Feb. 9, 1943. F. E. MASON 2,310,664

PROCESS FOR SHRINKING TEXTILE FABRICS

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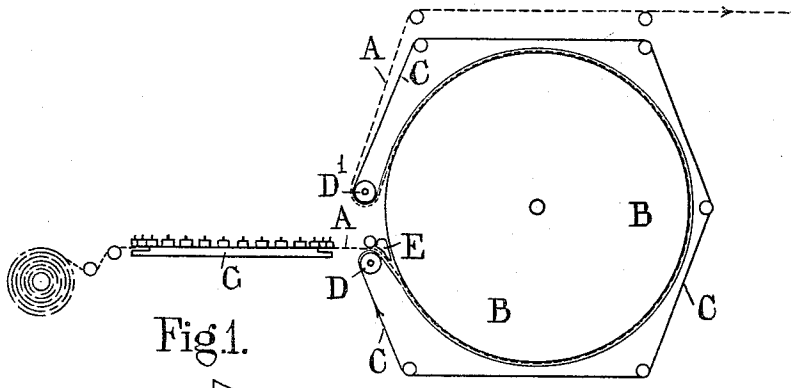


Fig.1.

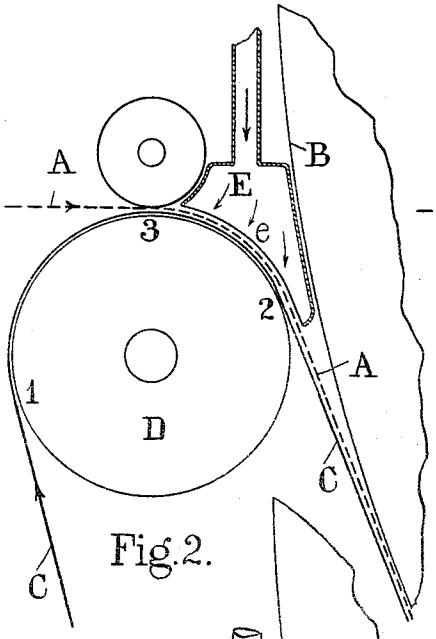


Fig.2.

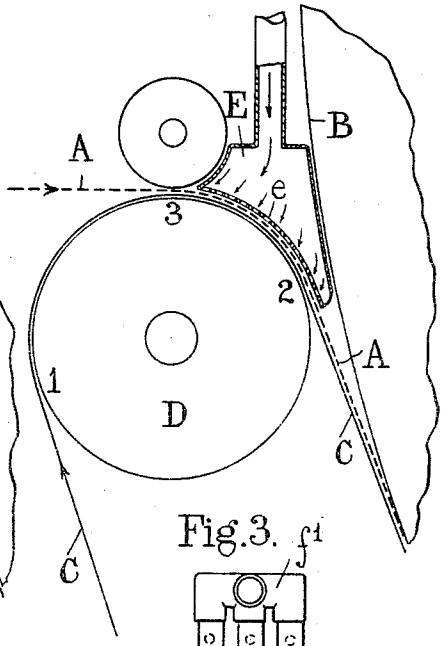


Fig.3.

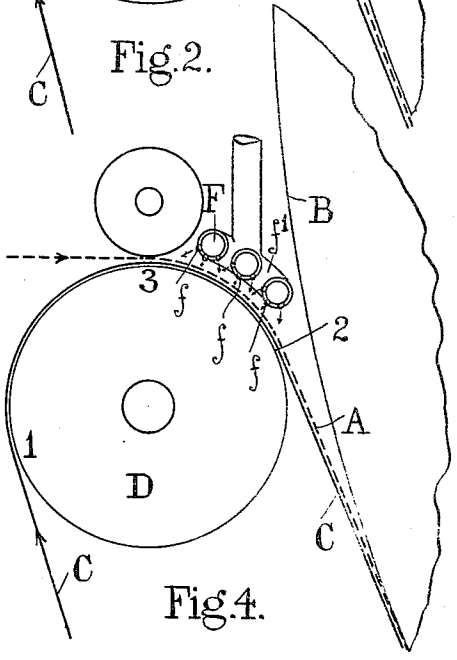


Fig.4.

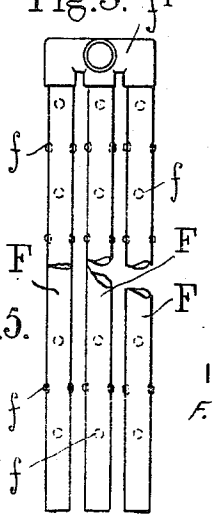


Fig.5.

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PROCESS FOR SHRINKING TEXTILE FABRICS

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In Great Britain June 17, 1941

1 Claim. (Cl. 26—18.6)

This invention relates to an improved process for shrinking textile fabrics.

The improved process is carried out in the well known type of drying and finishing machine in which the fabric to be treated, after passing through a weftwise stretching machine (having been previously moistened or damped) is immediately passed around a large heated drying cylinder being pressed to the surface of the latter by a thick woollen endless blanket, the fabric passing with the blanket over a roller or bowl adjacent to the cylinder which feeds it to the latter.

In such a machine the outer surface of the blanket stretches as it passes over the feed roller or bowl and contracts again during its travel between the roller or bowl and the cylinder so that a fabric which meets the blanket when the surface of the latter is extended will be contracted warp-wise as the surface of the blanket contracts between the roller and the cylinder.

This inherent and long known property of the machine is counter-acted to a greater or less extent according to the characteristics of the fabric being treated by its tendency to slip relatively to the blanket as it passes over the roller thereby decreasing the warp contraction of the fabric.

The present invention makes use of this known property of the machine to produce a predetermined amount of longitudinal shrinkage in the fabric by ensuring that the fabric will adhere to the surface of the blanket during the contraction of the latter.

According to the invention the fabric before passing around a heated drying cylinder of large diameter against the surface of which it is pressed by a thick endless travelling blanket or equivalent device, passes with the blanket and on the outside thereof over a roller or bowl, the outer surface of the blanket or equivalent device first expanding and then contracting whilst in contact therewith and the fabric being led into contact with the blanket or equivalent device at or after the point where contraction commences, the desired shrinkage of the fabric being effected by its adherence to the surface of the blanket or equivalent device during the contraction of the surface of the latter as it passes around the feed roller, the adherence of the fabric to the blanket or equivalent device being assisted by air or steam blown or forced onto the surface of the fabric and the shrinkage effected in the fabric being finally set by its passage around the heated drying cylinder of large diameter.

Apparatus for carrying out the invention is illustrated diagrammatically in the accompanying drawing and the invention will be described with reference thereto, and in this description it is to be understood that the term "blanket" includes any equivalent device. In this drawing:

Fig. 1 is a side view of a machine showing means according to the invention for securing adherence of the fabric to the blanket as it passes over the feed roller or bowl.

Fig. 2 is a transverse vertical section on a larger scale of the feed roller or bowl, a portion of the cylinder, the blanket and one form of pneumatic means for securing adherence of the fabric to the blanket as it passes over the feed roller or bowl.

Fig. 3 is a transverse vertical section on a larger scale of the feed roller or bowl, a portion of the cylinder, the blanket and another form of pneumatic means for securing adherence of the fabric to the blanket as it passes over the feed roller or bowl.

Fig. 4 is a transverse vertical section on a larger scale of the feed roller or bowl, a portion of the cylinder, the blanket and a further form of pneumatic means for securing adherence of the fabric to the blanket as it passes over the feed roller or bowl.

Fig. 5 is a plan of the pneumatic means shown in Fig. 4 for securing adherence of the fabric to the blanket as it passes over the feed roller or bowl.

In carrying out the invention the fabric A which is to be shrunk is treated immediately after passing through a clip belt or other stretching machine, in a machine consisting of a large rotating cylinder B against which the fabric is pressed by an endless blanket C, the blanket C and the fabric A being guided from the stretching machine G to the cylinder B by the roller or bowl D and away from the cylinder B, after the fabric has travelled in contact therewith for nearly a complete revolution of the cylinder by the second guide roller D^1.

During the passage of the blanket C around the roller or bowl D from the point 1 where it meets the roller to the point 2 where it leaves the roller its outer surface is first gradually stretched longitudinally until it reaches the point 3 about midway between the points 1 and 2 and is then gradually contracted between the point 3 and the point 2 where it passes away from the roller or bowl D and according to the invention

advantage is taken of this contraction of the surface of the blanket C by bringing the fabric A into contact with the blanket at or near the point 3 and causing it to adhere thereto by pneumatic means until the point 2 is reached when the contraction of the surface of the blanket is ended. The fabric A is thus shrunk or contracted warp-wise to the same or substantially the same extent warp-wise as the surface of the blanket contracts between the points 3 and 2, the amount of such shrinkage or contraction varying according to the thickness of the blanket C. Thus by varying the thickness of the blanket different degrees of shrinkage of the fabric can be obtained. The shrinkage of the fabric is set as it passes round the drying cylinder B.

The fabric A is caused to adhere to the blanket C between the points 3 and 2, i. e. where the surface of the blanket is contracting by a current of air or steam blown on to the surface of the fabric and Figs. 1 to 5 show different means for directing the current of air or steam onto the surface of the fabric.

In the arrangement shown in Figs. 1, 2 and 3 a hood E is arranged around the roller or bowl D between the points 3 and 2 the fabric A and blanket C travelling between the hood and the roller. Air under pressure is delivered to the hood E and impinges on to the outer surface of the fabric thereby causing it to adhere to the blanket C and contract as the outer surface of the blanket contracts. The inner face e of the hood E may be open as shown in Fig. 2 or it may be perforated as shown in Fig. 3.

Instead of employing a hood for directing the air under pressure onto the surface of the fabric A between the points 3 and 2 one or more pipes F with nozzles *f* or with perforations as in Figs. 4 and 5 (which show three pipes) may be used the air under pressure being supplied by the header f^1 to the pipes and directed therefrom onto the fabric through the nozzles *f* or through the perforations. If found desirable when air is used it may be heated and/or humidified before being blown onto the fabric.

If found to be necessary or desirable the hereinbefore described hood E or the pipes F may be extended beyond the point 2 to a point as close as is practicable to the point where the fabric comes into contact with the surface of the drying cylinder B to ensure that the fabric adheres to the belt or blanket C until it is almost in contact with the surface of the cylinder.

The amount of shrinkage imparted to the fabric per unit of length can be varied by employing rollers or bowls D of different diameters and/or by employing one or more additional rollers in front of the roller D.

When using any of the above described means of assisting the adherence of the fabric to the blanket C the fabric is preferably damped or wetted before passing to the machine and/or during its passage therethrough.

I claim:

A process for shrinking textile fabrics consisting in passing an endless travelling blanket over a portion of the circumference of a roller of small diameter whereby the outer surface of the blanket is first expanded and then contracted, leading the fabric into contact with the blanket at or after the point where contraction of the surface of the latter commences, causing the fabric to adhere to the surface of the blanket during its contraction by air under pressure directed onto the outer surface of the fabric whereby the fabric will contract with the blanket and finally setting the shrinkage caused by said contraction by immediately passing the blanket and fabric around a heated drying cylinder of large diameter with the fabric in contact with the cylinder and the blanket outside the fabric whereby the fabric is pressed onto the cylinder.

FRANCIS EDWARD MASON.