Jan. 19, 1937. E. ROBERTS 2,068,636

PERFORATED BASKET FOR CENTRIFUGAL MACHINES

Filed Dec. 14, 1934

Fig. 1.

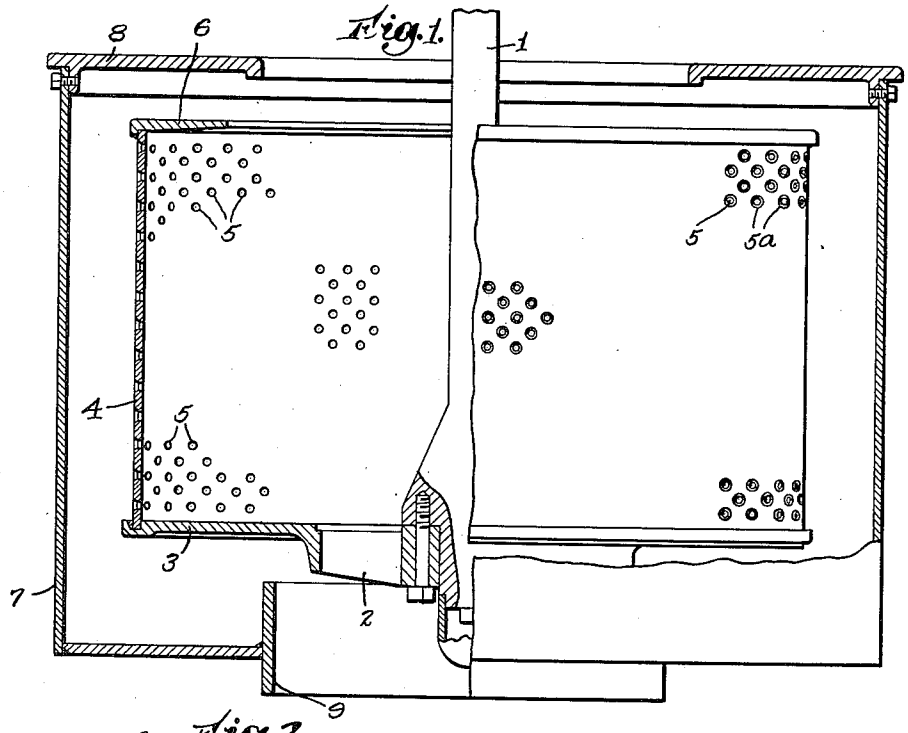


Fig. 2.

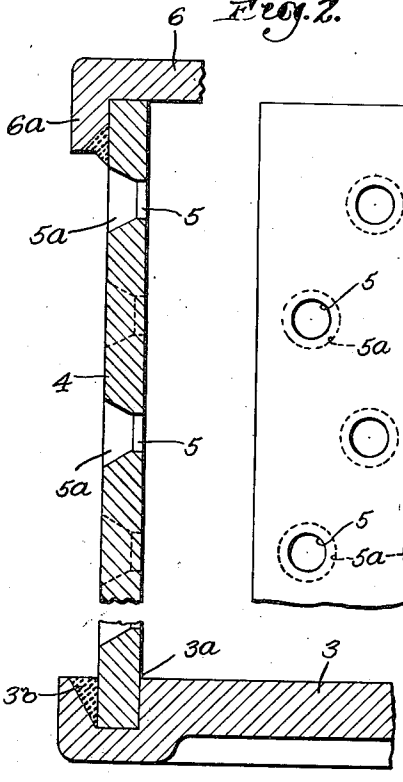


Fig. 3.

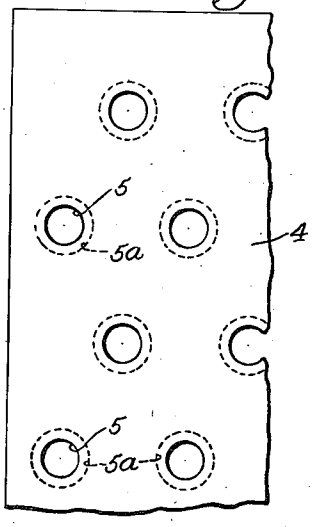
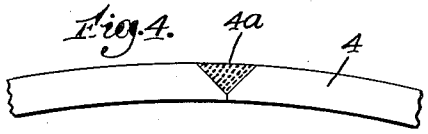


Fig. 4.



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PERFORATED BASKET FOR CENTRIFUGAL MACHINES

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Application December 14, 1934, Serial No. 757,518

4 Claims. (Cl. 210—76)

The present invention relates to perforated centrifugal baskets of the type used in sugar making and other industries for the centrifugal separation of liquid from a mass of crystals or grains with which the liquid is intermingled.

For many years centrifugal practice has tended toward progressively increasing speeds of revolution, but such higher speeds have resulted in operating conditions that are not satisfactorily met by previously existing constructions of centrifugal baskets. In my copending application, Serial No. 658,544, I have disclosed a construction for a centrifugal basket which affords the requisite degree of strength and lightness and provides outlet holes of uniform depth or length in directions radial to the axis of the basket, but in that case the actual basket construction shown had numerous external reenforcing bands or hoops which permitted the use of a thin enough basket wall to provide radial openings or bores short enough to avoid being smeared or clogged by the accumulations of the sticky material therein.

The present invention is intended to provide an alternative construction of basket which eliminates the need of reenforcing hoops by making the wall correspondingly thicker and which at the same time avoids the smearing or clogging of the outlet holes that would normally result from such thickening of the basket wall by countersinking or counterboring the outlet holes on the outside face of the basket wall.

The practice of counterboring or countersinking the outlet holes of a perforated centrifugal basket of this type has been well known in the art, but I have found that the use of such countersinks or counterbores actually increases the tendency toward the smearing or clogging of the outlet holes, since it facilitates the accumulation of the material on the inside countersink.

I have found by actual experiment that if the outlet holes are countersunk or counterbored from the outside face sufficiently to leave only a relatively short bore or passage for the escape of the liquid, there is no appreciable tendency toward the clogging of the holes and no appreciable deposit of the sticky material in the outlet openings and this discovery forms the basis of the present invention.

In the accompanying drawing I have illustrated a simple and convenient construction of basket which combines the maximum of strength with the minimum of weight, as the material that would be used in reenforcing hoops may be evenly distributed over the basket wall in the form of additional thickness, while at the same time the objectionable clogging is avoided.

In the drawing

Fig. 1 illustrates this novel construction of perforated basket partly in central section and partly in elevation, a sufficient number of the perforations being shown merely for the purpose of illustration although it will be understood that the perforations extend throughout the perforated area of the basket wall, preferably in uniformly spaced relation.

Fig. 2 is a vertical section of the basket wall on an enlarged scale with the intermediate portion broken out.

Fig. 3 is an enlarged detail on a like scale showing the interior face of a portion of the basket wall.

Fig. 4 is a detail plan view showing the integral union of the abutting ends of the circumferential basket wall by means of an integral weld.

In the practice of this invention as illustrated in the drawing, I have shown the centrifugal basket of cylindrical form having a central radial arm spider **2** securely bolted in well known fashion to the lower hub end of the centrifugal gyratory suspension shaft **1**, the bottom being extended outward to form an annular shelf for the support of the circumferential wall **4** to whose upper edge is secured the usual cap ring **6** which retains the material from escape over the top.

Heretofore the practice has been to make steel basket walls of approximately $\frac{3}{16}$ inch thickness, but according to my present invention this wall may be made of double that thickness or even more than double that thickness, while the effective length of the outlet holes in a direction radial to the basket may be reduced to $\frac{1}{8}$ of an inch, or even less, in axial length when the outer ends of each outlet hole **5** is countersunk for half or even more than half the thickness of the basket wall, provided the countersinking is on the outside of the wall. The countersinking from the outside is absolutely essential to satisfactory results if a basket wall of such thickness is to be used, since countersinking on the inside would merely aggravate the trouble by facilitating the deposit of material over the countersunk area which would hasten the clogging or partial clogging of the outlet holes.

As in my earlier application above mentioned the abutting ends of the perforated basket wall have their outside corners chamfered off and the

flow of metal from the welding produces a welded joint as at 4a of practically integral construction.

The cap ring 6 has a flange 6a overlapping the upper edge of the basket wall and is similarly welded to the basket wall.

The basket bottom 3 is of circular form and of greater diameter than the diameter of the basket wall and is formed near its edge with an annular recess adapted to receive the bottom end of the basket wall, these parts being so dimensioned that when the wall is heated the shoulder at 3a can be forced tightly inside the basket wall, while the outer wall of the recess flares outwardly to facilitate the welding of the joint to integrally unite the bottom and the peripheral wall of the basket into a strong integral construction, as shown at 3b. This construction affords not only uniformly spaced perforations as close together as may be desired without any intervening reenforcing hoops between the rows of perforations but also combines the maximum degree of strength with the minimum weight of material, while still eliminating the clogging of the outlet holes.

The above described basket is shown suspended inside of the usual liquid collecting curb 7, which is provided with the usual top ring 8.

What I claim is:

1. A centrifugal basket for the separation of grain-like materials such as sugar from syrup-like liquid in which it is suspended, comprising a circumferential cylindrical wall presenting a smooth interior supporting surface permitting free flow of the liquid relative to the basket in seeking outlets through the basket wall and constituting a support for filter lining elements and spaced outlet holes for the centrifugal discharge of the liquid, said outlet holes having substantially straight bore inner portions opening into the interior supporting surface and outer portions substantially enlarged, whereby to provide straight bore passages of substantially less axial length than the thickness of the basket wall through which they pass, thus permitting the use of a relatively thick basket wall while avoiding accumulation of clogging material on the interior surface of the basket wall and in said outlet passages.

2. A centrifugal basket for the separation of grain-like material such as sugar from syrup-like liquid in which it is suspended, comprising a circumferential cylindrical wall presenting a substantially smooth interior supporting surface for filter lining elements and provided with outlet passages including inner cylindrical portions, opening into said interior surface, of a length and diameter adapted for the centrifugal separation of the syrup-like liquid without clogging and outer relatively larger portions communicating with said inner portions and opening into the outside face of the basket wall, thereby permitting the use of a relatively thick basket wall while avoiding accumulation of clogging material in said outlet passages.

3. A centrifugal basket for the separation of grain-like material such as sugar from syrup-like liquid in which it is suspended, comprising a circumferential cylindrical wall presenting a substantially smooth interior supporting surface for filter lining elements, said surface being substantially unbroken except by outlet passages having inner portions opening into said interior surface and constituting straight bores for the passage of centrifugally extracted liquid and outer portions formed with countersunk enlargements substantially reducing the length of the narrow bores of the outlet passages, thus permitting the use of any desired thickness of wall without entailing the clogging of the outlet passages.

4. A hoopless centrifugal basket comprising a perforated circumferential cylindrical wall of uniform thickness having top and bottom members integrally welded thereto, said basket wall being provided with spaced liquid outlet passages that are countersunk to a substantial depth in the outside face of the basket wall, thereby reducing the length of the narrow bore of each passage to avoid clogging.

EUGENE ROBERTS.