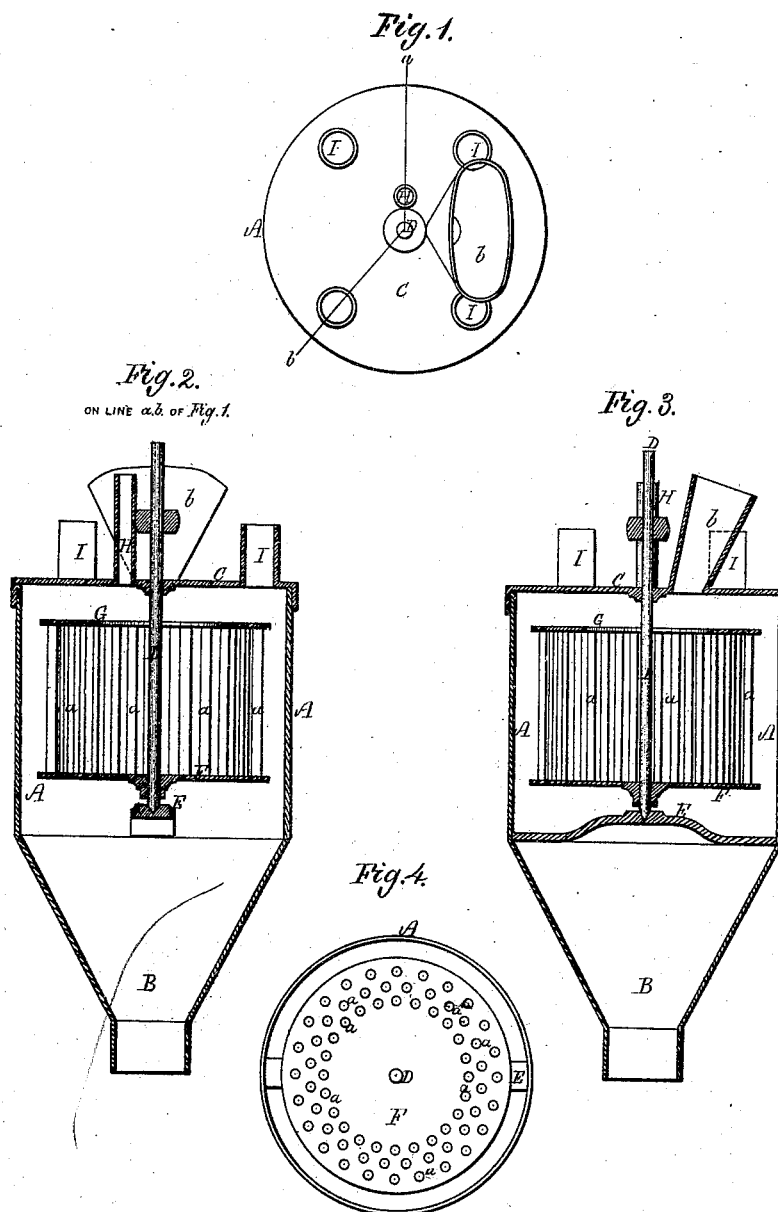


*M. Hanford,*  
*Bleaching Sugar.*  
*No. 110,972.      Patented Jan. 17. 1871.*



*Witnesses.*  
*Edward Griffith.*  
*P. C. Headley*

*Melancihon Hanford.*  
*by his Attorney*  
*Frederick Corliss*

# United States Patent Office.

MELANCTHON HANFORD, OF LEXINGTON, MASSACHUSETTS.

Letters Patent No. 110,972, dated January 17, 1871.

## IMPROVEMENT IN MACHINES FOR MIXING AND BLEACHING SUGARS.

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

*To all to whom these presents shall come:*

Be it known that I, MELANCTHON HANFORD, of Lexington, in the county of Middlesex and State of Massachusetts, have made an invention of a new and useful Machine for Mixing and Bleaching Sugars; and do hereby declare the following to be a full, clear, and exact description thereof, due reference being had to the accompanying drawing making part of this specification, and in which—

Figure 1 is a plan;

Figures 2 and 3 are vertical sections; and

Figure 4, a horizontal section of a machine embodying my invention.

This invention relates—

First, to means for thoroughly mixing, at a small expense, "soft sugars," so called, in order that the mass may present a uniform color; and

Secondly, in combining with a device for thus treating sugars a means of bleaching and lightening the color of the same, for reasons well known to persons accustomed to the refining of sugars.

The invention consists, first, in the employment of a series of upright rods or bars, disposed within an outer drum or casing mounted upon a revolving disk or platform, and united at top by an annular rim or plate, the rods being arranged concentrically about a perpendicular shaft, which supports them and their disks, and producing, by their arrangement, numerous narrow interstices, through which the sugar is compelled to pass by the centrifugal force which the rotation of said rods, in aggregate, generates, the sugar being introduced into the top of the drum, and within the concentric circle formed by the rods, and escaping therefrom, as hereinafter stated; and

Secondly, this invention consists in combining with the aforesaid drum and the cluster of rods revolving therein one or more central air-inlet pipes or orifices and a number of outer air-escape pipes, the former permitting entrance of air, generated by the revolution of the rods, to the center of the annular inclosure formed by such rods, and the latter presenting the means whereby such air, after circulating throughout the interstices between the rods, and the sugar at the time distributed thereabout escapes from the drum, in manner to be hereinafter stated.

The drawing accompanying this specification represent, at A, an upright cylindrical drum or structure, the bottom whereof terminates in a tunnel-shaped outlet, B, through which the sugar poured in the top escapes, the top of the drum A being surmounted by a cover, C, which, in turn, is provided with a hopper, b, for supplying sugar to the interior of said drum.

D represents a perpendicular shaft, the upper end of which revolves in a bearing formed in the cover C, and whose lower end rotates within a cross-bar, E, which spans the upper part of the tunnel B, as exhibited.

Within the straight portion of the cylinder or

drum A, and upon the lower end of the shaft D, I mount a circular disk, F, while upon this disk or platform I erect a cluster of upright rods or bars *a a*, &c., arranged concentrically about the shaft D, the upper ends of the rods being united by an annular plate or rim, G, whose outer periphery is equal, or about equal, to that of the disk F.

The centrifugal force generated by the revolution of the series of rods drives the sugar from the central inclosure within them through the narrow interstices between them, and into the drum A, from whence it is precipitated to the barrel or other object destined to receive it, the said sugar, in such journey, being thoroughly distributed and mixed.

H represents an upright open pipe, extending through the cover C of the drum A, and as near the center of the same as circumstances will permit, while

I I, &c., represent a number of pipes, also passing through the cover, but near its periphery or that of the drum A.

The pipe H is for entrance of air to the inclosure within the concentric cluster of rods, which air is drawn therein by the centrifugal force generated by their revolution in a body, the air, by this force, being driven through the interstices between the rods, and expelled from the drum A through the pipes I I, &c.

The air, in its journey to and from the drum A, meets and permeates the mass of sugar, which is dumped into the hopper b, by this means bleaching it to a considerable degree, which it would not otherwise attain except by exposure to air for a long time.

In fact, I effect in a few moments, and without the expenditure of labor now requisite, what at present requires days to accomplish.

Although the accompanying drawing represents but one cluster of rods or mixers, two or more may be combined, if found necessary or desirable.

### Claims.

I claim—

1. In a machine or apparatus so arranged as to constitute a whole, devices for mixing and for bleaching sugar, for purposes stated.

2. A machine for mixing sugar, consisting of a drum, and a series of rods or mixers disposed therein, and supported and operated as explained.

3. A machine for mixing and for bleaching sugar, consisting of a series of rods revolving within a drum, and air-inlet and escape pipes combined with the latter, whereby air is, by the centrifugal force of the revolving rods, drawn into and discharged from the drum, as stated.

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Witnesses:

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