

Aug. 31, 1926.

C. A. HUTTINGER

1,598,281

SPINNING BOX FOR RAYON SILK

Filed August 1, 1925

2 Sheets-Sheet 1

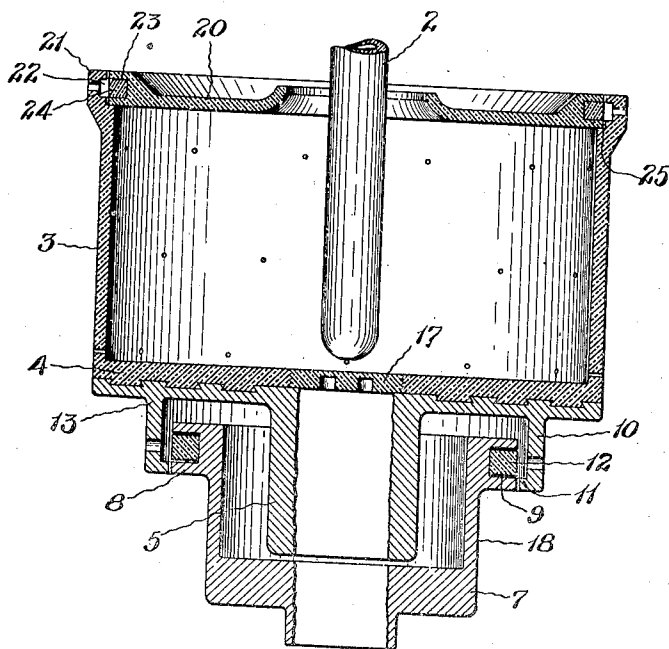


FIG. 1.

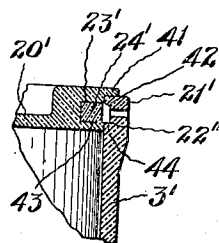


FIG. 1a

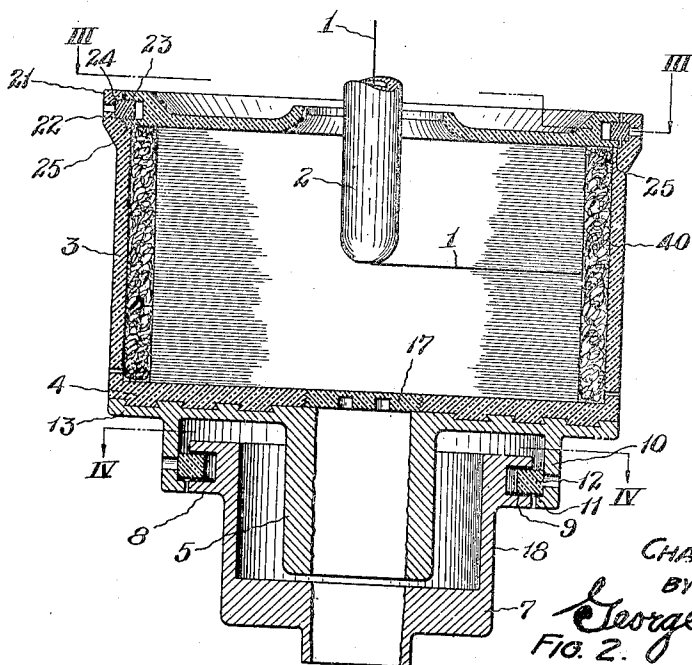


FIG. 2.

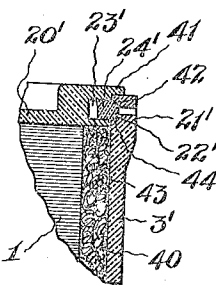


FIG. 2a

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2 Sheets-Sheet 2

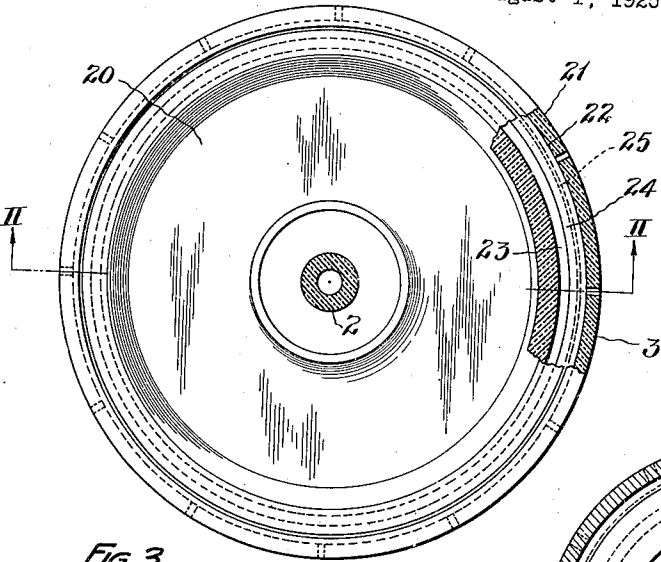


FIG. 3.

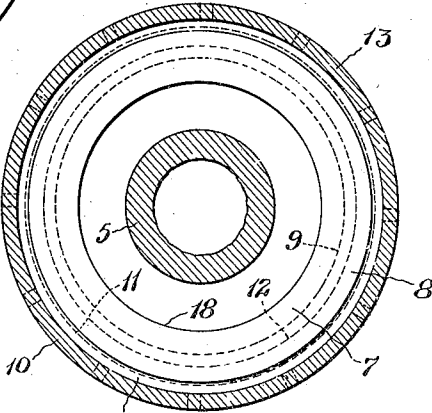


FIG. 4.

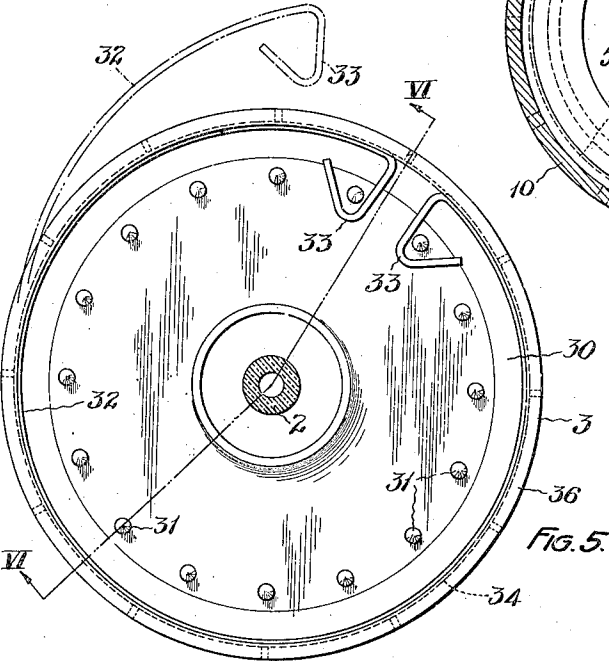


FIG. 5.

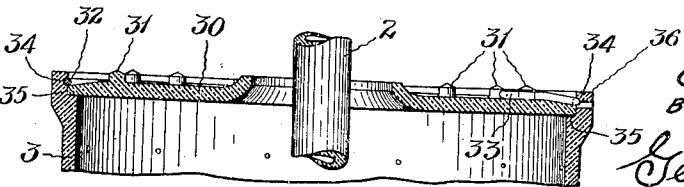


FIG. 6.

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UNITED STATES PATENT OFFICE.

CHARLES A. HUTTINGER, OF LAKEWOOD, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE ACME RAYON CORPORATION, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SPINNING BOX FOR RAYON SILK.

Application filed August 1, 1925. Serial No. 47,456.

My invention relates to spinning boxes and particularly to devices of this character utilized for collecting in cakes, rayon silk made from viscose after the same has been set up into a thread in a precipitating bath. The improvements relate to means for preventing the box from flying off the driving shaft; means positively causing the cover to stop its rotation when the box is stopped; as also, a particular construction of the box itself in which the body of the same is formed of a suitable composition securely attached to a metal sub-base.

The annexed drawings and the following description set forth in detail certain means embodying my invention, such disclosed means constituting, however, but a few of the various forms in which the principle of the invention may be applied.

In said annexed drawings:

Figure 1 represents a vertical, axial section through my improved spinning box, showing also a portion of a funnel thread-guide, the parts being shown as relatively positioned, when the box is stopped;

Figure 1^a is a fragmentary vertical section of a slightly modified construction designed effectively to prevent leakage around the cover of the spinning box;

Figure 2 is a view similar to Figure 1 in which the parts are shown as relatively positioned when the box is rotating at a high speed;

Figure 2^a is a view similar to Figure 1^a in which the parts are shown as relatively positioned when the box is rotating at a high speed;

Figure 3 is a partial plan view and partial horizontal section, taken in the planes indicated by the line III—III, Figure 2;

Figure 4 is a plan section, taken in the plane indicated by the line IV—IV, Figure 2;

Figure 5 is a plan view of a modified form of box cover and a lock therefor; and

Figure 6 is a fragmentary vertical section, taken in the planes indicated by the line VI—VI, Figure 5.

Referring to the annexed drawings in which the same parts are indicated by the same respective ordinals in the several views, the ordinal 1 represents a rayon silk thread, comprised of a suitable number of strands, fed downwardly from the usual godet wheel

(not shown) over which the thread passes from the bath in which the same has been set up, this thread 1 being conducted through the usual funnel guide 2 and being formed into a cake 40 in the spinning box 3, when the latter is rotated at the high speeds for which said boxes are constructed and at which they perform their functions of coiling the thread 1. The body of this box 3 is of suitable composite material, usually a hard rubber composition, but I use bakelite for the body of my improved box. I firmly secure the base 4 of this bakelite box body 3 to a metal sub-base 13, the particular securing means which I utilize being interlocking grooves and tongues formed respectively in the bakelite base 4 and the metal base 13. Preferably, the bakelite box body 3 is molded to the metal base 13. The base member 13 is formed with a hub 5 adapted to receive a bushing (not shown) which in turn receives the means for driving the box 3, the same being usually an extension of a motor shaft. A bakelite plug 17 is threaded into the bakelite base 4 above the upper end of the bushing and shaft in the hub 5.

The thread 1 is fed through the guide 2 into the box 3 when the latter is rotated at the proper speed, resulting in the formation of a cylindrical cake 40, as illustrated in Figure 2. It is within the spirit of my invention to mold the entire box 3 and hub 5 of bakelite, instead of providing a metal sub-base and hub.

In order that the box 3 may not fly off the motor shaft, when rotated at the high speeds to which these boxes are subjected, I provide a retaining ring 7 adapted to be securely fastened to the motor shaft and being of cup-shaped formation, as plainly shown in Figures 1 and 2, this retaining ring 7 being formed with an upwardly-extending body portion 18 having an upper and outwardly-extending flange 8 formed with a peripheral groove 9. Within this groove 9 is positioned an expansible member, such as a rubber friction band 12, or a coiled spring or an annular series of alternate blocks and springs, adapted to fly outwardly under the force of centrifugal action, when the box 3 is rotated at a high speed. Depending from the metal base 13 is an annular flange 10 formed at its lower end with an inwardly-projecting shoulder 11, the

flange 10 lying just outside the flange 8 of the ring 7 and having its shoulder 11 substantially horizontally aligned with the bottom of the groove 9 formed in the flange 8.

5 It is evident that when the box 3 is rotated at a speed high enough to cause the expansible band 12 to be thrown outwardly under the centrifugal action, the band 12 will frictionally engage the inner face of the flange 10 and the box 3 will be prevented from riding upwardly on the motor shaft.

By a construction similar to that described with reference to the preventing of the box 3 flying off the motor shaft, a cover 20 is caused to rotate in unison with the box 3. Referring particularly to Figures 1, 2 and 3, the box 3 is formed with an inner shoulder 25 upon which the cover 20 is mounted, said cover being formed with an outer peripheral groove 23 within which is positioned an expansible member such as a rubber friction band 24. The upper end of the box 3 is formed into an enlarged annular flange 21 formed with an inner annular groove 22 horizontally aligned with the groove 23 of the cover 20. The cover 20 rotates with the box 3 and when the box 3 is stopped, the cover tends to continue its rotation or to be thrown off the box. The expansible rubber ring 24 prevents this result by causing the cover 20 to stop rotating when the box 3 stops, since the ring 24 frictionally engages the wall of the groove 22 in the flange 21 when the cover continues rotating at a speed sufficient to cause the ring 24 to be thrown outwardly by centrifugal action.

Referring particularly to Figures 1^a and 2^a, a slightly modified construction is shown for effectively preventing leakage around the cover. This modification consists in eliminating the shoulder 25 formed at the top of the box 3, upon which the cover 2 rests in the type of device shown in Figures 1 and 2, and forming a peripheral flange 41 upon the cover 20', by means of which the same is supported upon the flange 21' of the box 3'. Furthermore, the upper wall 42 bounding the box groove 22' is beveled so as to provide positively for the wedging of the expansible ring 24' tightly down upon the lower wall 43 bounding the groove 23' and the lower wall 44 bounding the groove 22'. This construction particularly prevents distortion of the silk.

Referring particularly to Figures 5 and 6, I show a modified form of cover and cover lock. The same consists in a cover body 30 formed with an annular series of spaced upwardly-projecting bosses 31 of which any two adjacent bosses are adapted to be engaged by the hook-shaped ends 33 of a flexible wire ring 32. The cover 30 rests upon an inner shoulder 35 formed in the upper end of the box 3 and the body of the

ring 32 is positioned in a small inner annular groove 34 formed in an upper flange 36 of the box 3. The ring 32 by frictional engagement is caused to rotate with the box 3 and the rotation of the ring 32 causes a similar rotation of the cover 30 through its hook-ends 33. Likewise, the stopping of the box 3 stops the ring 32 which in turn stops the rotation of the cover 30.

What I claim is:

1. A spinning box formed with a hub to receive driving means, a retaining ring adapted to be actuated by the driving means, and an expansible member carried by and around said ring and adapted by centrifugal action to engage and hold said box to prevent the latter from climbing upwardly.

2. A spinning box formed with an annular flange, a hub member secured to the box base to receive driving means, a retaining ring adapted to be actuated by the driving means, and an expansible member carried by and around said ring and adapted by centrifugal action frictionally to engage said annular flange.

3. A spinning box formed integrally with a depending hub to receive driving means, an annular flange formed on said box and depending therefrom, a retaining ring adapted to be rotated by the driving means, said ring being formed with a lateral flange having a peripheral groove, and an expansible member positioned in said groove and adapted by centrifugal action frictionally to engage said annular flange.

4. A spinning box formed with a hub member to receive driving means, a removable cover for said box, and positive means for stopping the rotation of the cover when the box stops rotating.

5. A spinning box formed integrally with a hub member to receive driving means, a cover for said box mounted upon and within the latter, and means for causing the cover to rotate in unison with the box comprising opposed annularly grooved members formed on the box and cover respectively, and an expansible member positioned in the cover groove and adapted by centrifugal action frictionally to engage the box member.

6. A spinning box formed integrally with a hub member to receive driving means, said box being formed with a laterally-extended peripheral upper end flange formed with an inner annular groove, said box being further formed with an inwardly-extending shoulder, a cover resting on said shoulder and having a peripheral flange formed with an annular groove opposed to the box groove, and an expansible member positioned in the groove of said cover and adapted by centrifugal action frictionally to engage the box flange within the groove of the latter.

7. A spinning box formed with an annular depending flange, a cover for said box, positive means for stopping the rotation of the cover when the box stops rotating, a hub member secured to the box base to receive driving means, a retaining ring adapted to be actuated by the driving means, and an expansible member carried by and around said ring and adapted by centrifugal action frictionally to engage said annular flange.

8. A spinning box formed integrally with a hub member to receive driving means, said box being formed with a laterally-extended peripheral upper end flange formed with an inner annular groove, the upper wall of said groove forming an inner upper end shoulder, a cover resting on said shoulder and having a peripheral flange formed with an annular groove opposed to the box groove, and an expansible member positioned in the

groove of said cover and adapted by centrifugal action frictionally to engage the box flange within the groove of the latter.

9. A spinning box formed integrally with a hub member to receive driving means, said box being formed with a laterally-extended peripheral upper end flange formed with an inner annular groove, the upper wall bounding said groove being beveled at the bottom and further forming an inner upper end shoulder, a cover resting on said shoulder and having a peripheral flange formed with an annular groove opposed to the box groove, and an expansible member positioned in the groove of said cover and adapted by centrifugal action frictionally to engage the box flange within the groove of the latter.

Signed by me this 13 day of July, 1925.
CHARLES A. HUTTINGER.