. A. D., of Texas.—If a person cannot describe a true circle, it must be his own fault, not that of the compass.

S, T. McD., of N. Y.—The directors of the "American Union" appear to be well-meaning men, so far as we know.

J. H. S., of Texas.—The pressure of the steam upon the piston is always a little less than the pressure in the boiler. The exact amount can only be known by a gage placed on the cylinder. We have never known of a steam engine constructed without a piston of some form, but engines have been made with stationary pistons and movable cylinders. They are wrong in principle, and inefficient in action.

M., of N. J.—On the 17th of February, 1847, an act of Congress was approved for the relief of Thos. Blanchard, whereby his patent for a machine for turning irregular forms, was extended for a term of fourteen years, from the 20th January, 1848, at which time the patent would have expired, but for the Relief Act. The patent will therefore not expire till Jan. 20, 1862. We do not, therefore, think Mr. Blanchard will attempt to get it extended again, neither do we believe that Congress would grant another extension. Nothing will be done about it at present. We are having many inquiries about the lathe from parties who wish to use it and would like to know upon what terms the assignees are operating under this patent. It has been hinted to us that they monopolize this business entirely, and refuse to sell machines.

D. M. Campbell, of Lower Peach Tree, Wilcox county, Ala., wishes to purchase the best hub, spoke and felloe machinery.

R. K., of Pa.—The reason why you could not obtain good crystals of nitrate of silver from coin is because of the presence of copper and other metals, and to obtain them you must proceed as follows:—Dissolve the coin in nitric acid, and add to the solution common salt until all the silver is precipitated as chloride, then filter and wash the chloride well with distilled water. The chloride of silver must next be mixed with about one-fifth its bulk of powdered charcoal, and about twice its bulk of dry carbonate of soda; a little borax may be added, and the whole being put in a crucible and covered with charcoal, by putting it in a furnace or bright red fire for about 15 minutes, you will obtain a button of pure metallic silver. This button must now be dissolved in nitric acid, not very strong, and the solution slowly evaporated in a dark place, clear, well-defined crystals of nitrate of silver will be the result.

H. G., ——.Lead pipe is just as good as tin for the purpose of a siphon. There may be a small leak in yours, which can be remedied by giving it a thick coat of copal varnish or paint. It may be caused by friction, setting free a portion of the air contained in all water, which may have gradually accumulated at the "bend."

C. L. T., of D. C.—Galvanic electricity is generated by the decomposition of an oxydizable metal in communication with one less oxydizable, ihe former being called the positive, the latter the negative metal. The current of electricity will continue to flow as long as the zinc is undergoing decomposition. The greater the amount of surface exposed, the greater will be the quantity of galvanism generated; various plans have been employed to obtain an extensive surface in a small space.

J. P. W., of ——.The method you propose for preventing lightning fro n entering telegraph stations, by placing a large surface of polished iron near the conductor, to convey the current to the earth, would also carry the regular current away from the instruments, and thus prevent operations. We cannot give you the information requested regarding the silicate of soda.

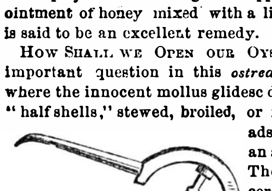
J. O. G., of Mo.—The rule for the pitch of paddles is to allow one paddle for every foot of the wheel's diameter; your wheel being 25 feet diameter should have 25 paddles. If the wheel, however, is run very fast, the number should be less. To find the proper area of each paddle divide the horse power of both your engines by the diameter of the wheel in feet, the quotient is the area of one board in square feet; this area multiplied by 0·6 will give the length of the paddle in feet. The size of paddle wheel should be regulated by the draft of water, so as to allow 15 inches of water over the vertical paddle. This rule will answer for all classes of vessels.

J. F. B., of Mich.—The toils and painstaking attending the progress of your mind towards some useful invention deserve better success, and it is very likely that the examiner who acted on your cases got his ideas confounded somewhat. It is now too late to advise you to do anything with those cases, neither can we refer you to any reliable party who would be likely to undertake to manage new ones.

S. B. R., of Wis.—Thomas Ewbank is still living, and resides in this city. Drawings, as well as a specification, must accompany the petition to have a caveat filed into the Patent Office. If you will send us some sketches and descriptions of your invention we will examine them.

RINGWORM.—This is called a disease, although it does not seem to affect the general health of a person infected with it. Children appear to be its subjects, and it is so infectious that it has been known to run through a whole school. It appears in circular patches of little postules, and destroys the bulbs of the hair when it forms on the head. The proper treatment for it consists in keeping it clean by frequent washings with soap and water. It is more liable to attack weakly than strong children, and although disagreeable in appearance it is not dangerous. An ointment composed of vegetable tar mixed with a little sulphate of zinc ground to powder will soon remove it. Mercurial ointment is sometimes used, but it should seldom, if ever, be employed. When ringworm appears on the face, an ointment of honey mixed with a little flour of sulphur is said to be an excellent remedy.

HOW SHALL WE OPEN OUR OYSTERS?—This is an important question in this *ostrea*-devouring nation, where the innocent mollus glidesc down our throats (as "half shells," stewed, broiled, or fried) by the myriads; and we will give an answer tothe query:



The little pair of pincers seen in the engraving are the most handy oyster-openers we know; they can be procured anywhere, and are cleanly and simple. The oyster is placed in a groove on one arm of the pincers, and a knife or wedge on the other being pressed down between the hinges of its shell, forces it open, ready for the application of pepper, salt, and vinegar, and final disappearance into the digestive organs of the mammal *homo*.

GAS FROM NATURE'S OWN WORKS.—We learn from Messrs. Sabbaton Brothers, the celebrated gas engineers of Albany, N. Y., that they have made a contract to lay the pipe for bringing gas into the village of Fredonia, N. Y., from a natural gas well near that place. It is calculated that about 9,000 feet may be obtained every twenty-four hours.

G. C., of Mass.—We believe it is quite practicable to construct a marinerailway, and transport vessels across the Isthmus of Panama, if the project could be made to pay. Such a railroad is now in daily operation at Newark, N. J., for transporting canal boats as a substitute for a lock. Englishmen are not in earnest when they say that Americans have invented nothing; they are poking a bit of fun.

L. F. H., of Me.—The reason why a coin will stick to the forehead is that by pressing against the moist skin the air is excluded from under it, and the external atmospheric pressure keeps it in its place. A person having a dry skin cannot hold a coin on the forehead, as there needs to be some moisture to fill up the interstices of the pores, and so enable the vacuum to be kept perfect.

J. E. S., of Va.—The dynamometer is used for testing the power of engines, but we do not know of any for a 100-horse engine. Address Stillman, Allen & Co., of this city, in reference to it.

A. J. D., of Cal.—The amount of power consumed by the friction of water in pipes is one-fifth of the total resistance; the friction is found by multiplying the weight of the column of water into its velocity. The pressure of water in an iron pipe inclined at an angle of 40° is two-fifths of the total pressure, whatever that may be. We have no faith in the belief that persons lost in the woods travel in a circle.

BALLOON PHOTOGRAPHING.—We learn from our foreign exchanges that M. Nadar, a distinguished artist of Paris, recently made an ascension with M. Goodard in a balloon, and took photographic bird's eye views of the city of Paris at various altitudes. We have heard of photographic pictures being taken by artists when sailing on the water and traveling on land, but to M. Nadar belongs the credit of being the first flying photographer.

J. B. McQ., of Iowa,—The power and economy of a water wheel depends greatly on its construction, the materials, and workmanship. Baldwin's is a good wheel; but we are not personally acquainted with the results of its performance in comparison with Tylers'.

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Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, December 4, 1858:—

W. J. H., of Md., $150; J. C., of Mo., $25; H. & H., of N. Y., $15; E. P., of Cal., $40; E. A. G., of Pa., $30; J. H. C., of N. Y., $250; J. C. B., of Texas, $30: F. C. K., of Wis., $25; H. & A., of Ill., $30; F. & Bro., of Md., $400; T. N., of Tenn., $37; J. M., of Ga., $150; S. T. S., of N. Y., $55; W. D., of L. I., $30; G. & I. C., of Pa., $25; J. L. Y. W., of Mich., $30; H. B., of Va., $30; J. O. G., of Cal., $65; R. B. N., of Cal., $25; O. & K., of Mass., $35; A. L. B. N., of N. Y., $30; B. B., of Md., $25; L. B., of N. J., $30; J. P., of Ind., $36; D. & S., of La., $25; J. B., of Ill., $25; J. N. W., of Ohio, $55; J. C., of L. I., $25; A. J. B., of Va., $25; H. F., of La., $45; R. & McC., of N. Y., $55; W. H., of L. I., $100; J. J., of Ohio, $30; R. W. S., of Ala., $10; I. W. & A. H. H., of Conn., $30; H. M. P., of Mo., $32; J. A. H., of Pa., $30; J. A. A., of Oonn., $30; F. J. G., of N. C., $55; J. G. S., of N. Y., $30; S. N. L., of N. Y., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 4, 1858:—

J. C. of Mo.; A. J. B., of Va. R. B. N., of Cal.; P. B., of N. Y.; G. & I. C., of Pa.; R. H. D., of Cal.; J. H., of Mo.; W. G. B., of Ill.; W. D., of L. I.; J. C., of L. I.; G. W. P., of L. I.; C. C., of Ind.; O. & K., of Mass.; F. C. K., of Wis.; B. B., of Md.; J P., of Ind.; J. N. W., of Ohio; S. N. L., of N. Y.

Literary Notices.

CORNELL'S GRAMMER SCHOOL GEOGRAPHY. By S. S. Cornell. New York: D. Appleton & Co.—This is one of a series of geographies intended to teach that science systematically. It is profusely illustrated with correct maps and pictures, and contains much information concerning the commercial importance of different distant places. As a school geography it is unrivalled.

THE BUILDER. G. Godwin, F.R.S., Editor. New York: Wiley & Halstead. This monthly part is excellent, containing much information, splendid engravings, and all the news which can interest the architect, engineer, operative, and artist.

A WORD TO OUR PATRONS.

WILL OUR FRIENDS FAVOR US?—Any of our readers who do not preserve files of our paper for binding (we hope there are but few such), and who have Nos. 4 and 5 of the present volume which they are willing to spare, will oblige the publishers by sending said numbers to this office. Ten cents for each copy will be paid.

BACK NUMBERS of the present volume of the SCIENTIFIC AMERICAN will be supplied to new subscribers when desired, with the exception of Nos. 4 aud 5.

Science and Art.

Notes on the Progress of the Paddle and Screw.—No. 4.

The contrivances for feathering floats are numerous. In some cases, each float turns like an oar on a spindle, radial from the shaft, as in Duquet's plan, in 1693, where they feathered by fixed tappets. This was frequently patented afterwards. Two sets of such floats were used by Oldham (1820); Stead (1828) turned them by grooved guides, and Symington (1834) by cog wheels. But the more common method was to cause the float to feather on a horizontal axis, parallel with the shaft. Silvester (1792) effected this by a spindle turned by a fixed cog wheel; Broomfield (1825) made the principal cog wheel adjustable by a screw; Steenstrup (1827) and Brown (1845) used an endless chain to regulate the angles of the float; Holebrook (1832) used a spindle, with a worm at one end and a pinion at the other. Curved rims, or cam guides, feathered the floats by acting directly on catches, in the plans of Binns (1822), Pool (1829), and Winkles (1840). Parr (1825) caused the pressure of the water to feather the float on an axis dividing it unequally; Binns (1822) loaded the float so as to keep one edge always lowermost. This mode was repeatedly patented. Lambert (1819), Mercy (1825), tried to make the float feather by buoyancy, and Hill (1825) connected all the floats together by forked jointed pieces. Skene (1827) combined these two last means, and bridle bars were added by Vint (1835). Long before this, Lambert, in 1819, kept the free edges of the floats lowermost, by attaching them all to a heavy circular rim without central bearings. Cochrane patented this ten years afterwards, and Napier did the same in 1841. Miller (1848) had small guide rollers to steady the rim and increase the vertical pressure. Parlour (1838) feathered the floats by a divided shaft, of which the part attached to the float spindles turned twice for each revolution of the other part.

In 1813, Robertson Buchanan patented his invention for feathering each float by a spoke from an arm on its spindle, jointed to a rim turning on a fixed eccentric.

This application of the eccentric was repeatedly patented, in various shapes, and many of the plans are so similar, if not identical, that it is evident their inventors were ignorant of what had been done before. It is to be regretted that, in many of these cases from £300 to £500, besides often ingenuity, time, energy, and private expenditure, were thus needlessly thrown away; and it is to be hoped that, by the enlightened policy of the present authorities at the British Patent Office, invention will be delivered from a useless repetition of past efforts, and genius will be set free to cultivate new fields of labor.

In 1827, Oldham put the feathering eccentric on a hollow shaft, embracing the paddle shaft, and so turned slowly, by fixed cog wheels, as to cause the side edges of each float to point to the top of the wheel.

Bernhard (1828), Anderson (1828), and Gifford (1837), made the eccentric adjustable, so as to regulate the angles of exit and entrance of the floats. This is done by levers, or by a sector working a frame-work jointed to the rods that work the floats.

In Lagergren's plan (1855), the rim on one side was higher than that on the other, and each float revolved on horizontal bearings, placed at its diagonal points.

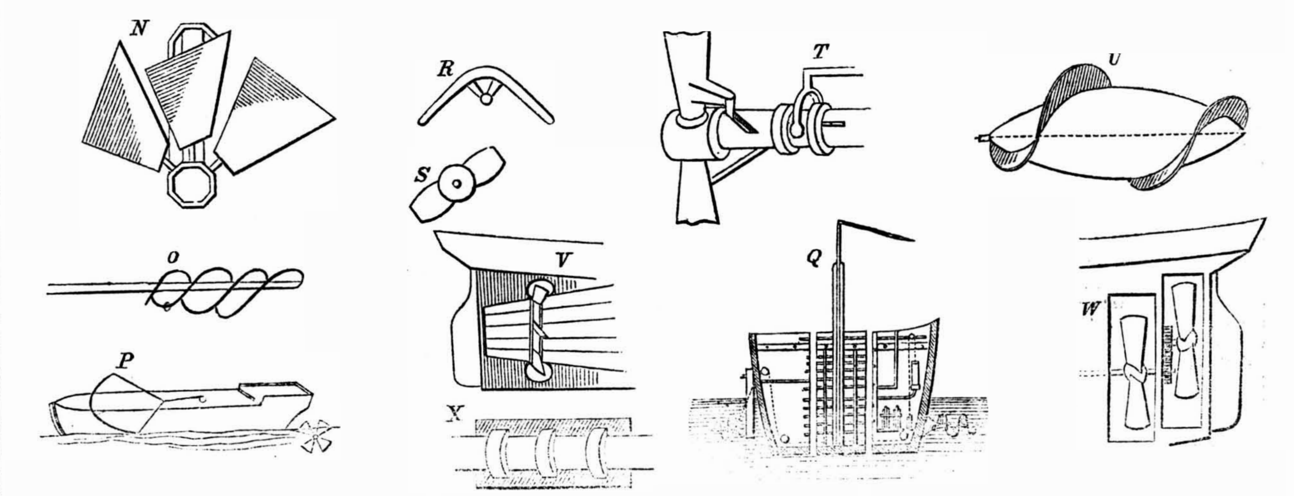
Pickworth (1836) made each feathering float to consist of a frame carrying louvre boards on vertical spindles.

In Bramwell's plan (1851), an eccentric motion and springs caused the arm and float to yield at the beginning of the stroke, and to work at greater angular velocity near the end. Ross (1856) gave to the outside edge of hinged floats a similar variable motion. The paddle floats of the *Leviathan* do not feather.

Among the few patents relating to paddle boxes, we may notice Cochrane's (1818), for forcing smoke from the furnace into a closed paddle box partly submerged, so as to exclude the water. Palmer (1839) did this by pumping in air, while Taylor (1846) allowed it to be forced in by the waves. Symington (1835) led the spray from the paddle box to cool the engine; and the well-known paddle box boats were patented by Smith in 1838.

We must go back again to early times for the first appearance of the screw propeller. It is probable that, as the action of a water-mill suggested the use of the paddle wheel, so the motion of a windmill may have prompted the use of the oblique vaned propeller. The windmill is of an unknown antiquity. There is an interesting description of it by R. Hooke, in 1681. It will be observed that under the term "screw propeller," we include every rotating propeller with oblique vanes which urges the vessel in a direction parallel to the propeller shaft.

In 1729, Duquet submerged an apparatus like a smoke-jack or windmill, and the action



of the stream turned its shaft so as to wind up a rope.

In 1746, Bouguer states that "revolving vanes, like those of a windmill," had been tried for the propulsion of vessels, but it is not clear that the axis was turned by force inside the vessel, or that the method was an advance on that of Duquet.

This week we present some more illustrations of the different forms of propellers which have been, and are still, used.

N. Duquet's oblique vanes (1729), turned by the stream, and winding a rope attached to a vessel. O. Watt's suggested screw propeller (1770). P. Screw tried by Fulton (1798). Q. Dallery's patent screw steamer (1803, France). R. "Bommereng propeller," turning on its center of gravity. S. Griffith's screw propeller (1849). T. Woodcroft's vary pitch apparatus (1844). U. Duncan's (1856) double conical hollow float, turning on its axis, and propelling by a spiral rib. V. Burch's propeller of inclined vanes on a revolving plate (1852). W. Tombs' propeller, with one screw behind and above the other geared to it. X. Ordinary grooved bearing block, used to receive the horizontal thrust of the propeller shaft in the *Leviathan*.

Artificial Ivory.

Charles Westendarp, Jr., of London, has invented a new composition, which can be made to imitate ivory, bone, horn, coral, or other similar substances, natural or artificial, and which may be used in preference to ivory and other such like substances, by being molded or turned to the various forms or patterns they may be desired to take.

The patentee takes any certain quantity of small particles of ivory, bone, wood, glass, cotton, wool, or other similar articles, either in a coarse or fine powder, or in shavings, according to the imitation which is intended, and combines them, or any of them, according to the purpose required, with gums or other resinous materials, such as gum damar, gum copal, resin, gum shellac, gum sahdrac, wax, or other glutinous or resinous materials. These ingredients he combines by pressure or heat, or with spirit, or other solvent, and forms a mixture of the whole, or any of them, which may be colored during the process. A paste is thus obtained, which may be immediately molded, and becomes solidified in a short space of time by means of heat or pressure, or it may be so manufactured as to remain in a pasty condition for a considerable time, in order to allow it to be carried to any distance, or worked into any form; for instance, such as decorating in buildings, for moldings, scrolls, or similar ornamental work; the hardening materials being added as required.

The application of the material called "artificial ivory," may be very various besides those already named, as it is capable of being made to resemble sculptured articles, by means of dies or chasing, or it may be turned, carved, sawn, and polished, like ivory, bone, or other similar substances. In illustration of the manufacture of artificial ivory, the patentee explains the method of making white billiard balls. For this purpose he soaks ivory dust, say, five ounces, and a white color, say, white lead or zinc white, three ounces, in a solution of eight ounces of white shellac or copal in sixteen ounces of spirit of wine. After the whole is well mixed—which is best done at a temperature a little below or above the boiling water—the alcohol is partially or wholly evaporated, and the stiff paste or dry powder pressed into a solid mass in a pair of dies or mold, previously heated to about 230° to 280° Fahr.; after being so solidified, the compressed balls are worked round and polished like the ordinary ivory balls. The same purpose is effected by reducing eight ounces of white shellac, three ounces of white color prepared of bismuth, lead, or zinc, with five ounces ivory dust, bone dust, or any other suitable matter to a fine powder, and passing it between heated metal rollers repeatedly, at about 230° to 280° Fahr. By this process, a soft homogeneous mass is obtained, which can easily be molded into any desired shape, and forms, when cold and hard, a very ivory-like material.

The patentee claims the amalgamation of the aforesaid or similar articles, thereby producing artificial ivory, and which is applicable to the purposes hereinbefore mentioned.

Carbonization of Gas.

M. Vesian has recently been renewing, in Paris, an old idea in connection with illuminating gas. From chemical and photometric observations which he has made, he has come to the conclusion that there is a great percentage of the hydrogen which really gives no illumination, in the ordinary coal gas, and that the amount of light given by a definite quantity of gas can be increased materially by adding to it the vapor of any highly carbonaceous fluids. This has all been done before; but M. Vesian has contrived a new apparatus for adding more carbon to the gas; and also suggests the use of the waste products of gas-making, such as tar and oils, as the substances with which to add the solid particles that give illuminating power to the gas.

Consumption of Gold and Silver.

The consumption of gold and silver at the present day for household purposes is enormous, its application having increased rapidly since the discovery of gold in California and Australia. The amount of gold and silver annually taken from the mines of Europe is valued at twenty-five millions of dollars. In America, the yield is computed to be one hundred and forty-six milllons, and Asia produces twenty-five millions. Africa has no silver mines, but produces gold to the amount of nearly three millions of dollars. Australia is also without silver, but produces gold to the large amount of two hundred millions.

New Voltaic Battery.—M. M. Fommier & Alix, of Paris, have made an improvement on the voltaic battery by substituting lead for zinc, and they use only one acid; no amalgam is required and, it gives a steady constant current suitable for electroplating and similar processes.