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CLEARER FOR DRAFTING ROLLS

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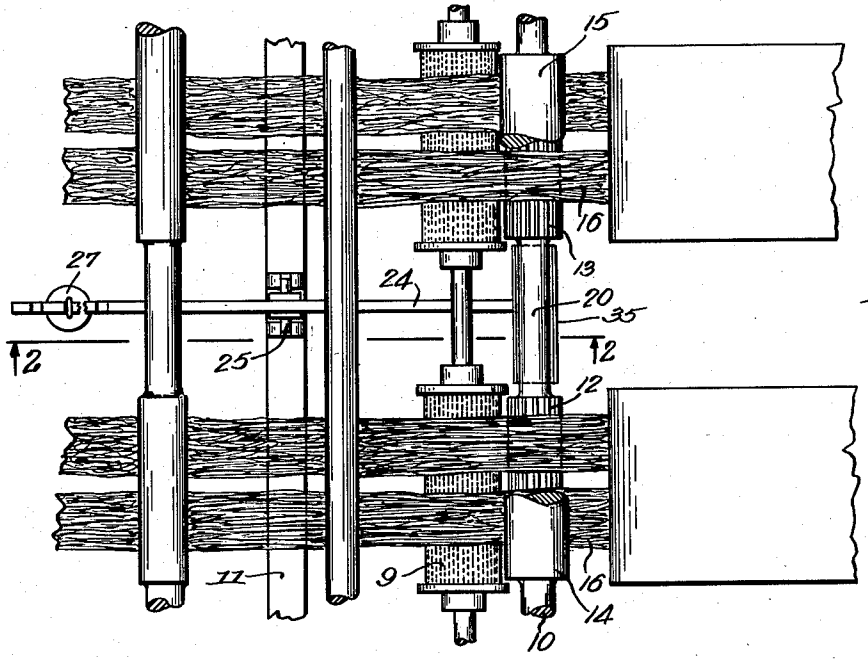


Fig. 1

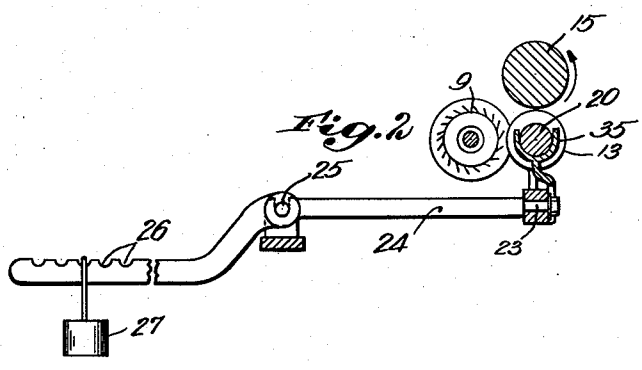


Fig. 2

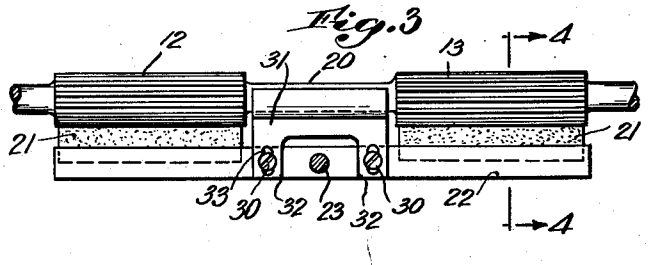


Fig. 3

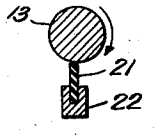


Fig. 4

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CLEARER FOR DRAFTING ROLLS

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3 Claims. (Cl. 19—139)

My present invention relates to devices for clearing lint, dirt and fibers from fluted draft rolls such as are employed in textile machinery.

Heretofore it has been customary to use a bristle brush supported below and in contact with the periphery of the fluted roll and held yieldingly against the roll by a lever and weight. Ordinarily the drafting rolls are arranged in pairs of fluted sections on a shaft with a brush beneath each fluted section. The brushes are supported on a bar and are held against the rolls by a weighted lever which engages the bar at a point between the two fluted sections or draft rolls. This arrangement is not altogether satisfactory because some fibers adhere to the roll and then are caught by the bristles of the wiper. Eventually a mass of fiber is built up on the wiper and either of two things may happen; (1) a lump is pulled off the bristles by the fluted roll and carried around it into the sliver produced forming a slub in the yarn, or (2) the lump of fibers pulled off the bristle brush may be so large that it catches on the pins of the porcupine roll just behind the drafting rolls and becomes embedded in them filling up the spaces between the pins so the drafting action of the machine is impaired. In either case poor work results. To avoid these difficulties, it is necessary for the operator to pick the coating of fiber off the bristles and clear the brush. This involves considerable manual labor during which the machine must be stopped and, therefore, there is a loss of time and production while the brushes are being cleared. The amount of fiber caught on the brushes is substantial. These fibers may be thrown away and so become a total loss or may be reclaimed at substantial expense, depending upon market conditions.

I have discovered that these objections and difficulties may be overcome by employing the novel mechanism hereafter described. In a test run I have found that the fiber loss when the device embodying my invention was employed was only two and one-half percent of the loss when conventional brush clearers were used.

In the device embodying my invention, I employ a flexible blade having a continuous edge in light contact with the surface of the fluted rolls and use this in place of a bristle brush and provide special supporting mechanism therefor. In the operation of my device when a fiber starts to travel around the periphery of the fluted roll being caught for some reason as, for instance, the presence of a bit of grease or owing to static electricity, and held against the circumference of the roll, it progresses until the head of the fiber reaches the wiper. Then further movement of the head of the fiber is stopped and, as the fluted roll turns farther, the portion of the fiber lying along the periphery of the roll bunches up until the sliver has carried the middle or tail portion of the fiber out of contact between the drafting rolls. Further movement of the tail end of the fiber which at this time is entangled with the other fibers of the sliver, drags the bunched up portion of the fiber along with it and pulls the fiber back into the sliver where it becomes a useful part thereof.

The special supporting mechanism mentioned already supports the wiper blade in such a way that it makes contact with the periphery of the fluted roll with a limited and adjustable pressure and also is held in position to make a line contact with the roll. By providing precisely the right pressure and making sure that the line of contact is complete for the whole length of the fluted roll, effective action of the wiper is secured. The light contact and the small area of contact also reduces the static electricity and the possibility of accumulating fiber. My invention produces a substantial saving both in labor and lost fiber. Cleaning is required so infrequently and the time for cleaning is so small that the loss of productivity of the machine is practically negligible.

In the drawings:

Fig. 1 is a top plan view of a portion of a drafting machine having a pair of fluted sections with which the clearing apparatus embodying my invention cooperates, the top rolls being broken away to expose the construction beneath.

Fig. 2 is a section on line **2—2** of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a detail of the fluted draft roll and clearer separated from the rest of the machine.

Fig. 4 is a section on line **4—4** looking in the direction of the arrows.

At **11** is shown a bar forming part of the frame of the machine and at **12** and **13** are shown a pair of fluted draft sections mounted on a single shaft **10** and separated from each other in the usual manner by a cylindrical portion **20**. The fluted sections are conveniently referred to as fluted rolls. Top rolls **14** and **15** cooperate with them. A porcupine roll having pins on its surface in the usual manner is shown at **9**. The drafting machine shown is of conventional form and, therefore, need not be described in further detail. At **16—16** are shown slivers passing through the machine and being drafted by the fluted rolls and the top rolls.

The clearer embodying my invention has two flexible blades **21**—one for each fluted roll—and these are mounted on a wiper blade bar **22** which is pivoted at **23** to a longitudinal lever **24**. This lever **24** is pivoted at **25** on the cross bar **11** which forms part of the frame of the machine. The rear end of the lever **24** is offset downwardly as indicated in Fig. 2 and is provided with notches **26** in which may be located the bale of a counterweight **27**. Secured by cap screws **30** to the wiper blade bar **22** is a bearing member **31** having at the bottom two legs **32** provided with slots **33** to receive the cap screws **30** so that the bearing member **31** may be adjusted vertically as required. The bearing member **31** is formed with a trough-shaped upper portion **35** clearly seen in Fig. 2, and this is arranged to embrace and rest against the cylindrical portion **20** of the shaft **10** between the fluted rolls **12** and **13**. The body of the bearing member between the legs **32** and the trough-shaped portion **35** is offset as seen in Fig. 2 so that the trough-shaped portion can rest against the underside of the cylindrical portion **20**.

In the operation of the machine, the bearing member **31** is adjusted by the cap screws **30** and slots **33** so that the upper edge of the wiper blades **21** will contact very lightly with the fluted rolls when the bearing member rests against the cylindrical portion **20**. The parts are held in this position by the lever **24** and counterweight **27**. The wiper blade bar **22** for the two clearer blades **21** can swing pivotally on the end of the lever **24** but the trough shaped portion **35** of the bearing member **31** holds the edge of the wiper plate bar **22** parallel with the axis of the rolls and insures a substantially line contact between the wiper blades and the surface of the rolls. Therefore, the two rubber blades **21** will rest with equal

pressure and throughout their entire length on the underside of the two fluted rolls **14** and **15** and parallel with the axis thereof.

The wiper blade **22** is flexible and preferably made of a relatively thin sheet of rubber. It requires, however, a certain stiffness. While in practice I have used a sheet of rubber, other flexible material may be employed. The wiper blade is set slightly off center, i. e. with its leading side in line with the radius of the roll. In this way a better line contact of the blade with the surface of the fluted roll is produced.

I have found that in operation the roll wiper arranged as described keeps the fluted draft rolls free from dirt, lint and fiber and that fiber adhering to the rolls is scraped loose from the rolls and then is pulled back into the sliver instead of being embedded on the bristles of the conventional brush and forming a mat. As time goes on and some lint and dust sticks to the edge of the blade, it may be cleaned off by the operator who lifts up the rear end of the lever **24**, thus moving the blades downward away from the fluted rolls, after which she runs her finger along the edge of the blade wiping it clean. This can be done almost instantaneously and needs to be done very infrequently.

The clearer embodying my invention may be used wherever, at the present time, a stationary clearer is used to keep rolls free from fiber, and it is a substantial improvement over all other stationary clearers known to me including those using bristles, plush, felt or any other cleaning element. My clearer is equally effective on fluted rolls in connection with which it has been described herein, and on other types of rollers or rolls including plain rollers.

I claim:

1. In combination with a fluted roll of a drafting machine, a shaft on which said roll is mounted and having a cylindrical exposed portion, a wiper comprising a flexible blade having the qualities of rubber and having its edge arranged closely adjacent the periphery of the fluted roll, a yielding support for the blade tending to move the blade toward the periphery of the roll, and a semi-cylindrical stop member secured to the support for the blade and embracing a part of the exposed portion of the shaft only thereby limiting the movement of the blade toward the roll and positioning the blade parallel therewith.

2. In combination with a pair of fluted rolls of a drafting machine, a shaft on which said rolls are mounted and having an exposed cylindrical portion between the rolls, a yielding support beneath the rolls tending to move toward them, flexible blades of rubber like characteristics mounted on the support having their edges arranged closely adjacent the peripheries of the fluted rolls and making substantially a line contact therewith, and a stop member carried by the support and contacting the cylindrical portion of the shaft and thereby limiting the movement of the blades toward the rolls.

3. In a drafting machine and in combination, a fluted roll, a shaft on which said roll is mounted and having a cylindrical exposed portion, a wiper comprising a flexible blade of rubberlike material having its edge arranged closely adjacent the periphery of the fluted roll, a support for the blade embracing part of the exposed portion of the shaft and limiting the extent of the movement of the blade toward the roll, and yielding means holding the support in contact with the shaft.

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