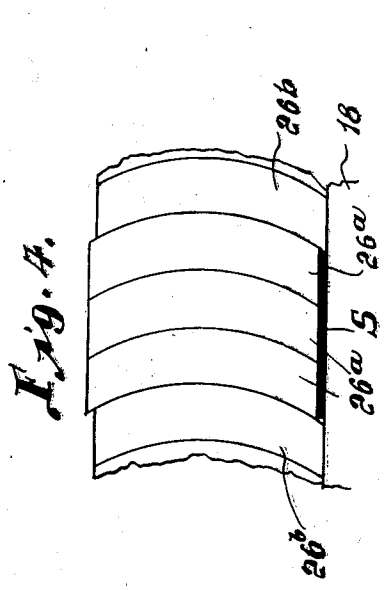
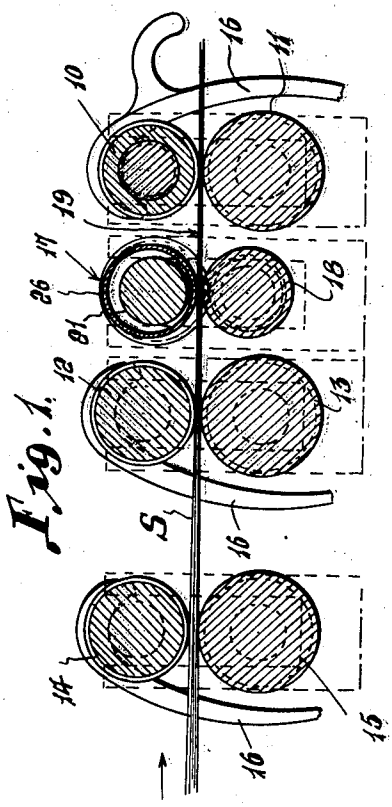
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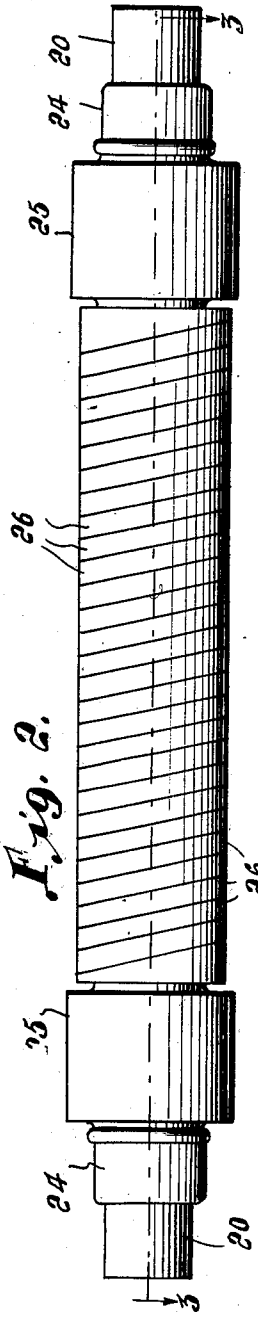
Dec. 3, 1940. J. WEINBERGER 2,223,589

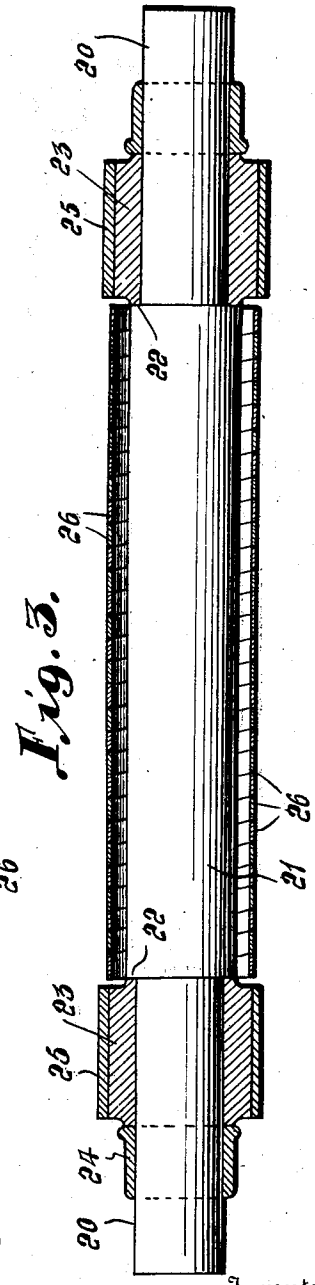
DRAWING FRAMES FOR TREATING VEGETABLE, ANIMAL, OR ARTIFICIAL FIBERS OF VARYING LENGTHS

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DRAWING FRAME FOR TREATING VEGETABLE, ANIMAL, OR ARTIFICIAL FIBERS OF VARYING LENGTHS

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Application March 2, 1938, Serial No. 193,588

3 Claims. (Cl. 19—141)

This invention relates to certain new and useful improvements in drawing frames for treating vegetable, animal or artificial fibers of varying lengths and is a combination of the general type disclosed in application for patent filed by Jan Weinberger on October 25, 1937, Serial No. 170,911, for improvements in Drawing frames for treating vegetable, animal or artificial fibers of varying lengths, and embodies improvements in the art thereover.

The primary object of this invention is to utilize a cotton drawing frame that is designed for the handling of fibers with relatively short staple by slightly modifying the construction of said cotton drawing frame by the removal therefrom of one or more rollers preceding the front or delivery draft rollers and substituting for such removed roller or rollers a cylinder formed of edge-abutting freely mounted rings whereby fibers of much greater lengths than normal cotton staple may be treated by said frame.

A further object of the invention is to utilize a cotton drawing frame normally comprising four pairs of rollers for the drawing of fibers of varying staple length, such as short and long fibers found in wool, by substituting for the second top roller preceding the front or delivery draft roller a ring roller construction which provides between the third roller and the front roller a comparatively long stretching or slide field with the long fibers controlled in their passage through said slide field by the front rollers, while the passage of the short fibers through the slide field is controlled and directed toward the front rollers by the ring roller.

A further object of the invention is to utilize a cotton drawing frame of standard construction for the treatment of mixed or long staple fibers by substituting a roller formed of freely mounted edge-abutting rings for the second roller preceding the front or delivery draft rollers of the cotton drawing frame, an even application of pressure being exerted on the sliver by the movement of rings riding on the sliver, the peripheral speed of rotation of which is controlled by the speed of movement of the sliver therebeneath, the several rings of the cylinder engaged with the sliver imparting an even pressure over the entire surface of the sliver engaged by said rings, the long fibers moving between the third and front rollers independently of the ring roller, the latter acting to control and direct the feeding of the shorter fibers to the front rollers.

A still further object of the invention is to provide a ring roller of the foregoing character as a substitute for the second roller of a standard cotton drawing frame to accomplish the foregoing objects, with the rings of said roller diagonally cut from a cylinder whereby a sliver moving in contact with certain ones of said rings may be shifted longitudinally of the ring roller by its reciprocating bar with the rings disposed laterally of the side edges of the sliver presenting an inclined side face to the adjacent edge of the sliver so that such rings having their lower sides in planes below the upper surface of the sliver may easily rise to permit the movement of the sliver longitudinally of the ring cylinder.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawing, and claimed.

In the drawing:

Figure 1 is a cross-sectional view of a cotton drawing frame constructed in accordance with the present invention, the second roller thereof preceding the front or delivery draft roller being removed and the ring roller constituting the invention of this application substituted therefor,

Figure 2 is a top plan view of the ring roller and its carrying axle removed from the cotton drawing frame and showing the rings diagonally cut from a cylinder,

Figure 3 is a longitudinal sectional view taken on line 3—3 of Figure 2, and

Figure 4 is an enlarged fragmentary elevational view of the substituted ring roller and its associated lower roller with a sliver having an even pressure placed thereon by several of the rings of the ring roller.

Referring more in detail to the accompanying drawing and particularly to Figure 1 there is illustrated a standard cotton drawing frame designed for the handling of short fiber staple and comprising a pair of front rollers 10 and 11 constituting the delivery draft rollers of the frame, a third pair of pressing rollers 12 and 13 and a pair of entry rollers 14 and 15, the pressing rollers 12—13 and the entry rollers 14—15 rotating at the same peripheral speed. The top rollers 10, 12 and 14 are weighted as at 16 for proper engagement with a sliver passing between the top and bottom rollers of the several pairs mentioned.

The top roller of the second roller pair preceding the front top roller 10 is removed and a ring roller designated in general by the reference character 17 is substituted therefor, the ring roller cooperating with the standard steel roller 18 of the second roller pair. By eliminating the top roller of the second roller pair and substituting therefor a freely mounted ring roller, there is provided a slide field 19 between the pressing rollers 12—13 and the front rollers 10—11 for long fibers while the short fibers passing through said slide field 19 are controlled in their movements and directed toward the front draft rollers 10—11 by the ring roller 17.

The ring roller 17 is shown more in detail in Figures 2 to 4 removed from the cotton drawing frame and includes an axle 20 having an annularly enlarged portion 21 intermediate the ends thereof to form end abutment shoulders 22 against which one side of a cylindrical bearing 23 freely mounted on the end of the axle 20 abuts, the cylindrical bearing 23 being retained on each axle and by a collar 24 secured to each axle end and abuttingly engaging the adjacent side of the cylindrical bearing 23. The axle ends outwardly of the intermediate enlarged portion 21 thereof are freely rotatable in the cylindrical bearing 23. A leather, felt or other band 25 encloses the cylindrical bearing 23 for engagement with the normal lower steel cylinder of the cotton drawing frame.

A plurality of rings 26 are diagonally cut from a metal cylinder and are freely mounted on the intermediate portion 21 of the axle 20 for movements independently of each other, and while said rings may be cut at any desired angle, it has been found preferable to cut them at an angle at approximately 15°. As shown in Figure 3, the rings 26 are of an internal diameter much greater than the diameter of the intermediate portion 21 of the axle 20 so that said rings when engaged with a sliver passing under groups of said rings may freely move relatively to each other with those rings of a group engaged with a sliver bearing by their own weight on the sliver to impart an even pressure to the entire upper surface area of the sliver. By cutting the rings 26 at an angle extending across the axle 20, the side edges of the sliver are presented to an inclined side edge of a ring positioned laterally of the sliver with the result that when a sliver is moved by its reciprocating bar longitudinally of the ring roller a minimum of resistance is offered to the sliver in such movement, the ring riding upwardly out of the path of movement of the sliver for subsequent resting thereon.

As shown in Figure 4, the sliver S is of a cross sectional area and width to be engaged by three rings 26^a which effects a slight elevation of said rings while the laterally disposed rings 26^b have dropped downwardly by their own weight for riding on the normal steel cylinder 18 of the cotton drawing frame. It will be understood that the free mounting of the axle 20 and the free mounting of the rings 26 eliminates a positive drive from the steel cylinder 18 to said rings 26, the latter being rotated independently of each other by their contacts with the steel cylinder 18 and the sliver S. The rings 26^a engaged with the sliver S as shown in Figure 4 permit the long fibers to slide through the slide field 19 to the front rollers 10 and 11 and at the same time control the movements of the short fibers through said slide field and direct their movements to the front rollers 10 and 11 for the production of a smooth and even sliver free of internal stretching. The diagonal formation of the rings 26 presents an inclined surface of a lowered ring 26 to the adjacent side edge of the sliver so that the sliver may freely move longitudinally of the ring roller under influence of its reciprocating bar. It is of course understood that the illustration in Figure 4 is considerably enlarged and that a very small abutting area of a lowered ring is presented to a side edge of a sliver.

It will also be understood that only those rings of the group engaged with a sliver exert pressure on said sliver by their own weight. Should an uninterrupted cylinder be employed in a slide field as disclosed herein, one end of the cylinder would be lowered while the other end of the cylinder was engaged with a sliver which would result in increased pressure of a cylinder on one side of the sliver and uneven pressure over the entire upper surface area or sliver. It is therefore essential that the cylinder be formed of freely mounted rings so that only certain ones of the groups of rings are evenly engaged with the sliver and by their own weight impart an even pressure to the sliver.

While there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:

1. In cotton spinning machinery for working on fibers of varying lengths with the long fibers of much greater length thar standard cotton fibers, said machinery including a cotton drawing frame having a ring roller substituted for the top roller of the pair of rollers preceding the front rollers of the frame to form a slide field for long fibers between the pressing rollers and front rollers and acting to control and feed the shorter fibers through said field to the front rollers, said ring roller being formed of edge abutting rings disposed at an angle to the longitudinal axis of the ring roller and individually movable in paths at acute angles diametrically of the ring roller without changing the overall length of the ring roller.

2. In cotton spinning machinery for working on fibers of varying lengths with the long fibers of much greater length than standard cotton fibers, said machinery including a cotton drawing frame having a ring roller substituted for the top roller of the pair of rollers preceding the front rollers of the frame to form a slide field for long fibers between the pressing rollers and front roller and acting to control and feed the shorter fibers through said field to the front rollers, said ring roller being formed of freely mounted edge abutting rings individually movable in paths at acute angles diametrically of the ring roller without changing the overall length of the ring roller whereby those rings under which a sliver passes impart an even pressure to the entire upper surface area of the sliver.

3. In cotton spinning machinery for working on fibers of varying lengths with the long fibers of much greater length than standard cotton fibers, said machinery including a cotton drawing frame having a ring roller substituted for the top roller of the pair of rollers preceding the front rollers of the frame to form a slide field for long fibers between the pressing rollers and front roller and acting to control and feed the shorter fibers through said field to the front rollers, said ring roller including an axle and a plurality of diagonally cut edge abutting rings freely mounted on the axle for independent movements transversely of the axle whereby those rings under which a sliver passes impart an even pressure to the entire upper surface of the sliver.

JAN WEINBERGER.