Jan. 31, 1967 NARUKAZU OKAZAKI 3,301,497

METHOD AND MEANS FOR CONTINUOUSLY TRANSFERRING FABRIC IN A CHAMBER OF GIVEN SIZE

Filed Aug. 30, 1965

FIG. 1

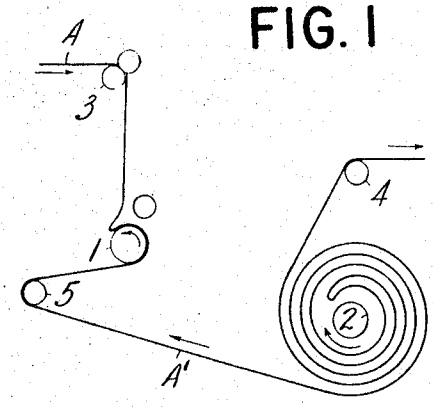


FIG. 2

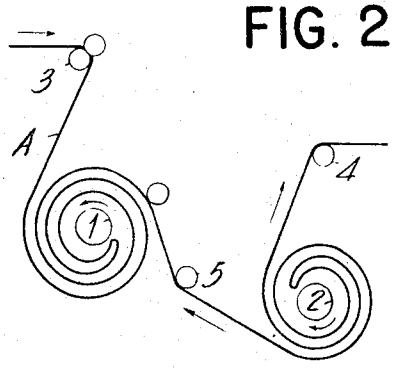


FIG. 3

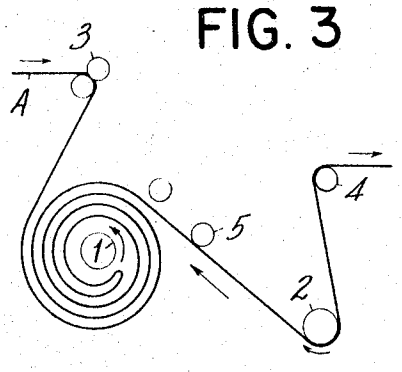


FIG. 4

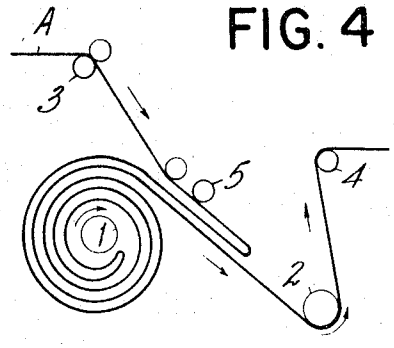


FIG. 5

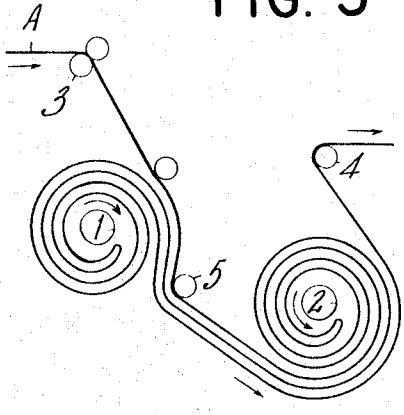
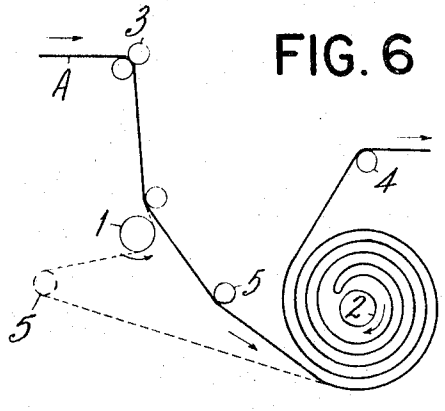


FIG. 6



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METHOD AND MEANS FOR CONTINUOUSLY TRANSFERRING FABRIC IN A CHAMBER OF GIVEN SIZE

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2 Claims. (Cl. 242—55)

This invention relates to a method whereby, when a fabric is caused to continuously travel through a chamber of given size for subjecting the same to desizing, refining, bleaching or the like, the fabric is advanced while being wound alternately on winding rollers disposed on the right-hand and left-hand sides of the chamber, its object being to reduce the cost required for treatment and facilities by allowing the fabric to stay in the treating chamber of given size as many hours as possible while continuously treating the same.

According to the invention, in a condition in which a fabric to be treated fed along guide rollers disposed in a chamber is caused to travel along left-hand side and right-hand side winding rollers, the direction of rotation of each of these two rollers is changed to the opposite direction at predetermined intervals of time, with a displaceable roller disposed in an obliquely downwardly leftward position with respect to the left-hand side winding roller, and the fabric is engaged with the left side of the movable roller whereby the fed fabric portion and the fabric portion unwound from the right-hand side winding roller are wound double on the right-hand side winding roller. When the double fabric portions are completely wound on said right-hand side winding roller, the displaceable roller is shifted to an obliquely downwardly rightward position with respect to the left-hand side winding roller. When the roll of fabric on the right-hand side roller has all been taken up by the left-hand side winding roller, the two winding rollers again are rotated in the respectively opposite direction whereby the fabric portions fed by the guide rollers and unwound from the left-hand side winding roller are brought into piled relation to the fabric portion extending between the two winding rollers and are then introduced to the right-hand side winding roller to be wound thereon, while the fabric portion extending between the two winding rollers and unwound from the left-hand side winding roller is drawn to the outside of the chamber through the right-hand side winding roller. In so doing, when the roll of fabric on the left-hand side winding roller has all been taken up by the right-hand side winding roller, the displaceable roller is again shifted to said obliquely downwardly leftward position with respect to the left-hand side winding roller, whereupon the direction of rotation of each winding roller is reversed. The above-mentioned operations are repeated thereby moving the fabric while allowing the latter to stay in the treating chamber for a predetermined period of time.

The invention will now be described with reference to an embodiment thereof shown in the accompanying drawings in which:

FIGS. 1 through 6 show different stages of operation of the method according to the invention.

A pair of winding rollers **1** and **2** are provided in a predetermined chamber, and guide rollers **3** and **4** are disposed respectively above the winding rollers **1** and **2**. A displaceable roller **5** is provided in operative relation to the two winding rollers. The displaceable roller may be attached either to the lower end of a swingable depending body having its upper end pivoted to a suitable place or to a body movable along a rail.

The condition shown in FIG. 1 is established at the

instant that the direction of rotation of the left-hand side winding roller is changed from clockwise to counterclockwise direction while the direction of rotation of the right-hand side winding roller is changed from counterclockwse to clockwise direction. In this condition the displaceable roller **5** has been shifted to an obliquely downwardly leftward position with respect to the left-hand side winding roller, so that a fabric portion A′ extending between the left-hand side and right-hand side rollers is pressed against the left-hand side winding roller to produce a frictional force necessary for winding. In this condition a fabric portion A being delivered down to the left-hand side winding roller is caused to be engaged with the left side of the left-hand side winding roller owing to the counterclockwise rotation of the left-hand side winding roller so that it is brought into piled relation to the fabric portion unwound from the right-hand side winding roller and is wound double on the left-hand side winding roller. In this case, since the fabric is in a wet condition owing to the treatment such as refining, bleaching or the like, the fabric will be more intimately contacted with the rollers and smoothly wound as the rollers are rotated. In this manner, when the double fabric is wound some number of turns around the left-hand side roller, the displaceable roller is shifted to a position intermediate between the two winding rollers, as shown in FIG. 2. In this condition, the fabric is taken up hereafter by the left-hand side winding roller, and consequently the roll of fabric on the right-hand side winding roller is gradually decreased. In so doing, when all of the roll of fabric wound double on the right-hand side winding roller has been take up by the left-hand side winding roller, as shown in FIG. 3, the rotation of the right-hand side winding roller is stopped. Thereafter, the two winding rollers **1** and **2** are rotated in the respectively opposite direction, with the result that of the roll of fabric taken up by the left-hand side winding roller the fabric portion leading to the right-hand side winding roller is drawn out to a predetermined position through the right-hand side winding roller and over a guide roller **4**. On the other hand, the fabric portion leading to the feeding side of fabric is brought into piled relation to the fabric delivered through the guide rollers **3**, is entrained on the fabric portion extending between the two winding rollers and moves as guided by the latter fabric potrion in a manner shown in FIG. 4, so that it is again taken up by the right-hand side winding roller in said piled condition, as shown in FIG. 5. In this manner, when all the roll of fabric on the left-hand side winding roller has been taken up by the right-hand side winding roller, as shown in FIG. 6, the displaceable roller is brought to a position shown in chain lines in FIG. 6, i.e. the position shown in solid lines in FIG. 1, and the winding rollers **1** and **2** are reversely rotated. Thus, the first condition shown in FIG. 1 is reestablished.

From the foregoing description it is understood that according to the method of the present invention winding rollers are disposed on the right-hand and left-hand sides above which are disposed guide rollers, the direction of rotation of said winding rollers being timely changed thereby introducing a fabric toward the right or the left, and after a displaceable roller is allowed to stay for some time in an obliquely downwardly leftward position wtih respect to the left-hand side winding roller, the displaceable roller is moved to the right thereby to suitably guide the fabric while being doubled, the fabric portion bridge between the two winding rollers being utilized to guide the fed fabric therealong, the latter being doubled and moved to the right-hand side winding roller. And by such means the fabric is wound alternately on the right-hand side and left-hand side winding rollers, so that by repeating this operation the winding and transferring of the

fabric are very easily and dependably effected. Further, since the fabric is allowed to stay in a treating chamber for many hours, sufficient and effective treatment can be attained in each process. Furthermore, since the present method can be carried out in a very simple and easy manner, reduction in cost of facilities and working can be attained.

It is to be understood that the foregoing description and the accompanying drawings have been presented only by way of illustration, and that changes and alterations in the present disclosure which will be readily apparent to those skilled in the art, are contemplated as being within the scope of the present invention.

What I claim is:

1. A method of transferring a fabric in a textile treating machine having

(a) fabric feeding guide roller means,

(b) fabric withdrawal guide roller means,

(c) first and second winding rollers on which the fabric is alternately wound in first and second bights, respectively, in its passage from said fabric feeding guide roller means to said fabric withdrawal guide roller means, said first and second winding rollers being fixedly located in relatively high and low positions, respectively, and

(d) a displaceable roller associated with said fixedly positioned winding rollers,

said method comprising the steps of:

(A) Arranging the fabric to extend from the fabric feeding guide roller means (a) in the form of a first span to a doubled portion forming a first bight wound around the first winding roller and thence in the form of a second span to and around the second winding roller and thence in the form of a third span from said second winding roller to said fabric withdrawal guide roller means,

(B) Simultaneously driving said winding rollers in a direction to unwind fabric from said first winding roller and feeding fabrics from said fabric feeding guide roller means, thereby to form a second bight in said first span disposed on top of said second span to become pinched between said second span and said second winding roller as said second span is moved around said second winding roller to become said third span, and continuing said driving until said first bight has been completely unwound from said first winding roller thus merging said first and second spans into a new span of fabric between said fabric feeding guide roller means and said second bight,

(C) Then moving said displaceable roller against said new span of fabric to a position which causes said new span to bear against said first winding roller and simultaneously reversing the driving of said winding rollers while continuing to feed fabric from said fabric feeding guide roller means, thereby causing

the so fed fabric to fold ahead of the contact of said new span with said first winding roller to again form a first span and a first bight which becomes pinched between said first winding roller and said new span and is thus wound on said first winding roller as said second bight is unwound from said second winding roller,

(D) Continuing the drives of step (C) until said second bight is completely unwound from said second winding roller and simultaneously, but after said again formed first bight is wound more than once about said first winding roller, moving said displaceable roller to a position reestablishing said second span, whereby the condition produced by step (A) is again established, and

(E) Repeating said steps (B) (C) and (D) in sequence for continuing the transfer of the fabric.

2. Apparatus for transferring a fabric in a textile machine of the type having

(a) fabric feeding guide roller means,

(b) fabric withdrawal guide roller means,

(c) first and second reversible winding rollers, and

(d) means for causing the fabric passing from said fabric feeding guide roller means (a) to the fabric withdrawal guide roller means (b) to be alternately wound on and unwound from each of said first and second winding rollers in first and second bights respectively,

said apparatus being particularly characterized in that:

(A) Said first winding roller is located in a fixed position below said fabric feeding guide roller means (a),

(B) Said second winding roller is located in a fixed position proximate to said fabric withdrawal guide roller means (b),

(C) Said first winding roller is located at a higher elevation than said second winding roller, and

(D) Said means for causing the fabric to be alternately wound on said winding rollers comprises a displaceable roller located to lie above a portion of the fabric lying between said first and second winding rollers and displaceable from a first position between said winding rollers to a second position lower than said first winding roller and more remote from said second winding roller than said first winding roller.

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