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SEIKICHI SHIBATA
METHOD AND APPARATUS FOR CONTINUOUSLY WINDING
AND UNWINDING TEXTILES IN TEXTILE
TREATING MACHINES

3,206,777

Filed Jan. 27, 1964

4 Sheets-Sheet 1

Fig. 1

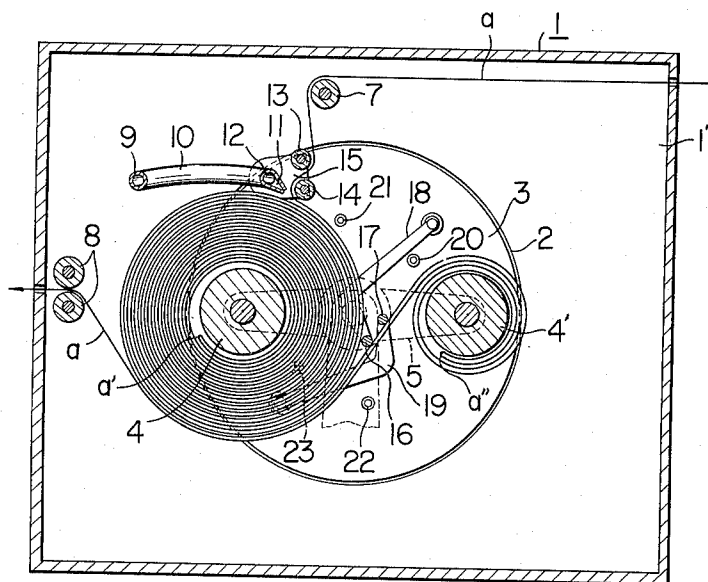
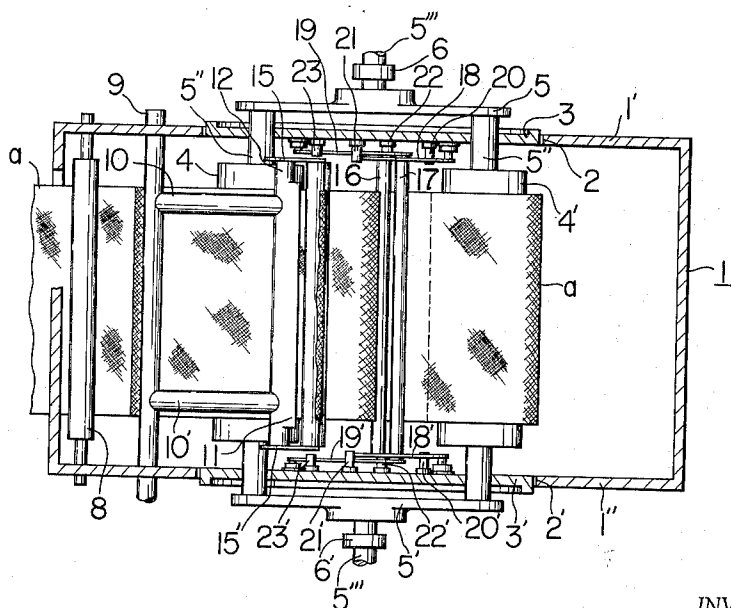


Fig. 2



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Fig. 3

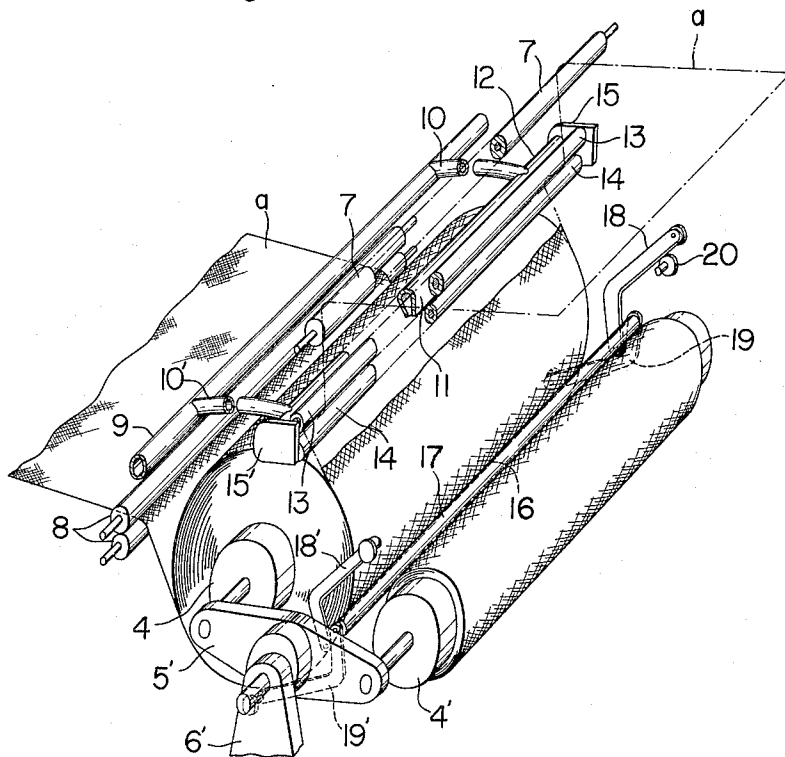
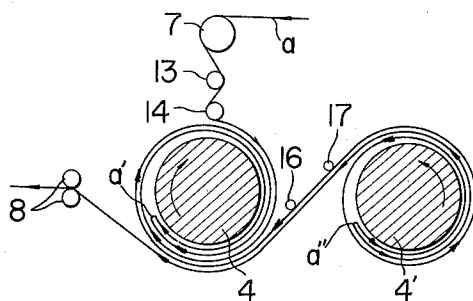


Fig. 4b



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Fig. 4a

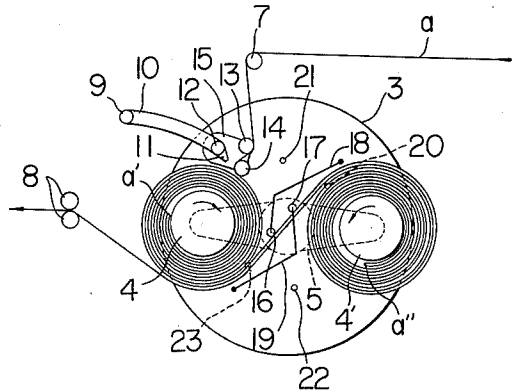


Fig. 5

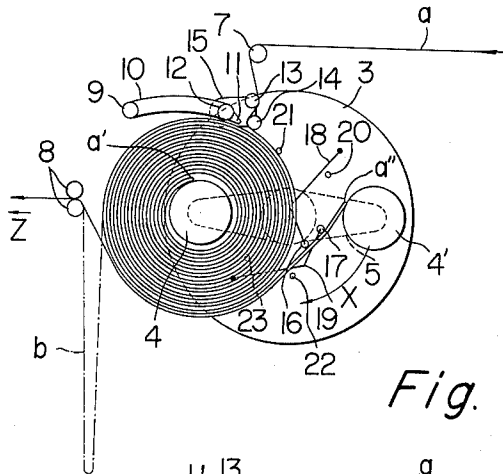
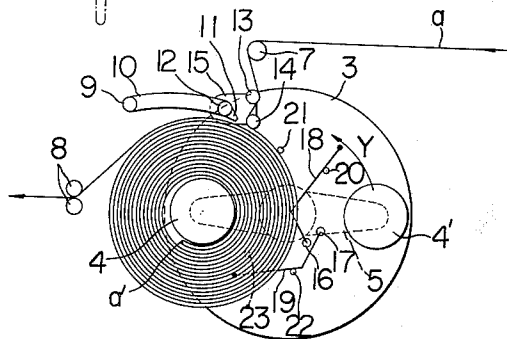


Fig. 6



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Fig. 7

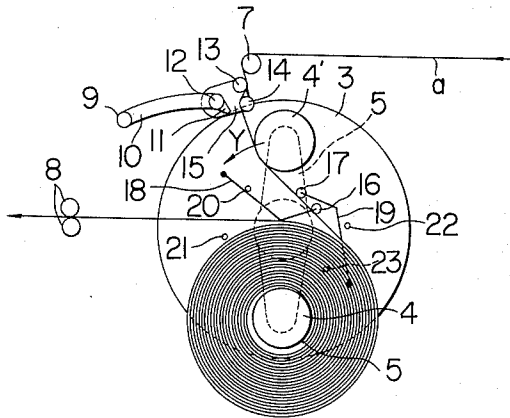


Fig. 8

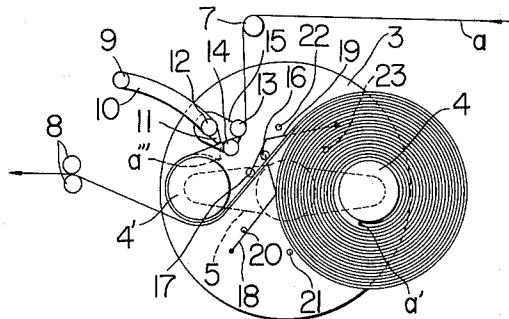
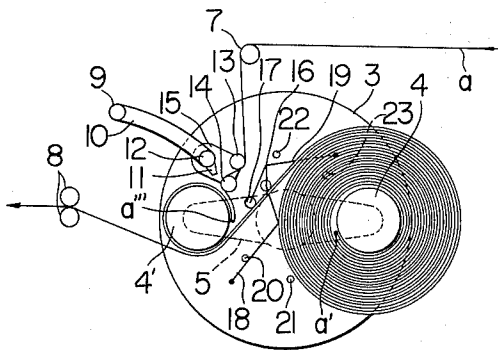


Fig. 9



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METHOD AND APPARATUS FOR CONTINUOUSLY WINDING AND UNWINDING TEXTILES IN TEXTILE TREATING MACHINES

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2 Claims. (Cl. 8—149.3)

This invention relates to methods and apparatuses for continuously winding and unwinding textiles in textile treating machines.

In order to continuously scour, bleach, dye or heat-treat a textile without breaking it in a textile treating machine, it is necessary to continuously wind and unwind the textile as expanded (or extended) on rolls. Therefore, though some continuously winding and unwinding apparatuses of such kind have been already suggested, any of them has defects that it is very difficult therewith to wind the textile on rolls without creasing it and that the construction of the apparatus is complicated. The present invention is suggested to eliminate the above mentioned defects.

A principal object of the present invention is to provide a method and apparatus wherein it is possible to continuously wind and unwind a textile to be treated as expanded on a winding roll and unwinding roll without breaking it on the way.

Another object of the present invention is to provide a method and apparatus wherein it is possible to wind and unwind a textile to be treated on rolls without creasing it.

The drawings of the present invention shall now be explained in the following:

FIGURE 1 is a side view of an apparatus of the present invention.

FIGURE 2 is a plan view of the apparatus of the present invention.

FIGURE 3 is a perspective view of the same.

FIGURES 4 to 9 are views for explaining the process for winding and unwinding textiles in the apparatus of the present invention.

The apparatus and method of the present invention shall be explained in detail with reference to the drawings.

In FIGURES 1 to 3, 1 is a treating chamber, 1' and 1'' are side walls of said treating chamber 1 and 2 and 2' are circular holes made in said side walls 1' and 1'', respectively. 3 and 3' are circular bearing plates rotatably fitted in said circular holes 2 and 2', respectively. 5 and 5' are a pair of rotary bearing plates. Said rolls 4 and 4' are fitted to two shafts 5'' connecting said bearing plates. 6 and 6' are a pair of fixed bearings to rotatably bear a shaft 5''' provided in the middle between said rotary bearing plates 5 and 5'. The two shafts 5'' are provided through said circular bearing plates 3 and 3', respectively. Therefore, when said circular bearing plates 3 and 3' rotate in the circular holes 2 and 2', respectively, the rolls 4 and 4', bearing plates 5 and 5' and other parts fitted to the circular bearing plates 3 and 3' will also rotate.

7 and 8 are guide rolls borne in both side walls 1' and 1'' of the treating chamber 1. 9 is a hollow shaft for introducing steam or air and supported by the side walls 1 and 1'. A steam jetting tube 12 having a steam jetting nozzle 11 is fixed to said hollow shaft 9 through two hollow arms 10 and 10'. 13 and 14 are winding guide rolls rotatably borne by a pair of bearing plates 15 and 15' fixed to both ends of the steam jetting tube 12. 16 and 17 are bars (or guide rolls) fitted to the free ends of

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two pairs of angle levers 18, 18' and 19, 19', respectively. Said levers 18, 18' and 19, 19' are rotatably borne at the base ends by said circular bearing plates 3 and 3', respectively. 20, 20', 21, 21' and 22, 22' are stoppers fixed to said circular bearing plates 3 and 3' so as to restrict the rotating ranges of the angle levers 18, 18' and 19, 19', respectively. *a* is a textile to be treated.

The method of winding and unwinding textiles by using the apparatus of the present invention shall be explained with reference to FIGURES 4 to 9.

First of all, the textile *a* as expanded is hung on the rolls 7, 13 and 14, winding and unwinding rolls 4 and 4' and bars 16 and 17 and is turned on the way to form turned parts *a'* and *a''*. It is then wound up on the rolls 4 and 4' with these turned parts *a'* and *a''* as forward ends, respectively. The textile *a* as wound up is shown in FIGURE 4(B) so as to be easily understood. It is seen therein that the turned parts *a'* and *a''* are in contact with the rolls 4 and 4', respectively, and that the textile is doubly wound thereon. Then, if the rolls 4 and 4' are rotated in the respective directions indicated by the arrows in the state shown in FIGURES 4(A) and 4(B), a part of the textile wound up on the roll 4' and a new part of the textile coming through the rolls 7, 13 and 14 will be overlapped and wound up on the roll 4. At the same time, the other part of the textile wound on the roll 4' will be pulled out through the rolls 8.

When the textile wound up on the roll 4' has been all unwound, such state as is shown in FIGURE 5 will be obtained. In this state, the turned part *a''* of the textile will rotate in the direction indicated by the arrow X and will hang down as shown by the chain line *b*. When the textile *a* is then further pulled in the direction indicated by the arrow Z, the hanging part *b* of the textile will be taken out through the rolls 8 so as to be in such state as is shown in FIGURE 6.

When this state is obtained, as shown in FIGURES 6 and 7, the rolls 4 and 4', bars 16 and 17, angle levers 18, 18', 19 and 19', stoppers 20, 20', 21, 21', 22, 22', 23 and 23' and circular bearing plates 3 and 3' on which are borne or fixed said angle levers and stoppers will be rotated by 180 degrees in the direction indicated by the arrow Y and will be stopped.

Then the state shown in FIGURE 8 will be obtained. That is to say, the positions of the rolls 4 and 4' will be reversed to each other and, as shown by the broken line, the new turned part *a'''* of the textile *a* will be pushed and folded by the steam jetted through the nozzle 11 and will be gradually wound up on the roll 4' to be in such state as is shown in FIGURE 9. Thereafter, it will be again in such state as is shown in FIGURE 4. In such case, the positions of the rolls 4 and 4' will be reverse to those in FIGURE 4.

Further, during the whole period while the rolls 4 and 4' move from the positions shown in FIGURE 4(A) to the positions shown in FIGURE 9 through the positions shown in FIGURES 5, 6, 7 and 8 as described above, the bars 16 and 17 will be always kept pressed against the upper surface of the textile between the rolls 4 and 4' by their own weight, the steam jetting tube 12, nozzle 11, rolls 13 and 14 and bearing plates 15 and 15' will all rotate around the hollow shaft 9 as a center and the bars 16 and 17 will rotate around the base ends of the angle levers 18, 18' and 19, 19' as centers, respectively, so as not to interfere with winding and unwinding the textile *a* on the rolls 4 and 4'.

As described above, according to the present invention, the textile to be treated can be continuously wound and unwound as expanded on the winding and unwinding rolls without being broken on the way. Further, when the textile is to be turned, steam will be blown to

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the turned part through the nozzle and therefore no other irregular creases than the regular fold will be likely to be made in the turned part. As the bars are always kept pressed against the upper surface of the textile over its entire width between the winding and unwinding rolls, the textile to be treated can be prevented from being creased between the winding and unwinding rolls.

What is claimed is:

1. A method of continuously winding and unwinding textiles in textile treating machines comprising a step of winding and unwinding a textile to be treated on a winding roll and unwinding roll opposed to each other while pressing bars against the textile between said winding and unwinding rolls by turning the textile in two places on the way and making both turned parts respective forward ends, a step of reversing the positions of both rolls when the textile wound on one of the rolls has been all wound up on the other roll and winding the textile on the roll on the side for taking out the textile by making the part of the textile to be made a new turned part at the time of reversing rolls a forward end while blowing steam to the new turned part and a step of repeating the above mentioned two steps alternately.

2. An apparatus for continuously winding and unwinding textiles in textile treating machines comprising a

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sealed treating chamber, a pair of circular bearing plates rotatably provided in circular holes made in both side walls of said treating chamber, winding and unwinding rolls rotatably fitted to respective shafts passing through said circular bearing plates, a pair of bearing plates supporting the respective shafts passing through said circular bearing plates, bearings rotatably supporting a shaft provided in the center of said bearing plates, two bars fitted to the respective free ends of two pairs of angle levers pivoted on said circular bearing plates, a hollow shaft for introducing steam borne in said sealed treating chamber, a steam jetting tube provided on hollow arms fixed to said hollow shaft, a steam jetting nozzle provided on said steam jetting tube, a set of winding guide rolls rotatably borne in a pair of bearing plates fixed to both ends of said steam jetting tube and a means of rotating said circular bearing plates by 180 degrees and stopping them.

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