This invention relates to devices for retaining covers on spinning buckets employed in collecting threads, such as of freshly spun artificial silk made from viscose.

It is an object of the invention to provide means on the cover, normally positioned within the limits defined by the periphery of the cover, adapted to be thrown outwardly to engage the rim of the spinning bucket during rotation thereof and to be returned to normal position upon slowing down of the rotation of the bucket so that the cover may be readily removed and replaced on the bucket. It is a further object to provide such means as are of relatively small size compared to the periphery of the cover to reduce to a minimum any tendency of the movable parts to stick in either the normal or cover-engaging positions as a result of either adhesive or frictional forces.

In the drawing, illustrative of the invention, Figure 1 shows a plan view of a spinning bucket with the cover in place.

Figure 2 is a perspective view of the cover of Figure 1, partly in cross-section and partially broken away.

Figure 3 is an elevational cross-section of the spinning bucket of Figure 1 with cover in place partially broken away.

Figure 4 is a perspective view similar to Figure 2 but showing a modified form of invention, and Figure 5 is a perspective view similar to Figure 2 but showing a second modification of the invention.

Figure 6 is a plan view of a modification.

Referring first to Figures 1 to 3 inclusive of the drawing, there is shown a spinning bucket 2 with a cover 3 in place. The cover is provided with the central opening 4 customary in such devices to permit the traversing of a thread-guiding funnel therethrough. The spinning bucket 2 may be of any conventional construction and may be provided with the usual perforations to permit discharge of fluids introduced by the thread wound in the bucket by centrifugal force, one such perforation being shown at 5. As shown in Figures 1 to 3, the inner periphery of the spinning bucket is provided with a cover-retaining ledge 6. Alternatively, the cover itself may be provided with an overhanging flange at the top thereof which would permit proper seating of the cover upon the top edge of the spinning bucket.

In accordance with the invention, the cover is provided with a plurality of finger-like elements adapted to serve as cover-locking means. While any number of such elements may be employed in accordance with the invention, three are shown in the drawing, and for the purpose of simplifying the description, only one of such elements will be described hereinafter since all of them in a given embodiment are identical.

In the embodiment of Figures 1 to 3, a finger-like member 7 is supported upon the cover for swinging motion about the pivot 8. The member 7 is provided with a resilient tail portion 9 which normally restrains the finger-like member to the position shown in Figure 2 wherein the member 7 is confined within the limits of the periphery of the cover, this limiting position being controlled by the abutment 10 against which the end of the tail 9 rests. The construction of the finger-like member 7 is such that one end 11, herein designated the cover-engaging end, is considerably heavier than the tail 9. As a result of this fact, upon rotation of the spinning bucket at high speeds the bucket-engaging end is thrown outwardly by centrifugal force against the resilient opposition of the spring tail 9, thereby locking the cover in position upon rotation of the spinning bucket. Because of the resilient character of the tail 9, the member 7 is returned to the position shown in Figure 2 upon slowing down of the spinning bucket and coming to a stop. This return to normal position is highly important in that it permits ready removal and re-insertion of the cover upon the spinning bucket without subjecting the cover-locking means to severe mechanical action. As shown in the drawing, the area of the bucket engaging surface of the finger-like member is relatively small as compared to the total periphery of the cover thereby reducing to a minimum any tendency of the bucket-engaging surface to adhere to the spinning bucket. In addition, the horizontal surfaces of the finger-like member which must slide along adjacent horizontal surfaces of the cover during operation to bucket-engaging position and back to normal position are relatively small as compared to the periphery of the cover and as compared to the effective weight of the bucket-engaging end thereof. This serves to minimize the amount of friction opposing the centrifugal motion or return to normal position of the finger-like member 7.

The bucket-engaging end of the finger-like member 7 may be formed with a beveled surface as shown at 12 to facilitate a firm engagement and rapid disengagement of the locking element with the groove 13 on the inside of the bucket rim, the groove being beveled to conform with the bucket-engaging member. The groove 13
may extend annularly along the entire inner periphery of the bucket rim or, as is shown in Figure 5, it may have a relatively short length, having however a sufficiently greater length than the bucket-engageable portion of the finger-like member to facilitate insertion of the cover in the proper position relative to the grooves in the bucket without the necessity of exercising great care in lining up the accurate register.

In the modification shown in Figure 4, the finger-like member 7 is pivoted at 8 and has a non-resilient tail 14 of less weight than the bucket-engaging end 11. The tail 14 bears against a leaf-spring 15, bent in the shape of a U and confined between the tail 14 and the recess surface 16 within the cover. As in Figures 1 to 3, the embodiment of Figure 4 is normally in the position shown, the end 11 of the finger-like member 7 being thrown into bucket-engaging position upon rotation of the box and being returned to normal position by the spring 18 upon stopping thereof.

In the embodiment of Figure 5, the finger-like member 7 is similar in construction to that of Figure 4, but the spring 18 of Figure 4 is replaced by the resilient resilient 17, which may be of rubber, sponge rubber, synthetic rubber, or synthetic rubber sponge. As in the other embodiments, the embodiment of Figure 5 is held in the normal position within the limits of the periphery of the cover but upon rotation the heavy end 11 is thrown into socket-engaging position and upon stopping the rotation, the resilient cushion 17 returns the finger-like member to normal position.

Where a groove of short length is provided within the inner periphery of the basket rim, as is shown in Figure 5, a register mark 18 may be provided at the proper position along the bucket rim so that an operator in placing the cover in position may place the cover with the pivot 8 in substantial alignment with the register mark 18. If desired, a separate register mark may be placed upon the cover to correspond with the register mark upon the bucket. As stated above, the groove 13 should be made considerably longer than the bucket-engaging portion 12 of the finger-like member 7 so that an operator need not exercise great care in inserting proper register.

In the embodiment of Figure 6, the bucket cover is provided with a plurality of recesses in its periphery as in the preceding embodiments. Each of the recesses is provided with the locking member 18 having a beveled groove-engaging surface 20 and two oppositely arranged hook-like projections 21 and 22 at its inner end. The member 18 is provided with a centrally disposed guiding slot 23 which cooperates with a pin 24, extending through the recess. A leaf spring 25 is confined between the ends of the hook-like projections 21 and 22 and the pin 23 in such a manner that the member 18 is normally held in the retracted position within the recess as shown, but when rotation of the bucket and cover, member 18 is thrown outwardly by centrifugal force in bucket engagement with the groove in the bucket. Preferably the member 18 is so constructed that it is symmetrical and has its center of gravity between the pin and the bucket-engaging surface 20 so that as the member is thrown outwardly, there will be tendency to set up a moment adding any inequality in the arms of the leaf springs which might cause the member 18 to jam against the end wall of the recess. In this embodiment as well as that of Figure 4, the spring may be made of corrosion-resistant metal or of ordinary steel covered with a tough corrosion-resistant coating of rubber or of a synthetic rubber or resin, such as polyvinyl chloride. Besides having all of the advantages of the other embodiments, that of Figure 6 also has the advantage that the ratio of bucket-engaging surface to the frictional sliding surfaces is much greater.

As shown in the drawing, the elements of the cover-locking means are all recessed in the cover, but this is not essential. For example, they may be pivoted upon the top surface of the cover which may be supplied with suitable slots, or which the resilient means may bear. However, the recessed form is preferred because of the fact that it confines the cover-locking elements in a neat fashion, thereby protecting the elements of the mechanism from damage resulting from any possible catching of the cover-locking means during handling of the cover and also protects the hands of operators from injuries that might result from careless manipulation of the cover before the spinning bucket has stopped rotation or even after such stopping of rotation.

In general, the devices of the invention are characterized by relatively small areas presenting frictional resistance to motion and relatively small areas presenting the opportunity of sticking of the locking elements in bucket-engaging position even after stopping of rotation. The invention is also characterized by relatively few projecting parts, and in the preferred embodiment by absolute freedom from projecting parts and with absolute assurance that the cover may be removed and replaced upon the box without any possibility of wear and tear. The various parts of the bucket and cover may be made of the usual corrosion-resistant materials employed in making similar structures heretofore.

While preferred embodiments of the invention have 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 spinning bucket adapted to receive a cover, a cover therefore carrying symmetrically disposed thereon a plurality of locking means normally retained within the limits defined by the periphery of the cover and adapted to be thrown outwardly into engagement with the bucket upon rotation thereof, and resilient means for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the locking means to normal position upon the slowing of the rotation of the bucket in stopping.

2. A spinning bucket adapted to receive a cover and having a groove in its upper rim, finger-like members pivoted on the cover at points considerably offset from their respective centers of gravity and normally held out bucket-engaging position but capable of being thrown into engagement with the bucket upon rotation thereof, resilient means for opposing said motion but of insufficient magnitude to overcome it, said resilient means being capable of returning said members to their normal position upon the slowing of the rotation of the bucket in stopping.

3. A spinning bucket adapted to receive a cover thereon carrying a plurality of finger-like members pivoted thereupon and normally disposed within the limits defined by the periphery of the cover, the members being
heavier at one side of their respective pivots and adapted to be thrown outwardly into engagement with the bucket upon rotation thereof, and resilient means for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the locking means to normal position upon the slowing of the rotation of the bucket in stopping.

5. A spinning bucket adapted to receive a cover, a cover therefor carrying a plurality of finger-like members pivoted thereupon and normally disposed within the limits defined by the periphery of the cover, said members being heavier at one side of their respective pivots and adapted to be thrown outwardly into engagement with the bucket upon rotation thereof, and resilient means on the other side of the pivots for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the finger-like members to normal position upon the slowing of the rotation of the buckets in stopping.

6. A spinning bucket adapted to receive a cover and having a groove on the inside periphery of the upper rim, a cover therefor carrying a plurality of finger-like members pivoted thereon and normally disposed within the limits defined by the periphery of the cover, said members being heavier at one side of their respective pivots and adapted to be thrown outwardly into engagement with the groove in the bucket upon rotation thereof, and resilient means for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the finger-like members to normal position upon the slowing of the rotation of the bucket in stopping.

7. A spinning bucket adapted to receive a cover and having on the inside periphery of its upper rim a groove having sloping sides diminishing its width with increasing depth, a cover therefor carrying a plurality of finger-like members pivoted thereon and normally disposed within the limits defined by the periphery of the cover, said members being heavier at one side of their respective pivots and adapted to be thrown outwardly into engagement with the groove in the bucket upon rotation thereof, and resilient means on the other side of the pivots for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the finger-like members to normal position upon the slowing of the rotation of the bucket in stopping.

8. A spinning bucket adapted to receive a cover, a cover therefor carrying a plurality of finger-like members pivoted in recesses in said cover and normally disposed within the limits defined by the periphery of the cover, said members being heavier at one side of their respective pivots and adapted to be thrown outwardly into engagement with the bucket upon rotation thereof, and resilient means for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the finger-like members to normal position upon the slowing of the rotation of the bucket in stopping.

9. A spinning bucket adapted to receive a cover, a cover therefor carrying symmetrically disposed thereon a plurality of locking means normally retained within the limits defined by the periphery of the cover and adapted to be thrown outwardly into engagement with the bucket upon rotation thereof, said locking means extending along but a relatively small proportion of the periphery of the cover whereby frictional and adhesive force tending to oppose outward and inward movement of said means are minimized, and resilient means for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the locking means to normal position upon the slowing of the rotation of the bucket in stopping.

10. A spinning bucket adapted to receive a cover, a cover therefor carrying a plurality of locking members radially slidable with respect thereto and normally disposed within the limits defined by the periphery of the cover, and resilient means for opposing said radial movement outwardly but of insufficient strength to overcome such movement upon rotation of the bucket, said resilient means being capable of returning the locking means to normal position upon the slowing of the rotation of the bucket in stopping.

11. A spinning bucket adapted to receive a cover, a cover therefor carrying a plurality of members slidable radially with respect thereto and normally disposed within the limits defined by the periphery of the cover, a pin disposed in said cover on a radial line extending substantially centrally of each said locking member, resilient means on each of said members bearing against said pin normally holding said member in its normal retracted position and tending to oppose outward movement thereof but insufficient to overcome outward movement upon rotation of the bucket.

12. A spinning bucket adapted to receive a cover, a cover therefor carrying a plurality of locking members slidable radially with respect thereto and normally disposed within the limits defined by the periphery of the cover, a pin disposed in said cover on a radial line extending substantially centrally of each of said locking members, a guideway in each of said locking members adapted to cooperate with each of said pins, resilient means on each of said locking members bearing against said pin normally retaining said member in its normal retracted position and opposing outward movement thereof but with insufficient force to overcome such outward movement upon rotation of the spinning bucket, each of said locking members being so constructed that its center of gravity lies outwardly with respect to each of said pins when said locking members lie in normal position so that outward movement thereof against the opposing action of the resilient means is accompanied with a tendency to prevent any binding action of said locking members in said cover.

13. A spinning bucket adapted to receive a cover and having a groove on the inside of its
upper rim, a cover therefor carrying recessed therein a plurality of locking members slidable radially with respect thereto into and out of engagement with said groove and normally disposed within the limits defined by the periphery of the cover, a pin disposed in said cover on a radial line extending substantially centrally of each of said locking members, a guideway in each of said locking members adapted to cooperate with each of said pins, resilient means on each of said locking members bearing against said pin normally retaining said member in its normal retracted position and opposing outward movement thereof but with insufficient force to overcome such outward movement upon rotation of the spinning bucket, each of said locking members being so constructed that its center of gravity lies outwardly with respect to each of said pins when said locking members lie in normal position so that outward movement thereof against the opposing action of the resilient means is accompanied with a tendency to prevent any binding action of said locking members in the recesses in said cover.

14. A spinning bucket adapted to receive a cover, a cover therefor carrying thereon locking means normally retained within the limits defined by the periphery of the cover and adapted to be thrown outwardly into engagement with the bucket upon rotation thereof, and resilient means for opposing said outward movement but of insufficient strength to overcome it, said resilient means being capable of returning the locking means to normal position upon the slowing of the rotation of the bucket in stopping.

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