

**New Inventions.**

**Printing on Glass.**

Two weeks since on page 129 of the present volume of the SCIENTIFIC AMERICAN, we published an extract in relation to printing on glass, and we called upon the inventor of this process to report himself and exhibit some specimens of his skill. He has done so; the real *Simon Pure* is Mr. Baxter, No. 111 Fulton st., New York, the ornamental printer and publisher of colored prints. He showed us specimens of colored printing on both flat and curved glass surfaces. Flowers and letters are printed with equal facility, but the invention is not considered by its author to possess much utility.

**New Prairie Plow.**

This being about the time when agriculturists and dealers are laying in their stock of implements, we illustrate the prairie plow invented by David Cockley, of Lancaster, Pa., and patented by him Sept. 21, 1858.

Fig. 1 shows the plow with its improvements, and Fig. 2 is an underside view of the same. A are the handles of the plow connected by a brace, B, by which they are kept in their position. C is part of the regulator, which is attached to the handles, A, and through which a joint bolt, D, passes. The head of the bolt, D, is in the other or beam part of the regulator, C (the regulator being in two divisions), and operates in a horizontal slot, H, which allows the beam to be moved or adjusted to the right or left when required, and by this adjustment of the beam, F, the plow can be changed for the use of two or three horses abreast, or two or four horses in line.

The joint, I, of the regulator, C, is corrugated in grooves fitted into each other, formed in a proper radius, so as to correspond with the upward, downward, or side adjustment of the beam, F. The beam end of the regulator, C, is fastened to the beam by a bolt, J. K is an adjustable cutter, which is set at an angle, with its curved front, and is adjusted up or down at the side of the beam upon a screw bolt in the slot, L. The cutter is held and braced in its position by a grooved plate, M, attached to the side of the beam. N is the wheel, with a cutter attached to the outer periphery, for the purpose of cutting sod, roots, briars, or running vines, and assists in keeping the plow clean and free from choking, and marks the width as furrow and lines with the land side of the plow, and which by its rolling motion cuts the sod and relieves the draught of the horses. It is attached to the beam by a double slotted plate, O, that allows the wheel to be raised or lowered or set in or out of the land. The main bolt, P, that holds the moldboard passes through the one end of the draw-rod, R, which extends to the front end of beam, F, where it is firmly held by an eye-bolt and nut, S, operating in a slotted plate, T. The plate, T, is held to beam firmly by two projections, and a bolt, U, and has grooves underneath to change the positions of the draw-rod.

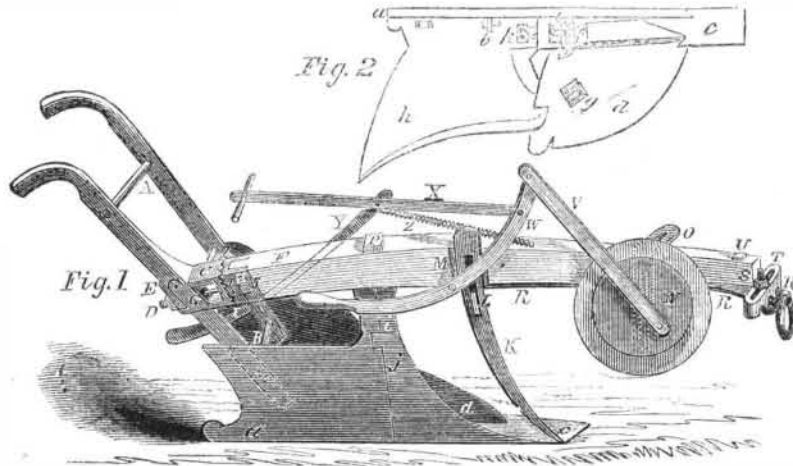
V is a connecting rod attached to wheel, N, to operate the cleaner or knife, W, and the combination of these devices, V N W, prevents the plow from choking, and is self-acting. When the wheel operates, the cleaner, W, must be disconnected from and work independent of the upper lever, X. By detaching the connecting rod, V, from the knife, W, and wheel, N, the device is then changed to a hand or foot cleaner, by the plowman drawing the upper lever, X, towards him, or pressing his foot upon the end of lower lever, Y, which operates the cleaner, W, while the spiral spring, Z, (attached to lever, Y, and beam, F) draws the cleaner, W, back to its place. The curved shape of the cleaner, W, and the position of it as attached to the beam, F, gives the edge of the cleaner a forward and downward motion, and thus

throws the stuff down that accumulates and chokes up the plow, so that the furrow slice will take hold of the stuff, and turn the furrow.

We will now describe Fig. 2. *a* is the sole or heel of the plow, which is slid into the landside, and fastened by a dovetail wedge, *b*. The point, *c*, and share, *d*, are made to reverse, which makes them self-sharpening,

and they are made fast to the bottom of the moldboard by a projection, *e*, on the moldboard, by means of a groove, *f*, on the point, *c*, and a slot, *g*, in the share. The moldboard, *h*, and post or sheath, *i*, are cast in one piece. The cutter, *j*, and landside are let into the post, *i*, and moldboard, *h*, by means of dovetails. The whole are held and bound together by means of one short screw bolt, *k*, and

**COCKLEY'S PRAIRIE PLOW.**

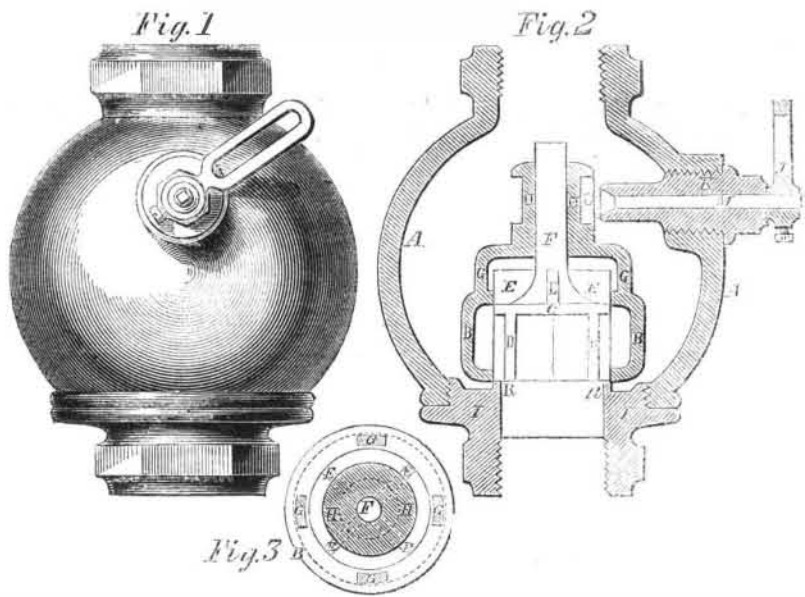


plate, *l*, underneath. This screw bolt, *k*, is made with a square head, which is fitted into a corresponding groove in the bottom of moldboard or post, and the back part of plate, *l*, rests upon two lugs, one upon the landside, and the other upon the moldboard. On the the forward end of plate, *l*, is a lip which drops into the groove, *j*, in the point, *c*, and by screwing down the nut on to the plate, *l*, all the pieces of the plow are drawn and held

tightly together. The advantage of fastening the pieces together by one short bolt is to prevent holes being made through the cast iron moldboard, so as to allow the moldboard to be chilled on its whole surface, thus making it susceptible of a higher polish, and consequently of lighter draught and durability.

Mr. Cockley has made arrangements to manufacture his valuable plow in Lancaster, Pa., where communications can be addressed.

**IMPROVED GOVERNOR VALVE.**



This invention was noticed on page 11, of the present volume of the SCIENTIFIC AMERICAN; and in order that its construction and advantages may be more fully understood, we present illustrations of it.

Fig. 1 is a perspective view of the exterior, Fig. 2 is a vertical central section, and Fig. 3 is a horizontal section of the same.

The exterior is of metal, and made in two parts, A A and I I. The steam pipe connecting the engine with the boiler should be screwed into the top and bottom of the governor, or attached by flanges and bolts. The interior of I is bored out to receive the lower ends of the wings, D D, which are fitted tight into I, and the shoulders on D D, rest on a ring or projection, R R, upon the upper side of I, supporting the winged disk, C. The ring, R, wings, D and E, and disk, C, are all turned on the same diameter. B B is the winged hollow cylindrical valve, and H H is a hollow spool-shaped stem connected to the same by arms, G. The cylinder, B, is fitted to move loosely up and down over the periphery of the wings, D and E, disk, C, and ring, R; it being suspended by the arms, G, and spool, H, on an eccentric, L, the spool being ar-

ranged to move up and down over the stem, F, when operated by the eccentric, L, of the rocking shaft, M, which carries the slotted link, J. By depressing the link, J, the eccentric will raise the cylinder, B B, and cause the steam openings to be made at the same time, one above the ring, R R, and one above the disk, C. The eccentric, L, and stem, M, is formed of one piece of metal. The stem is made to turn freely in the stuffing-box, K, and it forms a conical joint at the inner end of the stuffing-box, K, the two being ground together, forming a steam joint and requiring no packing.

From the foregoing description it will be evident that the valve, B, never rests down upon part I, and that it has no seat at top, it being held suspended by the eccentric, L, which is controlled by the governor, whose connection, by the eccentric, with the valve is such that it never causes the valve to descend lower than is represented in Fig. 2. This suspending the valve avoids loss of power, and also insures an insinuation of sufficient steam into the valve to keep up a perfect lubrication of it, and thus avoid friction in case of expansion of the metal of the pis-

ton and valve; and it also has the advantage that it can be operated, although the governor balls descend with a regular and uniform motion with a quick speed when the balls first begin to dray, and with a gradually decreasing speed as the balls continue their descent, and with a continually increasing speed as the balls rise. This having the valve open to a greater extent with the same length of movement of the eccentric at the commencement of the falling of the balls than it does in a like length of movement of the eccentric in the continued descent of the balls, is essential, in order to meet a nearly full head of steam with the check given to the engine by the application of work to it.

This most excellent valve is the invention of S. B. McCray, of Grand Rapids, Mich., and a patent was granted to him September 7th, 1858. He will be happy to furnish any further particulars upon being addressed as above.

**Method of Treating Madder.**

J. Wright, of London, Eng., has recently invented a new process of treating madder for printing and dyeing. He takes madder in the ordinary raw state, and mixes it with water, or bran water, in the proportion of about one (by weight) of madder to about five of water. After allowing it to steep for a little time he puts the mass into a coarse calico bag, and subjects it to pressure in an ordinary press, receiving the expressed liquor into a vessel, which after standing for some time, forms a jelly, and afterwards separates into a solid and liquid form. He then washes thoroughly the resulting coloring with clear water, and strains it off. This, upon being reduced to a proper consistency with gum or mucilage in the usual manner, is ready to dye or print with. Instead of treating the jelly in the last described manner with cold water, it may be treated with dilute sulphuric acid, or any vegetable substance containing an acid, or even with common salt. Afterwards it must be thoroughly washed, so as to remove all trace of the acid, then strained, and pressed so as to get rid of the water. Upon being reduced to the proper consistency, as before, it is ready to dye or print with, or the water may be all evaporated, and a dry powder formed. He then takes the refuse madder left from the last operation, and treats it in a similar manner, that is, obtaining a jelly extract, using, however, less water than in the previous operation. Finally, he mixes the refuse madder remaining after these two operations, with warm water, and after allowing it to stand for a short while, boils it; a precipitate is thus formed, which, after running off the clear supernatant water, he treats with caustic potash, then washes well and strains. He precipitates the coloring matter from the mass of water by means of sulphuric acid after boiling; and care should be taken to wash out of the precipitate every trace of the acid. It may be advisable in some cases to neutralize it by means of an alkali. The residuum or precipitate thus obtained may be added to the products of coloring matter obtained from the first or second described operations. Instead of treating the refuse madder in the way described, it may be converted into garancine in the usual manner. Again, when he wishes to obtain a crimson, or darker shade of red color, he takes the product resulting from either of the two first-mentioned operations, and converts it into garancine in the usual manner. Furthermore, he proposes to form garancine of any precipitate or extract of madder, either using them separately, or with the garancine results last described. The invention includes other details.

[The Erie Canal contains more water and floats more vessels than any canal in Europe, and has 5,568 vessels on its register, of which 1,446 are larger than the one in which Columbus discovered America.]