

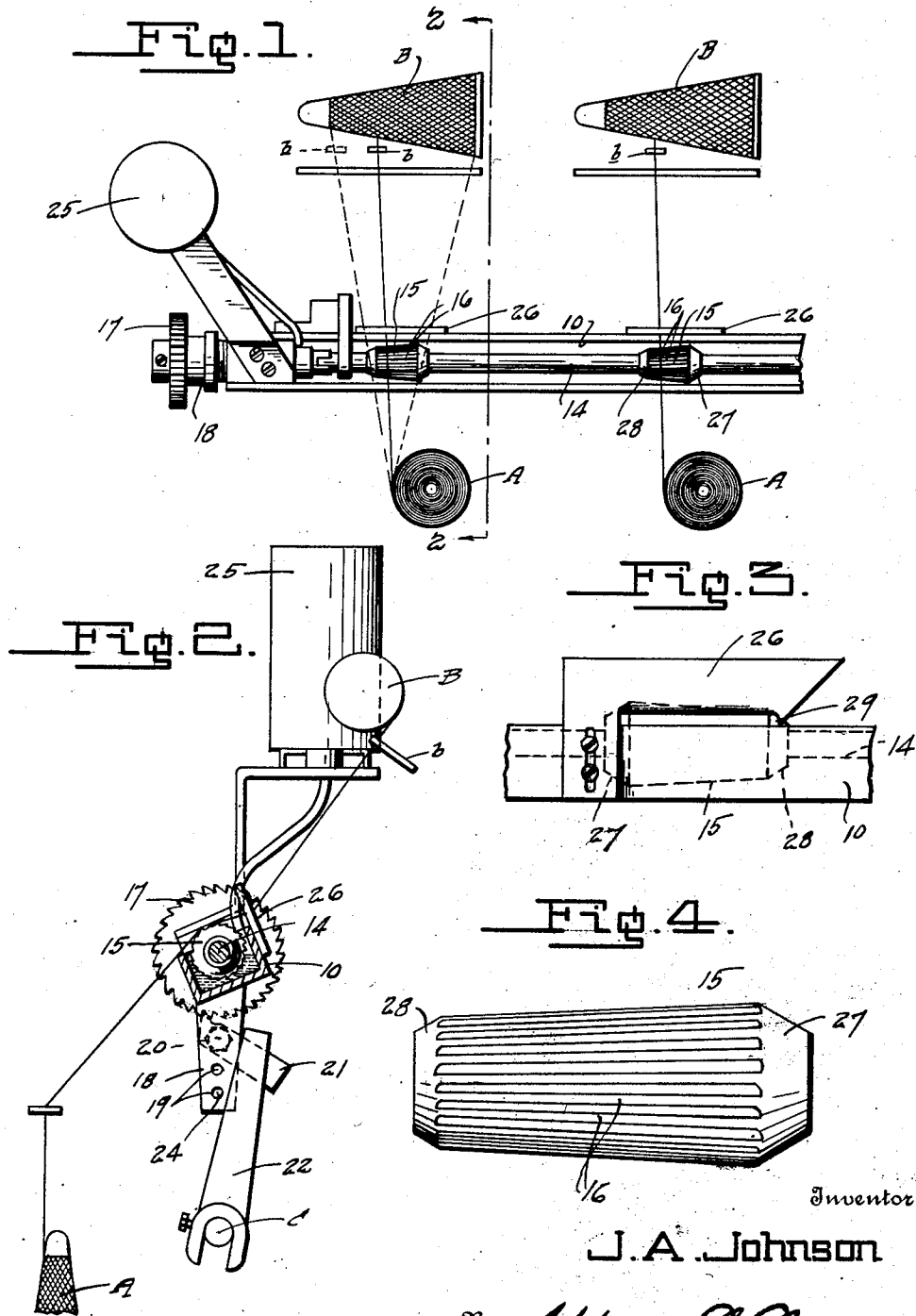
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J. A. JOHNSON

YARN TREATING MECHANISM FOR WINDING MACHINES

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YARN-TREATING MECHANISM FOR WINDING MACHINES.

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To all whom it may concern:

Be it known that I, JAMES A. JOHNSON, a citizen of the United States, residing at Danville, in the county of Pittsylvania and State of Virginia, have invented certain new and useful Improvements in Yarn-Treating Mechanisms for Winding Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to the conditioning or treating of yarn prior to its being wound, and particularly to means for supplying moisture to the yarn or conditioning it, as it is called, the present invention being an improvement upon the construction illustrated in my prior application for patent, Serial #490,253, filed August 6, 1921.

In the ordinary conditioning of yarn, the yarn is wound upon paper cones and these are placed within a conditioning room where they are submitted to the action of moisture, the room being filled with a very fine spray or vapor from suitable spraying pipe. This moistening sets the twist and prevents kinking, but one of the objections to this method of conditioning the yarn is that the outside layers of the yarn on a cone must be moistened beyond the proper percentage in order that the inside layers of yarn shall have the proper percentage of moisture.

The general object of the invention set forth in my prior application and upon which this is an improvement is to condition the yarn by the provision of means whereby the yarn is moistened as it is being wound upon the paper cone, and provide means whereby a uniform amount of moisture will be applied to all the yarn whereby the inner layers of the yarn on the cone will have just as much moisture and no more than the outer layers, thus preventing the mildeewing of the outer layers.

These are secured in my prior mechanism before referred to by providing a moistening roller over which the yarn passes, this moistening roller being disposed within a tank containing liquid, and the moistening roller being positively rotated so as to carry the liquid up from the tank and apply it on the yarn. The yarn, of course, has a certain amount of traverse due to its being wound backward and forward upon the cone and the rollers, as illustrated in my prior application, were longer than this amount of

traverse so as to prevent the yarn from sliding off from the ends of the rollers.

Practical experience has shown that lint gathers upon these rollers and that this lint is caught by the yarn and carried up with the yarn to the cone and is wound thereon with the yarn. This is obviously objectionable for a variety of reasons, and the object of the present invention is to so form the roller that the traverse of the yarn will carry the lint off of the roller and discharge it off from the ends of the roller so that the yarn will be left clean and will not accumulate lint as it passes over the roller, and to this end to form the roller over which the yarn passes with beveled polished ends so distanced apart that the yarn in its traverse will pass onto these beveled ends but not beyond the beveled ends, and will thus carry the lint onto these beveled ends and permit the lint to discharge into the tank, from whence it may be readily removed.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a diagrammatic top plan view of a yarn winding mechanism showing my moistening means applied thereto;

Figure 2 is a vertical section on the line 2—2 of Figure 1;

Figure 3 is a fragmentary rear elevation of the water containing tank showing the finger 26;

Figure 4 is an elevation of one of the rollers 15.

In these drawings, I have illustrated somewhat diagrammatically a part of an ordinary winding machine in use in mills where cotton is prepared for knitting purposes. This machine embodies a plurality of spindles upon which the spools or quills are mounted, these quills being designated A, and a plurality of spindles on which the paper cones on which the yarn is received are mounted, which are designated B. The cones rotate, it will be understood, at a high rate of speed and the yarn is taken from the quills A over to the cones B and is wound upon these cones, there being a reciprocating guide *b* associated with each cone through which the yarn passes and by which the thread is guided upon the cone and by which the yarn is given a certain amount of traverse, depending upon the length of the cone.

For the purpose of moistening each thread of yarn between the quill A and the

cone B, I provide a tank 10 which is supported in any suitable manner, as is illustrated in my prior application, and which tank extends along the entire length of the machine and may be made in several sections if desired. Extending longitudinally through the tank or through each section of the tank is a shaft 14 which is mounted in suitable bearings so that the shaft will not sag, and at one end carries means whereby the shaft may be given rotation. Mounted at intervals along this shaft are moistening rollers 15, these rollers being made of brass, aluminum, or any other suitable material and being preferably tapered to correspond to the tapering of the cones B. Preferably these rollers are formed with longitudinally extending recesses upon the outer face and designated 16, these recesses being ratchet-shaped so as to act like buckets, these buckets acting, as illustrated in Figure 2, to carry the water up from the tank and distribute it against the yarn which passes over the top of the corresponding roller. The shaft 14 at one end is provided with a ratchet wheel 17, and coacting with this ratchet wheel I have illustrated an arm 18 pivoted upon the axial center of the shaft 14 and provided with a plurality of openings 19.

Pivotaly mounted on a pin 20 extending into any one of these openings is a pawl 21, the tooth of which engages the teeth of the ratchet wheel 17. The pawl is weighted at its opposite end so that the tooth is always held in engagement with the teeth on the ratchet wheel. Any suitable means may be used for giving an oscillatory movement to the arm 18, such for instance as the stop motion shaft C provided with the arm 22, this arm 22 striking the pin 24 on the arm 18. I do not wish to be limited to this particular method of giving a step by step rotation to the shaft 14, as any other suitable means may be employed for the purpose and I have simply illustrated the means described and shown in my prior application for patent.

For the purpose of keeping the tank 10 constantly filled with water, I have illustrated a water container or reservoir 25 which discharges by any suitable means into the tank 10 so that the water in the tank is kept at a constant level. In order that the yarn may contact with the roller 15 throughout a considerable area and thus cause the yarn to take up a greater amount of moisture than it would do if it only contacted at one point with the roller, I mount upon one wall of the tank but in association with each roller 15 a finger 26 which extends approximately parallel to the longitudinal axis of the shaft 14 and the yarn slides back and forth beneath this finger 26. This finger is so arranged that the yarn may be

easily guided into the space between the finger and the wall of the tank. Because of the conical shape of the tapering cone on which the yarn is received the speed of the yarn traveling over the roller varies, depending upon its point of contact with the winding cone B. Thus if the yarn is being wound upon the small portion of the cone it will have a lower speed than if it is being wound upon the large portion of the cone, and by tapering the rollers 15 I provide means that when the yarn is being wound over the small portion of the cone B it will be passing over the small portion of the conical roller 15 and will thus receive less water than it will when passing around the large portion of the cone B and over the larger portion of the roller. So far I have described the construction which is present in my prior application for patent and which is fully illustrated, described and claimed therein.

My present improvement consists in forming the roller 15 with beveled ends 27 and 28. It will be noted that the finger 26 is provided at one end with a stop 29 and that the thread oscillates between this stop 29 and the angular supporting end of the finger. It is to be noted that the adjacent ends of the beveled portions 27 and 28 of the roller are spaced from each other a less distance than the space between the stop 29 and the angular supporting end of the finger so that the thread as it oscillates passes at opposite ends of its movement from the grooved face of the roller onto these beveled ends. In so doing the yarn or thread carries with it any lint which may be upon these rollers and the lint drops off onto these polished beveled faces and slides down into the trough instead of remaining upon the periphery of the roller. If it were not for this beveled face the lint would collect upon the peripheral face of the roller and be caught by the yarn as it passed and carried upward with the yarn to the cone B.

In winding the yarn from the small spool or bobbin A onto the bobbin B, there is a considerable amount of lint that flies off into the air. So long as this lint is dry it is immaterial whether some of the lint falls upon the yarn and is wound into the bobbin B, but when this lint falls into the trough of water it becomes wet and the rollers in revolving bring this lint up and the thread is liable to catch this wet lint and take it up to the cone or bobbin. This forms a wet spot and the yarn will no doubt mildew and become damaged, but by beveling the ends of these rollers and causing the yarn to pass over these beveled portions the lint is thrown onto the smooth portions of the rollers and back into the trough, thus preventing any lint accumulating on the rollers and being caught up by the thread. Inasmuch as these

beveled portions 27 and 38 are perfectly smooth and preferably polished, the thread will not catch upon these beveled portions so that there will be no strain exerted upon the thread and at the same time the desired result will be accomplished. Of course, the troughs are cleaned daily of lint or whenever too great a quantity of lint accumulates in the troughs.

As stated in my prior application, this mechanism also may be used for dyeing yarn as well as for setting the twist and preventing the threads from kinking. This mechanism may be also used for applying oil to the yarn wherever desired.

I claim:—

1. Yarn moistening means including a moistening roller, means for rotating the roller in one direction, means for causing the yarn to bear against the periphery of said roller, means for causing the traverse of the yarn longitudinally of the roller, and means for moistening the roller, the roller having elongated conical ends tapering toward the axial center of the roller, the distance between the bases of said conical ends being less than the traverse of the yarn, the total length of the roller being greater than the length of travel of the yarn whereby said yarn in its traverse shall move onto said tapering ends of the roller, the taper of the roller at its ends being such as to automatically guide the yarn back upon the body of the roller inward of the tapering ends without additional assistance.

2. A cotton yarn winding machine including a yarn holding quill and a device upon which the yarn is wound, the yarn passing from the quill to the yarn winding device;

a moistening roller disposed intermediate the yarn winding device and quill whereby moisture is applied to the yarn, said roller having elongated conical ends, means for causing the traverse of the yarn longitudinally of the yarn winding device to an extent which would carry the yarn onto the tapering ends but not beyond the same, the ends of the roller being so tapered as to guide the yarn back upon the body of the roller between said ends without additional assistance and without breaking the yarn.

3. In a cotton yarn winding machine, a yarn holding quill, a device upon which the yarn is wound, the yarn passing through the quill to the yarn winding device, a tank disposed between the quill and the yarn winding device, a roller disposed in said tank and adapted to receive liquid, means for causing the yarn to contact with said roller as it passes from the quill to the yarn winding device, the ends of the roller being formed to provide elongated tapering portions and said tapered ends being smooth, and means for causing the yarn to traverse to and over the roller, the traverse of the yarn being such that the yarn passes onto the tapering portions of the roller but not beyond the extremity thereof, the angular relation of the tapering ends to the periphery of the middle portion of the roller being such that the yarn will be guided back onto the body of the roller from a tapering end without additional assistance and without breaking the yarn.

In testimony whereof I hereunto affix my signature.

JAMES A. JOHNSON.