

Nov. 4, 1958

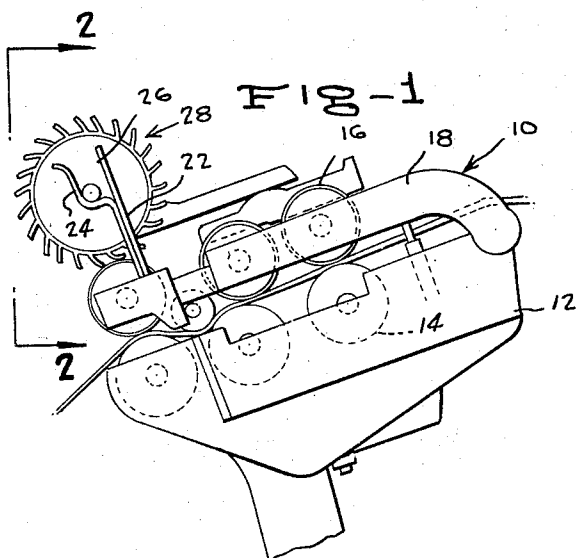
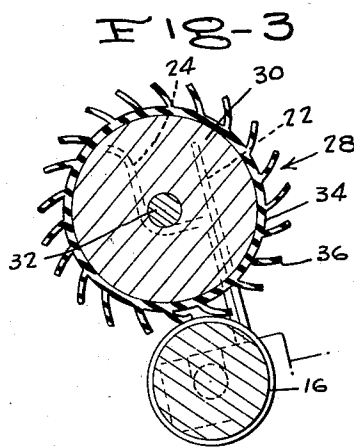
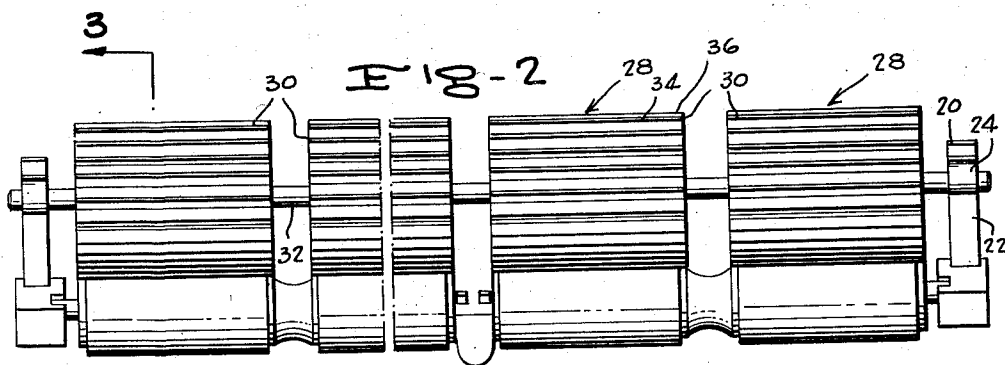
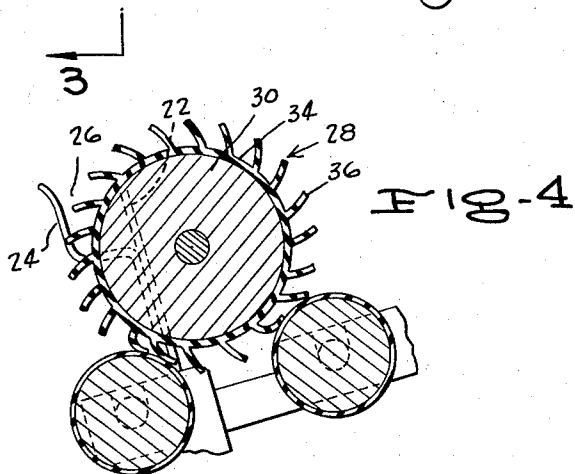
E. F. ROSE

2,858,576

TOP CLEARER ROLL CONSTRUCTION

Filed July 9, 1958

2 Sheets-Sheet 1



INVENTOR.

EDDIE F. ROSE

BY

McMorrow, Perman & Davidson
ATTORNEYS

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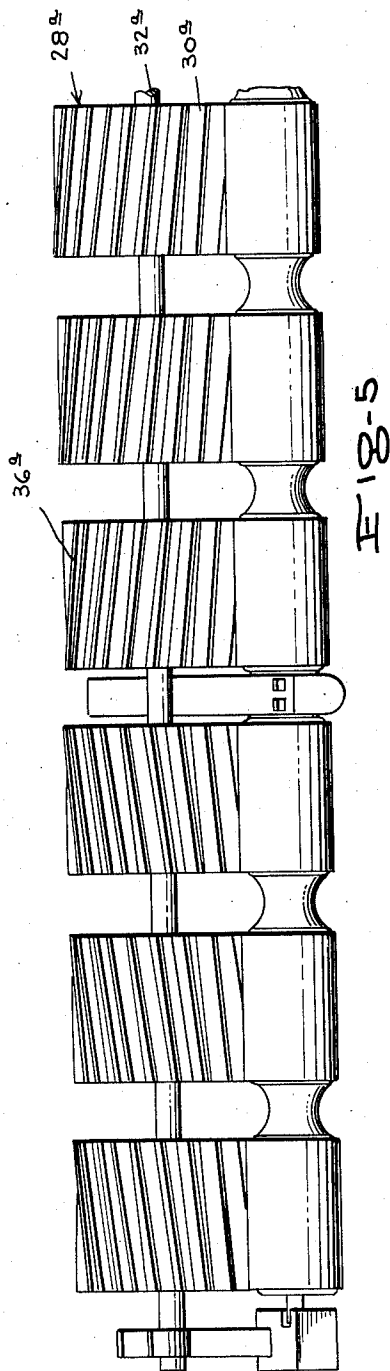
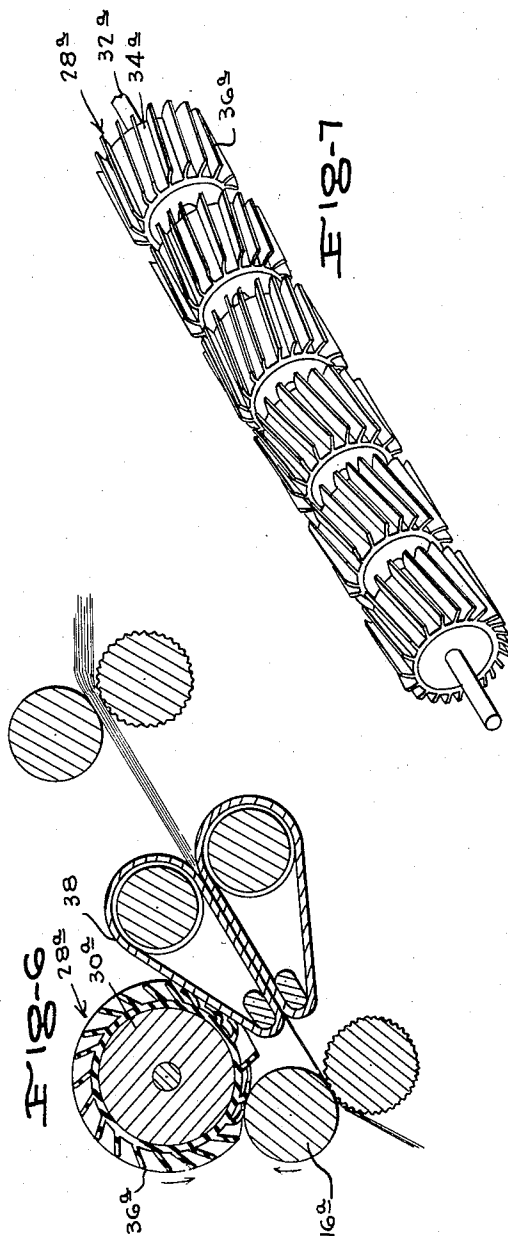
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INVENTOR.

EDDIE F. ROSE

BY

McMorrow, Perman + Davidson
ATTORNEYS

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TOP CLEARER ROLL CONSTRUCTION

Eddie F. Rose, Maiden, N. C.

Application July 9, 1958, Serial No. 747,447

11 Claims. (Cl. 19—140)

This invention relates to top clearer rolls of the type used for maintaining top drawing rolls free from accumulations of loose fibers or broken ends and the like during the drafting of textile fibers, and more particularly relates to novel and improved top clearer roll constructions that avoid the defects and drawbacks of conventional top clearer rolls.

Conventionally, top clearer rolls are formed from an elongated shaft having roll bodies coaxially mounted on the shaft at spaced apart locations along the shaft. Usually, the clearer rolls are formed by several wooden body members of cylindrical shape which are mounted on a wood or metal mounting shaft of relatively small diameter, the shaft disposing the body members so that the body members, which are covered with wool felt or like material, can ride on top rolls of a spinning frame or the like. The covering on the body members picks up the fibers, which adhere thereto during the drafting operations, the clearer rolls, thus, maintaining the top rolls clear. However, such covers accumulate the loose fibers and, therefore, as the accumulated fibers build up in a covering mass on the clearer bodies, it is necessary to stop the drafting operation in order to clean the clearer rolls. In addition, a considerable amount of loose fibers are accumulated and caused to be separated from the working fibers, which results in a considerable amount of waste, since the fibers cannot be worked back into the fibers being drafted.

Another type of conventional top clearer roll assembly includes body members, which are formed of a compressible material, but these body members are also covered with a material to which the loose fibers tend to adhere and on which they are accumulated. Thus, these top clearer rolls must also be periodically cleaned.

Regardless of whether the roll bodies are formed from relatively hard material, such as wood or the like, or expanded rubber or the like, it is conventional to provide a covering for such roller bodies, which covering is usually formed from textile materials and which is provided to absorb a large quantity of lint and dust. Thus, the clearing rolls can only be operated for a definite period of time without being cleaned.

It is a primary object of the present invention to provide a top clearer roll construction which operates to dissipate the loose fibers to the atmosphere or to suction devices, rather than to collect the loose fibers, thus permitting some of the loose fibers to be worked back into the fiber being drafted or causing the loose fibers to be completely removed from the machine. Also, it is a primary object of the present invention to provide a top clearer roll construction which does not pick up the fibers but which merely brushes or flicks the fibers from the top clearer roll and causes the loose fibers to be dissipated to the atmosphere and blown away by the conventional overhead blowers or sucked in by the conventional suction devices.

A further important object of the present invention is to provide a top clearer roll assembly which includes several relatively hard body members of cylindrical shape that are mounted on a shaft and which are provided

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with covers, the covers being formed from plastic, rubber or similar material and having radially extending ribs, which are disposed axially of the body members and spaced circumferentially thereof. It is preferred that the covering ribs be formed from rubber or plastic or other suitable resilient material and that the ribs and cover be integral.

It is a further important object of the present invention to provide a cover for the roll bodies of a clearing roll for a textile machine, the cover being in the form of a sleeve, which can be sleeved onto the roll body, and can be formed in one piece from suitable plastic or rubber or other resilient material, so that the ribs of the cover have a flexibility and can be deformed in their movement over top drawing rolls for the purpose of brushing the top drawing rolls.

The foregoing and ancillary objects, including the provision of a cover for a clearing roll for a textile machine which will prevent lap-ups around the top drafting rolls, which will last longer than conventional cloth or sponge rubber covers and which will be relatively inexpensive, more durable and better functioning than conventional top clearer roll constructions, are attained by this invention, the preferred embodiments of which are set forth in the following description and illustrated in the accompanying drawings, wherein:

Fig. 1 is a side view of a drawing machine showing the improved clearer roll assembly of the present invention mounted thereon;

Figure 2 is a fragmentary enlarged sectional view taken substantially on the line 2—2 of Figure 1 and showing portions of the clearer roll broken away to more clearly illustrate certain details of construction;

Figure 3 is a fragmentary cross-sectional view taken through one of the clearer rolls and taken substantially on the line 3—3 of Figure 2;

Figure 4 is a cross-sectional view of the drawing machine, showing the clearer roll mounted between the top drawing rolls, instead of on top of one of the drawing rolls, as shown in Figures 1—3;

Figure 5 is a front elevational view of a modified form of clearer roll assembly, in accordance with the present invention;

Figure 6 is a cross-sectional view of the drawing machine, showing a modified form of Figure 5 mounted between the front clearer rolls and the apron of conventional construction; and,

Figure 7 is a view in perspective of the modified top clearer roll assembly of Figure 5.

Referring now more particularly to the accompanying drawings and, initially, to Figures 1—4, the reference numeral 10 generally designates a spinning or drawing machine of conventional construction and operation. The machine 10 is equipped with a conventional drawing head or frame 12 in which the bottom drawing rollers 14 are mounted. Arranged for running contact with the peripheries of the bottom drawing rollers 14 are top drawing rollers 16 which are mounted in a hinged frame 18 forming part of the drawing frame or head of conventional construction. Extending upwardly from the end bars of the top hinged frame 18 adjacent the ends of the lowermost top drawing roll 16 are brackets designated by the numerals 20, such brackets comprising uprights 22 from which extend upwardly spaced guide fingers 24 defining between them a relatively wide mouth 26.

A top clearer roll assembly 28 is provided, in accordance with the present invention, and includes a number of clearer roll bodies 30, which are formed from relatively hard material, such as wood, which are cylindrical in shape. The clearer bodies 30 are circumposed in fixed fashion on a shaft or rod 32, which is of considerably

smaller diameter than the bodies 30. The ends of the shaft are rotatably seated in the mouths 26, which support the shaft for rotation, with the clearer bodies being disposed above the lowermost top drawing roll 16, as shown in Figures 2 and 3. The clearer bodies 32 are provided with a cover 34, that is fixedly circumposed thereon and which extends circumferentially around the clearer bodies and is co-extensive in length therewith. The cover is preferably formed from resilient material, such as rubber, or may be formed from suitable plastic material, such as vinyl plastic. The cover is provided with a plurality of radially projecting ribs 36, which are co-extensive in length with the cover and which extend substantially tangentially therefrom and are slightly bowed or curved in the direction of rotation of the clearer bodies. The ribs 36 are spaced equidistantly about the circumference of the cover and are of equal dimensions. It is to be noted that the ribs are spaced apart a distance substantially equal to the extent thereof from the periphery of the cover.

As shown in Figure 3, the ribs are in wiping contact with the peripheral surfaces of the top drawing rolls 16 and, as the rolls 16 rotate, the rotation from the rolls is imparted to the clearer bodies, with the ribs flexing and being disposed in scrubbing or wiping action, as shown in Figures 1 and 3. It is to be noted that the top drawing rolls 16 rotate in the direction of the arrow of Figure 3 or in a clockwise direction, while imparting counterclockwise rotative movement to the clearer roll bodies 30. The ribs 36 scrape or brush across the drawing rolls 16, with the ribs being flexed, as they come in contact with the top drawing rolls 16. In this fashion, the ribs bend or flex as they contact the peripheral surfaces of the top rolls and scrub or flick off the loose fibers, which are dissipated to the atmosphere and blown away by the overhead blowers or sucked in by the underlying suction devices, some of the fibers returning to the fiber being drafted so as to be worked back into the fiber being drafted. As a result, a very material reduction of the fiber waste at the top clearers is realized. It can be seen that there is no necessity to clean the top clearers, since there cannot possibly be any accumulation of the loose fibers thereon. When the ribs contact the peripheral surfaces of the top drawing rolls, they flex and brush over the surface and push or brush the fibers from the surfaces.

The weight of the rod 32 and the clearer bodies maintains the rod ends at the bottom of the supporting brackets with the clearer bodies being disposed a distance substantially less than the extent of the ribs above the top drawing rolls, as shown in Figure 3. The ribs that engage in the top drawing rolls cause the top clearer roll assembly to rotate smoothly in a counterclockwise direction.

In the instance of long drafting machines, the top clearer roll assembly can be disposed, in the manner shown in Figure 4, behind the first most top drawing rolls and in engagement between such usual front delivery rolls. The relationship between the ribs 36 of the cover and the rolls 16 is the same, as can be seen from a consideration of Figures 3 and 4.

In Figures 5-7, a modified form of clearer roll assembly is shown, wherein the clearer roll assembly 28a is disposed in contact with and rearwardly of the front drafting roll 16a and the top apron roll 38a. The top clearer roll assembly 28a is disposed in contact with the front drafting roll 16a and the apron roll 38a and is rotated thereby, similar to the operation of the top clearer roll assembly 28 of Figures 1-4.

It is to be noted that the ribs 36 of the form shown in Figures 1-4 are arranged parallel to the axis of the roll bodies, whereas the ribs 36a of the clearer roll assembly 28a are arranged in non-parallel relation to the axis of the roll bodies and shaft 32a.

In this respect, the roll bodies 30a are usually pro-

vided in groups of four, six, eight or the like multiple units. In the specific embodiment illustrated, six roll bodies are shown and the ribs 36a are formed on the covers 34a in groups, as shown in Figure 5. The ribs 36a are formed at an angle to the axis of the shaft 32a and are pitched in right and left hand fashion so that, commencing from the center of the group, the ribs are right and left handed pitched for the purpose of directing the fibers, to the right and left of the clearer roll assembly. Thus, as an additional feature, the pitching of the ribs not only insures the brushing or flicking of the fibers from the drafting rolls, but insures the carrying of such fibers to the ends of the machine, in the instances where the fibers may not be immediately blown or sucked by the conventional blower or suction units. This insures the complete cleaning of the drafting rolls without any accumulation of the fibers between the ribs since the ribs function to not only insure the removal of the loose fibers from the drafting rolls by the direct pick up action of the suction devices or blow off action of the blowers but also carry the fibers to the ends of the machine where they will not interfere with the drafting operation and can be easily blown or sucked away.

It is to be particularly noted that the primary improvement of the present invention resides in the provision of a cover for the top clearer roll bodies, which cover includes the sleeve-like member that hugs the roll bodies and is circumposed thereon and the ribs which sweep or brush across the drafting rolls to remove the fibers from the drafting rolls. The important feature of the construction resides particularly in the fact that the cover does not accumulate the fibers, thereby avoiding the need for stopping the drafting operation in order to clean the clearer rolls.

While the preferred embodiments of the present invention have been illustrated and described herein, other forms may be realized, as come within the scope of the appended claims.

The present application is a continuation-in-part of my co-pending application, Serial No. 674,412, filed July 26, 1957.

Having thus described this invention, what is claimed is:

1. A textile clearer roll adapted for cleaning loose fiber and broken ends from drawing rolls during the process of fiber preparation, said roll comprising at least one body member of relatively hard material, a shaft on which said member is mounted, the shaft being of substantially smaller diameter than the diameter of said body member, a cover circumposed on and covering said body member and said cover having outwardly projecting flexible wiping ribs, said ribs projecting outwardly from the cover a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls.

2. A textile clearer roll adapted for cleaning loose fiber and broken ends from drawing rolls during the process of fiber preparation, said roll comprising at least one body member of relatively hard material, a shaft on which said member is mounted, the shaft being of substantially smaller diameter than the diameter of said body member, a cover circumposed on and covering said body member and said cover having outwardly projecting flexible wiping ribs, said ribs extending axially of the body member and the cover and outwardly from the periphery of the body member, said ribs projecting outwardly from the cover a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls and the ribs being coextensive in length with the body member and being equally spaced circumferentially of the body member.

3. A textile clearer roll adapted for cleaning loose

fiber and broken ends from drawing rolls during the process of fiber preparation, said roll comprising at least one body member of relatively hard material, a shaft on which said member is mounted, the shaft being of substantially smaller diameter than the diameter of said body member, a sleeve-like cover circumposed on and covering said body member and said cover having outwardly projecting flexible wiping ribs, said ribs extending axially of the body member and the cover and the ribs being coextensive in length with the body member, said ribs projecting outwardly from the cover a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls and said ribs being equally spaced circumferentially of the body member and being of equal dimension.

4. In a textile clearer roll assembly for cleaning loose fibers and lint from drawing rolls during a process of fiber preparation, which assembly includes a shaft having a number of cylindrical roll bodies provided thereon, a cover for said roll bodies which includes a sleeve-like member sleeved on and covering the roll bodies, said sleeve-like member having flexible wiping ribs which extend axially of the cover and are spaced circumferentially thereof and project outwardly from the cover a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls.

5. In a textile clearer roll assembly for cleaning loose fibers and lint from drawing rolls during a process of fiber preparation, which assembly includes a shaft having a number of cylindrical roll bodies provided thereon, a cover for said roll bodies which includes a sleeve-like member sleeved on and covering the roll bodies, said sleeve-like member having flexible wiping ribs which extend axially of the cover and are spaced circumferentially thereof and project outwardly from the cover a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls, said ribs being disposed parallel to the axis of the roll bodies.

6. In a textile clearer roll assembly for cleaning loose fibers and lint from drawing rolls during a process of fiber preparation, which assembly includes a shaft having a number of cylindrical roll bodies provided thereon, a cover for said roll bodies which includes a sleeve-like member sleeved on and covering the roll bodies, said sleeve-like member having flexible wiping ribs which extend axially of the cover and are spaced circumferentially thereof and project outwardly from the cover a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls, said ribs being disposed non-parallel to the axis of the roll bodies.

7. A textile clearer roll adapted for cleaning loose fiber and broken ends from drawing rolls during a process of fiber preparation, said roll comprising at least one body member of relatively hard material, a shaft on which said member is mounted, the shaft being of substantially smaller diameter than the diameter of said body member, a tubular cover circumposed on and covering said body member and said cover having outwardly projecting flexible wiping ribs, arranged tangentially to the body member, said ribs extending axially of the body member and the cover and the ribs being coextensive in length with the body member and said ribs being equally spaced circumferentially of the body member, said ribs projecting outwardly a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls

but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls and said cover and ribs being integrally formed from plastic.

8. A textile clearer roll adapted for cleaning loose fiber and broken ends from drawing rolls during a process of fiber preparation, said roll comprising at least one body member of relatively hard material, a shaft on which said member is mounted, the shaft being of substantially smaller diameter than the diameter of said body member, a tubular cover circumposed on and covering said body member and said cover having outwardly projecting flexible wiping ribs, arranged tangentially to the body member, said ribs extending axially of the body member and the cover and the ribs being coextensive in length with the body member and said ribs being equally spaced circumferentially of the body member, said ribs projecting outwardly a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal positions when released so as to flick the fibers and lint from the drawing rolls and said cover and ribs being integrally formed from rubber.

9. A cover for textile clearer roll body, which is disposed adjacent a drawing roll to clean lint and loose fibers therefrom, said cover comprising a cylindrical sleeve-like member adapted to be sleeved on and cover the roll body, said sleeve-like member having flexible wiping ribs extending axially on the periphery thereof and spaced circumferentially thereof and said ribs projecting outwardly from the periphery thereof a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to normal position when released to flick the lint and loose fibers from the drawing rolls.

10. A cover for a textile clearer roll body, which is disposed adjacent a drawing roll to clean lint and loose fibers therefrom, said cover comprising a cylindrical sleeve-like member adapted to be sleeved on and cover the roll body, said sleeve-like member having flexible wiping ribs extending axially on the periphery thereof and spaced circumferentially thereof and said ribs projecting outwardly from the periphery thereof a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to normal position when released to flick the lint and loose fibers from the drawing rolls, said ribs extending in substantial spiral fashion on the periphery of the sleeve-like member from one end to the other end.

11. A textile clearer roll assembly for cleaning drawing rolls during a process of fiber preparation, said clearer roll assembly comprising a shaft having a number of cylindrical roll bodies provided thereon and spaced apart along the length of the shaft, a cover assembly for said roll bodies comprising a sleeve-like member circumposed on each roll body and having flexible ribs formed on its periphery and extending substantially axially of the sleeve-like member and spaced circumferentially thereof, said ribs projecting outwardly from the periphery thereof of a sufficient distance and being of such resilience as to bend upon contact with the drawing rolls but capable of springing back to their normal position when released to flick the lint and loose fibers from the drawing rolls, said ribs being arranged substantially spirally on the sleeve-like members with the members arranged on the roll bodies from the centermost roll bodies outwardly to the ends of the shaft so that the ribs from the center to the ends of the shaft are spiraled to the right and to the left whereby the fibers are flicked towards the ends of the shaft.

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