March 8, 1949. H. W. FAY 2,463,683

LAUNDRY CONDITIONING TUMBLER

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Fig. 1.

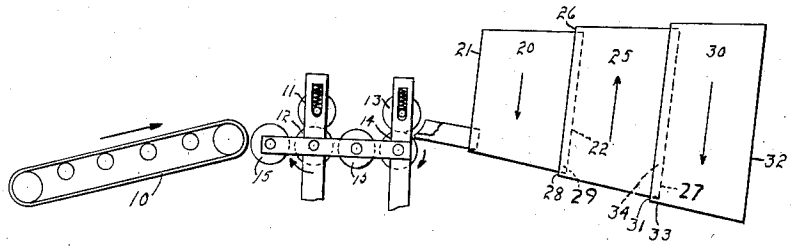
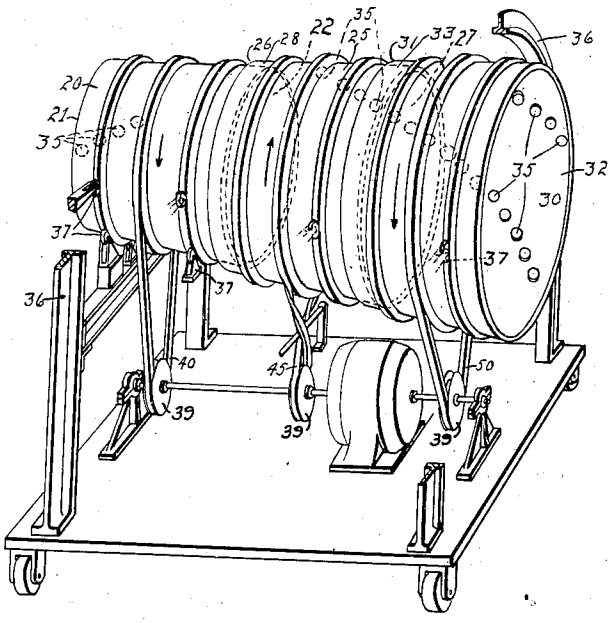


Fig. 2.



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LAUNDRY CONDITIONING TUMBLER

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10 Claims. (Cl. 38—143)

1

This invention relates to shake-out or "conditioning" tumblers for loosening up compressed fabric material such as laundry coming from an extractor.

A wide variety of devices have been devised for tumbling out laundry prior to flat-work ironing. In general these are in the nature of a rotating barrel into the interior of which the creased and compacted laundry from a wringing means is introduced and tumbled so as to loosen the fabric, to pull apart irregular wrinkles and folds caused by compression in an extractor, and, in general, to loosen up the fabric and ready it for flat-work ironing. These devices have greatly simplified the operation of preparing flat-work for ironing; but have fallen far short of desired uniform, effective, and consistent operation. Efforts have been made to remedy this difficulty by reversing the direction of rotation of the single tumbler cylinder while the work is in it, and by increasing the length of a tumbler or the length of the operation thereof, but these have been found lacking both from the standpoints of effectiveness, efficiency, and economy of construction and operation.

An object of the present invention is the provision of a machine which will provide goods which are loosened out sufficiently so that the necessity for hand-smoothing is eliminated and which will at the same time be efficient in operation and economical to construct and operate.

Another object is to provide effective means for continuously and speedily converting wet masses of laundered goods into such smooth and dry condition that they may be fed immediately into flat-work ironers.

Another object is to provide tumbler means of such character that the necessity of pushing the goods thru with poles is avoided.

Other objects will in part be obvious and will in part appear hereinafter.

Pursuant to the invention, means are provided for continuously subjecting laundry or other fabric material to a plurality of varying rotative movements; and in certain of its more specific aspects the invention contemplates subjecting such material to successive rotations in different directions. In accordance with the invention in various of its more specific aspects a succession of drums are arranged with their lower runs inclined, with the lower run of a successive drum under the end of a lower run of a preceding tumbler; with projections on the interior of the drums; and with a plurality of drums are arranged to receive material from an upwardly-

2

inclined delivery means and/or from a wringer means.

The invention accordingly comprises the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the constructions hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a diagrammatic view of one form of laundry-processing means embodying the invention; and

Fig. 2 is a perspective view on a larger scale of the tumbler means.

In the form of construction exemplified in Fig. 1 there is provided a continuous belt 10, the upper run of which is inclined upwardly so as to elevate fabric material, as, for example, laundry from a washing machine or dye goods from a dye bath. In the present instance two pairs of extraction rolls precede the tumbler means, one pair of rolls 11—12 being adapted to receive goods from the belt 10 and another pair of rolls 13—14 being adapted to receive goods from the first pair of rolls and deliver same to the tumbler means. It will be understood, however, that, in various of the broader aspects of the invention, goods may be delivered to the tumbler means more or less directly or in other manners than that shown. Idler rolls 15 may be supplied where and if necessary. The passage of goods thru the tumbler means may be accomplished in any of a number of manners, but, as exemplified and in accordance with the invention in its more specific aspects, is accomplished by having the lower runs of the tumblers downwardly inclined. This may be accomplished by providing tumblers of frusto-conical shape with their larger ends forward or by disposing the tumblers with their axis downwardly inclined. In the present instance the apparatus embodies both such features.

The tumbler means exemplified comprises a tumbler 20 in the form of a hollow rotatable barrel having an open receiving end 21 and an open discharge end 22. It rotates in a counter-clockwise direction when viewed from the right. Beyond it is a tumbler 25, having an open receiving end 26 and an open discharge end 27. This rotates in a clockwise direction when viewed from the right. Its rear end 28 surrounds the forward

end 29 of the tumbler 20 so that its lower run lies beneath the lower run of the tumbler 20. Beyond the tumbler 25 is a tumbler 30 having an open receiving end 31 and an open discharge end 32. It rotates in the same direction as the tumbler 20. Its rear end 33 surrounds the forward end 34 of the tumbler 25 so that its lower run lies beneath the lower run of the tumbler 25. On the interior of each of the tumblers 20, 25 and 30 are projections 35 which, in the present instance, are button-like nubs which may extend about three-quarters of an inch from the inner surfaces of the tumblers so as to assure against undesired slipping of the goods under treatment. In an effective form of operation thereof there are employed tumblers having axial extent of ten inches and varying in diameter from twelve inches at the opening 21 to nineteen inches at the opening 32. Desirably and as exemplified the speed of the tumblers is increased along the series. For example the tumbler 20 may be rotated at an inside peripheral speed of eighty feet per minute, the tumbler 25 at ninety feet per minute, and the tumbler 30 at one hundred feet per minute.

The tumblers are supported on a stand 36 by means of roller bearings 37 and are driven from a suitable source of power thru the medium of pulleys 39 and belts 40, 45, and 50 extending respectively to the tumblers 20, 25, and 30.

The provision of a plurality of tumblers effectuates a much greater exposure of the fabric to drying air than would be the case with a single tumbler. In addition the use of variously rotating tumblers results in a very great multiplication of this spreading and exposing action. This is still greater when, as exemplified, the variation in rotation is of character wherein successive tumblers rotate in opposite directions.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, and a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum, said drums having different rotative factors so that a smoothing pull will be exerted on the fabric as it passes from one drum to another.

2. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, and a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum, said drums rotating in opposite directions.

3. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, and a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum, said second drum rotating faster than the first mentioned drum.

4. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, and a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum, said drums rotating in opposite directions, the lower run of each of said drums being inclined downwardly a rearward portion of the lower run of the second drum extending beneath the forward portion of the lower end of the first-mentioned drum.

5. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum and discharging material at its other end, and a third rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the second drum.

6. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum and discharging material at its other end, and a third rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the second drum, each successive drum rotating in a direction opposite from the preceding drum.

7. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum and discharging material at its other end, and a third rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the second drum, said second drum rotating faster than the first mentioned drum, and said third drum rotating faster than said second drum.

8. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum, said drums having different rotative factors, and projections on the interior of at least one of said drums.

9. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum and discharging material at its other end, and a third rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the second drum, the lower run of each of said drums being inclined downwardly at all positions of rotation, the lower runs of the second and third drums extending respectively below the

lower runs of the first and second drums, and projections on the inner surface of said drums, each of said drums rotating in a direction opposite from the preceding drum.

10. A tumbler arrangement comprising a rotatable hollow drum for conducting fabric materials from one end to the other thereof, a second rotatable hollow drum disposed in end-to-end overlapping relationship therewith for receiving into one end thereof fabric materials from said other end of the aforesaid drum, said drums rotating in opposite directions, the lower run of each of said drums being inclined downwardly, and upwardly inclined means for carrying fabric material toward the first mentioned drum.

HARRY W. FAY.

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