

M. S. BRINGIER.

Improvement in Apparatus for Extracting Saccharine
Matter from Sugar Cane.

No. 124,030.

Patented Feb. 27, 1872.

Fig. 1.

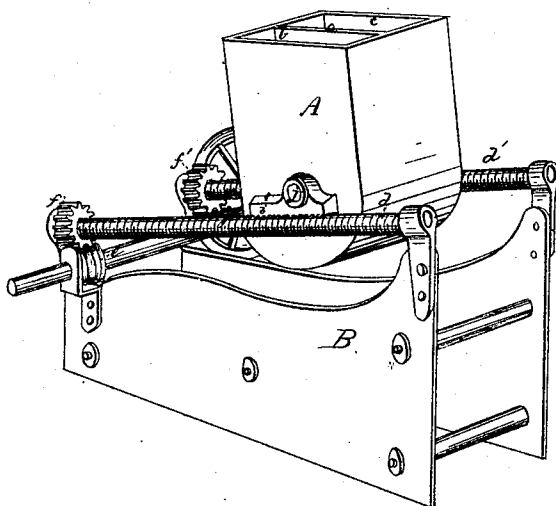
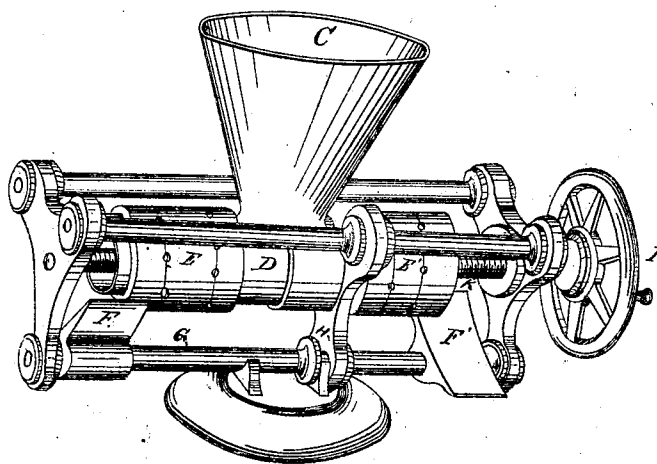


Fig. 2.



Witnesses:

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IMPROVEMENT IN APPARATUS FOR EXTRACTING SACCHARINE MATTER FROM SUGAR-CANE.

Specification forming part of Letters Patent No. 124,030, dated February 27, 1872.

I, MARIUS S. BRINGIER, of the Parish of Ascension, in the State of Louisiana, have invented a new, useful, and Improved Apparatus, and Process to be used in connection therewith, for Extracting the whole of the Saccharine Matter that is contained in the Sugar-Cane or other vegetable substances in which the saccharine element exists; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, whereon all that I claim as pertaining to my invention is amply illustrated and clearly shown.

Before proceeding to describe my invention, it is proper to premise that, by the most approved method now practiced in the manufacture of sugar, only about six per cent. of sugar and molasses, combined, are obtained from sugar-cane that is grown in the United States, the West Indies, or other sugar-producing countries, notwithstanding that there is about fourteen per cent. of pure saccharine matter contained in the same. The reason why so great a loss is sustained (to state it briefly) arises out of the fact that, in expressing the juice that is subsequently evaporated or reduced to make the sugar and molasses that are actually obtained, the means employed—to wit, the pressure-rollers—are insufficient to break or crush the fine cellular tissues or membranes which constitute the walls of the minute vesicles in which the saccharine—either in liquid or solid crystal form—is contained, and, hence, there cannot be a complete extraction or expulsion of the same. The juice is to some extent expelled, and with it a part of the crystal saccharine; but, as I have stated, the greater portion of pure saccharine remains in the bagasse, which is either thrown away or consumed as fuel in the furnace of the sugar-mill.

My improvement dispenses entirely with the ponderous pressure-rollers, as well as other expensive machinery that enters into the composition of the most approved existing sugar-mills, and by reducing the whole cane or other saccharine product employed to a condition of infusibility, by cutting or by thinly slicing the same by any convenient means, or by any convenient mechanical appliance, and then, by a process of infusion and subsequent pressure, effected through the agency of my device, as hereinafter fully described, thoroughly and

completely to extract all the saccharine properties with which the said cane or other saccharine products may be impregnated, and to convert the same into sugar. The object sought to be attained by my invention, is, therefore, precisely similar to that which is set forth in my "improved process for extracting saccharine matters from sugar-cane," for which Letters Patent of the United States were granted to me under date of November 11, 1867, and numbered 70,691; but the mechanical means, as well as the process employed in my present device, are essentially different, and, as I have demonstrated by experiment, practically superior and far more efficient. But my invention will be more clearly understood by reference to the drawing.

Figure 1 is a perspective view of that part of my apparatus which I employ for the purpose of steeping in warm water the finely-cut or divided cane. Fig. 2 is a perspective view of that part of my devices employed for the purpose of pressing out all the saccharine liquid that remains from the bagasse after the same has been thoroughly steeped.

The above illustrated apparatus, though not complete in all the machinery and connections necessary to make the same practically operative, yet I believe to be amply sufficient to render my invention perfectly understood by any intelligent mechanic skilled in the art of sugar-making.

A, of Fig. 1, represents one of a series of receptacles, each of which is subdivided by partitions, as shown at *a*, into two or more infusion or steeping chambers, *b* and *c*, which, at their lower bases, communicate with each other by means of suitable openings for the free passage of the liquid as it flows from one chamber to another. These receptacles A are placed closely together upon a movable carriage or platform, or upon inclined screw-threaded bearings *d d'*, each of which is made to revolve toward the receptacles A by means of suitable gearing, shafts, and pulleys, as shown at *e, f, f'*, and *g*, and communicating in any proper manner with any suitable motive power at hand. The forward motion of the carriage or platform, or the revolutions of the bearings *d d'*, when these are employed, and when the receptacle A is also provided with bearings *i*, which bearings are likewise screw cut or threaded, will

carry the said receptacles A to the forward end of the frame B, whereupon it is turned over by means of the oscillating bearings *j*, and its contents of bagasse discharged into the hopper C of Fig. 2. The empty receptacle A is now taken, by means of a crane or any other suitable mechanical appliance, back to the rear end of the frame B, where it is again filled with the thinly-divided bagasse, as aforesaid. In the meantime the other receptacles, not necessarily shown on the drawing, are moving forward up the incline to be discharged into the hopper C of the pressing-machine, as above described for the receptacle A. These said several receptacles are connected by means of flexible pipes, and warm or hot water, which is supplied from a tank, or from any other convenient source, is admitted into one of the chambers of the forward receptacle; and as the steeping or infusion chambers of each receptacle communicate with each other, as above stated, the hot water thus admitted will, by its own gravity, circulate freely through all the chambers and through each receptacle containing the cane, and finally be discharged therefrom thoroughly surcharged with all, or nearly all, of the saccharine properties with which the cane was impregnated before being subjected to the infusion process above described. The hopper C, of Fig. 2, is open at the bottom to admit the cane discharged therein directly into the cylinder D, provided with a piston-head, which is removable upon a screw-piston rod, *k*. The cylinder D is furthermore provided with the sliding collars E E', which project at a convenient distance beyond the ends of the cylinder D, so that, when the cane has been sufficiently pressed therein to expel all the liquid therefrom, it may be allowed exit from the said cylinder D and projecting collars E E', over the pivoted platforms or aprons F F', to be conveyed away and used for the manufacture of paper, food for animals, or any other purpose for which it may be found suitable. The pressing apparatus of Fig. 2 is placed upon a suitable platform or base, and it is secured thereto in such a manner as to be inclined or oscillated upon the bearings G and H, so

that the mouth of the hopper C may be conveniently adjusted to the proper angle for the reception of the cane as it is discharged therein from the steeping or infusion receptacles above described.

The process of compressing the said cane is effected within the cylinder D, and jackets or collars E E', by the revolutions of the screw-cut piston-rod *k*, upon which is placed the movable piston-head before mentioned and described, to which any motive-power may be applied by a pulley or crank, as shown at I.

My invention, it will be perceived, secures all the saccharine properties that the cane contains, and, by means of the process of maceration, steeping, or infusion, above described, will be reduced to a condition suitable for the utilization of its vegetable fibers, and hence it is not only of great value to the producers and manufacturers of sugar, but to the public generally.

The process of filtration, purification, or defecation, and finally of evaporation of the saccharine liquid extracted from the cane or other vegetable product used, in the manner and by the means above explained, need not herein be described, because constituting no part of my invention.

Having described my improvement, what I desire to secure by Letters Patent, is the following—

Claims.

1. The receptacle A, divided into compartments *b c*, communicating as stated, screws *d d'*, bearings *i i* having a screw-thread, and oscillating bearings *j j*, the same being so combined and arranged to operate substantially as described.

2. The hopper C, cylinder D, having a removable piston-head, screw D, sliding collars E E', and pivoted platforms or aprons F F', the same being so combined and arranged as to operate substantially as described.

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Witnesses:

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