MARCELIN LANDRY'S

IMPROVED APPARATUS FOR DEFECATING OR BLEACHING CANE-JUICE.

117787

PATENTED AUG 8 1871

Fig. 1.

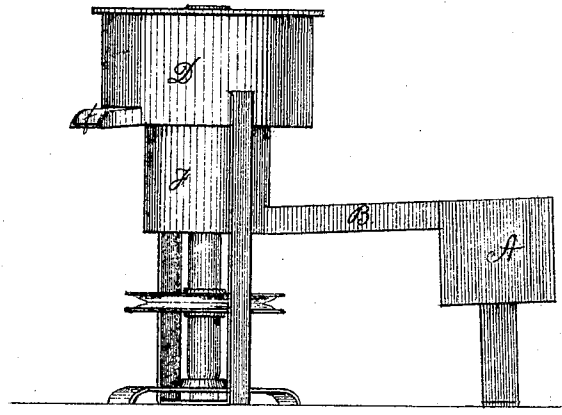
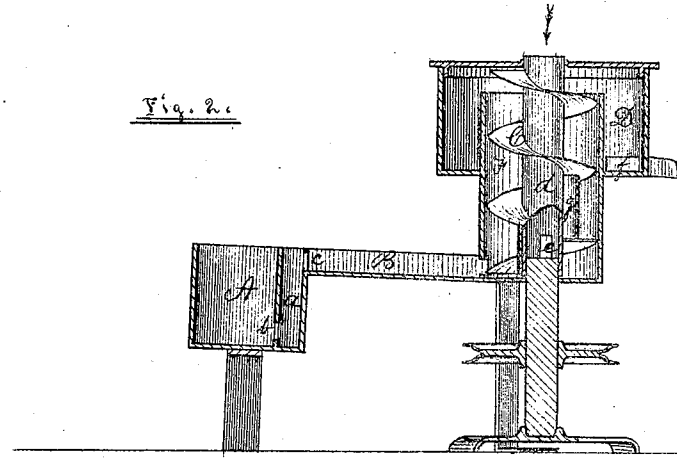


Fig. 2.



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MARCELIN LANDRY, OF IBERVILLE PARISH, LOUISIANA.

IMPROVEMENT IN APPARATUS FOR DEFECATING AND BLEACHING CANE-JUICE, &c.

Specification forming part of Letters Patent No. 117,787, dated August 8, 1871.

To all whom it may concern:

Be it known that I, MARCELIN LANDRY, of Iberville parish and State of Louisiana, have invented a certain new and useful Improved Apparatus for Defecating or Bleaching Cane-Juice and all other saccharine liquids with the fumes of sulphur; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing making a part of this specification, in which—

Figure 1 is a side view of my said apparatus as when ready for use, and Fig. 2 is a vertical sectional view of the same.

Experience has demonstrated to all sugar-makers that no perfect bleaching or defecation of saccharine liquids can be thoroughly effected with the fumes of sulphur, no matter what the extent of degree of the purification of the same, unless every particle or atom of the liquids be brought into actual contact therewith. Keeping this fact in view, it will be easily comprehended that in the creation or fabrication of a mechanical organism, through the agency of which it is designed practically to apply the fumes of sulphur to purposes of defecation, whether the subject to be operated upon be cane-juice or some other saccharine substance or liquid, it is imperatively necessary to incorporate therein special instrumentalities for distributing, diffusing, and disseminating the fumes throughout every part of the liquid that is to be bleached, in order effectually to attain perfect and satisfactory results; and in the accomplishment of these results it is likewise equally and imperatively essential that the substance to be operated upon should not be subjected, by the mechanical means employed, to unnecessary beating or agitation, whereby its granulating and crystallizing capacities, as well as the quality of sugar produced therefrom, may be impaired, and a consequent disproportionate yield of molasses from a given quantity of juice as compared with the quantity of sugar obtained, which so often astonishes and puzzles the manufacturer if it does not subject him to serious loss. The object of my invention is to secure, in a simple, cheap, but effectual manner, the thorough impregnation of every particle of the liquid with the sulphur fumes, in order to produce in the said liquid the desired chemical effects and the consequent production thereby from the juice of a beautiful, uniform, light-colored, and well-granulated sugar.

My invention, while it admits of a thorough diffusion of the gas throughout the liquid, as desired, subjects it to no damaging or injurious commotion or agitation, as do most of the machines or devices hitherto known, invented, and now in practical use. My invention consists of mechanical agencies of peculiar and novel construction and arrangement for accomplishing the above-enumerated important results, and will be more quickly and clearly understood by reference to the drawing, in which—

A represents an elevated receptacle for the cane-juice as it flows directly from the grinding-mill. Within and at one side of the above receptacle there is a tubular box or conduit, *a*, perforated at or near the bottom, as shown at *b*, Fig. 2, through which the juice or liquid passes into and up through the said conduit to an outlet, *c*, which is at a point below its top surface. By the above arrangement it will readily be perceived that the liquid is invariably drawn from or near the bottom of the main or principal receiver, where it is at all times comparatively free from the fibers of the cane, which always are a necessary accompaniment to raw cane-juice when flowing directly from the mill. All fibrous material will, from its own buoyancy, naturally float to the surface of the liquid in the receiver, whence it may be conveniently removed at pleasure as operations proceed. The conduit for the liquid from the bottom of the receiver can be constructed either within or without the same, should occasion require it, without in any manner deviating from its usefulness as a clarifying or cleansing medium, for which it is intended. From the outlet of the conduit above mentioned, the juice, now freed from woody, fibrous substances, flows by its own accelerated hydraulic power along the inclined truncated box or trough B to the bottom of the spiral plate-screw, by which it is elevated when in motion to the inclosed receptacle shown on the plan and indicated by D. That portion of the vertical shaft *d* which is inclosed when in operation, and around which the plate-screws are wound or wrapped, is made hollow, and thus serves the purpose of a conduit for the passage of the sulphur fumes received at its apex, and conducted thence down to the outlet *e*, where it comes directly in contact with the ascending liquid.

Motive power is imparted to the vertical shaft *d* at the horizontal pulley by means of a chain,

rope, or band, which may be connected directly with the crushing-mill machinery, or with any other power whatsoever which may be conveniently accessible. This shaft, or at least that part of it which is hollow, and likewise the plate-screw, should be made of metal, either of thin copper or of iron, and this is all of the apparatus, except the step, the pulley, and the journals in which and through which the shaft works, which it is necessary to construct of metal. All the other parts of which it is composed may be made of wood, with staves and metal banded, or with planks, and in any desired form, as convenience or fancy may dictate, and without in any manner whatever deviating from the peculiar and characteristic features of my invention, or without impairing in any degree its efficiency.

Motive power having been imparted to the shaft by the means aforesaid, and as a consequence to the screw, and having attained the required speed, and the liquid coming into contact therewith at its lowest point, will, by the accelerated horizontal rotary motion thereof, bear the same relation to this screw that a threaded nut would if fitted and placed upon it, and therefore the said liquid will be elevated and discharged into the outer receiver D, whence it is discharged at *f*, to be conveyed to the evaporating apparatus. The liquid in ascending the spiral plate-screw will naturally, and from the centrifugal force imparted to it by the rapid revolutions of the shaft, be thrown upon a tangent, and therefore impinge against the inner side of the casing F which incloses the screw. In the intervening space between the liquid now thus impinged against the inner side of the casing aforesaid and the shaft there will be created a vacuum, into which the sulphur fumes will be drawn, as with a powerful pump.

It will now be perceived that in the operations herein described the liquid will be constantly exposed to the direct action of the sulphur fumes from the time it enters the orifice at the bottom of the plate-screw until it is discharged from the discharging-tank at the outlet *f*, and has thus become thoroughly impregnated with the gas, and that too without having been, by the very limited mechanical means employed, subjected to unnecessary and injurious agitation.

I have mentioned in this specification the use of but one spiral screw; but it may be necessary sometimes, and under peculiar circumstances of the condition of the liquid, to use two or more spiral screw-plates wound about the same vertical shaft, the object to be attained by such an addition being the increased additional cutting of the ascending liquid, the more effectually to present it to the action of the sulphur fumes. The projecting plate *g* near the orifice in the vertical shaft, at the bottom of the screw, is intended to assist in the formation of a vacuum at said point, as well as to prevent the liquid from the feeding-conduit ascending the inner side of the hollow shaft.

The different parts of my invention, separately considered, I do not claim as new; but the apparatus herein described presents a new, useful, and novel combination and arrangement, and as such I desire to secure by Letters Patent the following claim:

The combination of receptacle A, conduit *a*, and trough B with the receivers or defecators F and D, and shaft *d* with one or more spiral plate-screws C, openings *e*, and guard *g*, arranged as described and for the purpose set forth.

MARCELIN LANDRY.

Witnesses:
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