April 21, 1931. T. WINSTANLEY ET AL 1,801,830

WARP MOISTENING DEVICE FOR LOOMS

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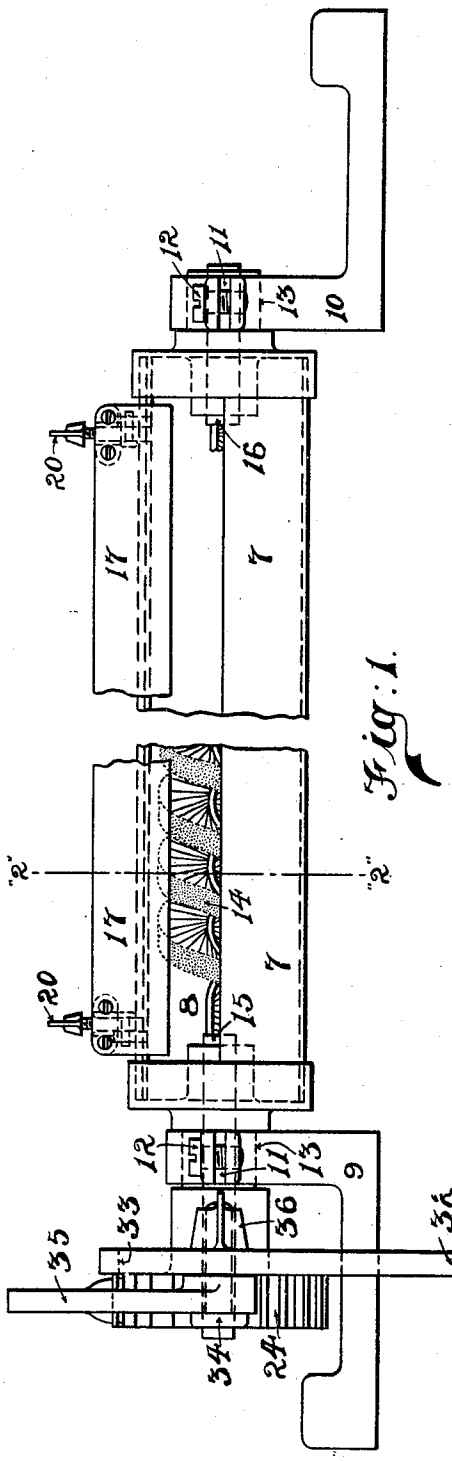


Fig. 1.

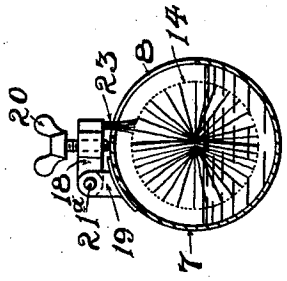


Fig. 4.

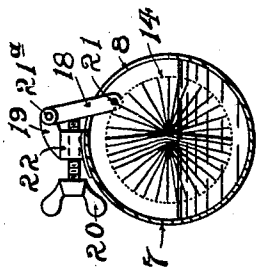


Fig. 3.

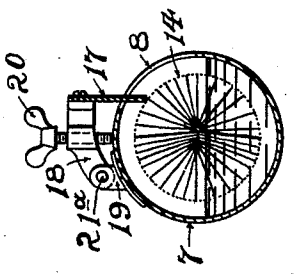


Fig. 2.

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Fig: 5.

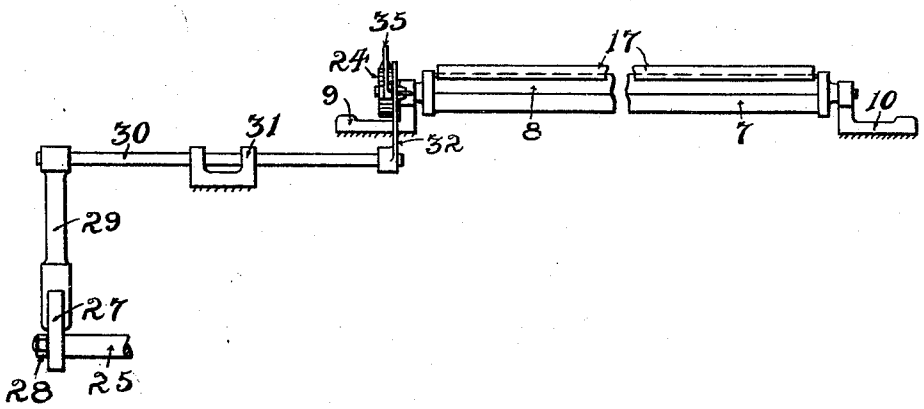
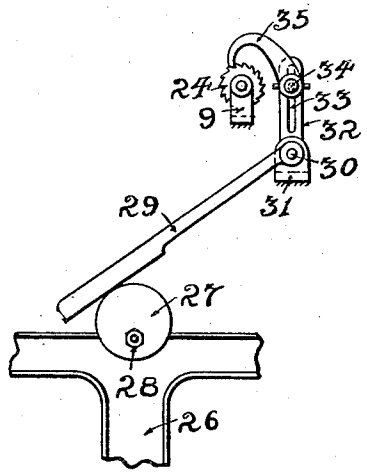


Fig: 6.



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UNITED STATES PATENT OFFICE

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WARP-MOISTENING DEVICE FOR LOOMS

Application filed September 15, 1928, Serial No. 306,239, and in Great Britain September 23, 1927.

For the conditioning of warps in looms it has been proposed to substitute for the old system of "steaming" or otherwise humidifying the atmosphere of the weaving shed, a trough over each loom, containing water which was sprayed upon the warps below by means of a rotating brush the bristles of which made contact with a fixed brush, rod, or the like. This obviated the evils of "steaming" and the like but it is found that with a fixed brush co-acting with the rotating brush the bristles of the latter bend the bristles of the former so that a clean and even spray is not produced. When fixed rods or the like are employed instead of a fixed brush the wear of the bristles of the rotatable brush is extremely rapid and the spray projection is harsh. Further, it is practically impossible to obtain commercially, brushes which are perfectly circular and which have all their bristles of equal length, the latter a necessity when fixed rods or the like, or a fixed brush, is employed.

The object of the present invention is to obviate these defects in apparatus of the trough and rotating brush type referred to, and according to the invention there are provided as before, a trough and a rotating brush, but instead of a fixed co-acting part a yieldable jockey member rides upon the rotatable brush in such a manner that it will yield radially or tangentially to the said brush under the impulse of the moving bristles.

A fine and even distribution of the conditioning medium in finely divided form for even conditioning is thus attained, with the additional advantage over atmosphere humidification that the conditioning medium is not confined to the use of water or water vapour. In broad looms the trough and brush may extend across the said loom but there may be a plurality of the yieldable jockey members riding upon the said brush, thus further ensuring even distribution of the conditioning medium by preventing torsion of the brush as it rotates.

Any means may be adopted for driving the rotatable brush at the desired speed and a convenient method will be hereinafter described.

The invention will now be fully described, reference being had to the accompanying drawings wherein:—

Figure 1 is a broken elevation to an enlarged scale of the apparatus showing part of the drawing means.

Figure 2 is a cross section taken on line 2—2 of Figure 1.

Figures 3 and 4 are similar views to Figure 2 showing modifications of the spraying means.

Figure 5 is a general view of the apparatus showing the driving means, and

Figure 6 is an end elevation of Figure 5.

Referring first to Figures 1 and 2, to the left of the former figure is shown a driving means which will be hereinafter fully described. Above the loom and stretching across the warps at a suitable distance above the latter is fitted a cylindrical trough 7 having closed ends and an opening 8 in the front thereof, this trough being mounted by means of brackets on a suitable part of the frame of the loom. These bearing brackets 9 and 10 can be adjusted so that the trough may be turned to direct at any desired angle through the opening 8, the spray produced. For this purpose of adjustment the bearings 9 and 10 are split as seen at 11 and a locking screw 12 is passed through the split portions so that the bearing bosses 13 may be released or gripped.

Mounted in the trough 7 is a brush 14 which is secured to necks 15 and 16 journalled in the bosses 13 of the trough. As shown this brush 14 is of spiral form, being manufactured by arranging the mass of bristles spirally between two central wires in known manner, but the said brush may be otherwise formed if desired. In the opening 8 of the trough is arranged a flat metal strip 17 which constitutes a jockey member and which makes contact by its lower edge with the bristles of the brush 14, this strip being borne by arms 18 pivotally mounted on lugs 19 screwed or otherwise secured to the outer face of the trough 7. An adjusting screw 20 passes through each arm 18 so that the metal

strip 17 can be regulated, and by manipulating these screws 20 the lower edge of the strip may be engaged to a greater or lesser degree as may be desired in the bristles of the brush 14.

The arms 18 are freely movable on their pivot points 21*a*, and as a result when the trough 7 is charged with the conditioning medium to the necessary level so that the bristles of the brush 14, dip therein, continued rotation of the brush brings the charged bristles against the lower edge of the strip 17, bending the said bristles backwards and flicking the liquid forward through the opening 8 in the form of a fine spray. At the same time the pressure of the bristles against the strip edge 17 causes the latter to rise or yield tangentially to the brush itself, the projection of the spray being thus regulated and the harsh effect of a fixed strip obviated.

In Figure 3 is illustrated the application of a rod as jockey member instead of the strip 17 of the previous figures. In this construction a rod 21 of circular cross section is secured to the ends of arms 18 pivotally mounted on lugs 19 secured upon the trough 7, the lugs 19 being tapped at 22 for the insertion of adjusting screws 20 which engage the arms 18 to regulate the extent of engagement of the rod 21 with the brush bristles.

If desired a flat brush 23—Figure 4—may be employed instead of the strip 17 or rod 21 of the previous figures. In this case the bristles of the brush 14 make contact with the bristles of the flat brush 23, on rotation of the former, but the defect caused by the consequent forward push upon the flat brush bristles, referred to earlier, is eliminated as the flat brush 23 rises owing to the combined force of the bristles of the brush 14 upon the bristles of the said flat brush 23. A speed of about ten revolutions per minute is found a very convenient one with an ordinary loom making the usual number of picks per minute, and the said brush 14 may be rotated by the means now to be described and illustrated in Figures 1, 5 and 6.

On the neck 15 is mounted a ratchet wheel 24 which serves as the direct driver for the brush 14. On a convenient rotating shaft 25 of the loom 26 is mounted a cam or tappet 27 by a nut 28 and upon this cam or tappet rests a lever 29 one end of which is fixed to a shaft 30 rotatably mounted in a bearing 31 borne upon the loom frame. The inner end of such shaft 30 has fixed to it a lever 32 slotted as shown at 33 for the reception of a bolt 34, on which is mounted a ratchet pawl arm 35 the end of which engages the teeth of the ratchet wheel 24. The slot 33 and nut 36 serve for the adjustment of the ratchet pawl arm 35 so that it will extend over one, or more, of the ratchet teeth and thus regulate the extent of movement of the ratchet wheel 24 and thus of the brush 14, at each lift of the lever 29 consequent upon its contact with the edge of the cam or tappet 27.

The intermittent rotation of the brush 14 in the manner described is a very practical one as by these means the warps may be sprayed intermittently as they intermittently advance during the working of the loom.

In the above description the strip 17 or rod 21, or flat brush 23, extends along the length of the trough 7 and rides upon the brush 14. To prevent torsion of the brush in broad looms due to the fact that the yieldable bristles of the said brush have to lift the said strip, rod or flat brush for the purpose of the invention, such strip, rod or flat brush may be in a plurality of sections along the trough, each such section being separately mounted in the pivoting members hereinbefore described with reference to the various figures, and each with such members thus constituting a separate yieldable unit riding upon the brush 14.

Water has been referred to as being employed for charging the trough and forming the spray, this being sufficient for ordinary cotton warps. It will be understood however that without change of the trough or its details as given other materials may be used, for instance a chemical solution; or indeed any material which is to be projected in finely divided form for the conditioning of the warps.

We claim:—

1. As a spray producing device, an open trough, a rotatable brush mounted in the trough, means for rotating the brush, and a jockey member resting by its own weight upon the rotatable brush.

2. As a spray producing device an open trough, a rotatable brush mounted in the trough, means for rotating the brush, a jockey member resting by its own weight upon the rotatable brush, and an adjustable stop for the said jockey member.

In testimony whereof we have hereunto set our hands.

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