March 10, 1925. 1,529,375

A. L. REMINGTON

ATTACHMENT FOR CREELS

Filed March 26, 1923

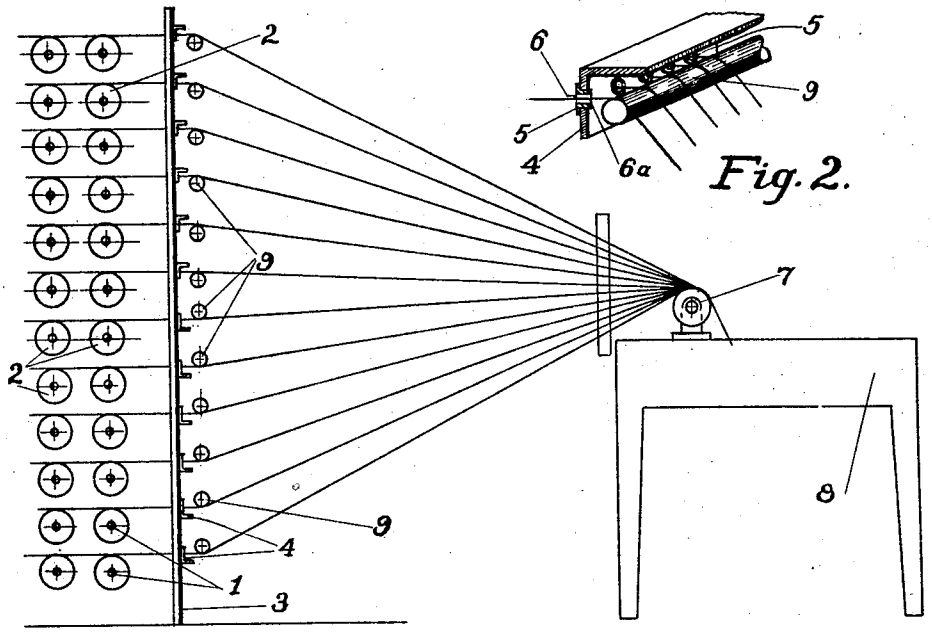


Fig. 1.

Fig. 2.

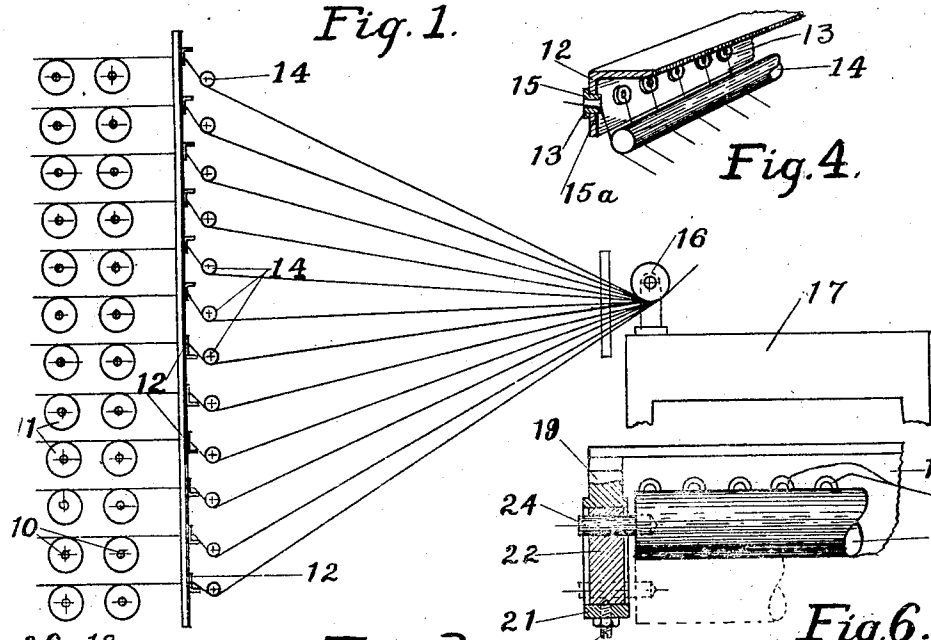


Fig. 3.

Fig. 4.

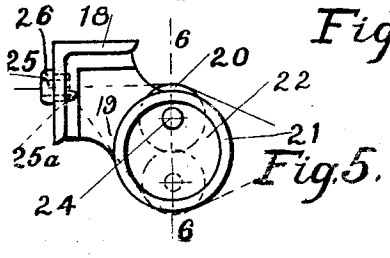


Fig. 5.

Fig. 6.

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Atty

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UNITED STATES PATENT OFFICE.

ARTHUR L. REMINGTON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO WARP COMPRESSING MACHINE COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ATTACHMENT FOR CREELS.

Application filed March 26, 1923. Serial No. 627,755.

To all whom it may concern:

Be it known that I, ARTHUR L. REMINGTON, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in an Attachment for Creels, of which the following, together with the accompanying drawings, is as specification.

My invention relates to creels or spool stands, such as are employed for supporting a plurality of spools so that the yarn may be conveniently led therefrom to a winding machine of any desired type, or directly to a loom.

The object of my invention is to provide an improved attachment for a creel or spool stand, whereby the amount of friction to which the individual warp threads or strands of yarn are subjected to, as they leave the creel, can be readily controlled in accordance with the nature of the yarn and the manner in which it is to be handled after leaving the creel. By my invention it is possible to substantially eliminate the friction to which the yarn is subjected, or to so regulate it that each thread is subjected to the same amount of friction. The above and other advantageous features of my invention will hereinafter more fully appear, reference being had to the accompanying drawings in which—

Figure 1 is a view in side elevation of a portion of a creel showing my invention applied thereto so as to eliminate friction on the yarn.

Figure 2 is an enlarged, perspective view of one of the cross bars of Fig. 1.

Figure 3 is a view in side elevation of a portion of a creel with my invention applied thereto so as to provide for a uniform amount of tension on the yarn.

Figure 4 is an enlarged perspective view of one of the cross bars of Fig. 3.

Figure 5 is an enlarged detail view of a roll support embodying my invention.

Figure 6 is a sectional view along the line 6—6 of Fig. 5.

Like reference characters refer to like parts in the different figures.

Referring to Fig. 1, a portion of a creel is shown, which consists of a number of spindles 1 arranged in rows, each of which carries a spool or package 2 of yarn. An upright 3 is provided at the front of the creel, upon which is mounted a plurality of cross bars 4, each extending across the front of the creel, the number of cross bars 4 corresponding to the number of rows of spools or packages 2. As best shown in Fig. 2, each cross bar 4 is provided with a plurality of eyes 5 corresponding in number to the number of spools or packages 2 in a given row, and each eye 5 is provided with a central opening 6 for the passage of the yarn therethrough.

With creels as previously constructed, it has been customary to lead the separate strands of yarn directly from the eyes 5 to a suitable winding machine, or loom, which provides a roll 7 on a support 8 over the surface of which all of the strands pass. As the roll 7 is located between the lowermost and uppermost cross bars 4, it is apparent that the several layers of threads will make different angles with the horizontal as they converge upon the roll 7. Consequently the layer of threads passing through the eyes 5 in one cross bar 4 will be subjected to a certain amount of friction as each bends over the lip 6^a of the opening 6, and it is apparent that the amount of friction will vary with the different angles which the various layers of threads make with the horizontal. When handling very fine yarn possessing but little tensile strength, it has been found that the variations in the amount of friction to which the different layers of threads are subjected, give rise to very undesirable results when the yarn is wound, for the reason that different layers of yarn have been stretched unequally. It is the object of the present invention to provide an attachment for creels, whereby the above described unequal stretching is avoided by the substantial elimination of friction at the point where the threads leave the creel.

To this end I have provided a plurality of rolls 9, each extending across the creel in front of a cross bar 4. As best shown in Fig. 2, each roll 9 is so supported with respect to a cross bar 4 that a thread passing through the opening 6 of any one of the eyes 5 will engage the periphery of the roll 9 without touching the sides of the opening 6. In other words, each roll 9 is so supported with respect to the corresponding cross

bar 4 that the threads passing through the eyes 5 of a cross bar are all tangent to the surface of a roll 9, from which the threads pass to the roll 7 of the winding machine in the usual manner. At this point it should be noted that all of the rolls 9 located above the top of the roll 7 are mounted with their respective axes of rotation below the corresponding series of eyes 5, while the rolls 9 below the top of the roll 7 are mounted with their respective axes of rotation above the corresponding eyes 5, the above statement holding true regardless of the location of the roll 7 with respect to the cross bars 4.

With the improved arrangement shown in Fig. 1, it is apparent that each individual thread passes through the opening 6 of its eye 5 without touching the eye, so that frictional engagement between the threads and the eyes is eliminated. As the threads pass over or under the several rollers 9 at different angles from the horizontal, whatever frictional engagement there may be between the yarn and the rolls 9 is substantially the same for each individual thread, because of the fact that the rolls 9 are free to turn on their respective axes. From the foregoing then it follows that very fine yarn may be taken from the creel with the arrangement shown in Fig. 1, without subjecting the individual threads to different degress of tension.

When handling certain kinds of heavy yarn or cord, it is sometimes desirable that the threads be subjected to a certain amount of tension as they pass from the creel, a specific instance being in the manufacture of fabric for cord tires. In the production of cord fabric it has been proposed to weave the relatively strong and heavy cords which comprises the warp, directly from the spools or packages of a creel, so that the necessity for beaming the warp is eliminated. When warp threads are taken directly from a creel to a loom it is desirable that the threads be subjected to a certain amount of tension, although in this case it is very essential that the tension in each thread be the same. The present invention also contemplates a modification of the arrangement shown in Fig. 1, whereby the threads taken from the creel are each subjected to an equal amount of tension, which may be regulated.

Referring now to Fig. 3, there is shown a portion of a creel comprising the usual spindles 10, spools or packages 11, and cross bars 12, each having a row of eyes 13. As best shown in Fig. 4, a roll 14 is rotatably supported in front of, and below each cross bar 12, so that a thread passing through the opening 15 of an eye 13 to the roll 14 will be drawn over the lip 15^a at a definite angle, which is the same for each of the rolls 14. After passing under the rolls 14 the threads pass to a roll 16 on a stand 17 which may be placed in front of a loom, to which the threads pass directly for forming the warp of a fabric. It is apparent from an inspection of Fig. 3, that each thread will be subjected to a certain amount of friction as it is drawn downwardly over the lip 15^a and that this friction will be the same for each individual thread. Consequently all of the threads will pass to the loom with a certain amount of tension which will be uniform. The fact that the several layers of threads converge upon the roll 16 at different angles to the horizontal, does not materially affect the degree of tension in the threads because of the fact that each of the rolls 14 is free to rotate on its axis, thereby substantially eliminating friction between the threads and the rolls 14.

Referring now to Figs. 5 and 6, there is shown a cross bar 18 having a fixture 19 attached thereto for rotatably supporting one end of a roll 20 in such a manner that it may be employed in connection with either of the arrangements shown in Figs. 1 and 3. The fixture 19 provides an annular portion 21 within which is received a disk 22 turnable therein, and adapted to be secured in any desired angular position by a set screw 23. A pin 24 is carried by the disk 22 eccentric to the axis of the annular portion 21, and the roll 20 is rotatably supported at one end by the pin 24. A fixture similar to the fixture 19 is provided at the other end of the cross bar 18 for supporting the other end of the roll 20. In the full line position, the roll 20 is so supported that a thread passing through the opening 25 of an eye 26 is tangent to its periphery. By turning the disk 22, the roll 20 may be brought into the dotted line position so that a thread passing through the opening 25 is drawn downwardly over the lip 25^a in passing to the roll 20.

From the foregoing, it is apparent that by my invention I have provided an improved attachment for use in connection with creels or spool stands, whereby the amount of friction to which the threads are subjected in passing through the cross bars of the creel is always maintained substantially uniform and may be varied from substantially zero to a definite amount, as may be desired.

I claim.

1. An attachment for creels, comprising a row of eyes for the passage of threads therethrough, a roll with an axis parallel to the line of said row of eyes, and means for shifting the axis of said roll but keeping it parallel to said line of eyes so that the contact angles of the threads as they leave the eyes may be varied.

2. In a machine of the class described the combination with a creel comprising a cross bar providing a row of eyes, a roll adjust-

able but always parallel to the line of said row of eyes adapted, by such adjustment, to vary the friction of threads on the eyes of said cross bar.

3. In a machine of the class described, the combination with a creel comprising a cross bar having a row of eyes for the passage of threads therethrough to fixed points in a line, of means for controlling the angle of emergence of the threads from the eyes without changing the relationship between said row of eyes and said fixed points.

4. In a machine of the class described, the combination with a creel comprising a cross bar having a row of eyes for the passage of threads therethrough, of a rotatably mounted roll extending across the creel in front of the cross bar, and means for shifting the position of said roll in a surface parallel to the line of said row of eyes to control the tension on the threads in passing through said eyes.

5. In a machine of the class described, the combination with a creel comprising a plurality of cross bars, each having a row of eyes for the passage of a layer of threads therethrough and a rotatably mounted roll toward the periphery of which the several layers of threads converge, said roll being fixed in position with relation to all of said rows of eyes, of means for varying the angle of emergence which a thread in a given layer makes at its eye going to said roll.

6. In a creel, a series of rows of eyes for the passage of threads, a main roll toward which all the threads converge, and a series of auxiliary rolls to equalize the angles of emergence of all the threads from their eyes.

7. In a creel, a series of rows of eyes for the passage of threads, a main roll toward which all the threads converge, and a series of auxiliary rolls to cause all the threads to pass through their eyes with the same angular relation to the axes of said eyes.

8. In a machine of the class described, a series of eyes for the passage of threads therethrough, means causing all of said threads to converge, and means to cause the angles of emergence of all said threads to their respective eyes to be equal.

Dated this 22nd day of March, 1923.

ARTHUR L. REMINGTON.