

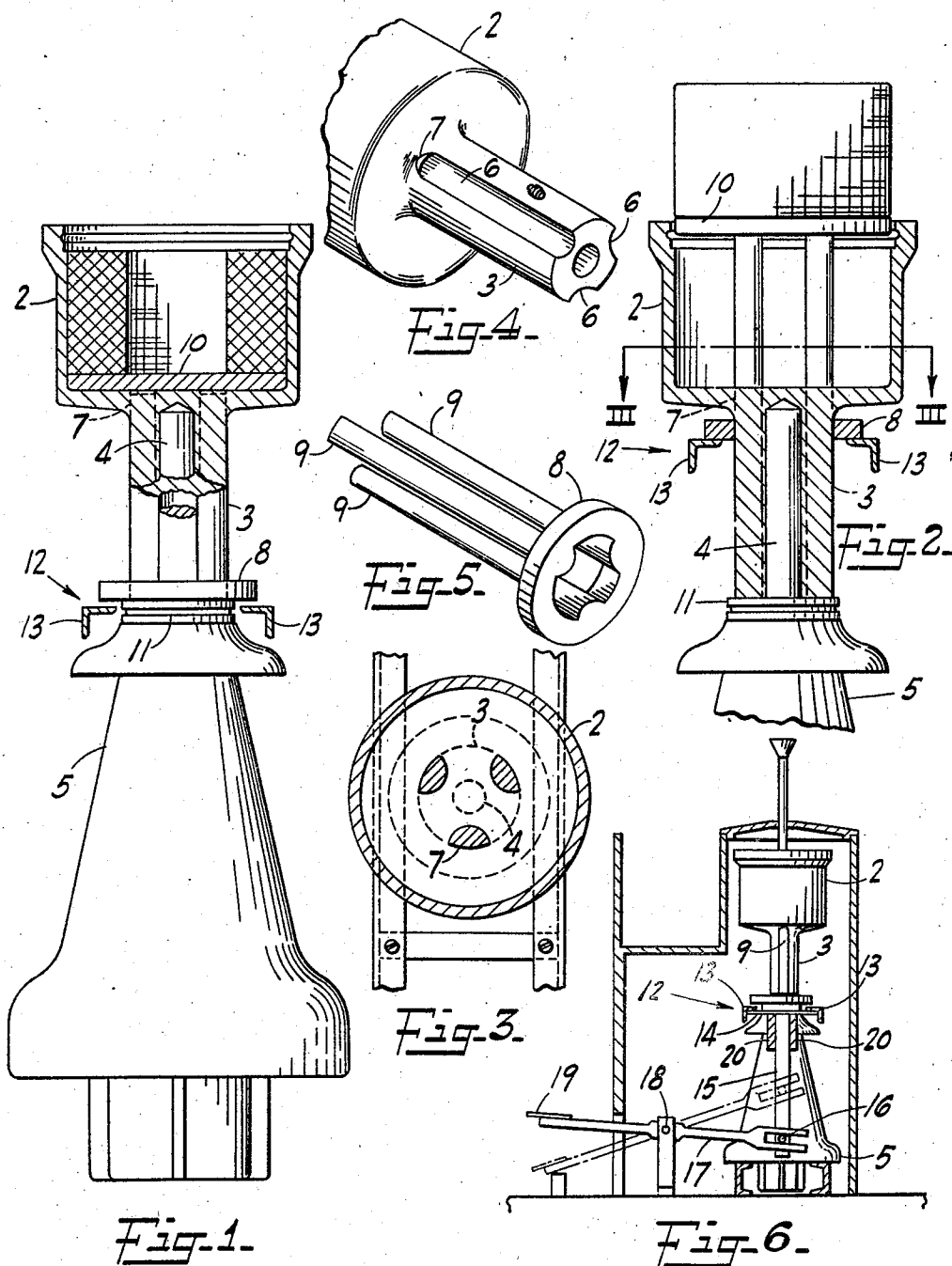
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CENTRIFUGAL SPINNING BUCKET

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CENTRIFUGAL SPINNING BUCKET

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4 Claims. (Cl. 57-76)

This invention concerns centrifugal spinning buckets, such as are employed in twisting and collecting artificial filaments, or natural or artificial yarns, for liquid-treatment thereof, and for liquid-extraction therefrom. The invention particularly concerns improvements in means for ejecting the wound packages or cakes formed or treated within the spinning buckets after completion of the collection or of the wet-treatment or of the extraction of liquids therefrom.

It has heretofore been suggested to employ a hollow spindle motor for driving the centrifugal buckets, the bore of which is provided with a reciprocable rod extending beneath the motor and attached at its upper end to a cake-supporting member in the form of a plate fitting within the bottom of the spinning bucket. By reciprocating the rod within the bore of the hollow spindle, a cake may be ejected when desired. An alternative arrangement has also been suggested in which a cake-supporting member within the bottom of the spinning bucket has a plurality of rods secured thereto which extend through apertures within the bottom of the bucket and carry secured to their lower ends an annular plate which may be reciprocated by suitable actuating means to effect ejection of the cake from the spinning bucket. This type of arrangement has the disadvantage that the rods disposed about the hub of the spinning bucket create a great deal of windage because of rotation with the bucket, thus causing lost power.

In accordance with the present invention, an improved form of cake-ejecting means is provided in association with a spinning bucket which avoids the disadvantages of both forms of ejection devices mentioned above. Other objects and advantages of the invention will be apparent from the drawing and the description thereof hereinafter.

In the drawing, illustrative of the invention, Figure 1 is an elevation, partially in cross-section and partially broken away, showing one embodiment of the invention in dormant position.

Figure 2 illustrates the invention of Figure 1 in the ejecting position.

Figure 3 is a cross-section taken on line III-III of Figure 2.

Figure 4 is a perspective view showing the hub of a spinning bucket made in accordance with the present invention.

Figure 5 is a perspective view of an ejecting collar which fits slidably upon the hub of the spinning bucket, and

Figure 6 shows, in elevation, and partially in cross-section, one arrangement for actuating the ejecting means upon a spinning bucket in a machine for spinning artificial filaments.

As shown in the drawing, a centrifugal spinning bucket 2 which may be provided with the conventional grooves for receiving a cover and cover-locking ring and with the customary liquid-escape perforations in walls thereof, has a hub 3 which fits upon and makes a driving connection with a spindle 4 extending from the motor 5. As shown in Figure 4, the hub 3 is provided with one or more arcuate grooves 6 (three being shown) extending axially therealong, the ends of which continue through the bottom of the box as perforations 7 therein. An ejector member, shown in Figure 5, is provided and comprises a collar 8 which, in the normal position of Figure 1, encircles the lowermost portion of the hub 3 of the spinning box. From the collar 8, one or more rods 9 (three being shown) extend axially thereof and are shaped to fit within the groove or grooves 6 of the hub and to provide an external surface which is substantially coplanar with the circumferential surface of the hub 3. The perforations 7 within the bottom of the bucket are of corresponding cross-section and adapted to permit the reciprocation of the rod or rods 9 therethrough. As shown in Figure 1, the cake-supporting member 10 within the spinning bucket rests upon or is in proximity to the upper end of the rod or rods 9. Alternatively, this member 10 may be secured to the upper ends of the rods 9. As shown, the hub 3 and collar 8 rest upon a ball bearing 11 but where the alternative form of arrangement just described is employed (that is, where the cake-supporting member is secured to the rods extending from the collar), the hub 3 and collar 8 need not rest upon such a bearing 11 upon the motor 5 but may be disposed well above the motor.

As shown more particularly in Figure 6, the centrifugal buckets of a machine for spinning artificial filaments may be provided with the ejector devices of the present invention, and the machine may be provided with a rail 12 (comprising two parallel bars 13 joined together at intervals between the spinning buckets by suitable cross-strips 14) extending longitudinally beneath one or more spinning boxes arranged side by side in the spinning machine in the normal manner. The rail 12 may be provided with a depending link 15 which is pivotally connected at 16 to a slotted lever 17 fulcrumed at 18 and provided

with a foot pedal 19 at its other end. By this arrangement, when doffing the machine, the operator may merely step upon the foot pedal, thus causing reciprocation of the link 15 within suitable stationary guides 20, which reciprocatory motion is transmitted to the collars 8 about the hubs 3 of the several spinning boxes by means of the rail 12.

Whereas the rods 9 which elevate the cake-supporting member 10 to ejecting position are shown of such length as to cause the cake to be brought entirely outside the spinning bucket, rods of shorter or greater length may be substituted therefor.

While the cake ejecting device of the present invention has been specifically disclosed in relation to the spinning buckets within a machine for spinning artificial filaments, it may be associated with the centrifugal buckets employed in machines for treating wound packages or cakes of yarns with liquids or for extracting liquids from such wound packages or cakes, such as in the centrifuging machine disclosed in the prior application of Henry Crewdson, Ser. No. 433,155, filed March 3, 1942.

While preferred embodiments of the invention have been shown, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In combination, a centrifugal bucket for handling filamentary material, a package-supporting member reciprocable in the bucket, a solid shaft adapted to drive the bucket, a hub depending from the bucket having a bore for receiving the shaft, perforation means in the bottom of the bucket, reciprocable means for reciprocating the member, said reciprocable means lying substantially entirely within the external per-

iphery of the hub and extending axially thereof in alignment with the perforation means, and means for reciprocating the reciprocable means through the perforation means.

2. In combination, a centrifugal bucket for handling filamentary material, a package-supporting member within the bucket, a hub on the base of the bucket and positioned outside thereof, at least one groove extending axially along the periphery of the hub of the bucket an aperture through the bucket in alignment with and communicating with the groove, and a collar having a rod fitting slidably within the groove.

3. In combination, a centrifugal bucket for handling filamentary material, a package-supporting member within the bucket, a hub on the base of the bucket and positioned outside thereof, a plurality of grooves extending axially along the periphery of the hub of the bucket, a corresponding number of apertures through the bottom of the bucket in alignment with and communicating with the grooves, and a collar having a plurality of rods fitting slidably within corresponding grooves.

4. In combination, a centrifugal bucket for handling filamentary material, a package-supporting member within the bucket, a hub on the base of the bucket and positioned outside thereof, a plurality of grooves extending axially along the periphery of the hub of the bucket, a corresponding number of apertures through the bottom of the bucket in alignment with and communicating with the grooves, a collar having a plurality of rods fitting slidably within the grooves, the rods having their external surfaces substantially flush with the peripheral surfaces of the hub and being arranged to extend during normal rotation of the bucket substantially the entire length of the grooves.

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