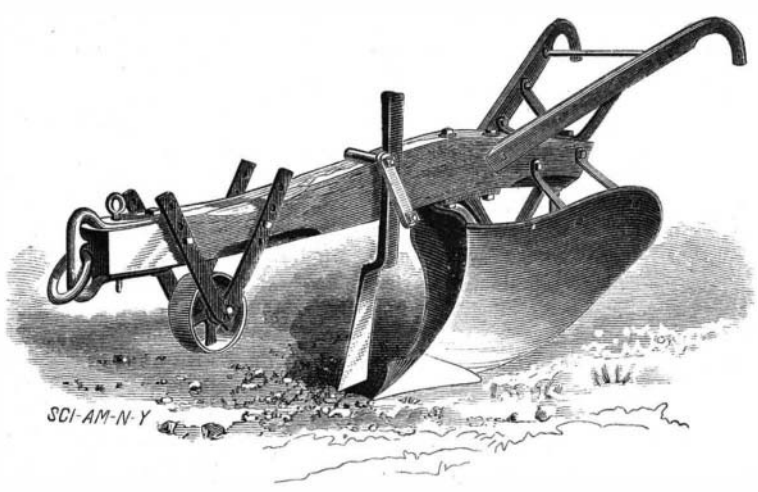
IMPROVED DOUBLE MOULD BOARD PLOW.

Our engraving represents an improved double mould board furrowing plow, which is designed to make a furrow from twelve to sixteen inches deep in previously plowed and prepared land, for planting sugar cane. The essential feature of the plow consists in making the mould board so that all its horizontal lines from the apex to the rear end are straight instead of concave, as heretofore made. This form presents the same angle to the earth all the way from front to rear, thereby avoiding the greater angle along the rear part which causes the earth to clog on that part until it fills up the concave to a straight line, making the plow draw very hard, not only by the greater friction of earth which does slide off, but because of the great mass of earth that is pushed ahead of the plow by reason of the resistance of the mould board. The mould boards are extended higher and lower and also further back in order to prevent the earth from running over or beneath the mould board back into the furrow when plowing deeply, and also in order that the angles of the boards may be made sharper for a given width of furrow.

This plow is now being manufactured by Messrs. Dillingham & Co., of Honolulu, Hawaiian Islands, who should be addressed for further particulars.



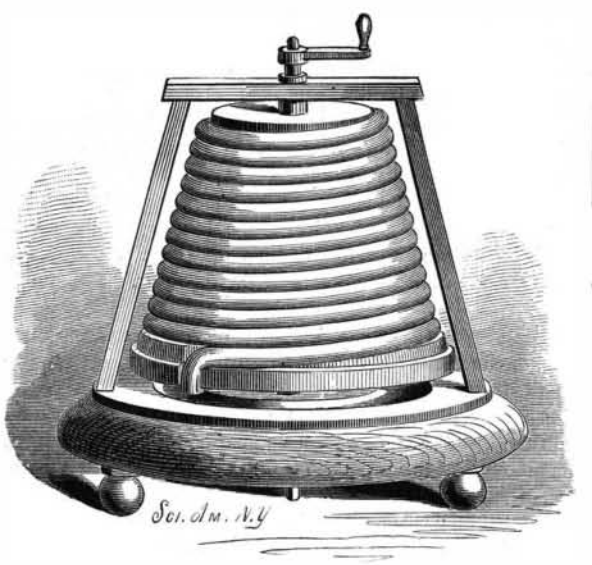
DILLINGHAM DOUBLE MOULD BOARD PLOW.

Fruit Jellies made without Fruit.

M. Girard, director of the Paris Municipal Laboratory, says that the chemical knowledge applied to the concoction of spurious foods and drinks is of a very high order, and would suffice to make the fortunes of the adulterators a dozen times over, if applied in an honest capacity. The matter which seems to have aroused him of late is a peculiarly ingenious thing in gooseberry jelly. It appears that the article is made entirely of seaweed. The coloring matter is fuchsine, and the flavor is given by a compound of acetic ether, tartaric acid, aldehyde, and œnanthic. Inspectors often recognize it from the fact that it is "a little more elegant than the genuine article." M. Girard ought to send over to a New York grocery if he wants first class jellies of all kinds made without the real fruit.

HOSE REEL.

The hose reel represented in the engraving is so constructed that every part of a hose wound upon it stands at an inclination in the line of its length, thereby causing the water to drain off from the interior. In the upper surface of the base, which may be supported upon legs, is a groove provided with a pipe leading down through the base. Rising from the base are uprights whose upper ends are secured by a cross piece, in the center of which and in the center of the base are journaled the gudgeons of the reel head. This reel head is made in the form of a truncated cone, and at its base is an inclined ledge having a hole through it at its thinnest part. Above the cross piece the upper gudgeon is provided with a crank by which the head may be revolved for reeling up the hose. In reeling, one end of the hose is first passed through the hole in the ledge when the crank is turned, so that the first coil of hose rests upon the inclined ledge. The next coil, coming upon the first, which is held at an inclination by the ledge, will also take the same inclination and will furnish an inclined support for the next coil, and so on. By this arrangement all the water in the hose will run into the groove in the base and be conducted away by the pipe. At the upper end of the reel head is a hook for holding the upper end of the hose. By the use of this device the interior of the hose is quickly relieved of water and kept dry without any extra trouble or attention.



BILLINGS' HOSE REEL.

This invention has been patented by Mr. Albert Billings, of Bergen Point, N. J.

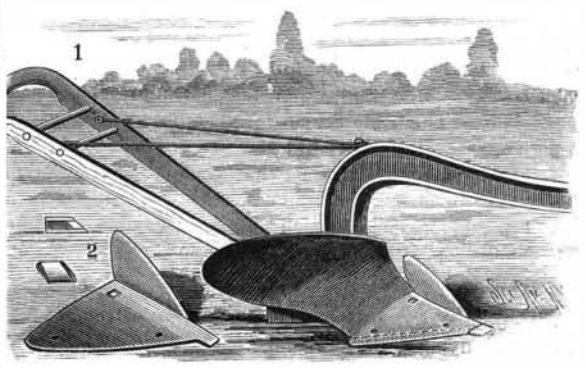
A PROCESS FOR FROSTING GLASS.—To give glass this appearance, it is only necessary to coat it with the following composition: Sulphate of magnesia diluted in beer, with a little dextrine added.

Poisonous Action of Metals upon the Microbia.

To obtain the microbia the author used sea water in which a small quantity of peptone had been dissolved. This liquid rapidly swarms with microbia. He found the metals fatal to microbia in the following order: Mercury, zinc, cadmium, copper, nickel, iron (ferric salts), barium, lithium, magnesium manganese, ammonium, calcium, sodium, and potassium. The poisonous dose for bacteria is in general about twenty times greater than for fishes. The author points out the extremely poisonous character of ammonium and potassium for fishes, while toward microbia they are comparatively inert.—*Ch. Richet.*

PLOW.

An invention recently patented by Mr. Adam C. West relates to the point of a plow, including the colter and share thereof, and is designed as an appendage or sheathing to the cast iron point of a plow, for the purpose of giving thereto good, durable steel edges, which may be sharpened as required. The point of an ordinary cast iron plow, either new or worn out, is covered with an attachment, to give it increased strength, durability, and ease in the performance of its work, which can be applied by a blacksmith of ordinary skill at a comparatively small cost.



WEST'S PLOW.

A steel covering plate is cut and bent to form the share and colter (shown detached in Fig. 2), which may be of any desired shape. The share is made to project over the right hand wing of the point about one and a half inches, or sufficiently to give a good, lasting steel cutting edge that may be sharpened if necessary. The whole may be made from a mainly triangular shaped plate, except the forward lip end, which lies under the detachable cap point (shown at the left of Fig. 2), the left hand portion of the plate being bent up to form the colter, the front edge of which is sharpened. The plate is secured to the cast iron point by the same bolt that holds the cast point to the plow, the bolt first passing through the steel plate, having a countersunk hole in it for the purpose, and by any number of rivets passing through both the steel plate and cast point, the heads being countersunk. The cap point is fitted over the lip end of the plate and the forward end of the point. It is formed of a steel plate cut into suitable shape, and bent around and welded to form a hood or sheath to the forward end of the point, and having a piece of steel welded in it at its front end, sufficiently large to permit of its being sharpened occasionally. The solid point of the cap is hardened to give it durability. The cap is fitted over the plow point by heating it and driving it on.

Further particulars concerning this useful device may be obtained by addressing Mr. Charles V. West, of Blanchard, Mich.

Attraction and Repulsion of Bodies in Motion.

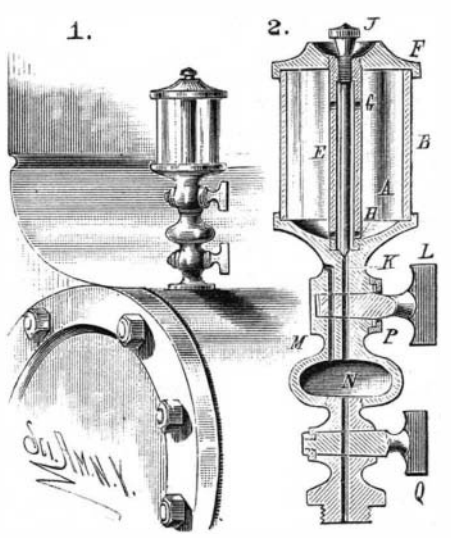
DR. MONKMAN.—The attraction of a light balanced body to a vibrating tuning fork was shown; also the attraction between two disks of paper revolving parallel and in the same direction. The author showed that two smoke rings traveling abreast in the same direction attracted each other, and that two paper rings revolving in the same direction close together attract, while if revolving in the other direction they repel.

Transmission of Power.

Will electricity enable us to transmit power in large quantities more efficiently than other means? Will it enable us to transmit small quantities? These questions were put to the Society of Arts, and answered by Professor Osborne Reynolds in his Cantor lectures as follows: Thanks to the experiments of M. Deprez, we can say that a current of electricity, equivalent to 5 horse power, may be sent along a telegraph wire one-sixth inch in diameter, some ten miles long—there and back—with an expenditure of 29 per cent of the power, because this has already been done. Compared with wire rope, this means falls short in actual efficiency, as Messrs. Hems send 500 horse power along a ¾-inch rope. To carry this amount, as in the experiment of Deprez, 100 telegraph wires would be required; these wound into a rope would make it more than 1·4 inches in diameter, four times the weight of Mr. Hems' rope. With the moving rope the loss per mile is only 1·4 per cent, while with the electricity it was nearly 6 per cent; so that, as regards weight of conductor and efficiency, the electric transmission is inferior to the flying rope. Nor is this all. With the flying belt, Mr. Hems found the loss at the ends, in getting the power into and out of the rope, 2½ per cent; whereas, in M. Deprez's experiments, 30 per cent was lost in the electric machinery alone, which is very small as such machinery goes. But this is not all. No account is here taken of the loss of power in transmission to and from the electric machinery. Taking the whole result, it does not appear that more than 15 or 20 per cent of the work done by the steam engine could have been applied to any mechanical operation at the other end of the line, as against 90 per cent which might have been realized with wire rope transmission.

ENGINE LUBRICATOR.

The lubricator herewith illustrated is designed for the cylinders of steam engines. The hollow stem, K, has a circular flange for supporting the glass cylinder, B, which forms the sides of the oil reservoir. The tube, E, forming a continuation of the stem, passes through the cylinder, and has a cap, F, screwed on its upper end for closing the upper end of the cylinder. The flange forms a concave bottom for the cylinder, and the tube is provided with perforations, G, near its upper end, and also with others, H, at the bottom of the cylinder, for the passage of air and oil, respectively, in filling and draining the cylinder. The upper end of the tube is closed by a valve stem, which is made smaller for the most part of the bore of the tube, and its lower end is made conical to adapt it to close the upper end of the bore, K, in the stem, while its upper end is made large enough to close the upper end of the tube into which it screws. In the stem just below the oil reservoir is a two-way plug, L, having one way turned into alignment with the bore, K, in the stem, and the other way aligning with the bore, M, which is formed in the stem parallel with the bore, K, and leading from the interior of the oiling chamber, N, to the outer air. The plug, L, is made slightly tapering, with a reduced portion at its outer end which carries an annular packing nut, P, screwing on a boss of the stem. The oiling chamber is formed in the body of the stem, and is closed from the steam cylinder, into which the stem is to be inserted, by a second plug, Q, having a single way aligning with the bore, K, when turned to proper position. The reservoir is filled with oil through the tube, E, the plug, L, being closed and the plug, Q, opened. When filled the valve stem is returned to position, the lower plug is closed, and the upper plug opened. Then by lifting the valve stem a given quantity of oil is allowed to descend into the chamber, N, forcing the steam therein out through the bore, M. The quantity of oil allowed to descend from the reservoir is gauged by a graduated scale on the glass cylinder. After the desired quantity has descended, the upper plug is closed and the lower one opened to allow the oil to pass into the steam cylinder.



HORN'S ENGINE LUBRICATOR.

This invention has been patented by Mr. William J. Horn, of 606 West 12th Street, Chicago, Ill.