Dec. 15, 1936. H. R. MOYER 2,064,028

RAYON SPINNING BUCKET

Filed July 24, 1934

Fig. 1.

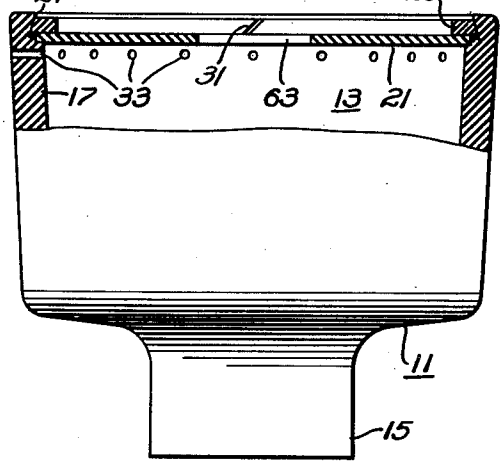


Fig. 2.

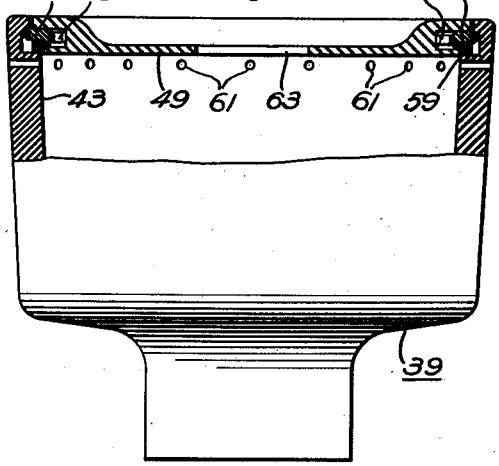


Fig. 3.

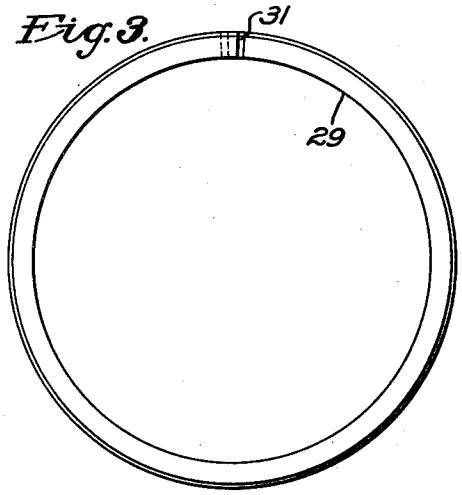


Fig. 4.

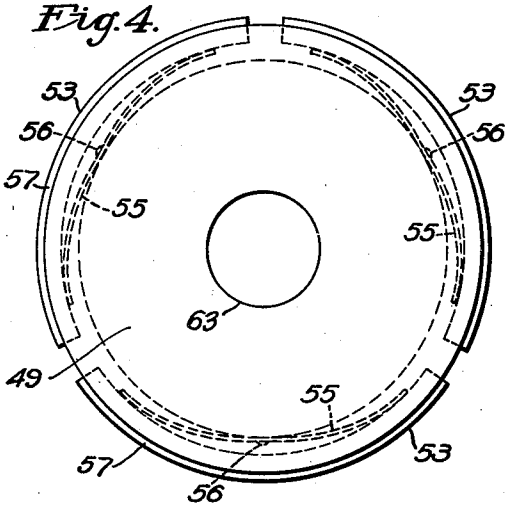


Fig. 5.

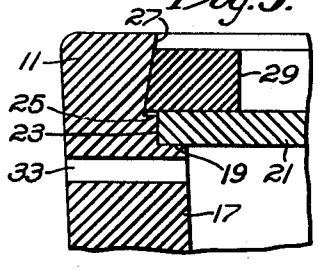


Fig. 6.

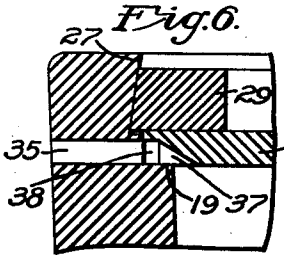


Fig. 7.

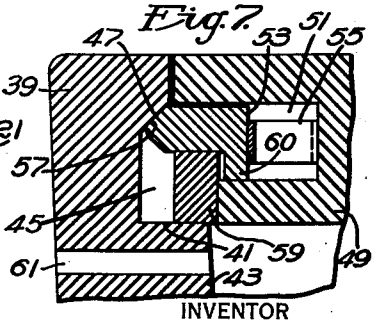
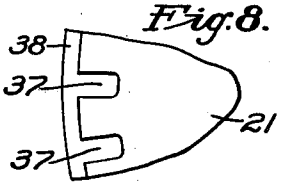


Fig. 8.



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UNITED STATES PATENT OFFICE

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RAYON SPINNING BUCKET

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Application July 24, 1934, Serial No. 736,671

3 Claims. (Cl. 117—27.5)

My invention relates to high speed rayon spinning buckets or pots and particularly to means for holding or locking a removable cover thereon.

An object of my invention is to provide a relatively simple, inexpensive and highly effective means for locking the cover on a vertical shaft spinning pot in proper operative position thereon.

Another object of my invention is to provide a relatively simple cover and cover locking means cooperating with drain holes in the wall of the pot without appreciable weakening of the pot walls.

Another object of my invention is to provide a cover locking or clamping means which will permit of easy and quick assembly and disassembly thereof relative to the spinning pot.

Other objects of my invention will either be apparent from the following description of several forms of devices embodying my invention or will be pointed out hereinafter.

It is well known that the speed in revolutions per minute of rayon spinning devices has been increased from the original relatively low speeds so that the question of balance of the spinning pots or buckets and the strength of the walls of such buckets has become of even greater importance than was originally the case.

In practicing my invention, I provide a spinning pot or bucket of the type usually employed in spinning rayon material, the inner surface of the upper edge of the pot being provided however, with an annular shoulder upon which a cover rests, and a second annular shoulder thereabove disposed adjacent to an upwardly and inwardly inclined annular surface, a centrifugally-actuable split ring located on the upper surface of the cover and engaging the inclined surface.

In a modified form of device embodying my invention, I make the peripheral edge of the cover of greater thickness than the central portion thereof and locate in an annular recess in the periphery of the cover a plurality of arcuate members centrifugally actuable outwardly against an inwardly and upwardly inclined surface.

In the single sheet of drawing,

Figure 1 is a view, partially in front elevation and partially in section, of one form of device embodying my invention,

Fig. 2 is a view similar to Fig. 1 but showing a modified form of device embodying my invention,

Fig. 3 is a top plan view of the locking ring constituting a part of the device shown in Fig. 1.

Fig. 4 is a top plan view of the cover assembly shown in section in Fig. 2 of the drawing,

Fig. 5 is a fragmentary view in vertical radial section, on an enlarged scale, of the upper left hand portion of Fig. 1 of the drawing;

Fig. 6 is a view similar to Fig. 5 but showing a modified form of device.

Fig. 7 is a fragmentary view of the upper left hand corner portion of Fig. 2 of the drawing, and,

Fig. 8 is a fragmentary bottom view of the cover shown in Fig. 6 of the drawing.

Referring first to Fig. 1 of the drawing, I have there illustrated a rayon spinning pot or bucket 11 which may be made of any suitable or desired material but which I prefer to make of a suitable phenolic condensation product. As is usual in such pots, the inner diameter of the bucket or pot increases toward the top of the bucket. The bucket provides a chamber 13 for receiving the spun thread or rayon usually called a cake, and is provided at its lower end with a portion 15 of reduced diameter which may be made of any suitable or desired construction to receive a driving shaft adapted to fit into said portion 15 and drive the bucket either by friction alone or by some positive driving means in a manner well known in the art.

The inner face of the upper part of wall 17 of the bucket is provided with an annular shoulder 19, shown on an enlarged scale in Fig. 5 of the drawing, upon which a substantially flat cover 21 may rest. While I have shown a snug fit between the outer peripheral surface of lid or cover 21 and the upwardly extending face 23 immediately above shoulder 19, I do not desire to be limited thereto. A short distance above the horizontal shoulder 19 there is provided a second horizontal shoulder 25, above which extends an upwardly and inwardly inclined surface 27 substantially as shown in Figs. 1 and 5 of the drawing. A split locking ring 29 rests upon the upper surface of cover 21 and is of such thickness that the lower face of ring 29 will be a small distance above the horizontal shoulder 25, as is shown clearly in Figs. 1 and 5 of the drawing. The split 31, (see Fig. 3 of the drawing), is made large enough to permit of deforming the ring 29 as by compressing it to introduce it into and remove it from its proper operative position shown in the drawing.

A plurality of radial drainage holes 33 are provided in the wall 17 immediately below the shoulder 19.

The cover member is provided with a central

opening 63 therethrough so that the usual small tube through which the rayon thread passes may be caused to enter the inside of the bucket.

After the cover 21 has been placed on the bucket 11, the spring ring 29 is compressed to a sufficient degree to permit it to be located in its proper operative position above the cover 21 and it is obvious that when the bucket is rotated the spring ring 29 will expand and be forced by centrifugal action thereon into close operative engagement with the upwardly and inwardly inclined annular face 27 so that a component of the centrifugal force or of the pressure exerted by the spring ring 29 on the face 27 will be operative in a downwardly direction or, to state it in other words, in a substantially axial direction to force the lid or cover 21 into its proper operative position on the shoulder 19 and to lock it in such position during operation. As is shown particularly in Figs. 5 and 6 of the drawing, the cover 21 is made slightly larger than the axial distance between shoulders 19 and 25 or their equivalent, so that the centrifugally actuable locking ring 29 can exert a positive axial force against the cover 21 to clamp it securely in its proper operative position.

In the modification shown in Fig. 6 of the drawing, I have illustrated a different location of drainage holes. The bottoms of the walls respectively defining the drainage holes 35 are in the same horizontal plane with or are on a level with the shoulder 19. A plurality of angularly upwardly radially-extending slots 37 and an annular recess 38 communicating therewith (see Figs. 6 and 8) are provided in the under face of the lid 21 at its periphery so that the liquid to be drained from the inside of the bucket 11 will flow freely outwardly through the slots 37 and the annular recess 38 in lid 21 and then through openings 35.

Referring now to Figs. 2 and 7 of the drawing, I have there illustrated a bucket 39 of substantially the same shape and general design as was hereinbefore described for bucket 11. In this case, a single substantially horizontal shoulder 41 is provided in the inside of the wall 43, the recess 45 formed thereby having an over-hung, upwardly and inwardly extending portion 47 formed in the wall of the bucket just below the upper edge thereof.

A cover 49 is provided with a thickened rim or peripheral portion which has an annular recess 51 provided therein for receiving a plurality of arcuate members 53 which are of substantially inverted L-shape in radial section, as is shown more particularly in Fig. 7 of the drawing. These arcuate members are initially yieldingly pressed radially outwardly by leaf springs 55 whose intermediate portion may be suitably secured against the inner wall of recess 51 as by screws 56 while the end portions thereof operatively engage and press outwardly the arcuate members 53.

The outer peripheral face or surface of the members 53 is made of substantially V-shape, as is shown clearly in Fig. 7 of the drawing, the upper surface 57 of the arcuate members operatively engaging the overhanging surface 47 of the recess 45. In order to retain the arcuate members 53 in their cooperative position relative to the cover, I may provide a shrink ring 59 located in close contact with the lower peripheral portion of cover 49, this ring 59 being engaged by the depending portions 60 of arcuate members 53 to hold them within the recess 51. Drainage holes 61 may be provided extending substantially radially through the wall 43 and they may be located just below the shoulder 41.

It is obvious that the arcuate members 53 will operate in substantially the same manner as the single annular member 29 of Fig. 1, the surfaces 57 of the respective arcuate members 53 engaging the annular surface 47 as already described. It is relatively easy to withdraw and insert the cover shown in Figs. 2 and 7 from the bucket, it being only necessary to give a quick upward or outward movement to the cover assembly to effect removal thereof when the bucket and cover assembly are at rest the operator grasping the edges of the cover surrounding the central opening 63. The same comments hold with regard to the assembly shown in Figs. 1, 5 and 6, since centrifugal force is not operative to cause spreading of the spring ring 29 when the bucket is not rotating.

It is obvious that the component of the centrifugal force which is thus made effective to hold the cover in place may be varied by varying the inclination of the surface 27 or of surface 47. It is further obvious that there is but a relatively small reduction in the cross-sectional area of the bucket wall adjacent the upper edge thereof so that a construction and device embodying my invention will weaken the bucket wall to a relatively small extent only. Consequently, my apparatus, as a whole, provides a much safer assembly than has heretofore been available.

Various further modifications may be made in the device embodying my invention without departing from the spirit and scope thereof, and I desire, therefore, that only such limitations shall be placed thereon as are imposed by the prior art or are set forth in the appended claims.

I claim as my invention:

1. In a spinning pot having an internal annular shoulder and an upwardly inwardly inclined annular surface thereabove below the upper edge of the pot, a cover structure resting on the shoulder and having an annular peripheral recess therein, an arcuate member in the peripheral recess having an external surface corresponding to and engaging the inwardly inclined surface in the pot and forced thereagainst by centrifugal force during rotation of the pot and cover structure and resilient means located in the peripheral recess in the cover to initially force the arcuate member substantially radially outwardly.

2. In a spinning pot having an internal annular shoulder and an upwardly inwardly inclined annular surface thereabove below the upper edge of the pot, a cover structure resting on the shoulder and having an annular peripheral recess therein, an arcuate member in the peripheral recess having an external surface corresponding to and engaging the inwardly inclined surface in the pot and forced thereagainst by centrifugal force during rotation of the pot and cover structure, resilient means located in the peripheral recess in the cover to initially force the arcuate member substantially radially outwardly and a peripheral ring operatively engaging the cover and the arcuate member to limit the radial outward movement of the arcuate member.

3. In a spinning pot having an internal annular shoulder and an upwardly inwardly inclined annular surface thereabove below the upper edge of the pot, a cover structure resting on the

shoulder and having an annular peripheral recess therein, a plurality of arcuate members in the peripheral recess, each having an external surface corresponding to and engaging the inwardly inclined surface in the pot and forced thereagainst by centrifugal force during rotation of the pot and cover structure, a plurality of springs in the peripheral recess in the cover initially forcing the respective arcuate members substantially radially outwardly and a peripheral ring operatively engaging the cover and the arcuate members to limit the outward movement of the arcuate members.

HOWARD R. MOYER.