

April 21, 1925.

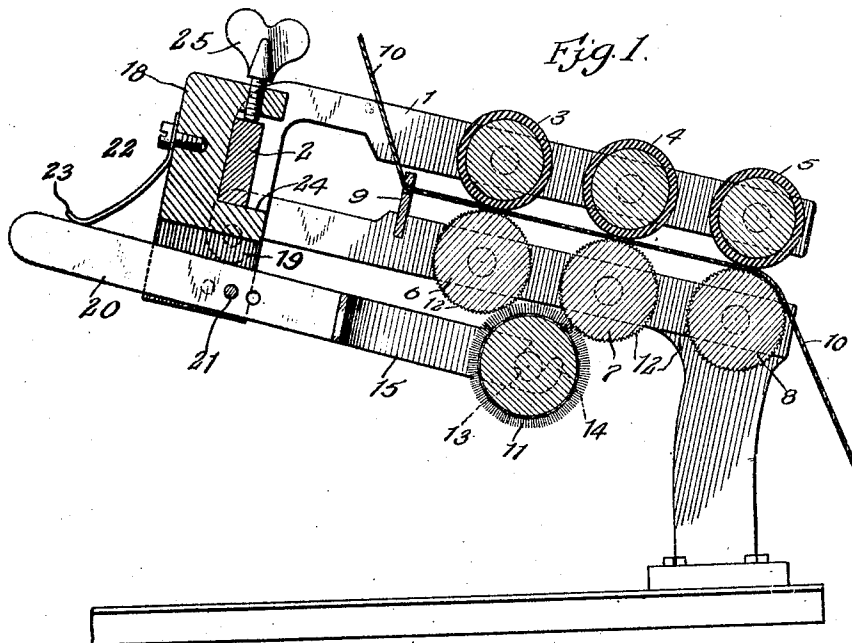
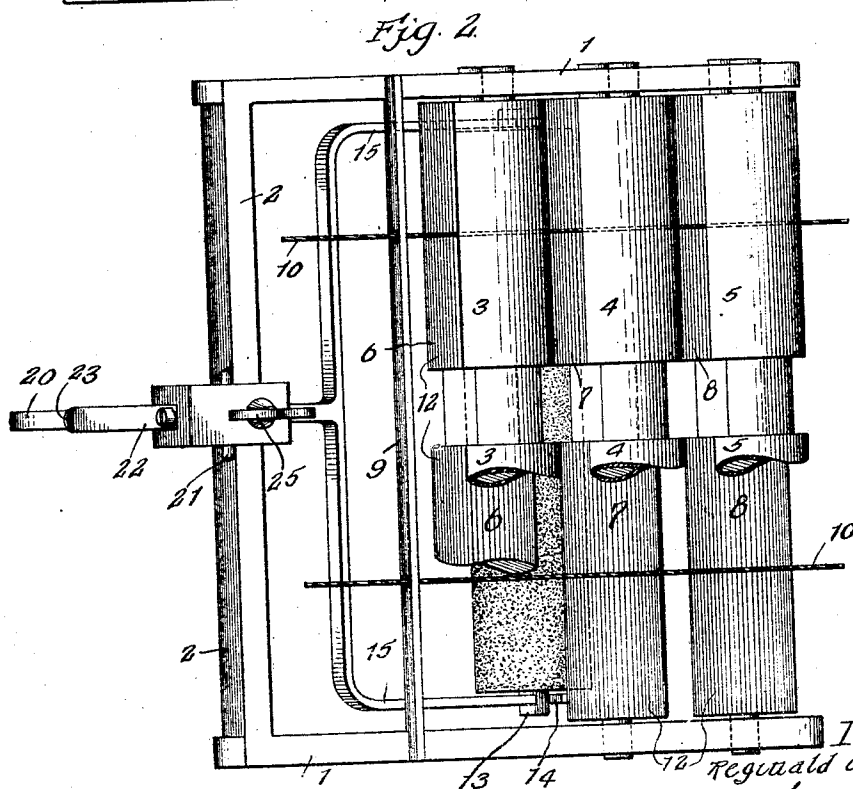
1,534,071

R. A. MORSE

ROLLER MECHANISM FOR SPINNING MACHINES

Filed Feb. 27, 1923

2 Sheets-Sheet 1



Inventor
Reginald A. Morse.
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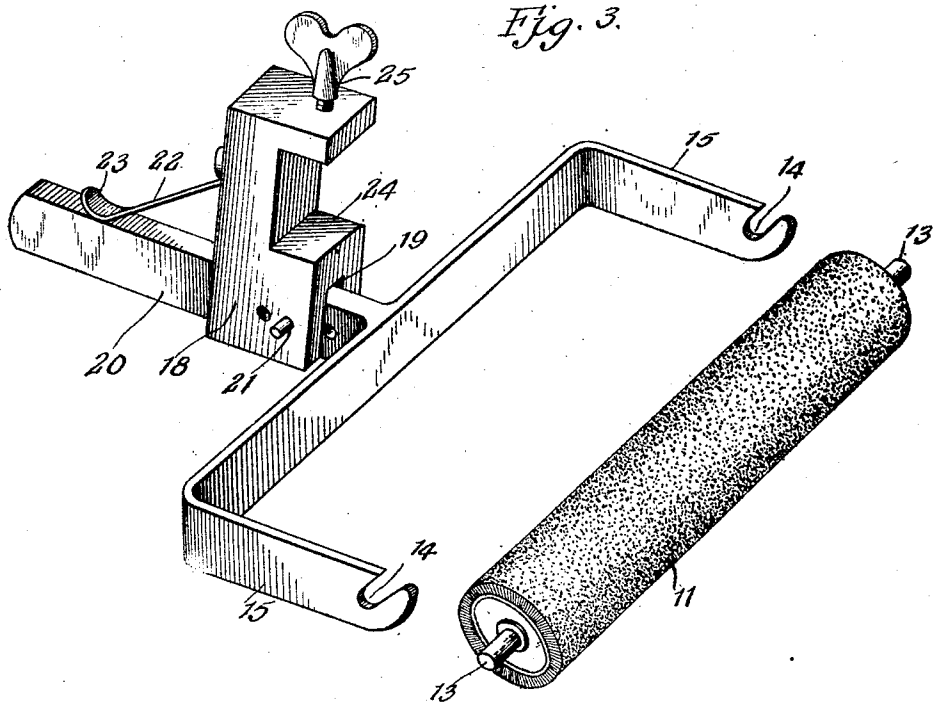
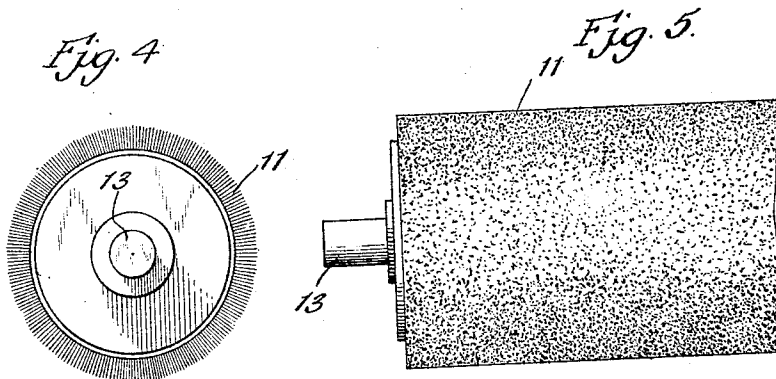
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UNITED STATES PATENT OFFICE.

REGINALD A. MORSE, OF PROVIDENCE, RHODE ISLAND.

ROLLER MECHANISM FOR SPINNING MACHINES.

Application filed February 27, 1923. Serial No. 621,648.

To all whom it may concern:

Be it known that I, REGINALD A. MORSE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Roller Mechanisms for Spinning Machines, of which the following is a specification.

The invention relates to devices for producing cotton yarn, objects of said invention being to increase the quantity of high-grade yarn produced by ring-frames and mules, to insure the uniform quality and strength of the products of such machines, and to prevent loss of material occasioned by the breaking of the yarn beyond the drawing rolls.

In the operation of spinning devices now in practical use, the partially-formed and loosely-wrought yarn material is liable to be abnormally attenuated and weakened at various points by the tension imposed by the differential action of the drawing rolls, and if attenuation and weakening are sufficiently pronounced, the fibers of the yarn will be pulled apart by the bobbin. When severance thus occurs production stops and the severed ends of the yarn have to be spliced by a skilled workman before production can be resumed. The splicing operation, which is very troublesome, leaves imperfect spots or "slubs" in the finished yarn, and these have to be removed by experts.

This defect in the operation of spinning machines has heretofore been regarded as an unavoidable obstacle to the production of yarn having substantially the same caliber and strength throughout its entire length, it having been assumed by those who are skilled in the art of spinning that attenuation and separation of yarn fibers is due to the uneven distribution of fibers in the sliver, or to some other antecedent defect for which there is no possible mechanical remedy.

I have found that this apparently insuperable difficulty in the production of yarn may be avoided even if the roving and the sliver from which it is formed have attenuated or weakened portions, provided that conditions in the drawing mechanism are such as to prevent abrasion and attenuation of the loosely-formed sliver. These results I attain by preventing accumulations of such substances as lint, dust, oil and moisture in

the grooves of the flutings or corrugations with which the lower drawing rolls are provided, thereby permitting said rolls to fully co-operate with the upper drawing rolls in feeding the yarn through the drawing mechanism, without, at the same time, removing or displacing any of the fibers from the body of the sliver. The deposits in these grooves are always of a viscous nature, and, as I have ascertained, become adherent to fibers of the yarn which they detain and partially separate from the yarn as it passes onward through the drawing mechanism. It will be understood that the twisted yarn formed beyond the drawing rolls is normally under about all of the tension it can withstand, and that it may not be able to bear the strain if the allotted fibers have been displaced.

The cleaning device is, preferably, a roller covered with a fabric, such as mohair plush, having a deep and resilient pile, the filaments of which are sufficiently stiff to penetrate the spaces between the flutings and dislodge any foreign matter that accumulates in the grooves of a lower roll.

The yielding character of the mohair plush enables the roller to produce suction sufficient to remove loosened foreign matter from the grooves of the roll, while the filaments of the fabric receive and dissipate charges of static electricity which tend to accumulate on the drawing mechanism and other parts of the machine.

Referring to the drawings:

Figure 1 is a vertical sectional view showing my device applied to pairs of a set of drawing rolls;

Figure 2 is a plan view with certain parts broken away;

Figure 3 is a perspective view of an attachment embodying my invention, and

Figures 4 and 5 are, respectively, enlarged end and plan views of the roller.

1 is the frame of the drawing-roll mechanism, and 2 is a cross bar to which my device may be attached. This frame is provided with three pairs of drawing rolls which, as is usual, are so related to the driving mechanism that the drawing action of the second pair of rolls is less than the drawing action of the third pair of rolls, 3, 4 and 5 being, respectively the upper drawing rolls, and 6, 7 and 8 being, respectively, the lower drawing rolls. 9 is a guide for

the yarn 10 which is shown as extending longitudinally between the upper and the lower rolls of the drawing mechanism.

The improvement constituting the present invention, is, preferably, an attachment which may be applied to standardized spinning machines, although, as will be clearly understood, any other form of device which is capable of attaining the results effectuated by my device as herein revealed, is within the scope of the invention, the essential element of which is a device, preferably a roller 11, operating to keep desired lower drawing rolls clean to thereby prevent fibers of the yarn from adhering to their surfaces which, being provided with fine flutes or corrugations 12, receive and retain particles of the fibers which are forced into the spaces between flutes or corrugations by the pressure of the upper drawing rolls. These spaces receive also particles of dust and lint which become saturated with oil and moisture, so that the accumulations within said spaces are rendered viscous enough to catch and detach fibers from the passing yarn and leave it weak in those spots where the displacement of fibers occurs.

The drawing rolls of a spinning machine have different peripheral speeds, the object being to stretch the sliver and thereby cause the fibers of said sliver to be drawn into parallelism. If this arrangement of the fibers is not maintained, the product will be lacking in the required tensile strength and will be liable to break when the pull of the bobbin puts it under tension. It is, for this reason, essential that the deposits in the grooves of the lower drawing rolls which catch the passing fibers of the sliver, should be removed. If present, they will undo the work performed by the drawing rolls, and leave the fibers in various undesired positions.

The roller 11 is made of wood or other suitable substance, and is provided with a layer of some material which is capable of keeping the grooves between the flutes or corrugations free from foreign matters, the material which I have successfully employed in actual practice being a piled fabric of mohair whose filaments are sufficiently stiff and resilient to enter and effectively clean said grooves without suffering permanent distortion. The nature of the surface of the roller is, however, immaterial, provided it is of such character as to

effectually perform the work of maintaining the drawing rolls in such condition that the sliver may pass them without being impaired or broken.

This roller 11 is provided with trunnions 13 resting in oblique open bearings 14 of a yoke 15 which is disposed below the level of the lower rolls 6, 7 and 8 in such position that the roller 11 will be in contact with the rolls 6 and 7, or such other drawing rolls in any particular machine as may require its cooperation. The yoke 15 is mounted in a block 18 having a slot 19 for its reception, the tail part 20 of said yoke being pivoted at 21. The block 18 carries a weak spring 22 whose free end 23 bears against the tail end of the yoke so as to lift its front end and gently press the roller 11 against the lower drawing rolls. The block 18 is provided with a notch 24 to receive the cross bar 2 of the frame 1, and the upper end of said block has a set screw 25 for securing said block firmly to said cross bar.

I have made the roll-cleaning device detachable in order that it may be applied to standardized machines without requiring alterations in their mechanisms, although, as will be understood, spinning machines containing inseparable roll-cleaning means are within the scope of my invention.

Having thus described my invention what I claim is:

1. A spinning machine having in combination pairs of drawing rolls, and a roller having thereon a layer of mohair plush for cleaning the grooves of a lower roll of said pair of rolls.

2. As an article of manufacture, a cleaning device for spinning machines including a cleaning roller for the grooves of a lower drawing roll, a yoke, a block supporting said yoke and a spring bearing on said yoke, said yoke being pivotally mounted in said block.

3. Means for keeping a longitudinally-grooved drawing roll clean, comprising a member having a surface held against the surface of the drawing roll, the contacting surfaces being caused to travel at substantially the same speed, the surface of the cleaning member being covered with projecting resilient filaments of sufficient length and stiffness to enter the grooves of the drawing roll to the bottoms thereof.

In testimony whereof I affix my signature.

REGINALD A. MORSE.