Aug. 30, 1938. C. G. RICHARDSON 2,128,377

CLOTH FINISHING MACHINE

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Fig. 1.

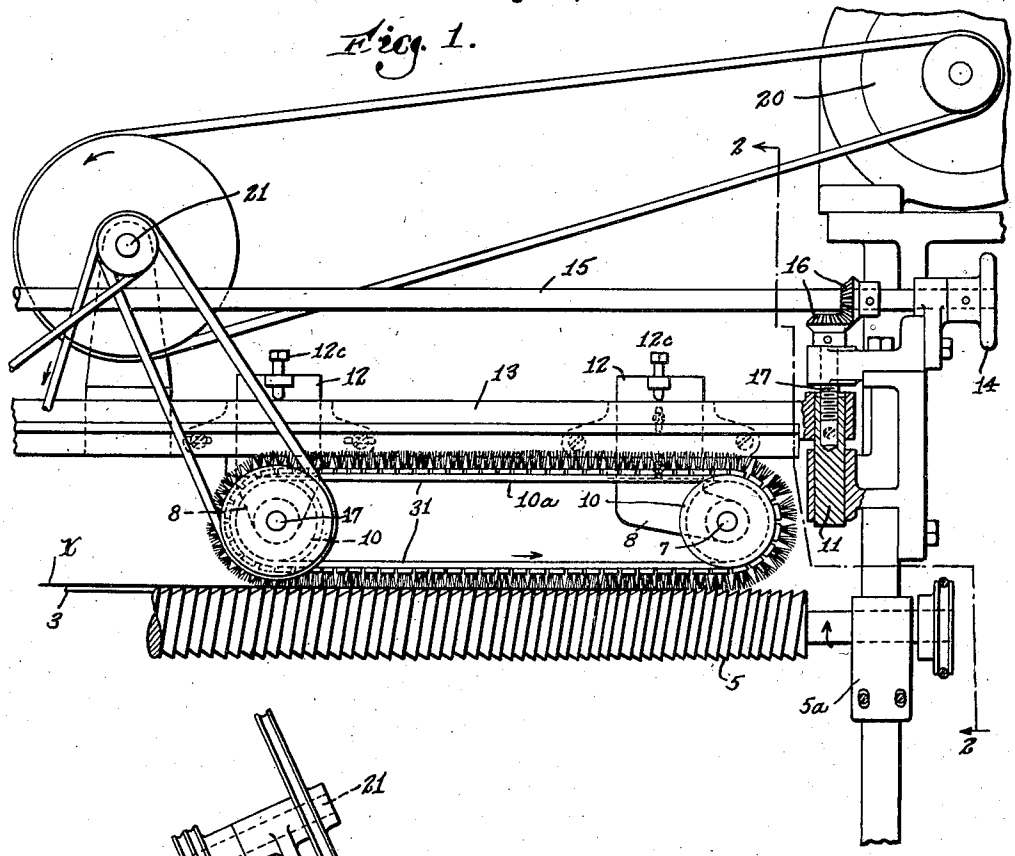
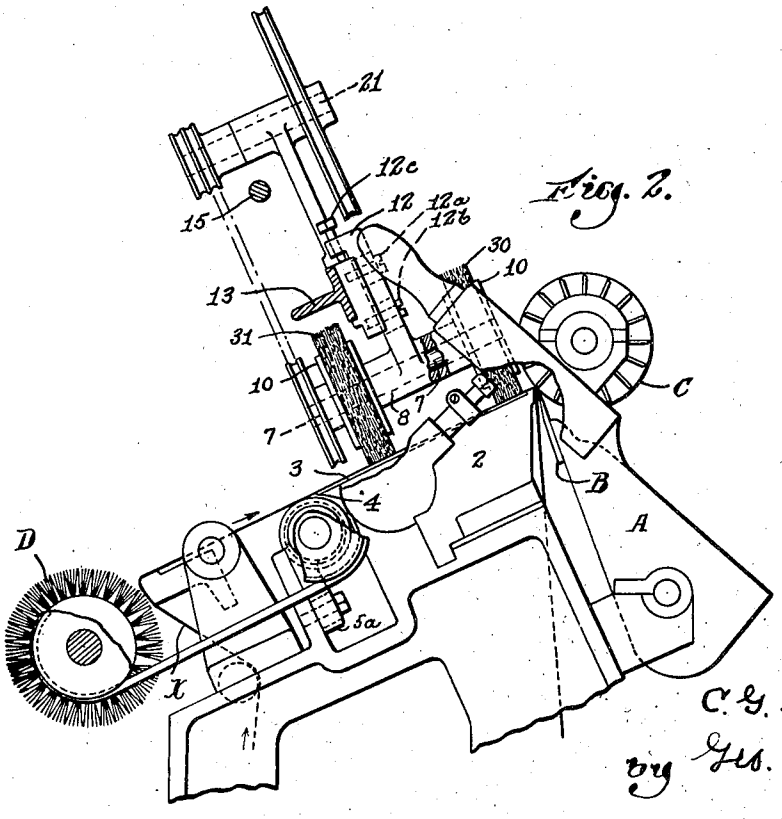


Fig. 2.



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CLOTH FINISHING MACHINE

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6 Claims. (Cl. 26—15)

This invention relates to cloth finishing machines of various types and is intended to provide such machines with means for eliminating the curling or rolling in of the longitudinal edge portions of the piece of fabric being finished.

It is well known that tubular knitted fabrics of all kinds of textile fibers, when split longitudinally for garment making, have a very marked tendency to curl in at the edges, thereby causing much trouble or damage when such pieces are passed through a finishing machine, either for face shearing, brushing, napping, pressing or other treatment. It is the object of the present invention to provide means applicable to various types of finishing machine which shall eliminate this curling of the edges and allow the full width of the fabric from edge to edge to be fed to the finishing elements in a flat condition which allows the finishing treatment to be applied to the marginal portions as well as to the interior parts of the fabric and thus avoids waste and damage.

The principle of this invention as disclosed herein is embodied in a preferred form of apparatus, the construction and operation of which will be described in the following specification and the novelty thereof defined in the claims hereto annexed.

In the accompanying drawing:

Fig. 1 illustrates an elevation of a cloth finishing machine taken from a plane immediately in front of the curl-eliminating attachment.

Fig. 2 is a side elevation, partly broken away, to expose otherwise concealed parts and illustrates the relation of the smoothing devices to the rear portion of a face shearing machine.

In the construction and arrangement embodying the invention according to the form illustrated in Fig. 1 and Fig. 2, the mechanism therein is applied to a well known type of cloth shearing machine provided with the usual pivotal fly blade head A, in which is mounted a rotary fly blade C and to which is secured the usual ledger blade B in a well known manner.

The cloth or fabric, whose path of travel is indicated at X, is subjected to the action of the usual rotary raising brush D before passing along a flat table or cloth support 3, in this case comprising a smooth sheet metal plate 3 covering the top of the transverse cloth rest beam 2, at whose rear edge the face of the fabric is presented to the action of the shearing couple. At the forward edge 4 of the cloth support or table 3 is located a revolving shaft or drum whose end portions are cut to form a helical ratchet having abrupt shoulders on the outer side and inclined faces on the inner side and arranged to rotate against the under face of the cloth just before it reaches the forward edge 4 of the cloth supporting table. This ratchet screw 5 extends across the width of the finishing machine having its opposite end portion formed with a similar ratchet thread also inclined outwardly in the direction of its rotation to outwardly smooth the marginal portion of the fabric being treated immediately before it passes over the flat table 3.

Since the fabric, even when laid flat on the table, still retains its tendency to curl, provision is made for maintaining the marginal portions of the travelling cloth in a flat condition. In this case this result is obtained by means of travelling endless belts 30 and 31, the former arranged close to the rear edge of the cloth rest where the cloth is presented to the finishing mechanism, while the latter is located near to the forward end of the table that receives the cloth after the curled edges have been straightened out by the rapidly revolving ratchet 5.

To properly support and actuate the brush belts 30 and 31, there is provided somewhat above the level of the upper stretches of these belts a supporting beam 13, as shown, of T-shaped cross section, whose ends are supported by vertical slides 11 mounted in suitable slideways formed in the frame of the machine, each slide having threaded engagement with an adjusting screw 17 to whose upper end is secured one of a pair of mitre gears 16, the other of which is secured to a transverse adjusting shaft 15 provided with a hand wheel 14 so that, as the screws at the opposite side are rotated simultaneously in one direction or the other, the slides and the T beam secured thereto are raised or lowered. The brush belts 30, 31 are carried by flanged sheaves 10 secured to approximately horizontal shafts 7 lying in parallelism with the plane of the cloth support 3. The shafts 7 are rotatably mounted in bearings 8 formed on slidably adjustable brackets 12 carried by the overhead transverse supporting beam 13 to which said brackets 12 are adjustably secured. The brackets 12 are slidable along their supporting beam 13, so that the brush belts may be set to properly overlap the edges of pieces of cloth of different width. Each bracket 12 can be accurately set as to vertical height by means of the vertical set screws 12^c and are clamped in adjusted position by means of clamping screws 12^a and 12^b. The vertical adjustment is intended to provide means for establishing a proper parallelism between the line of travel of the lower stretch of the belt brushes and the flat cloth supporting surface 3. The adjustment effected through shaft 15 and mitre gears 16 permits raising and lowering of the brushes to accommodate different thicknesses of cloth and to vary the friction of the brushes on the face of the fabric which, however, is never strong enough to interfere with the normal rapid feeding of the cloth through the machine to the finishing mechanism.

For convenience in driving the brushes, there

is provided a suitable motor 20 connected by belt and sheaves with a transmission shaft 21, which itself transmits rotation to the sheave 9 located on the inner shaft 7 that supports and drives the brush belt. The outer brush belt shaft 7 is driven from the inner shaft 17 by means of a connecting belt 10a. The reversely threaded ratchet screw 5 is mounted in vertically adjustable bearing members 5a that are clamped at the proper level by means of clamping screws.

The action of the reversely threaded outward smoothing ratchet shaft 5 acts to straighten out or smooth in an outward direction the marginal or edge portions of the cloth just before it reaches the flat supporting plate or table 3. The two brush belts act to maintain the smoothed out margins of the cloth in their straightened or flattened position up to the point where the cloth is presented to the finishing mechanism, in this case the shearing elements. In consequence of this smoothing out the marginal edges of the cloth and maintaining them in flat position, the cloth finishing elements perform their finishing treatment upon the marginal edge portions as well as upon the remainder of the surface of the fabric and it is found in practice that when the marginal portions have been subjected to the finishing treatment the tendency to curl is permanently eliminated and there is no longer danger of damaging or cutting the curled up edge portions of the fabric and there is no necessity of cutting off the marginal edges either because they are not properly finished or because they are damaged. Consequently much trouble and waste is prevented.

To permit illustration on a sufficiently large and clear scale only one side of the anti-curling attachment is actually illustrated, it being understood that the opposite side of the cloth is provided with a duplicate construction, the two portions being made as right and left members of the attachment.

It is important that the smoothed out margins of the fabric should be kept flat until they arrive at the position for treatment by the finishing mechanism and the outward movement of the ratchet threads, acts to temporarily smooth outwardly and straighten the curled edges of the cloth, while the endless belt means is provided for further smoothing out and preventing the return of the curl until the finishing mechanism has functioned and has imparted a permanent set to the straightened edges of the fabric.

While I have shown and described a preferred form of my invention, it is to be understood that the same is not limited to the details shown and described but is capable of modification and variation within the spirit of the invention and the scope of the appended claims.

What I claim is:

1. In a cloth finishing machine having cloth finishing mechanism the combination of a cloth supporting element having a smooth flat cloth supporting surface extending forwardly from close proximity to the cloth finishing mechanism, a rotary curl eliminator arranged transversely of the cloth in close proximity to the front of said support in position to direct the cloth with its uncurled edge portions in flat condition upon said support, means for yieldingly maintaining the flattened marginal portions of the cloth against said support comprising an outwardly travelling transversely arranged belt engaging the marginal portion to keep the cloth lying flat against the support until it is delivered to the finishing mechanism.

2. In a cloth finishing machine provided with cloth finishing mechanism a curl-removing element comprising a cloth supporting member for supporting the cloth as it travels to the finishing mechanism, a rotary helical ratchet member arranged in close proximity to the front of said support and rotated at higher surface speed than the travel of the cloth, whereby marginal portions of the cloth are uncurled and delivered to said support in a flattened condition, means for maintaining said flattened cloth in flat contact with said support while it travels to the cloth finishing mechanism, said means comprising a plurality of transversely arranged belts moving outwardly upon the surface of the cloth and thus preventing the recurling of the marginal portions of the cloth.

3. A curl eliminating device for presenting a travelling web of cloth to cloth finishing mechanism comprising a smooth flat surfaced cloth supporting member for supporting the cloth as it travels to the finishing mechanism, a rotary helically threaded spreader roll extending transversely of the cloth and in close proximity to the front of said cloth support, means for maintaining the uncurled marginal portions of the cloth in flat contact with said support while it is travelling to the cloth finishing mechanism, said means comprising belts provided with yielding bristles and travelling outward on the face of the cloth to prevent the marginal portions of the cloth from re-curling before they reach the cloth finishing mechanism.

4. A curl eliminating device for presenting the entire width of a traveling web of cloth to cloth finishing mechanism comprising, a belt arranged transversely with respect to the direction of travel of the cloth and overlapping one of the marginal edges thereof, means for supporting the cloth with its surface in contact with the belt, means for effecting continuous motion of the belt outwardly on the cloth surface, and means carried on the cloth contacting surface of the belt for maintaining a continuous frictional contact with the surface of the cloth outwardly to the cloth edge.

5. A device for eliminating curl from the edge of a traveling piece of cloth, embracing means for supporting one face of the cloth, a curl-eliminating endless belt element provided with projecting bristles and having a rectilinear portion thereof in contact with the other face of the cloth traveling by, said rectilinear portion of the belt extending transversely across the marginal edge portions of the cloth in overlapping relation thereto and means for effecting continuous motion of said bristle-carrying belt transversely outwardly across the marginal portion of the cloth.

6. A curl eliminating device for presenting a traveling web of cloth to cloth finishing mechanism comprising, a cloth supporting member for supporting the cloth as it travels to the finishing mechanism, cloth spreading means extending transversely of the cloth at the front of said cloth support, and means for maintaining the uncurled marginal portions of the cloth in contact with said support while it is traveling to the cloth finishing mechanism, said means comprising belts provided with bristles and traveling outwardly on the face of the cloth to prevent the marginal portions of the cloth from recurling before they reach the cloth finishing mechanism.

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