Dec. 26, 1933. E. ROBERTS 1,940,813

CENTRIFUGAL BASKET

Filed Nov. 23, 1932

Fig. 1.

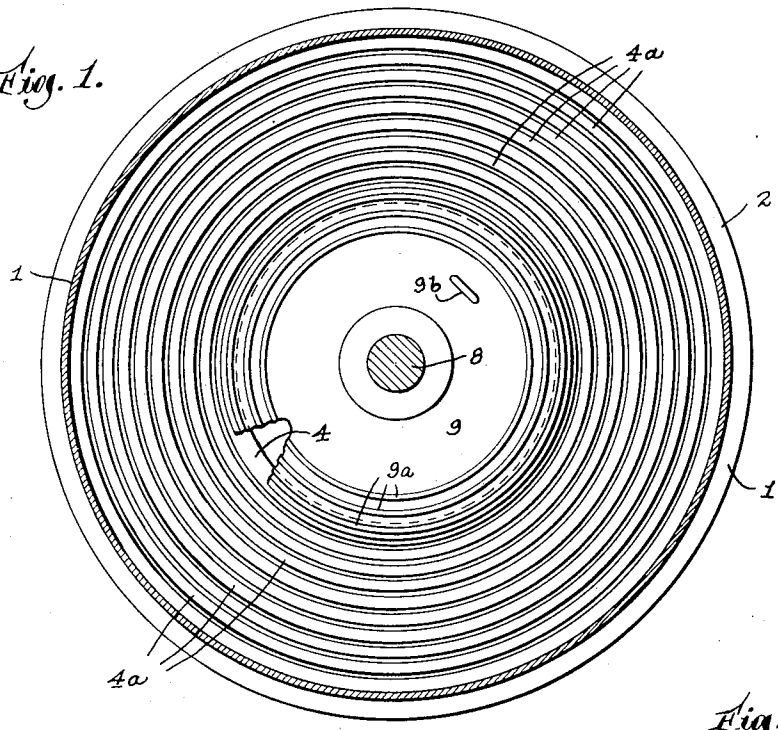



Fig. 2.

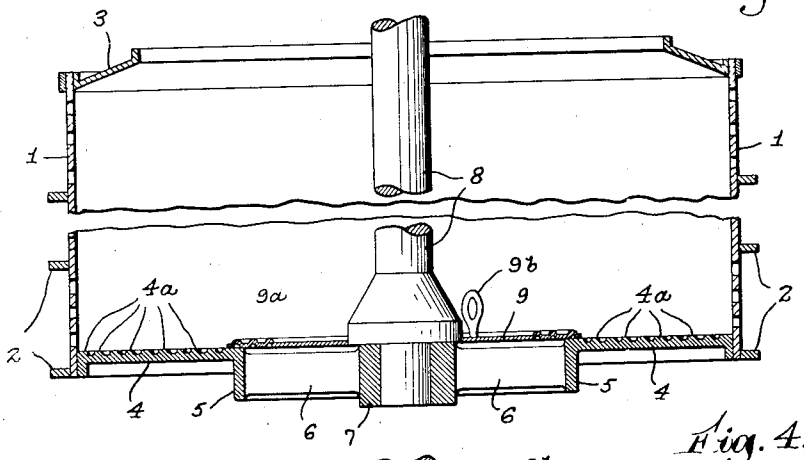



Fig. 3.

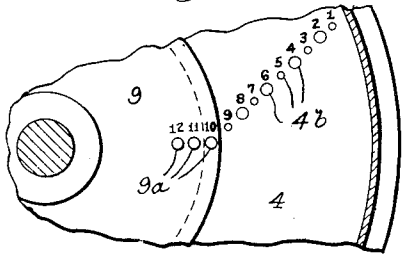
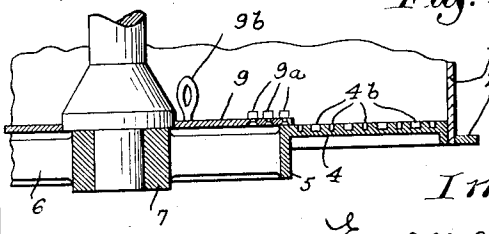



Fig. 4.




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# UNITED STATES PATENT OFFICE

1,940,813

## CENTRIFUGAL BASKET

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Application November 23, 1932
Serial No. 644,052

4 Claims. (Cl. 210—76)

This invention relates to centrifugal baskets of the type used for centrifugally separating the liquid and solid contents of raw sugar or of various types of chemical substances and is intended to provide a means for accurately gauging or determining the thickness of the wall material built up inside the basket during the charging period when the basket is being loaded at relatively low speed preliminary to centrifuging its contents.

As such centrifugal baskets in general comprise a peripheral wall generally of cylindrical shape having top and bottom members, which confine material against escape while it is being centrifuged, it is very important to determine the amount of material that is being poured into the rotating basket in order to limit the material to such amount as will build up a wall of predetermined thickness that is most appropriate for centrifuging the particular kind or grade of material being treated. If the material to be treated is flowed into the basket in sufficient amount to make too thick a wall, that prevents the effective and rapid penetration of the liquid content of the inwardly disposed portion of the mass through the surrounding wall of solid material. On the other hand, if less material is supplied by the operator to the basket than is capable of being properly centrifuged, the centrifugal is not operating at full efficiency.

In an earlier application for United States patent I have devised an interior vane or gauge suspended from above the basket and coordinated with an indicating pointer to act as a guide for the centrifugal operator to secure the proper thickness of wall, but this device depends upon the vane being operated by contact with the wall of sugar itself.

The present invention is based upon the principle of providing the basket bottom with calibrated means that are visible to the operator through the open top of the basket and which accurately indicate the thickness of the walled up material as it distributes itself around the inside of the basket, so that the operator has a clear indication as to the amount of load that he is flowing into the basket.

The invention essentially comprises a centrifugal basket bottom element provided with a series of calibrating members arranged at spaced intervals to indicate the thickness of the material walled up on the inside of the peripheral basket wall. These indicating members extend at regular spaced intervals from the peripheral basket wall toward the central axis of the machine and may be made in various forms. These and other features of the invention will be particularly described in the following specification and will be defined in the claims annexed.

In the drawing I have illustrated two specifically different forms embodying the principles of this invention, in which

Fig. 1 is a horizontal section through the basket on a plane intermediate the top and bottom thereof.

Fig. 2 is a vertical central section through the basket.

Fig. 3 is a detail view plan showing a modified form applied to the basket bottom and valve.

Fig. 4 is a vertical central section of the modified form shown in Fig. 3.

In the practice of the invention, the centrifugal basket comprises, in the form illustrated, a perforated peripheral wall 1 surrounded by reenforcing encircling rings 2 and having the usual top rim or ring 3 fastened securely to the peripheral wall and a bottom which, in this case, has a downwardly extending flange 5 surrounding the central opening and integral with the radial arm spider 6 with its central hub 7 securely fastened to the central basket supporting and driving shaft 8.

A well known form of closure valve 9, having the lifting loop or handle $9^b$, normally closes the central discharge opening and can be lifted out of the basket when it is desired to discharge the solid matter from the basket through the central opening.

Other well known accessories, such as filter linings, dischargers or the like, not being concerned with this invention are not illustrated herein.

In the form shown in Fig. 1 and Fig. 2 of the drawing, I provide the bottom with a series of annular concentric grooves formed in the upper surface of the basket where it can be seen through the open top rim or cap 3 of the basket. These grooves are cut to leave intermediate ribs $4^a$, which are spaced apart preferably one inch from center to center, so that the number of ribs covered by the sugar or other solid material, that is walled up against the inside of the peripheral wall 1 of the basket, will indicate the thickness of that wall as it builds up. Of course when the basket is rotating upwards of 100 revolutions per minute, no numerals could be distinguished but by forming a definite number of such ribs as markers extending in spaced succession from the outer portion to the inner portion of the basket bottom, it is possible by counting the number of

rings starting from the edge of the bottom valve to determine just how thick is the walled ring of material resting on the bottom of the basket. For example, if there are nine indicator rings formed between the inside of the peripheral wall of the basket and the outer edge of the bottom valve, and the sugar wall extends out to cover the sixth ring counting from the outside, then there will be exposed three rings between the inside of the wall of sugar and the outer edge of the bottom valve. The tenth, eleventh and twelfth rings, in this case, are shown on the bottom valve itself. Therefore, if the operator counts three rings exposed outside of the bottom valve, by subtracting that number from nine, he knows that the thickness of the wall of material at the bottom is six inches.

While the material that walls up into a ring under the centrifugal force exerted at loading speed is not absolutely vertical but somewhat inclined, being thickest at the bottom, nevertheless, since this contour line is substantially the same for like materials, the determination of the thickness of the wall at the bottom is a reliable guide in charging the machine to avoid under-loading as well as over-loading. In some cases the material may start to build over the edge of the bottom valve and for that reason the bottom valve itself is provided with gauge elements or rings.

In Fig. 3 and Fig. 4, I have shown a modified form in which, instead of calibrated rings formed in the upper surface of the basket wall, and of the valve when desired, inserts or plugs $4^b$ are arranged at regular spaced intervals from the center toward the outer wall and, as these plugs are made of a material that contrasts with the color of the basket bottom, they will appear as continuous rings when the basket is rotated during loading. Generally speaking, it is immaterial whether these indicator or measuring plugs are arranged in a radial series or on a line diagonal to, or staggered with relation to radial lines. The diagonal or staggered arrangement affords more space between the plugs.

To facilitate the easy counting of the actual rings of the first form, or of the apparent rings in the second form, the calibrating members may be formed to make every second or third member slightly wider or more conspicuous than the others and this may be effected in the case of the rings by leaving every other ring noticeably wider than the next adjacent rings, or in the case of the inserted plugs by making every alternate plug noticeably larger in diameter than the adjacent plugs, thus rendering them more conspicuous.

The use of such visual calibrating elements in the bottom of the basket affords a complete protection against over-loading or under-loading the basket, which has heretofore constituted a practical difficulty in the operation of large centrifugals of this type, for as soon as the material, as it walls up, covers the prescribed actual or apparent ring in the bottom of the basket, the stream of material supplied is cut off at the desired thickness of load. The invention, therefore, eliminates much uncertainty and guess work that has hitherto attended this stage in the operation of centrifugals.

Moreover, these calibrating rings serve to indicate to the operator the amount of shrinkage of the walled up material in washing the sugar and therefore warns him against excessive washing and resulting waste.

What I claim is:

1. A centrifugal basket comprising a peripheral wall and top and bottom members, the upper surface of the bottom being provided with calibrating members arranged in predetermined spaced relation to measure and indicate the thickness of the material walled up inside of the basket.

2. A centrifugal basket embracing in its construction a peripheral wall and top and bottom members secured thereto, a bottom member being formed with rings on its upper surface spaced at predetermined distances from the peripheral wall and concentric therewith to indicate the thickness of the material being treated when it is built up around the inside of the peripheral wall.

3. A centrifugal basket embracing a peripheral wall and top and bottom members secured thereto, a series of distinctive inserts arranged at predetermined intervals apart to form, when the basket is rotating, visible calibrating rings indicative of the thickness of the ring of material walled up inside the basket.

4. A centrifugal basket embracing in its construction top and bottom members and an intermediate peripheral wall connecting them, the bottom member being provided with a central discharge opening, a valve for closing said opening, and a series of calibrating members arranged in predetermined spaced relation between the peripheral wall and the edge of the bottom closure valve, said valve being provided also with calibrating members for gauging the thickness of the ring of walled up material inside the basket.

EUGENE ROBERTS.