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CENTRIFUGAL MACHINE.

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1,319,150.

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Fig. 3.




Fig. 2.




Fig. 4.

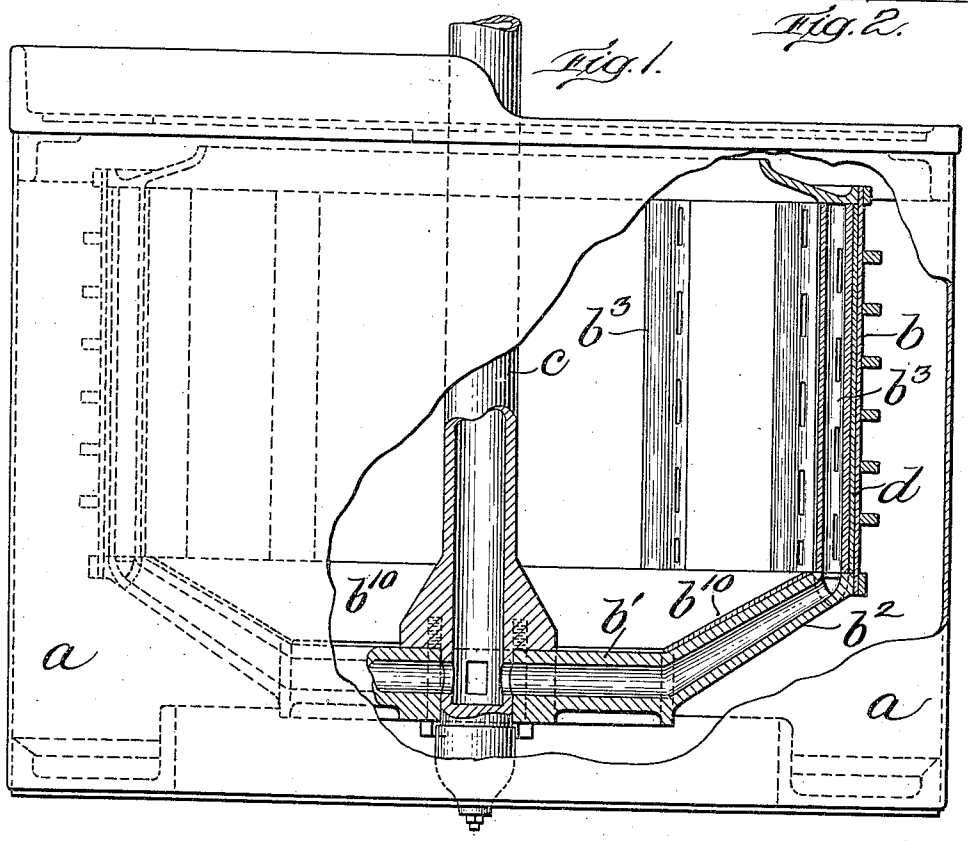



Fig. 1.

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# UNITED STATES PATENT OFFICE.

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## CENTRIFUGAL MACHINE.

1,319,150. Specification of Letters Patent. Patented Oct. 21, 1919.

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*To all whom it may concern:*

Be it known that I, ANGUS H. GIBSON, 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 Centrifugal Machines, of which the following is a specification.

This invention relates to centrifugal machines and has for its object the provision of a simple and effective arrangement by which the sugar that becomes walled up on the inside of the basket wall as it is separated centrifugally from the liquid content of the syrup may be discharged by the employment of suitably directed blasts of air so delivered as to break up the annular wall of sugar by the disruptive force of the confined air so that the crumbling or disintegrated mass of sugar may fall through the central discharge opening in the bottom of the basket.

Heretofore it has been the custom to remove the walled-up sugar by directing a plow or scraper against the mass of the sugar content in the rotating basket so as to break down the sugar wall and cause the mass of sugar to be discharged through the central spider and such a discharger while quite practical for use involved considerable mechanical manipulation and the parts are more or less subject to wear.

The present invention is based upon the principle of directing blasts of compressed air through suitable conduits so as to disrupt the wall of sugar and cause it to drop down by gravity to the central discharge opening. The invention comprises essentially a centrifugal basket provided with a compressed air supply pipe or conduit having branches arranged in close proximity to the wall of the basket with vent openings or outlets close to the basket wall so arranged that the compressed air passing through said outlets forces the sugar mass inwardly away from the wall of the basket or screen so that it drops on the inclined bottom from which it slides through between the arms of the central spider into any suitable receptacle below the basket.

This and other features of the invention will be particularly explained in this specification and will be defined in the claims annexed hereto.

In the accompanying drawings I have shown such parts of a centrifugal machine of the suspended type as is necessary to comprehend the principle and practice of my said invention in which

Figure 1 is a side elevation partly in central section showing the usual surrounding curb and the suspended centrifugal basket equipped with my invention.

Fig. 2 is a plan view in cross section of the basket and curb.

Fig. 3 is a front elevation of one of the compressed air tubes with its vents; and

Fig. 4 is a transverse section of one of said air tubes showing its relation to the basket and the basket lining.

In the practice of my invention according to the form illustrated in the drawings the centrifugal basket $b$ is of the usual type having a sloping bottom $b^{10}$ provided with a central orifice to receive the supporting spider $b'$ by which the basket is secured to the rotary suspension shaft $c$.

The usual curb $a$ is provided to surround the basket and catch the liquid contents thrown out centrifugally through the peripheral basket wall and its inside lining $d$.

Any suitable conduit may be provided for supplying the compressed air to the air blast tubes $b^3$ which are located at intervals around the inside of the vertical or peripheral basket. Preferably a slight space is left between the outer surface of the discharger tube $b^3$ and the wall of the basket $b$ to allow the insertion of the usual lining or screen $d$ between the discharger tubes and the basket wall.

The vertical discharger tubes are connected by means of tubular arms $b^2$ with a perforated central spider $b'$ whose interior passages are in communication with the centrally bored basket shaft $c$ through which a suitable supply of compressed air is furnished to the individual discharger tubes. In this case I have shown the radiating arms of the spider $b'$ bored or of tubular form so that the spider may perform the double function of connecting the basket to the basket shaft for proper support, beside affording conduits for the distribution of the air to the concentric discharger tubes $b^3$.

As it is unnecessary to have a separate radial pipe leading to each discharger tube which would involve filling up too large a part of the central discharge opening I prefer, as shown in the drawings, to provide

an annular conduit $b^5$ extending around the base of the basket to supply the intermediate discharger tubes with the requisite compressed air.

The discharger vents $b^4$ for the air are preferably directed toward the lining $d$ so as to bring the air blast between the mass of walled-up sugar and the lining in order that the disruptive action of the air on the sugar wall may be most effective.

Any suitable source of compressed air may be employed in connection with the main supply conduit formed by the central shaft $c$. Such connections, however, form no part of the present invention as any suitable or well-known arrangement may be employed for that purpose.

The operation of the device is as follows:

After the centrifugal separation of the sugar crystals from the containing juice is effected by the usual operation of the machine, the machine is slowed down or may be stopped altogether. The supply of compressed air is then admitted to the main conduit $c$ whence it passes to the vertical discharger tubes in sufficient volume to cause the wall of sugar to break down or crumble and fall upon the sloping bottom $b^{10}$ whence it is discharged through the central openings in the bottom.

What I claim is:—

1. In a centrifugal machine the combination of a centrifugal basket and a central shaft, said shaft being provided with an air passage and branch pipes leading from said air passage to the peripheral portions of the basket adjacent to the peripheral wall thereof, and vertical branch tubes provided with vents or outlets for the escape of air into the interior of the walled-up mass of sugar, substantially as described.

2. In a centrifugal machine a discharger device comprising essentially a main supply tube, a series of vertical tubes arranged around the inside of the basket wall and provided with air outlets and connecting conduits for conducting the air from the main supply tube to said vertical tubes, substantially as described.

3. In a centrifugal machine the combination of a centrifugal basket, a series of air-discharging tubes arranged at intervals around the periphery of said basket, and a supply conduit for furnishing a body of compressed air to said discharge tubes so as to disrupt the sugar wall by suitably directed air blasts, substantially as described.

4. In a centrifugal machine the combination of a centrifugal basket, a hollow central basket-supporting shaft, a basket-supporting spider secured to the lower end of said shaft and having radiating hollow arms in communication with the interior of said basket shaft, and concentrically arranged air discharging tubes in the peripheral portion of said basket in communication with said radial spider to receive compressed air therefrom and having a series of discharge vents for the escape of air into the peripheral portion of the basket, substantially as described.

5. A self-discharging basket for a centrifugal machine embracing in its construction a series of vertical tubes arranged around the interior of the peripheral basket wall at a slight distance therefrom to permit the insertion of a screen between said tubes and said basket wall, and an air supply conduit having communication with said tubes to furnish a supply of compressed air thereto, said tubes having suitably arranged vents to allow the escape of air adjacent to the inside faces of said screen, substantially as described.

6. A self-discharging basket for a centrifugal machine embracing in its construction a vertical peripheral wall, a downwardly sloping annular bottom provided with a central discharge orifice, a central supporting spider mounted in said orifice and having hollow radial arms, an annular conduit extending around the base of the basket in communication with said radial arms, and vertical discharge tubes extending up inside the basket around a common center, substantially as described.

In witness whereof, I have subscribed the above specification.

ANGUS H. GIBSON.

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