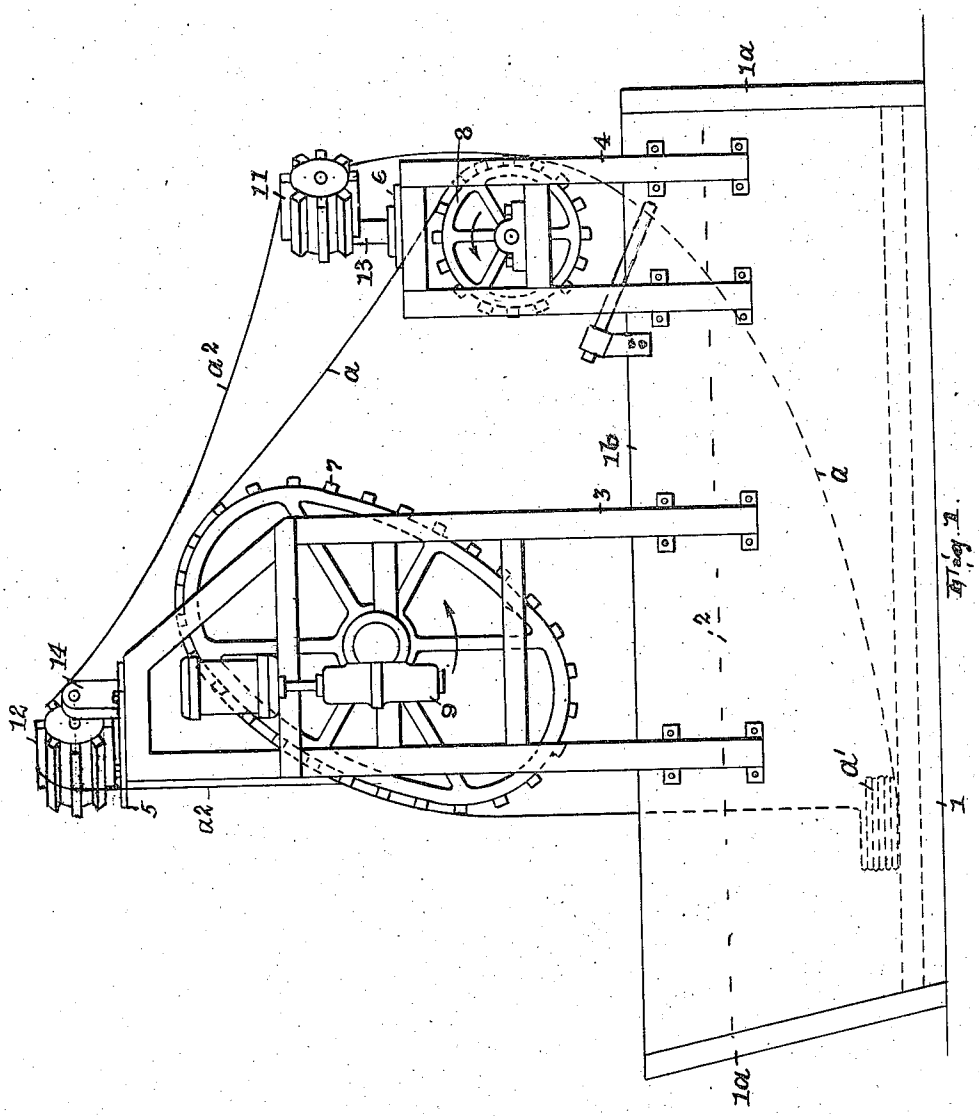
Aug. 13, 1946. R. NAZZARO 2,405,665

APPARATUS FOR TREATING FABRICS WITH LIQUID

Filed Sept. 22, 1944 2 Sheets-Sheet 1



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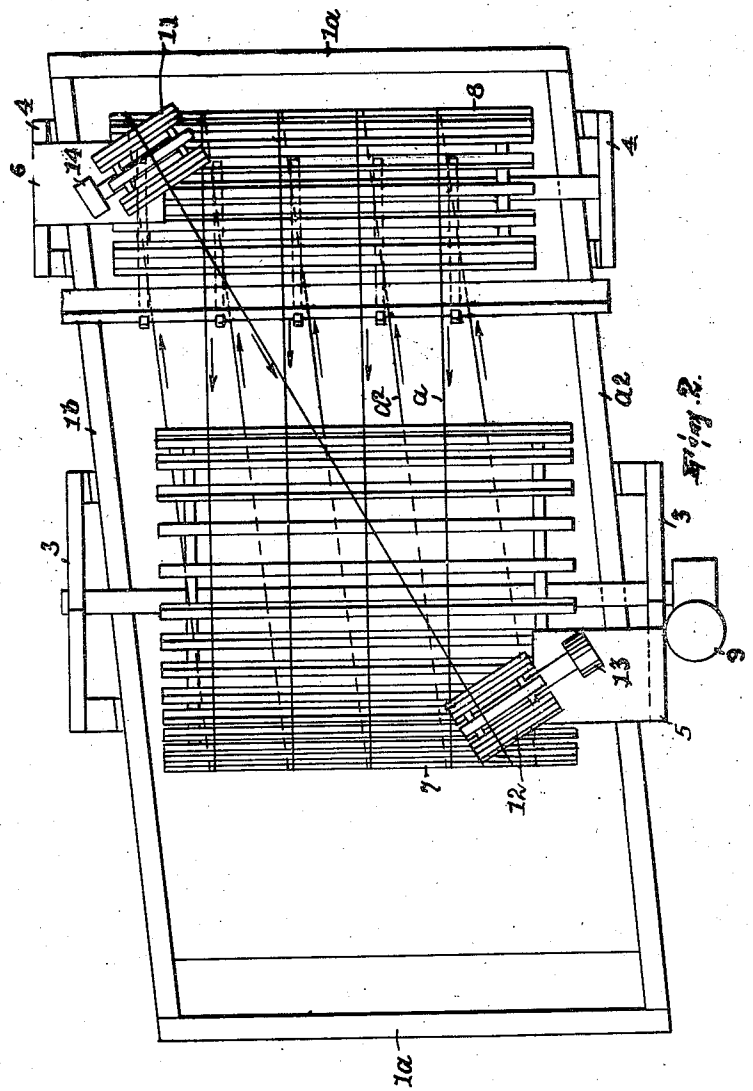


Fig. 2.

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APPARATUS FOR TREATING FABRICS WITH LIQUID

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3 Claims. (Cl. 68—176)

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In a known type of apparatus for treating a fabric with liquid, as in dyeing, washing, etc., given fixed structure including a container for the liquid, there is means, rotative in said structure in an upright plane, for advancing the fabric (usually transversely gathered in the form of a "rope") lengthwise of itself and around which a portion of the fabric extends in the form of a helix with convolutions thereof depending into the liquid in the container. Such means, as appears in the example illustrated in the annexed drawings, frequently consists of two reels having their axes horizontal and parallel, the one of which is the larger, and being driven, effects the advance of the fabric and delivers the convolutions of the helix down into the liquid and the other or auxiliary one of which is an idle or "jockey" reel and serves to guide the fabric up from the liquid on its way to the larger reel, which latter is usually oval in form so that it acts to deposit portions of the convolutions in piles on the bottom of the container.

According to the present invention the fabric exists endless, as by its ends being stitched together, so that it may undergo the treatment repeatedly, without interruption, which in itself is known. But, further, I provide for passing the fabric through the treatment in a manner to avoid undue rubbing thereof and subjecting it to undue distortion and other strains which would go to mar or perhaps seriously injure it. To this end, given the aforesaid fixed structure and the rotative means journaled therein and around which a portion of the fabric extends in the form of a helix, I provide rotary means to support the remaining or extra-helix portion of the fabric in arched state over the helix and which preferably includes two reels journaled in said structure and both arranged to be cut by, and having their axes substantially perpendicular to, a vertical plane acutely related to the end portions of said helix. When said rotative means comprises an oval and auxiliary reel the guiding reels, one of which I term the receiving reel and the other the delivery reel, such reels are respectively arranged adjacent such oval and auxiliary reels, with the latter arranged to deliver the fabric down onto the oval reel.

Usually, the depending portions of the convolutions of the helix are all biased in the same direction relatively to the plane of rotation of said rotative means. According to my invention, further, I so construct the tank or equivalent container for the liquid that its side walls will be substantially parallel with such biased depending portions of the helix convolutions, with its end walls perpendicular to said plane of rotation. Thereby considerable economy in respect to the materials, as dyes, used in the liquid for treating the fabric is attained.

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In the drawings, which somewhat diagrammatically illustrate my invention,

Fig. 1 is a side elevation and

Fig. 2 is a plan of the improved apparatus.

The fixed structure in the example includes a tank 1 for the treating liquid 2, the pairs of uprights 3 and 4 affixed to and upstanding above the tank, and platforms 5 and 6 on the near and far ones of the pairs of uprights 3 and 4, respectively. The aforesaid rotative means here includes an oval or large reel 7 and a smaller cylindrical reel 8. Reel 7 may be driven in the direction of the arrow, Fig. 1, so as to deliver the fabric down into the liquid, 2, by any means such as that generally shown by way of example at 9. Reel 8, which I term the auxiliary reel, is an idle or "jockey" reel. The axes of the reels are, as usual, parallel. The fabric, which is endless as by having its ends stitched together, exists in part as a helix a extending around the two reels with portions of its convolutions depending into the liquid in the tank and each in part piled in folds at a' on the bottom of the tank as an incident of the usual delivery action of reel 7. The depending portions of the convolutions of the helix are kept apart by the prongs of the usual rake 10 alternating with them and which rake is carried by the fixed structure.

The remaining or extra-helix portion $a2$ of the fabric is to be supported coincidental with a vertical plane itself coincident with the end portions of the helix. by which I mean viewing the helix in plan, wherefore 11 and 12 are two reels supporting the extra-helix portion in this way, they being journaled in bearing brackets 13 and 14 of the respective platforms 5 and 6 so as to be cut by, and have their axes perpendicular to, said plane. Said extra-helix portion of the fabric exists trained over the reels 11 and 12, which are respectively treated as delivery and receiving reels.

In so far as the helix portion of the fabric is concerned the operation is the same as in the conventional apparatus. When any point in the fabric departs from the helix to the extra-helix portion of the fabric it rides up over the reel 11 and then over the delivery reel 12, thereupon to return to the tank. In the travel from and back to the helix undue friction, distortion and other strains are avoided, as considerable practice of the ap-

paratus has shown. There being two reels 7 and 8 constituting the rotative means for advancing the fabric in the present example, the reels 11 and 12 are respectively arranged adjacent to them; and reel 7 being oval in form reel 11 is arranged to deliver down to reel 7 whereby the portion of the fabric which undergoes travel extra-helix will itself be piled in folds on the bottom of the tank.

The end walls 1*a* of the tank are, as usual, perpendicular to the plane of rotation of the said rotative means 7 and 8. But, according to my invention, the side walls 1*b* are in parallel relation to the biased depending portions of the convolutions of the helix. Thereby waste space in the tank is eliminated, with a consequent material economy in respect to dyes and other materials used in the treating liquid.

Having thus fully described my invention what I claim is:

1. Apparatus for treating an endless fabric with liquid including a fixed structure itself including a liquid container, rotatable means in said structure above the liquid in the container and in an upright plane, for advancing the fabric lengthwise of itself and around which a portion of the fabric is extended in the form of a helix having convolutions thereof depending into the liquid, and rotary guiding reels solely supporting the remaining portion of the fabric in arched state over the helix and being journaled in said structure and both arranged to be cut by, and having their axes substantially perpendicular to, a vertical plane coincident with the end portions of the helix.

2. Apparatus for treating an endless fabric with liquid including a fixed structure itself including a liquid container, an oval reel and an auxiliary reel journaled in said structure above the liquid in the container and with their axes substantially horizontal and parallel and around which reels a portion of the fabric is extended in the form of a helix having convolutions thereof depending into the liquid, and rotary receiving and delivery guiding reels solely supporting the remaining portion of the fabric arched over the helix and being journaled in said structure and both arranged to be cut by, and having their axes substantially perpendicular to, a vertical plane coincident with the end portions of the helix, said receiving and delivery reels being respectively adjacent the auxiliary and oval reels and the latter being arranged to deliver down onto the oval reel.

3. Apparatus for treating an endless fabric with liquid including a fixed structure itself including a liquid container, and an oval reel and an auxiliary reel journaled in said structure above the liquid in the container and with their axes substantially horizontal and parallel and around which reels a portion of the fabric is extended in the form of a helix having convolutions thereof depending into the liquid, and the depending portions of said convolutions substantially parallel but in bias relation to said axes, said container having end walls substantially parallel with said axes and side walls substantially parallel with the depending portions of said convolutions.

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