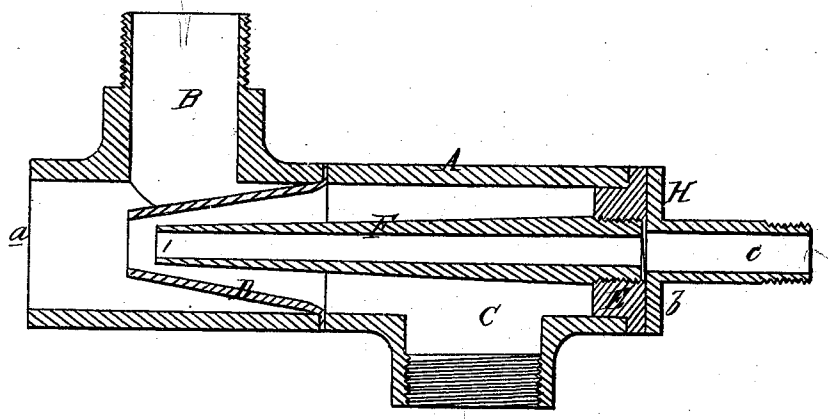
J. C. Marsh.

Treating Cane Juice.

No. 98,285. Patented Dec. 28, 1869.

Fig. 1.



Witnesses.

Rufus R. Rhodes

H. N. Jenkins

Inventor.

Jno C Marsh

United States Patent Office.

JOHN C. MARSH, OF ALEXANDRIA, LOUISIANA, ASSIGNOR TO GEORGE R. MARSH, OF SAME PLACE.

Letters Patent No. 98,285, *dated December* 28, 1869.

IMPROVED APPARATUS FOR BLEACHING AND DEFECATING CANE-JUICE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN C. MARSH, of Alexandria, in the State of Louisiana, have invented a certain new and useful Improvement in Machines for Bleaching and Defecating Cane-Juice; 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, whereon a sectional view of it is given.

My invention has especial reference to the defecation or bleaching of cane-juice, or other saccharine liquid, by an infusion and dissemination therein of sulphurous-acid gas.

The economy involved in the use of the fumes of sulphur, in the defecation of cane-juice, as well as the effectiveness of the same as a chemical agent to accomplish that object, has given rise to the fabrication of a great variety of mechanical arrangements having in view a complete dissemination of such fumes through the juice subjected to their action, for it has long been known that the bleaching of the same extends only to such parts as can be brought in direct contact with the gas.

It does not matter how short the period of contact may be, because the chemical effect is instantaneous; but there must be a positive contact of the fumes with every particle of the juice, or the defecation is imperfect.

No existing sulphur defecating-apparatus, so far as my knowledge extends, is capable of effecting a thorough dissemination or distribution of the fumes throughout all parts of the juice, and hence there is room for improvement as to them all.

My invention discards water-boxes for purifying the fumes, and, in fact, it dispenses with the use of water in every form for such purpose, for, in my opinion, no such purification is needed; the action of the lime, which has to be used in any event, being sufficient to free the juice, in the process of evaporation, in the reduction of it into sugar, of sulphuric acid and sublimed sulphur, be the quantity of the same that has been infused into it, in the operation of defecation, greater or lesser.

Nor does my invention require any revolving or otherwise acting mechanical appliances for stirring or agitating the liquid, in order to bring about a dissemination of the gas therein. For it consists of a very simple arrangement of pipes, which, providing for the flow of the gas into the juice-receiver, at a point in close proximity to the orifice through which the juice enters the same, enables me to bring to bear a current of steam to force the gas into the juice with such power as to insure a distribution of it throughout the entire mass of the juice, and thus effect a direct contact of the former with every particle of the latter, and a consequent thorough defecation of the same.

But my invention will be more clearly understood by referring to the drawing, on which—

A marks a section of a pipe, at the end *a* of which is the connection made with the cane-juice receiver.

B is a side-pipe, leading into A, through which the juice enters the latter, and which, it will of course be understood, connects with the conduit-pipe from the mill, or pressure-rollers by which the juice is expressed from the cane.

C is another side-pipe that enters A a few inches behind, or farther from the receiver than does pipe B. Through this side-pipe C, sulphurous-acid gas passes from the sulphur-furnace into A, and thence into the receiver.

Between the side-pipes C and B, a hollow truncated cone, D, is placed and fitted, as shown on the drawings, in such a manner as that its open apex will point toward the receiver, and extend under the opening B, as shown.

The object subserved by this appliance is, the reduction of the vent or opening through which the gas is driven, in order that the effect of the current of steam may be increased.

At the end of the section of pipe A is a close-fitting diaphragm, E, through which there is a central aperture, provided with a female screw, into which pipe F is fitted or screwed.

This pipe F is considerably smaller than the opening at the apex of the cone D, and it occupies the relation to this cone that is shown on the drawing; that is to say, its extremity, at which the steam escapes, is placed a little behind the point of escape of the gas, in order that the propulsive force of the steam may be increased.

Upon the outside of the diaphragm E is placed a covering head or cup H, through which a central opening, corresponding with the opening in E, leads into a pipe, *c*, which, in its turn, connects with the boiler in which the steam is generated that is used in the operation of the machine. The head H, in fact, constitutes a part of pipe *c*, being a flanch surrounding the end of the same, that connects with the opening through diaphragm E. It is secured in its place by strong outside straps, &c., that are not shown on the drawing, and being so, holds the diaphragm in its place.

To make the joints in my invention tight, packing of suitable form, of any proper material, may be used if necessary.

The operation of my invention is so simple that it is indicated by the slightest inspection of the drawing, and hence it will suffice for me to say that all that is

necessary to apply it to practice, is to make the necessary connections with the receiver, the juice-expression mill, the sulphur-furnace, and the steam-boiler.

I have demonstrated, by experiment, that with my invention the defecation of cane-juice is more perfect than can be effected with any other apparatus now in general use, and hence I conclude the dissemination of the gas by it is nearly, if not perfect, throughout every part of the juice.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

The mode herein described of disseminating sulphurous gases in and through saccharine liquids, when the same is carried into effect by the apparatus herein described, the same being constructed in all its parts and operating as specified, for the purpose set forth.

Witnesses: JNO. C. MARSH.

RUFUS R. RHODES,

H. N. JENKINS.