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2,323,712

CENTRIFUGAL BUCKET

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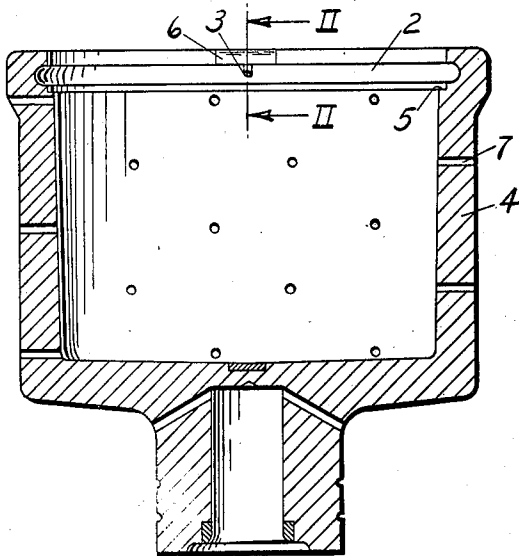


Fig. 1.

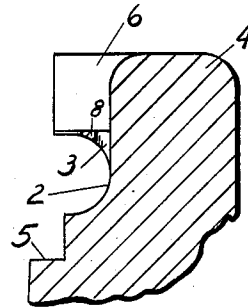


Fig. 2.

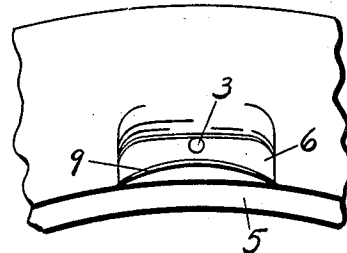


Fig. 3.

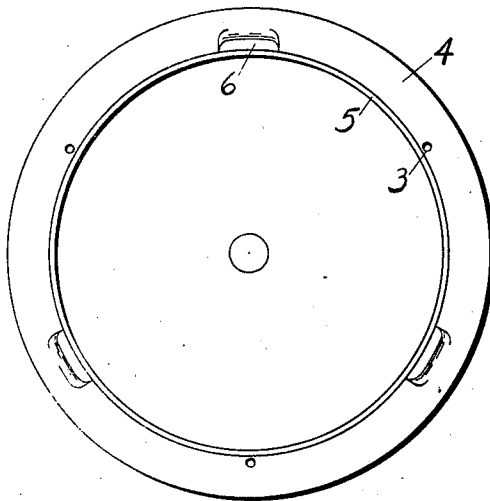


Fig. 4.

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CENTRIFUGAL BUCKET

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3 Claims. (Cl. 57—76)

This invention relates to centrifugal buckets which find use in the numerous processes of treating artificial silk threads, such as those of viscose.

This invention is more particularly concerned with spinning boxes or centrifugal buckets which are provided with a cover-supporting ledge and a groove adjacent the ledge for receiving a cover-retaining ring of flexible material adapted to be inserted and removed to permit fastening the cover upon the box and removing it therefrom respectively. While the invention is applicable to centrifugal buckets formed of any type of material, it is more especially concerned with molded buckets formed of laminated fabric impregnated with a resin, such as phenol-formaldehyde. In such molded buckets, the laminated fabric is generally arranged in the wall of the molded bucket in such a way as to form an annular structure within the bucket wall and concentric therewith.

Centrifugal buckets have heretofore been provided with perforations or holes extending outwardly through the wall of the bucket, at an oblique angle or radially, from the groove for the cover-retaining ring to permit the escape of the liquids from the yarn as it is wound in the bucket. To compensate for the removal of material that occurs in providing the bucket with a cover ledge and a groove for the cover-retaining ring, it is necessary to build up the outside diameter of the bucket at the upper rim. This displacement of the material at the rim outwardly with respect to the remainder of the box wall results in a higher centrifugal force thereon for a given weight of material thereby making the rim portion, as compared with the main wall of the box, subject to greater stresses tending to rupture the box. It is an object of the invention to provide for an improved arrangement of liquid-escape openings associated with the groove for the cover-retaining ring. It is a further object to provide the box with notches to facilitate removal of the cover-retaining ring.

In the drawing, illustrative of the invention,

Figure 1 is a cross-sectional elevation of a centrifugal box embodying the invention,

Figure 2 is a cross-sectional view of a detail taken on lines II—II of Figure 1,

Figure 3 is a plan view of the detail shown in Figure 2, and

Figure 4 is a plan view of a centrifugal bucket embodying a modification of the invention.

In accordance with this invention, the groove 2 for the cover-retaining ring (not shown) is provided at several points at its greatest depth with

drainage channels 3. As shown in Figures 1 to 3, the centrifugal bucket 4 is provided with the cover-receiving seat or ledge 5 as well as the groove 2 for receiving the cover-retaining ring and in accordance with this invention with one or more thumb notches 6 for facilitating the removal of the retaining ring from its groove by hand. The bucket may also be provided with the customary radially extending perforations 7 about the body of the box below the seat 5. While five rows of such perforations have been shown, other arrangements may be substituted.

The liquid-escape channels 3 extend vertically in a direction substantially parallel to the bucket axis by which it is meant that they extend in a direction parallel to the bucket axis or parallel to the inner wall of the bucket which tapers slightly to facilitate the removal of the filamentary cake or somewhere within the range of these limits. Each notch 6 is preferably formed so that its base 8 forms a projection overhanging the groove 2 to prevent distortion of the retaining ring during rotation which would result in throwing the spinning bucket out of balance. The front edge 9 of the projection 8 is formed so that the thumb or finger of the operator may be inserted and will lie over the hump of the retaining ring. This may be accomplished by cutting the edge 9 at least along a portion of its length back to the desired depth so that all or at least a portion of the projection 8 overhangs less than one-half the diameter of the retaining ring.

The arrangement of the perforations extending vertically from the outer periphery of the groove has been found to provide for adequate drainage in spite of the entire lack of any substantial radially extending component in the discharge direction of such channels. It has also been found that the rims of boxes provided with the perforations extending parallel to the axis of rotation have greater strength than rims of corresponding thickness in which radially or angularly extending perforations are employed. This is an important consideration in view of the necessity to build up the outside diameter of the rim portion to compensate for the seat and groove for the cover and the retaining ring respectively on the inside. Because of the reduced velocity of flow of the highly corrosive and erosive liquids that is obtained with the vertically extending perforations, the rim structure retains its original strength for a longer period of time and is relatively free from any tendency to develop cracks and fissures. Because the openings of the per-

forations are at the top surface of the box, a brake band may be applied to the exterior surface of the rim and in such an event, its braking action cannot cause the chipping and excessive wear of the box at the exterior periphery of the rim as would be the case were the openings to extend radially to the outside of the rim. Similarly, this fact also reduces the liability for the development of cracks and chipping at the external openings of the perforations under conditions of ordinary handling since the perforations terminate in a flat surface at the top of the rim rather than in the curved peripheral surface of the rim.

In the case of boxes molded from resin-impregnated laminated fabrics, the arrangement of vertical perforations has the additional advantage over the radially extended perforations in that the former cause less disturbance or rupturing of the fabric structure. At the worst, the vertically-extending holes may cut through one or two of the laminated fabric layers, while the angularly or radially extending holes may extend through the entire reinforcing structure.

Not only does this novel arrangement of the perforations provide for increased strength and durability of the spinning buckets, but they provide a saving in cost of manufacture of such boxes. As compared with the prior necessity to drill such perforations either individually or by means of a relatively expensive multiple drill arranged for simultaneous drilling from several directions, the vertically extending perforations of the invention may be drilled in a single operation with a relatively simple multiple drill since all of the perforations extend in the same direction.

Figures 1 to 3 illustrate the preferred embodiment in which the perforations extend to the thumb notches, which may be provided at several equidistantly spaced points about the periphery of the box, but such arrangement is not essential.

For example, in boxes which are not provided with thumb notches, the vertically-extending perforations may be provided at any suitable points about the rim. If desired, even in spinning buckets having thumb notches, these vertically extending perforations need not be formed at the thumb notches (as shown in Figure 4), though for most purposes the perforations are preferred to be made in the thumb notches since such an arrangement involves less drilling and removal of less material from the spinning bucket.

While a preferred embodiment of the invention has been disclosed, the description is intended to be illustrative only, and it is to be understood that changes and variations may be made without departing from the spirit or scope of the invention as defined by the appended claims.

What I claim is

1. A centrifugal bucket comprising a cover seat, a groove adjacent said seat for receiving a cover-retaining means, and a thumb notch adjacent said groove for facilitating removal of said means.

2. A centrifugal bucket comprising a cover seat, a groove adjacent said seat for receiving a cover-retaining means, a thumb notch adjacent said groove for facilitating removal of said ring, and a liquid-escape channel extending in a direction substantially parallel to the bucket axis connecting said groove and said thumb notch.

3. A centrifugal bucket molded of resin impregnated laminated fabric said fabric being annularly arranged in the wall of said bucket, said bucket comprising a cover seat, a groove adjacent said seat for receiving a cover-retaining means, and liquid-escape channels extending in a direction substantially parallel to the bucket axis and substantially parallel to the annularly curved plane of said laminated fabric.

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