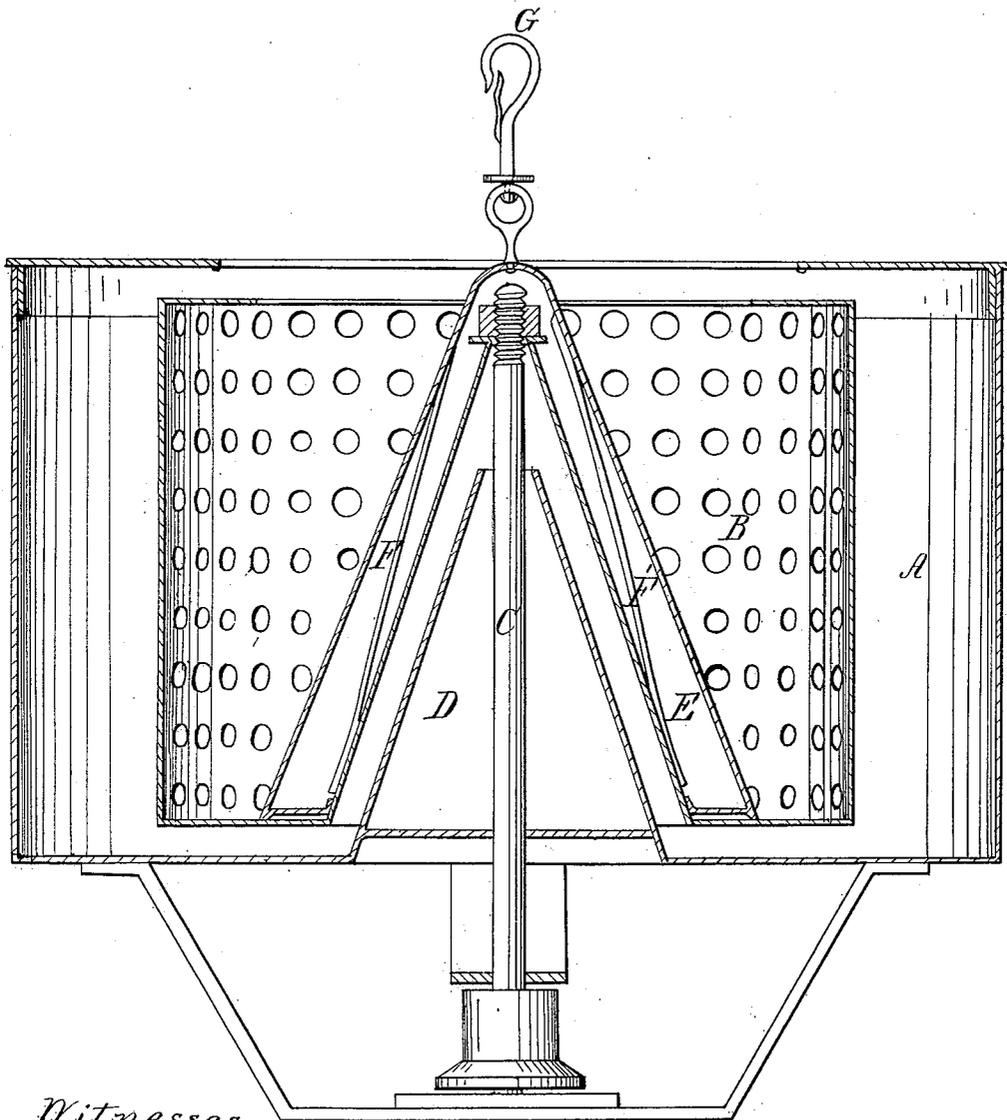


G. E. EVANS.
CENTRIFUGAL SUGAR MACHINE.

No. 68,356.

Patented Sept. 3, 1867.



Witnesses
Byron Rose.
John L. Stages.

Inventor
G. E. Evans.

United States Patent Office.

GEORGE E. EVANS, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 68,356, dated September 3, 1867.

IMPROVED CENTRIFUGAL MACHINE FOR WASHING SUGAR.

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, GEORGE E. EVANS, of Boston, in the county of Suffolk, and State of Massachusetts, have invented an improvement in Centrifugal Apparatus for Washing Sugar; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention will appear from the following statement as to the former and present condition of the art of washing or purifying sugars. Until quite recently there was no known means of cleaning or purifying the crude dry brown Havana or New Orleans sugars, except by re-crystallizing them. For a long time tubs, known as centrifugals, rotated at a great velocity, were used for washing sugars when mixed with sirup or liquid. When sugars so mixed were placed in centrifugals, provided with perforated sides, and rapidly rotated, the centrifugal action caused by the rapid rotation of the tub caused the viscid mass of sugar and sirup to form an interior wall within and around the side of the centrifugal tub, and the liquid portion, in consequence of the centrifugal action, passed through the wall of sugar and the perforated sides of the centrifugal, leaving the sugar which was mixed with the liquid in a wall within the sides of the centrifugal tub. Until quite recently this process of washing could not be applied to dry sugars, as they would not form a self-sustaining wall around the interior of the centrifugal of uniform thickness. It has been a desired object to form a wall of uniform thickness within the centrifugal tub and concentric with it. It is indispensable that the wall should have a uniform thickness, in order that the sugars should be evenly washed. To accomplish this object a cumbersome basket and cover had been used, as in the apparatus patented by Alexander Mackey and Eberhardt Müller. The objection to the apparatus used by Mackey and Müller is the expense of altering the centrifugal commonly used, which is at least one hundred and fifty dollars to each machine; the expense of repairing the baskets, the resistance of the air, caused by the covers diminishing the revolutions of the centrifugals, and the obstruction of the bottom of the centrifugal tubs by cleats used to retain the baskets in position, rendering it difficult to shovel out the sugar after being washed. The centrifugals fitted for Mackey and Müller's apparatus can be used only for dry sugars, and cannot be used for sugars containing sirup.

The nature of my invention consists in providing a cheap apparatus for forming the wall of dry sugar, which apparatus is subject to none of the objections above stated.

The apparatus used by me is shown in the accompanying drawing, forming a part of this specification, exhibiting a sectional view.

Within the fixed cylindrical tub A is placed the inner centrifugal tub B, with perforated sides. The centrifugal tub B revolves upon the spindle C, being supported by the fixed cone D. The fixed cone D is not essential, as obvious equivalent devices may be used for supporting the centrifugal tub B on the spindle. The apparatus, as thus far described, has been commonly used. That which I have devised, and claim as new, is the removable and adjustable cone E, which I call the wall-former, which is usually formed of tinned iron, although the material is unimportant. This cone is so constructed that when in place its diameter shall correspond with the perpendicular axis of the centrifugal tub, and also that there shall be a space between the bottom of the cone and the sides of the centrifugal tub sufficient for the desired diameter of the wall of sugar to be formed. The cone is so constructed as to be instantly and easily removable. For the purpose of fixing it in place, and at the same time rendering it readily removable, I make use of the elastic wires or slips of steel F F', which grasps the fixed cone D. If the inner cone is dispensed with, I make use of any equivalent means of keeping the cone E in place, and at the same time capable of being readily detached.

My improved apparatus is operated as follows: The sugar to be washed is dropped from a charger above into the centrifugal tub, until the tub is about three-quarters full, the sugar lying upon and around the wall-former E. Power is then applied to the centrifugal to cause its revolution. When the centrifugal is revolving ten or fifteen times in a minute, with a constantly increasing velocity, and as the centrifugal action causes the sugar to recede from the wall-former towards the outer circumference of the centrifugal tub, I slowly lift the wall-former E vertically by means of a cord passing over a pulley, and attached at G, while at the same time the revolution of the centrifugal is being rapidly accelerated. The combined centrifugal action, and the action of the wall-former as it is lifted upon the sugar, cause the formation of a wall of sugar of equal diameter con-

centric with the circular side of the centrifugal tub. The sides of this wall of sugar are free from any of the ridges or irregularities consequent upon the use of basket wall-formers. It is indispensable to the formation of a suitable wall that the wall-former should be lifted in the manner described. If the cone is allowed to remain, the sugar will form a wall wide at the bottom and narrowing towards the top, the side of the wall having an inclination directly reverse to that of the cone. The unequal thickness of the wall prevents an even working of the sugar without great loss.

The advantages derived from the use of my apparatus are, that it can be applied to any centrifugal tub without alteration, and the tub may be used for dry or wet sugars. The cost of the apparatus is trifling. The weight of the apparatus is from eighty to a hundred pounds less than that of the basket and covers used in Mackey and Müller's apparatus; and I can work three charges of sugar while other machines are working two, while I can apply the water directly to the wall of sugar without the intervention of the basket.

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

1. A removable cone for forming a wall of sugar in centrifugal machines, constructed and operated substantially as described; and
2. In centrifugal machines for washing sugars, I claim operating a removable cone placed within such centrifugals, by lifting it while the centrifugal is being revolved for the purpose of forming a wall of sugar, in the manner and for the purpose substantially as described.

GEO. E. EVANS.

Witnesses:

BYRON ROSE,
JOHN L. HAYES.