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LIST OF PATENT CLAIMS

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APPARATUS FOR HEATING FEED WATER OF STEAM BOILERS—By M. W. Baldwin, of Philadelphia, Pa., and David Clark, of Schuylkill Haven, Pa.: We claim the arrangement of a heater for the feed water of steam boilers, with respect to the chimney, smoke box, and the blast pipes of the escape steam, substantially as described, so that the heated smoke and gases from the smoke-box, and the exhaust steam from the cylinder, shall pass separately through the heater, in distinct tubes or channels, in such manner that they cannot mix, until both have passed the heater, as set forth.

MILL STONES—By Thos. Barnett, of Beverly, England. Patented in England Jan. 8, 1852: I am aware that holes or apertures in upper and under millstones, have been sometime in use, and I do not claim simply the making of holes or apertures, in mill stones, as my invention.

I claim the making, in under mill stones, of holes or apertures, covered with wire gauze cloth, perforated metal plates, or any other substance that will allow part of the meal to pass through, after it is sufficiently ground, in combination with holes or apertures, in upper mill stones, containing sweepers, brushes, or rubbers, for the purpose of sweeping, rubbing, or brushing the meal over, or through the wire gauze cloth, perforated metal plates, or other substances, without confining myself to the exact detail described.

GANG PLOWS—By Chas. Bishop, of Norwalk, O.: I claim the manner described of constructing the mould boards, and combining them with the blade, in the manner substantially as specified.

SUGAR BOILING APPARATUS—By Wm. H. Clement, of Philadelphia, Pa.: I claim, first, the arrangement and combination of the simmering vessel, with the ball cock and the scumming trough, substantially as described; and I claim this arrangement and combination, whether alone or in further combination with a partial covering of the bottom of the simmering vessel, or the introduction of the steam worm, as described.

Second, the agitator arranged and operating in the manner and for the purpose described.

SCUMMING APPARATUS FOR SUGAR APPARATUS—By Wm. H. Clement, of Philadelphia, Pa. Patented in England July 23, 1846: I claim the application in the manufacture of sugar, of rotating paddles, or leaves, for skimming or taking off the scum and gummy matters from the surface of the liquor.

DISTILLING APPARATUS—By Chas. Delecluze, of New York City: I claim, first, the combination and arrangement of the boiler connected by the pipes with the column, which enables me to work continually, and without interruption by distilling the contents of one boiler, while the other boiler is being filled, and thus distilling the contents of one boiler immediately after the other, as seen in the description of the work.

Second, the combination and arrangement of the worm, situated between the two boilers, and of the pipes which connect the boilers with the worm, enabling me to test and ascertain the nature of the liquid contained in the boiler under operation, and to ascertain when the contents of that boiler are distilled.

ILLUMINATING GAS APPARATUS—By Robt. Foulis, of St. Johns, N. B.: I claim the return pipe, in combination with the retort, as set forth.

Second, I claim, in combination with said pipe, the false bottom and lining, as described.

Third, I claim the arrangement of the decomposing chamber, in combination with the return pipe in the vertical retort.

Fourth, I claim the employment of the series of decomposing trays, under the arrangement in the vertical retort, substantially as described, in combination with the central pipe.

Fifth, I claim refrigerating the gas by air, substantially as described.

INDIA RUBBER BAT CLOTH—By Chas. Goodyear, of New Haven, Conn.: I claim passing the bat, or fleece of cotton, flax, silk, or other fibrous substance, together with dissolved or softened caoutchouc, gutta percha, or other vulcanized gums, or the compounds or preparations thereof, between callendering rollers, with an elastic substance interposed between the bat or fleece, and one of the rollers, as described, or between the glazed apron and one of the rollers, as described.

ELECTRO MAGNETIC ENGINES—By J. S. Gustin, of Trenton, N. J.: I claim supporting the principal part of the weight of the armatures of the electro magnets, mounted upon sliding guides, or their equivalents, upon the reciprocating frame, as described, by means of springs, or their equivalents attached to said frame, so as to preserve the balance of weight in the moving parts, as set forth.

SAFETY VALVES—By Alfred Guthrie, of Chicago, Ill.: I claim the construction of the cock in the connecting pipe, by which the resistance to the pressure is taken off, and at which the steam will be allowed to escape.

DOUBLE SCRAMING MACHINES—By Walter Hamilton, of Elmira, N. Y.: I claim the mandrel with heads removable at pleasure, in combination with two or more pressure rollers, operating with the same, and with a mallet acting simultaneously with said mandrel and pressure rollers.

I also claim the adjustable steadying rollers, or their equivalents, arranged with reference to the mandrel, and acting substantially in the manner and for the purpose set forth.

HOMINY MILLS—By James Hughes, of Cambridge City, Ind.: I claim the combination of the beating cylinder arranged and constructed as set forth, with the adjustable discharging apertures, by means of which the hulls and eyes are separated from the grain, and the latter is retained within the range of the beaters, for a shorter or longer period, according to the grade or size of hominy or samp, which is desired.

PRESSES FOR BUNDLING FLOCCULATED AND OTHER SUBSTANCES—By Danl Kellogg, of Pittsfield, Mich.: I claim the combination of the pressing box made with openings in its sides, with the platen and bed turning on swivels, and formed with channels, so ar-

anged as to admit of the passage of the needles and cord through the pressing box, for the purpose of singly and doubly binding fleeces of wool, or other substances, while under pressure.

GAS REGULATORS—By Walter Kidder, of Lowell, Mass.: I claim producing a uniform pressure of gas in the branch pipe, which supplies the burners by means of the inverted cap, the vibratory lever, and the induction valve, arranged and operating within the chamber, of the branch pipe, substantially as described.

GAS REGULATORS—By Walter Kidder, of Lowell, Mass.: I claim producing a uniform pressure of gas in the branch pipe, which supplies the burners, which may not be varied by the number of burners supplied, nor by the variations of pressure in the main, by means of the counterpoising double inverted cups, the vibratory lever, and the inductor valve so combined and arranged with reference to the main and the branch pipe, that one of the said inverted cups will be acted upon by the gas in the main, and the other by the gas in the branch pipe, as represented.

GAS REGULATORS—By Walter Kidder, of Lowell, Mass.: I claim the producing, at all times, a proper and uniform pressure of gas in the branch pipe, which supplies the burners, which will not be essentially varied by the number of burners supplied, nor by the variations of pressure in the main, by means of the induction valve, the vibratory lever, and the counterpoising inverted cup combined and arranged and operating within the chamber of the main, substantially as described.

HARNESS SADDLE TREES—By Thos. Mardock & Wm. C. Keller, of Cincinnati, Ohio: We claim the crupper loop, having a shank, which, being inserted through the cantle into the pommel, is secured to the latter by the pad hook, in the manner described.

APPARATUS FOR TRANSPORTING TRAINS ON INCLINED PLANES OF RAILROADS—By Saml. McElfatrick, of Dauphin, Pa.: I claim making the axles of the safety car in two parts, the inner end of each part being provided with an independent journal constructed and operated as described, when this is combined with the auxiliary wheels and auxiliary converging track and hub, substantially in the manner specified.

GRINDING MILLS—By Oldin Nichols, of Lowell, Mass.: I claim the pointed projections on the front edges of the teeth of the cylinder, when used in combination with the teeth in the concave formed with concavities in their front edges, substantially in the manner set forth.

EXPANDING WINDOW SASHES—By Mighill Nutting, of Portland, Me.: I claim the method of varying the pressure of the edges of the expanding sash against the jambs of the window frame, by means of the combination of the adjusting screws and springs with the set screws, or the equivalent thereof, for limiting the extent of the expansion of the sash, as set forth.

FLOW FASTENING DEVICES—By James Robb, of Lewistown, Pa.: I claim holding the share to its place by a tightening wedge, having a lip for lap or bite on the share, in combination with the headed or lipped studs for further securing the same.

SEED PLANTERS—By James Robb, of Lewistown, Pa.: I claim, first, causing the point of the drill tooth, when raised out of the ground, to slope backwards by the arrangement of the drag-bar attachment, the friction pulley and the curve of the upper part of the drill tooth, to avoid breaking the teeth, as described.

Second, I claim the combined device of endless screw and curved neck and pinion for producing the result specified.

BURNERS FOR SPIRIT GAS LAMP—By R. W. Sargent, of Philadelphia, Pa.: I claim the combination of the lower chamber or chambers, with the upper chamber, for the purpose specified, viz. the lower chamber or chambers answering the purpose of a heater, volatilize or turn into gas the fluid in the upper chamber, the flame being regulated as described, and the whole arrangement being substantially as set forth, without restricting myself, by this claim, to the precise form of the burner described.

PACKING WATER WHEELS—By Erasmus Smith, of Norwich, N. Y.: I claim the arrangement of the packing between the edges of the chamber or case and the wheels, in such manner that the packing on the lower portion of the chamber is adjustable from the interior, while the packing round the upper portion of the chamber is set up from the outside of the said chamber, substantially as specified, so that the whole of the packing is on the upper side, and none of it under the case, and all capable of being set up or adjusted without the necessity of getting under the case.

GOVERNORS—By John Trömpfer, of Buffalo, N. Y.: I claim the combination of the winding cords or chains, retarders or discs, hub, and spindle, arranged and operating in the manner set forth.

I also claim operating the governor valve of steam and other engines, by the twisting and untwisting of a flexible cord or chain, or equivalent thereto, attached to revolving retarders, and to the driving pulley placed above it, and detached from the spindle.

I likewise claim constructing the clasp with shoulders upon each part, which fit against corresponding shoulders upon its opposite part, and prevent the opening of the clasp, when they are united by the screw, substantially as set forth.

GLASS BUTTONS—By A. W. Walton, of Cheshire, Ct.: I claim the inserting of figures of uniform or variegated colors upon the inside of glass centered buttons, substantially in the mode described.

SEEDING APPARATUS OF SEED PLANTERS—By L. Moore, of Bari, Pa. Patented originally July 2nd, 1850: I claim the employment of a reciprocating gauge plate, when provided with feeding apertures, in combination with corresponding apertures in the hopper bottom, which have their sides oblique to the sides of the apertures in the said reciprocating plate, and when combined with a device for giving it a variable reciprocating motion, for the purpose of sowing the seeds constantly and uniformly, and varying the amount at pleasure, while the machine is moving by simply varying the extent of its reciprocating motion, as described.

I also claim the pivoted rod and the vibratory lever, which is provided with apertures arranged in the arc of a circle, whose centre is at the pivoted end of the rod, in combination with the curved or undulating discs and the gauge plate, substantially as described, for the purpose of imparting to the gauge plate a reciprocating motion, which may be varied at pleasure by the operator, by inserting the rod in one or another of the apertures in the lever at different distances from its fulcrum.

GRATE FRAME—By Jas. L. Jackson, of New York City.

PARLOR STOVE—By N. S. Vedder, of Troy, N. Y.

[For the Scientific American.]
Colored Daguerreotypes.

I have long been a reader of your valuable journal, and have been much interested in many of the communications on Electricity and Chemical Science, which have appeared from time to time in its columns. I have been experimenting on Heliography during my leisure hours for a few weeks past, and am induced to give you the results of my experiments, in the hope that others may be led to prosecute them more successfully.

The discoveries of M. Niepce Victor, in Heliography have been announced to the public for some time; I first saw them on page 3, Vol. 7, Scientific American, but I have heard of none repeating them. An outline of M. Niepce's process may be found in the "Annual of Scientific Discovery" for the year 1852; it is substantially the following:—Make a solution of the chlorides of copper and iron, about one part of the mixed chloride with three or four of water. The plate to be prepared is to be attached to the positive pole of a galvanic battery, the negative pole of which (a platinum plate) is immersed in the solution, and is then itself immersed for a short time, depending on the strength of the battery. The color of the plate rapidly changes from the chlorine of the mixed chlorides attacking its surface, to a red, lilac, brown, and even nearly black. It should be taken out when the plate has acquired a lilac or brownish tint, if sufficiently coated to hide the silvered surface completely, if not, let it remain a little longer. With a battery of two of the ordinary Grove cups, changed to a Smee's, by removing the porous cups, and charging it with dilute sulphuric acid, so that hydrogen is not evolved too rapidly from the platinum plates, it will take from one to two minutes to coat the plates sufficiently. The plate should now be well washed in rain or distilled water and dried carefully over a spirit lamp. The color changes as the plate is heated through various shades of brown and red, and is at its most sensitive state when it takes a cherry red. It should not, however, be heated much over 212° Fahr., or the surface will scale off. All these operations may be performed in open daylight (avoiding, of course, the direct rays of the sun); indeed, a certain amount of light seems to be necessary, in the preparation of the plate. The plate, if well prepared, will now present a beautiful red enamelled-like surface, partly translucent, but still showing no part of the silvered surface beneath, and is ready for the camera.

The object to be copied, a colored lithograph will answer, is placed in the clear light of the sun, and the prepared plate exposed to it for a time, varying with the brightness of the light, and the prevalence of the active rays in the atmosphere. It takes from two to three hours to produce an impression on the plate, and from five to six to obtain a good picture. If the process be successful, a perfect copy of the original, in form and color, will now be presented on the plate (and it will resemble a miniature painting) but be much finer in detail.

If the plate be dipped, before placing it in the camera, in a weak solution of the fluoride of sodium, the process will be much accelerated and the colors preserved. I have tried various other accelerators—the chlorides of sodium and bromine, the compound bromine and hydrofluoric acid, chlorochromic acid, and perfluoride of chrome. They all accelerate the process very much, but diminish the brilliancy of the colors; the hydrofluoric and chlorochromic acids are the best. The hydrofluoric acid acts very well with red and blue colors, but is apt to change the brown and black lines to a dark red. The other is better, but the plate should be exposed to it only for a few seconds.

I have taken very good pictures in an hour and a half, but it generally takes three or four. The most annoying failures sometimes occur from miscalculating the time, and taking out the plate a fine picture in form and color is found, but not sufficiently developed. In such cases the surface can sometimes be removed by an alkaline solution, and the picture developed. A camera with an aperture in it for viewing the picture, would be a good arrangement.

The pictures resist most of the ordinary che-

mical agents and heat very well, but are rapidly dissolved by the hyposulphite of soda. In one instance, I brought out a picture which was invisible when the plate was taken from the camera, by using the sulphate of iron and bichromate of potash, but the colors were fainter than the original. In this case chlorochromic acid was the accelerator.

I have not been able to produce colors on the mercurialized plate, though I have not experimented much on it. This presents a difficult but perhaps not impossible problem. It seems to me, though I have not tried it, that one or more colors might be produced in the ordinary picture by exposing the mercurialized image to chemical agents before gilding. The colors in this case would be owing rather to chemistry than to Heliography.

M. Niepce says that no bodies but chlorine or chlorides are capable of producing colored images. I am inclined, however, to suspect that when the problem of instantaneous photographic images is solved, that fluorine will be found as one of the principal, if not the principal, agent in their production.

I shall be happy to hear from other experimenters, and shall be much pleased if any of them should make the discovery of instantaneous colored images. Great credit is due to MM. Becquerel and Niepce for their discoveries, and also for the readiness with which they have made them public. I intend to devote a part of the little leisure time I have to the prosecuting of this interesting subject.

JAS. CAMPBELL.

Dayton, Ohio.

P. S.—I omitted to mention that the plates sometimes become solarized by long exposure. When this is only partial the picture may sometimes be restored by alkaline solutions. A thin coating of some colorless varnish is also very advantageous to the picture. The pictures accelerated with the fluoride of sodium or the chlorochromic acid seem to be quite permanent in ordinary diffused light.

Submarine Telegraph.

By our latest European exchanges we learn that in a few weeks will be completed a second line of electric communication, in connection with the Continental telegraph. It has been promoted by the European Telegraph Company, and one of its peculiar novelties is that it is being laid down along the old coach road, through Deptford, Greenwich, Shooters-hill, Dartford, Gravesend, Strood, Rochester, Chatham, Sittingbourne, Faversham, Canterbury, &c., to Dover. As may be known, the South-Eastern Railway Company are the proprietors of the present telegraph, and as the company would not sanction the formation of a second line of telegraph, the plan was devised of laying the wires under ground along the road, similar to those which are conveyed under the London streets to the several telegraph stations. Sanction, was obtained of the different road trusts, and some 200 or 300 workmen are now actively employed day and night on the works. The copper wires, six in number, are encased in gutta percha; and being deposited in a kind of trough, constructed of Kyanised timber, it is laid in a trench dug in the road, some foot and a half from the surface. In order that there should not be the possibility of the wires falling, test boxes, by which the wires are proved, are erected every mile. The works are proceeding with the utmost expedition. A mile and a half is completed every day. According to the present arrangements, the six wires will be so apportioned—two to Paris, two to Brussels, and two for the Mediterranean route. At present it is not known whether there will be any intermediate station between London and Dover. The telegraph is completed as far as Chatham from Cornhill.

Large Boilers.

The Royal Mail steamer Arabia, built for the Cunard line, is now getting her boilers on board. They are of tubular construction, the tubes running athwart-ships, with the furnaces of the two boilers facing each other. The boilers are shipped in sections, and riveted together in the hold of the ship. They are the largest boilers ever constructed, and are intended to supply steam to the largest engine ever built.