March 4, 1958 M. H. ROWE 2,825,556

OPEN-WIDTH FABRIC PILING APPARATUS

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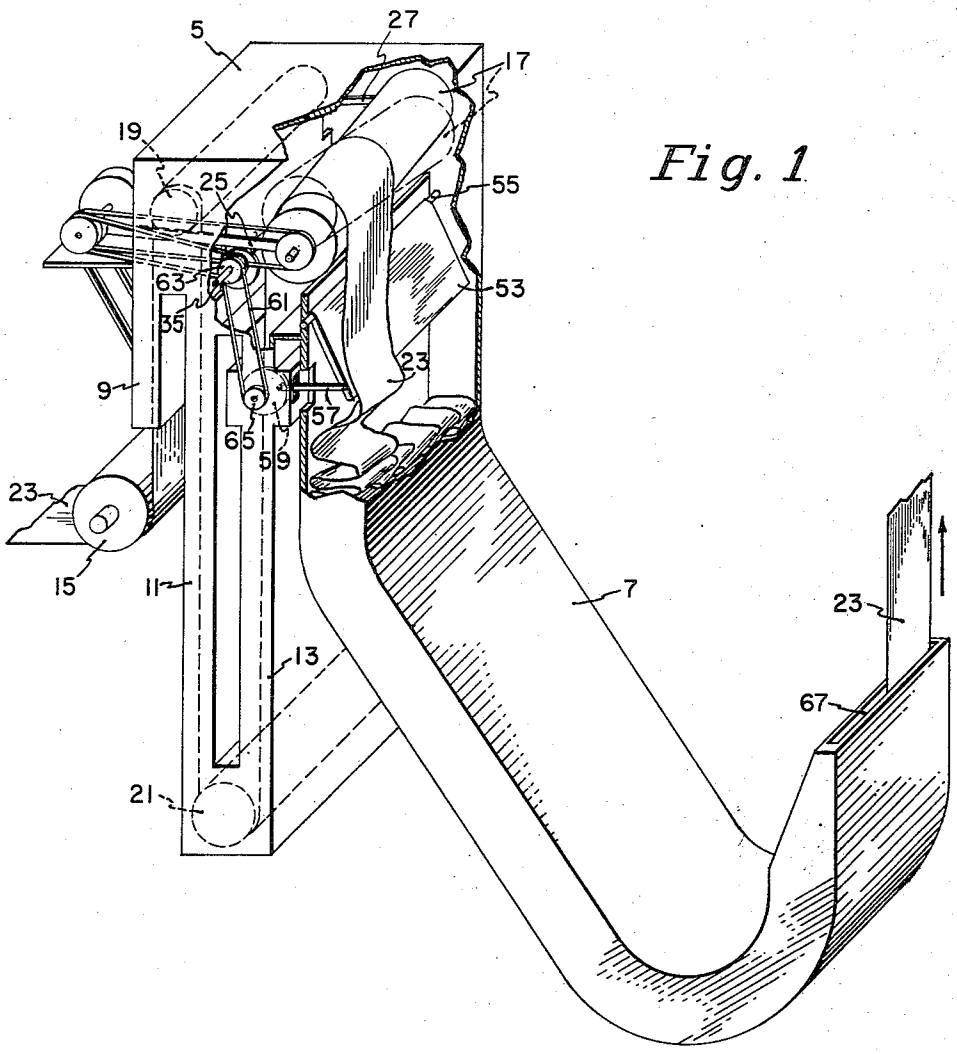


Fig. 1

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Fig. 2

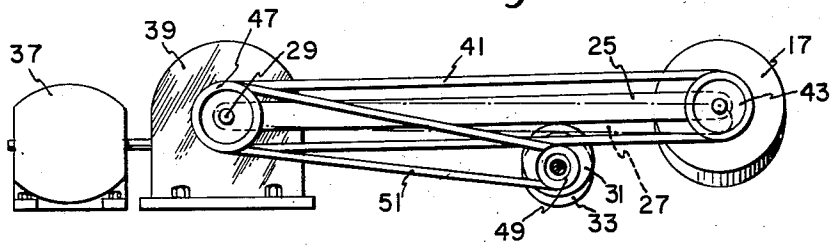


Fig. 3

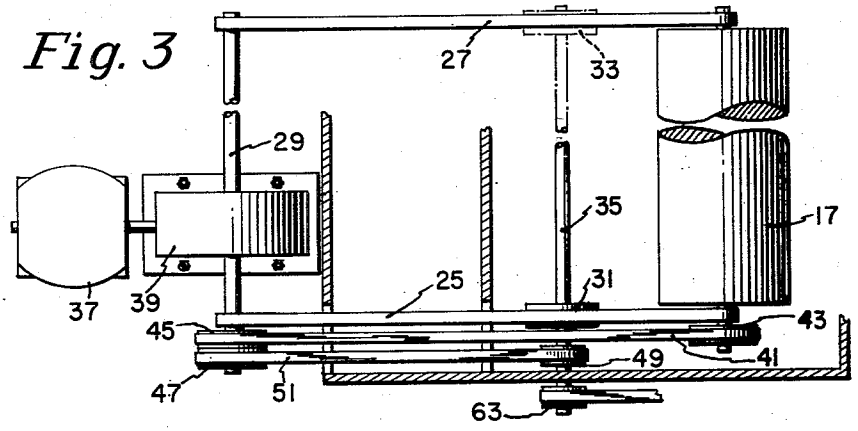


Fig. 4

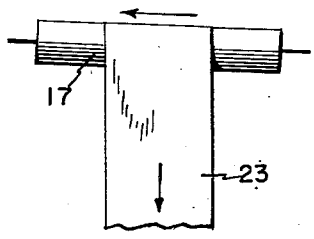


Fig. 5

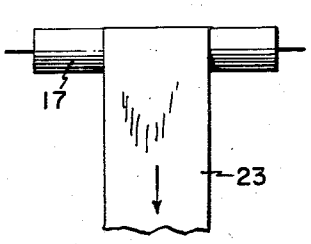
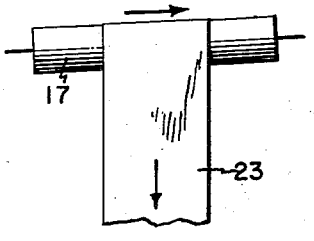


Fig. 6



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2,825,556

OPEN-WIDTH FABRIC PILING APPARATUS

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2 Claims. (Cl. 270—73)

This invention relates to apparatus for evenly piling open-width fabric into a container. More particularly, it relates to apparatus for piling open-width fabric into a container having a greater length than said fabric width in smoothly folded layers across the width and length of the container.

Open-width fabrics which are to be bleached, dyed, or otherwise treated in fabric treating equipment may be of different widths or, in some instances, such fabric may be doubled to present an open width of double thickness. In order that such fabric may be treated in its open-width form, it is necessary to provide treating apparatus which is sufficiently wide to accommodate the widest open width of fabric that may be subjected to treatment. The treatment of fabric in the open-width form generally involves the use of rotating forwarding rolls to carry the fabric through the treating equipment and the fabric passing therefrom is piled into a handling or storage container preparatory to further treatment or handling. In such fabric treating equipment the narrower widths of fabric will pile into the container in one vertical layer of less width than the container and will fall over and become tangled and wrinkled. It is, therefore, necessary to provide means for traversing the narrow width of fabric back and forth longitudinally of the forwarding roll so that it may be layered evenly into the container.

Heretofore, traversing mechanism has been provided to mechanically push the fabric back and forth longitudinally of the forwarding roll. Such mechanism has not been satisfactory because it forms wrinkles in the fabric and causes uneven treatment, for example uneven bleaching or dyeing, at such wrinkled sections.

It is an object of this invention to provide an improved fabric piling apparatus for use in treating open-width fabric.

It is a further object of this invention to provide an apparatus for continuously forwarding open-width fabric into a container longer than said fabric width in layers of smooth, uniform folds to fill said container.

Other objects of this invention will appear hereinafter.

The above objects may be accomplished, in general, by rocking a rotating open-width fabric forwarding roll from a horizontal position to alternate positions in which the roll axis is inclined at oppositely disposed angles above and below said horizontal position, whereby the fabric is caused to shift back and forth along the length of said roll.

It is preferred, particularly when the container into which the fabric is piled has a substantial width, to combine the rocking forwarding roll fabric shifting mechanism with a plaiting mechanism to plait said fabric back and forth across the width of said container to completely fill the container across its width as well as across its length.

The present invention will be more clearly apparent by reference to the following detailed description when

taken in connection with the accompanying drawings, in which:

Fig. 1 is a perspective view, with parts cut away, of a combination steam chamber and J-box equipped with a fabric piling apparatus constructed in accordance with this invention.

Fig. 2 is a side elevational view of a forwarding roll rocking mechanism constructed in accordance with this invention.

Fig. 3 is a top plan view of the mechanism shown in Fig. 2.

Figs. 4, 5, and 6 are front elevational views showing diagrammatically how the open-width fabric will shift longitudinally of the forwarding roll as the latter is rocked or tilted in opposite directions.

Referring to Fig. 1 of the drawings, reference numeral 5 designates a steaming chamber such as is commonly used in the bleaching of fabric impregnated with bleaching agents, and 7 designates a J-box in which the fabric is temporarily stored to allow the bleaching step to be completed. The steaming chamber 5, as shown, is comprised of three legs 9, 11, and 13, and is equipped with driven forwarding rolls 15 and 17 and guide rolls 19 and 21.

The open-width fabric 23 is drawn through the steaming chamber 5 by the rotatably driven forwarding rolls 15 and 17 in a manner well known in the art, after which the fabric drops down by gravity into a container such as the open mouth of J-box 7, as shown.

Forwarding roll 17 is providing with mean for tilting or rocking said roll axially to cause it to assume alternate positions at oppositely disposed angular positions above and below a horizontal position. This rocking or tilting action of the roll takes place slowly to permit the fabric to shift from one end to the other end of the roll.

In the embodiment of apparatus shown, the roll 17 is journalled in one end of each of two cam follower arms 25 and 27 (see Figs. 2 and 3), which arms are supported on their opposite ends by journals on drive shaft 29. The arms 25 and 27 rest on cams 31 and 33 positioned on cam shaft 35. The cams 31 and 33 are arranged on the cam shaft 35 so that the high cam surface of 31 contacts bar 25 at the same time that the low cam surface of 33 contacts bar 27. Drive shaft 29 is driven by motor 37 and reduction gear box 39. Roll 17 is driven by belt 41 and pulleys 43 and 45 from drive shaft 29, and cam shaft 35 is similarly driven by shaft 29 through pulleys 47 and 49 and belt 51.

As roll 17 rocks axially, due to the action of cams 31 and 33 on follower bars 25 and 27, the fabric 23 climbs uphill along the surface of the roll longitudinally of the latter. This climbing of the fabric on the roll is due to the fact that the uphill surface contact of the fabric on the roll is tight while the downhill surface contact of the fabric on the roll is slack whereby the fabric is caused to work its way along the roll in an uphill direction as shown in Figs, 4, 5, and 6.

The rocking forwarding roll 17 is preferably combined with a plaiting wing 53, the top edge of which is pivoted by pivot bar 55 in the side walls of the steaming chamber 5. The wing 53 is provided with a pivoted bar 57 which is pivoted to the wing 53 and off-center to crank wheel 59. Crank wheel 59 is driven by belt 61 and pulleys 63 and 65 by cam shaft 35. As crank wheel 59 rotates and pivoted bar 57 is oscillated thereby, the wing 53 swings from a vertical to an angular position so that the fabric passing in contact with the wing is plaited back and forth across the width of the mouth of J-box 7. The fabric is accordingly laid in even, uniform layers across the entire width and length of the open mouth of the J-box, and is removed

from the J-box by pulling the same through the exit end 67.

If desired, roll 15 can be given the rocking or tilting motion instead of roll 17, in which case roll 17 will be maintained in a horizontal position to merely forward the fabric to the container. In this optional form of construction the open-width fabric will be traversed back and forth longitudinally of the forwarding and guide rolls throughout the steaming chamber.

The rocking forwarding roll may be provided with a cam and follower bar on only one end thereof, the opposite end of the roll remaining pivoted in one location. In such embodiment, the single cam will have to have a large enough throw to lift and lower the roll above and below the position at which the roll will be horizontal.

It will be obvious that the mechanism for imparting a rocking or tilting action to the forwarding roll may have any one of a multitude of specific forms of construction. The particular form of construction of such mechanism is optional, the specific form herein shown being illustrative of one desirable embodiment.

Having described my invention what I claim is:

1. In a piling apparatus for open-width fabric, a fabric forwarding roll having a greater length than the open width of said fabric, a pair of pivoted parallel projecting arms journaled on opposite ends of said forwarding roll, said arms normally holding said roll in a horizontal position, at least one of said arms resting on an eccentric rotating cam, drive means for rotating said forwarding roll whereby to forward said open-width fabric, means for rotating said cam whereby to raise and lower at least one end of said roll alternately above and below said horizontal position and thereby traverse said fabric back and forth longitudinally of said roll, and oscillating folding means connected to said means for rotating said cam whereby to oscillate said folding means in timed relation to said fabric traverse, said oscillating folding means positioned below said roll in contact with fabric passing from said forwarding roll whereby to move said fabric back and forth laterally of said roll.

2. In a piling apparatus for open-width fabric, a fabric forwarding roll having a greater length than the open width of said fabric, a pair of pivoted parallel projecting arms journaled on opposite ends of said forwarding roll, said arms normally holding said roll in a horizontal position, each of said arms resting on an eccentric rotating cam, the high and low points of one of said cams being axially aligned with the low and high points of the other of said cams, drive means for rotating said forwarding roll whereby to forward said open-width fabric, means for rotating said cams whereby to raise and lower the opposite ends of said roll alternately above and below said horizontal position and thereby traverse said fabric back and forth longitudinally of said roll, and oscillating folding means connected to said means for rotating said cam whereby to oscillate said folding means in timed relation to said fabric traverse, said oscillating folding means positioned below said roll in contact with fabric passing from said forwarding roll whereby to move said fabric back and forth laterally of said roll.

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