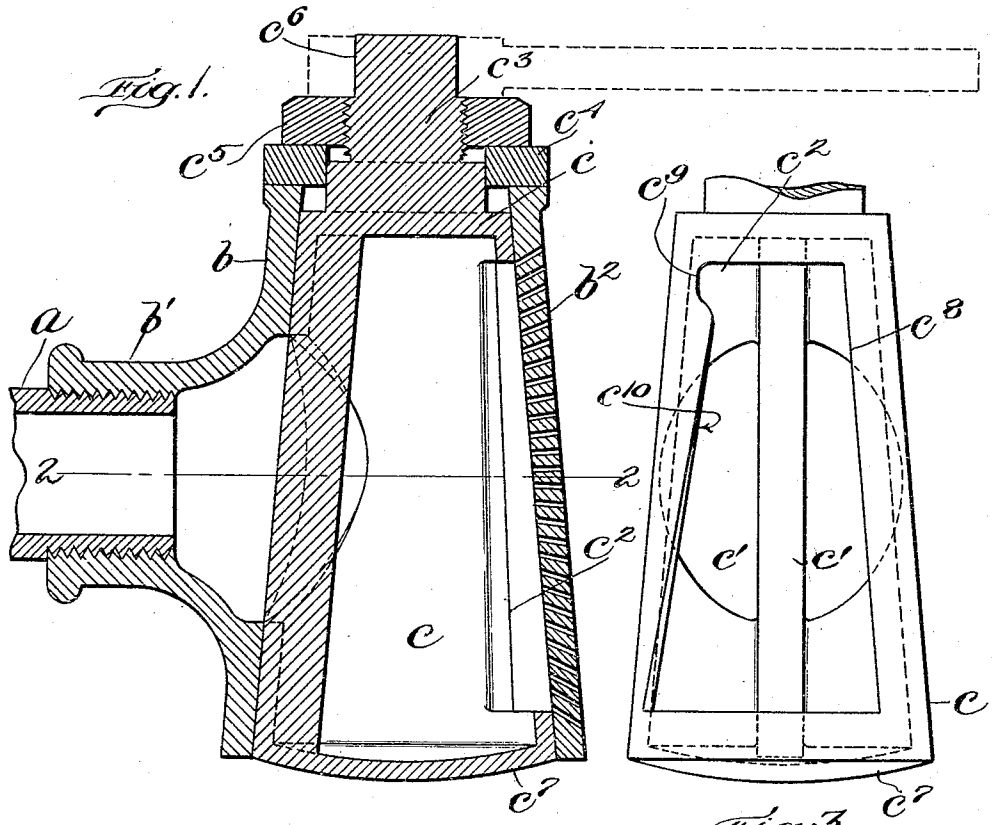
E. ROBERTS.

SPRAY NOZZLE FOR WASHING SUGAR AND THE LIKE.

APPLICATION FILED JAN. 22, 1914.

1,205,394. Patented Nov. 21, 1916.



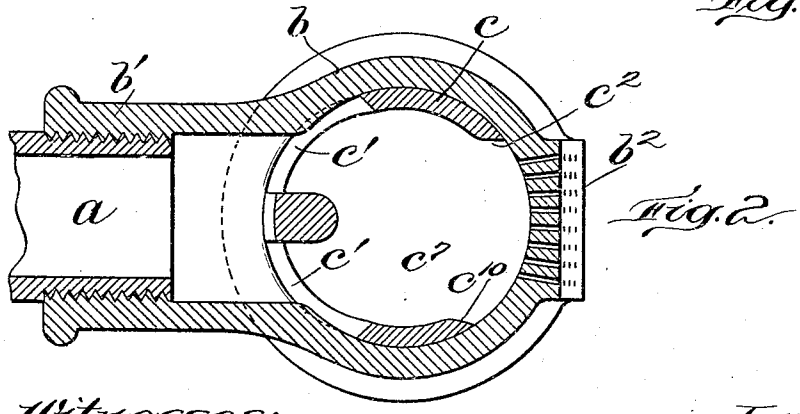


Fig. 2.

Witnesses:
Agnes M. Shea,
Ida A. Eichorn.

Inventor:
Eugene Roberts
by Geo. N. Goddard Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EUGENE ROBERTS, OF SALT LAKE CITY, UTAH, ASSIGNOR TO SUGAR CENTRIFUGAL DISCHARGER COMPANY, OF SALT LAKE CITY, UTAH, A CORPORATION OF UTAH.

SPRAY-NOZZLE FOR WASHING SUGAR AND THE LIKE.

1,205,394. Specification of Letters Patent. Patented Nov. 21, 1916.

Application filed January 22, 1914. Serial No. 813,800.

To all whom it may concern:

Be it known that I, EUGENE ROBERTS, citizen of the United States, and resident of Salt Lake City, county of Salt Lake, State of Utah, have invented certain new and useful Improvements in Spray-Nozzles for Washing Sugar and the like, of which the following is a specification.

This invention relates to a device for washing sugar and the like where it is desired to direct a fine and carefully regulated spray of liquid against the material to be washed.

In washing sugar in centrifugal machines with a hand hose, such as has been commonly employed, there is an absence of means for properly distributing the spray according to the form of the wall of sugar built-up inside of the centrifugal basket or according to the nature of the sugar to be washed. As the sugar wall is ordinarily thicker toward the bottom of the basket than at the middle and top portion, there should logically be a larger amount of liquid sprayed against the bottom portion than the thin middle portion; moreover, at the extreme top of the wall, owing to the overhanging cap of the basket and the fact that there is no drip from above, the amount of spray delivered should be somewhat greater than over the intermediate portion. Furthermore, some grades of sugar require a less quantity of liquid than is required by other grades. To meet these varying conditions I have devised a means for controlling the spray which is adjustable to secure any desired regulation of the amount of liquid distributed over the various portions of the sugar wall. This improvement is particularly adapted for use in connection with the sugar washing apparatus set forth in a joint application for United States Letters Patent filed by Angus H. Gibson and myself, May 20, 1913 and numbered serially 768,767. It comprises essentially a valve chamber or passage provided with an inlet opening and with a series of fine jet perforations formed in the side wall of the chamber and a rotatable valve plug provided with a transverse passage, the valve being so formed as to not only close and uncover the jet orifices, but also to cut off a larger number of jet orifices at the top than at the bottom, so that an increasingly large amount of liquid will be sprayed against those portions of the sugar wall that require the largest quantity of liquid for proper washing.

In general the invention comprises a valve chamber provided with a plurality of spray or jet orifices provided with a transverse port, one of whose cut off edges is diagonal to the axial plane of the valve plug in order to cut off successively the jet orifices in one portion of the spray plate in advance of its cutting off the orifices in other portions of the spray plate.

In the accompanying drawings I have illustrated the preferred form of embodying the principles of this invention in which—

Figure 1 is an elevation in central section showing the valve plug seated operatively in the valve chamber; Fig. 2 is a plan view in central section; and Fig. 3 is a front elevation of the valve plug removed from the chamber.

In the practice of my invention, according to the form illustrated in the drawings, there is provided a valve casing b provided with a lateral nipple b' by which it is screwed on to the liquid supply pipe a. The opposite side of the valve casing forms a spray plate b^2 in which are bored a large number of fine jet orifices which are preferably arranged in a number of substantially parallel vertical rows and bored on radiating lines in a vertical plane so as to deliver a fan-shaped spray.

Inside of the valve chamber is mounted the valve plug c, which is preferably hollow or in the form of a shell, provided at its rear with inlet openings or ports c' which preferably extend through a much larger arc of the circumference than does the outlet port at c^2, in order that there may be, even when the valve is partially closed, an excess supply of liquid so as to maintain a constant pressure through the jet orifices whether all or only a few of the orifices be uncovered or open. The upper reduced portion of the valve plug c^3 projects outside of the valve chamber and is surrounded by a washer c^4 and is engaged by a clamping or tightening nut c^5. A polygonal head c^6 is formed to be engaged by a wrench to permit the partial rotation of the valve plug to adjust it properly in the valve chamber. The valve plug or shell is closed at its lower end, as indicated at c^7. The outlet port c^2

of the valve plug is formed so as to regulate the distribution of the liquid over the wall of sugar to be washed by narrowing the fan-shaped spray at those portions where less liquid is required to secure uniform results in the washing. One edge of the port, therefore, as shown at c^{10}, is diagonal to the plane passing through the vertical axis of the plug, so that the width of the opening gradually increases from the top portion toward the bottom portion. At the extreme top, however, since it is usually desirable to have somewhat more liquid at this point, the port is extended through a larger arc of the plug, as shown at c^{9} but with this exception, the width of the port increases from top to bottom. By making the other edge c^{8} of the outlet port of the plug parallel to the plane of the axis of the plug it is possible when turning the plug in a clockwise direction, according to Fig. 2, to cut off successively the vertical rows of perforations from top to bottom, so as to secure a discharge through the upper and lower portions of the spray plate. On the other hand if the plug is rotated in a contra-clockwise direction, the perforations in the first two or three rows, at a short distance below the top of the spray plate, will be closed or cut off before any of the perforations in the lower part of the spray plate are closed. As the plug is removed a new plug having a different shaped port may be substituted, but generally speaking a plug formed as is the plug shown in the drawings, with one side straight and the other inclined, but with a slightly greater width at the extreme top portion will serve all practical purposes in ordinary sugar washing and permit the accurate regulation and adjustment of the spray, according to the particular requirements of the sugar being treated.

What I claim is:

1. A spray-regulating device for washing sugar and the like, embracing in its construction a conical valve casing open at both ends and having a lateral inlet opening and a series of spray orifices arranged on the opposite side of said inlet, a hollow conical valve plug fitted to the interior wall of said casing and having closed ends preventing the end-wise escape of fluid from the casing, said hollow plug being provided with oppositely disposed inlet and outlet openings, one edge of said outlet opening being formed to leave uncovered a greater number of spray orifices at the bottom than at the upper portion in order to distribute the spray more copiously toward the bottom than at the upper portion, substantially as described.

2. A device of the class described embracing in its construction a valve casing provided at one side with an inlet opening and provided on the opposite side with a series of vertical rows of divergent jet orifices, a hollow valve plug fitted into said casing and provided with an inlet opening on one side and with an outlet opening on the opposite side, one edge of said outlet opening being inclined to the vertical rows of jet orifices in order to leave uncovered a gradually increasing number of orifices toward the bottom of the series in order to distribute the spray unequally upon different portions of the sugar wall.

3. The combination of the valve casing provided with an inlet opening on one side and with a series of jet orifices arranged in vertical rows on the opposite side, a hollow rotatable valve provided with an inlet opening on one side and an outlet opening whose edge is formed to give it an irregular contour with relation to the series of jet orifices whereby the valve in adjusted position will leave uncovered a greater or less area of perforations at different heights in the valve casing in order to secure the desired distribution of the spray, substantially as described.

In witness whereof, I have subscribed the above specification.

EUGENE ROBERTS.

In the presence of—

GEORGE F. KENNY,

WM. C. SHERWOOD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D C."