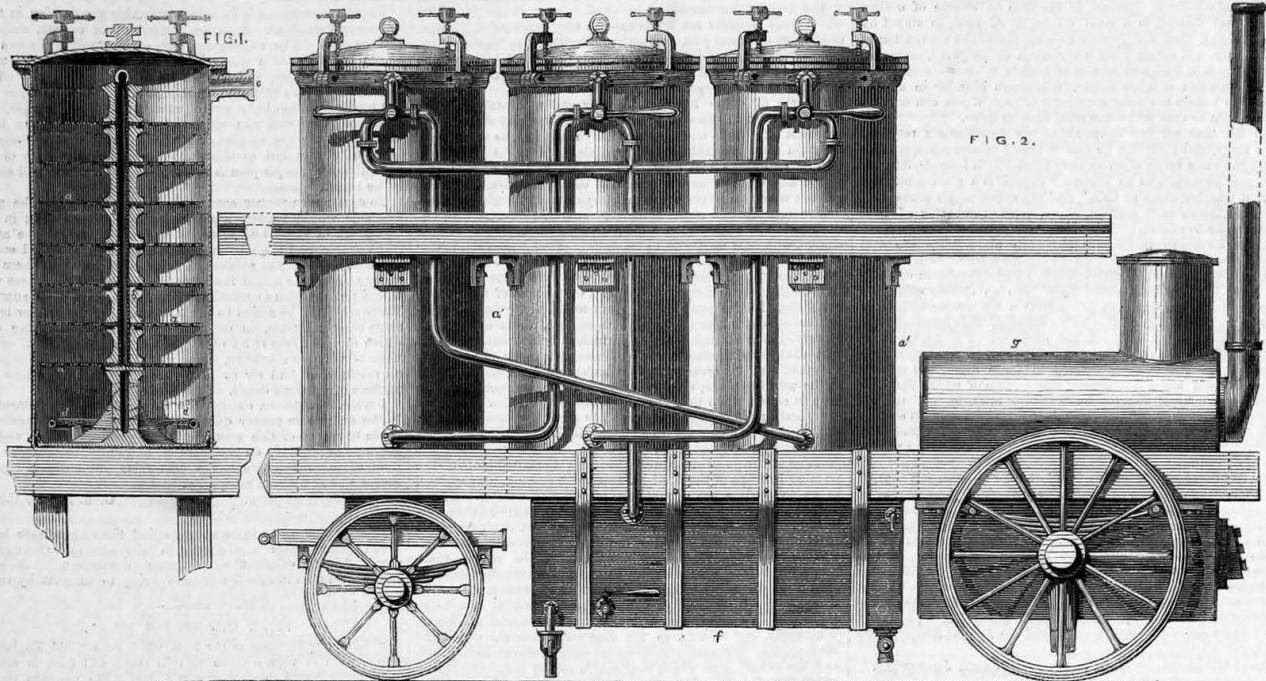


BURRELL'S PORTABLE APPARATUS FOR DISTILLING BEET ROOT, &c.

PATENT DATED 14TH JULY, 1856.¹



The object of this invention is to arrange stills so as to render them suitable for distilling from beet root and other vegetable substances, and at the same time to render the apparatus portable. The improvement consists in combining a still and refrigerator upon wheels, so that the whole apparatus may be moved from farm to farm in order to distil off spirit from beet or other vegetable substance.

The description of vegetable matters preferred to be used are beet-root and Jerusalem artichokes, though other vegetable matters capable of fermenting and giving off alcohol by the treatment described may be used. The roots to be used are first to be well washed, and then cut up in slices, which are preferred to be about a quarter of an inch thick. The cut roots are fermented in the following manner:—A number of wooden vats or vessels are provided, according to the extent of distilling apparatus employed. At the commencement, each vat or vessel is filled about half full of water, with as much of the cuttings of the roots as the water will cover. For each 2,630 lb. of the cutting of the root employed is added a small quantity of malt, and at intervals from 2 to 5 lb. of sulphuric acid is also added, mixed with about ten times its measure of the liquid from the tubs. The fermentation is generally complete in from 14 to 16 hours. The vessels or vats are covered during the fermenting process with wood

covers, and the contents are kept heated by steam pipes from about 26° to 28° of Centigrade's thermometer. The fermented cuttings of the roots are then removed from the liquor in the vessels or vats by perforated shovels or sieves, and the cuttings are placed on perforated trays, and a series of these trays are placed one over the other in a still. Fresh cuttings of the roots are then put into the liquid remaining in the vats or vessels, and they are fermented, as before stated, but it will not be necessary usually to add more sulphuric acid or malt for the successive quantities of the cuttings of the roots, but if any want of fermentation is indicated, a small addition of malt may be introduced, say, once a week. It is found that roots fermented in March do not require so much acid as roots fermented in November. In place of acid, neutral salts may be used, sea salt or common salt. The quantity of salt used for each fermentation of 2,630 lb. of cuttings is from 10 to 12 lb. The stills used are such as are shown in Fig. 1, and a series of these stills is shown at Fig. 2 mounted on a carriage with a steam boiler, in order that the distilling apparatus may be removed from farm to farm with a view to save the carriage of the roots, and at the same time have the residue of the roots for feeding cattle on the same farm where the roots have been grown. The apparatus shown consists of three upright cylindrical vessels, each con-

taining a series of trays, but more or less of such distilling vessel may be mounted on the same carriages. The trays *a, a'*, are kept separate by the tubes *b, b'*, and the whole are lifted in and out of the distilling vessel *a'* by a rod *c*. Each distilling vessel *a'* is provided with a perforated coil of pipe *d*, through which steam is passed, and the product distilled off passes from the still *a'* into the pipe *e*, and thence to a suitable refrigerating apparatus at *f*. In Fig. 2, the arrangement of the connexions is such, that the steam may be caused to enter one only of the stills, and the products of such still may then pass into the bottom and rise up amongst the matters on the series of trays contained in it, and from the second to the third; and by the cocks and connecting pipes, the order in which the several distilling vessels may be used may be varied from time to time, the steam being let first into the vessel where the most spent roots are placed or otherwise, or only one or two of the vessels may be in use, if desired, without employing the others. The steam boiler is shown at *g*, which is to be furnished with suitable means of keeping up a supply of water, and with a safety valve, a steam supply pipe, and cocks, in order to supply steam to the perforated coils of pipe in the distilling vessels, and a water gauge of the ordinary description.

LANCASTER'S METHOD OF INKING AND STAMPING SURFACES.

PATENT DATED 10TH JULY, 1856.

This invention consists in mounting an inking roller upon an arm or lever so that when the stamping or printing surface is at rest the roller is held clear of it, and when the printing surface moves it acts

roller to their original position, and causes the inking roller in its course to travel a second time over the printing surface.

Fig. 1 represents a side elevation of a desk or counter printing apparatus, with this method of inking the printing surface applied to it; and Fig. 2 is a view of the inking roller and arm detached.

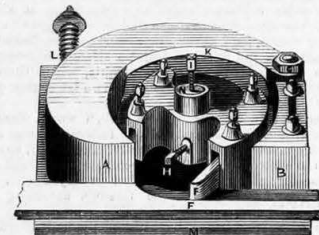
A is an arm or bracket, cast in a piece with the base B, having at its top a boss or hollow head B¹, in which there is a longitudinal groove *a*. To the bottom of the rod C is fitted a wood or metal frame D, which receives a stamp or block, or set of types D¹. E is a handle or button on the top of the rod C; and C¹ is a guide on the rod which works in the groove in the boss B¹. The inking roller F is mounted on an arm F¹ of the lever F², the end *b* of which is bent at right angles or nearly so to the lever F², and passes through a hole at *c* in the bracket A, where it is secured by a pin. G is a helical spring, hooked at *d* to the bracket A, and at *e* to the lever F², and keeps the roller F raised, when the apparatus is at rest, clear of the under side of the printing surface or block D¹. J is a pin fixed in the side of the frame D, which, when the rod C is depressed, causes the inking roller F to traverse under and ink the stamp or printing surface D¹. A spring H is attached at top to the bent pin *g* fixed in the boss B¹, and at bottom to the neck of the button *h*, which is screwed into the frame D. This spring H draws up the rod C and the printing surface, on the hand being withdrawn from or releasing the handle E, after having effected an impression. To use the apparatus, any required stamp or type is fixed in the frame D, and printing ink is distributed evenly over the roller F. The rod C is depressed, by which the inking roller will be caused to travel under the printing surface or stamp, and an impression thereof will be produced upon the paper, cloth, or other material placed under it, the inking roller lever, printing surface, or stamp and rod, all assuming the position indicated by the dotted lines in Fig. 1. Upon withdrawing the pressure from the rod, the springs G and H return the parts to their original position, and the apparatus is ready to make a fresh impression. It will be observed that the inking roller passes twice over the printing surface or stamp, once as the stamp is descending, and again when it ascends. When the apparatus is not in use a metal cover or case is slipped over the inking roller, in order to protect it from dust and dirt.

POST-OFFICE AUTOMATON.—M. Salles, *arpentier* to the Emperor Napoleon, has invented a post-office automaton, which takes up every letter as it is thrown in the box, places it under the stamp, where it receives the postmark and date, and throws it out again for delivery to its destination. The process indicates the number of letters thus stamped. It is said that no less than 200 letters may be stamped by this machine in one minute. The General Post-Office has made a trial of the invention, which has turned out satisfactory, and it is now in treaty with M. Salles for machines to be furnished to all the principal post-offices throughout France. The illegibility of post-marks, so often complained of, will, it is said, be completely obviated by the use of the automaton.

STEAM CORVETTE GALATEA.—Extensive preparations are in progress in order to expedite the construction of the 26 heavy gun steam-corvette, Galatea, in Woolwich dockyard. A number of the frames are got together, and are ready to be laid down. The shed from which the Scout was launched a few weeks ago is being considerably extended beyond its former space, as the prescribed length of the Galatea, 330 feet, will exceed that of any ship hitherto built at Woolwich.

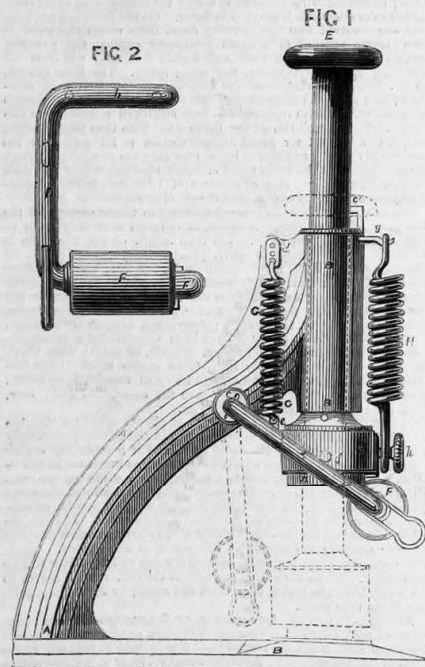
TONGUEING AND GROOVING MACHINERY.

The annexed figure is a perspective view of an improvement in edge cutters for tongueing and grooving machinery, to match boards, &c., in a superior manner, and more rapidly, it is alleged, than by the common tongueing and grooving machines.



The cutters are provided with a mouth-piece A, which, by the action of the spring L, presses against the edge of the board E, thereby holding the fibre from splitting or tearing, while the cutters F, act upon the board. The mouth-piece having its centre of motion at C, always keeps its inner edge practically the same distance from the path of the cutter, thereby holding the fibre perfectly firm under all circumstances, whether the cutters be reducing much or little. B is a guide to steady the material as it passes out of the machine. H is a set-screw to hold the cutter head upon the spindle. I is a set-screw to raise or lower the cutter head. N is an oil hole to oil the bearing; M is the bed plate; K is an aperture for the shavings to pass out; J J J are set screws to hold the cutters in the head. This improvement is applied to the surface cutters, and can be applied to the common Woodworth machines. The mouth-piece A, serves to hold the fibre of the timber while operated upon by the cutter, thereby preventing the tearing and splitting of the wood, although it may be cross-grained and knotty.—*Scientific American*.

THE ASSOCIATION FOR THE PREVENTION OF STEAM-BOILER EXPLOSIONS, &c.—The usual monthly meeting of the Committee of Management of this association was held on Tuesday the 24th inst., at the office of the secretary, Mr. Henry Whitworth, 13, Corporation-street, Manchester, where the chief inspector, Mr. R. B. Longridge, presented his monthly report, from which we have been furnished with the following extracts:—During the present month 257 firms have been visited, 673 boilers inspected, and 69 engines indicated. The principal defects which have been observed in these boilers are as follows, viz., three boilers dangerous from over pressure, three from corrosion or fracture of plates, three from injury resulting from deficiency of water, eight injured from the same cause but not considered dangerous, three not provided with sufficient safety-valves. In two cases the water-gauges were found inoperative, and in four others the pressure-gauges very far from correct.



upon the lever, presses it back, and causes the inking roller to traverse over and ink the printing surface. Upon the printing surface resuming the position from which it started, a spring draws the lever and