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C. G. HANHART
APPARATUS FOR WET TREATMENT OF A
CONTINUOUS WIDE STRIP OF FABRIC

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2 Sheets-Sheet 1

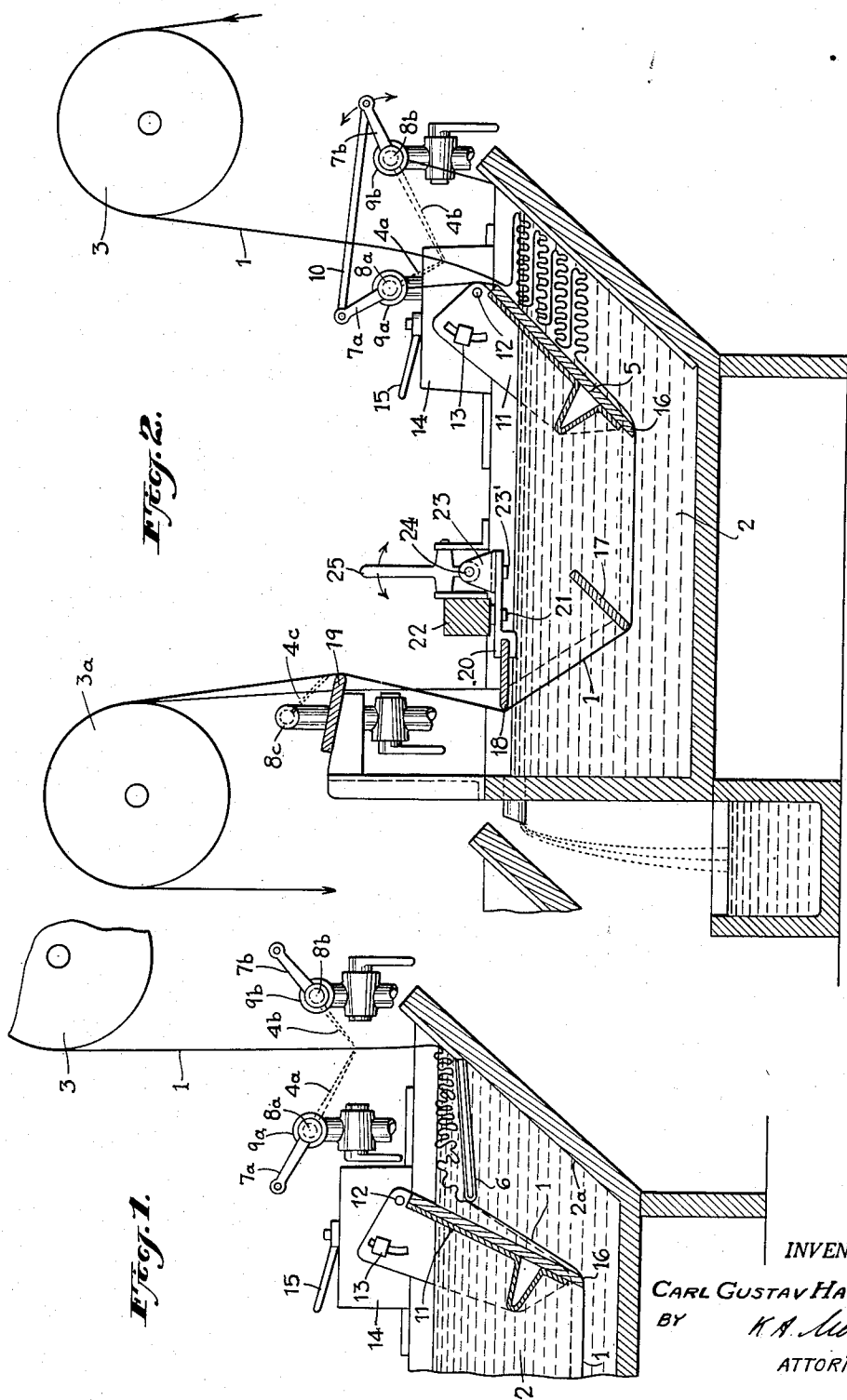


Fig. 1.

Fig. 2.

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Fig. 4.

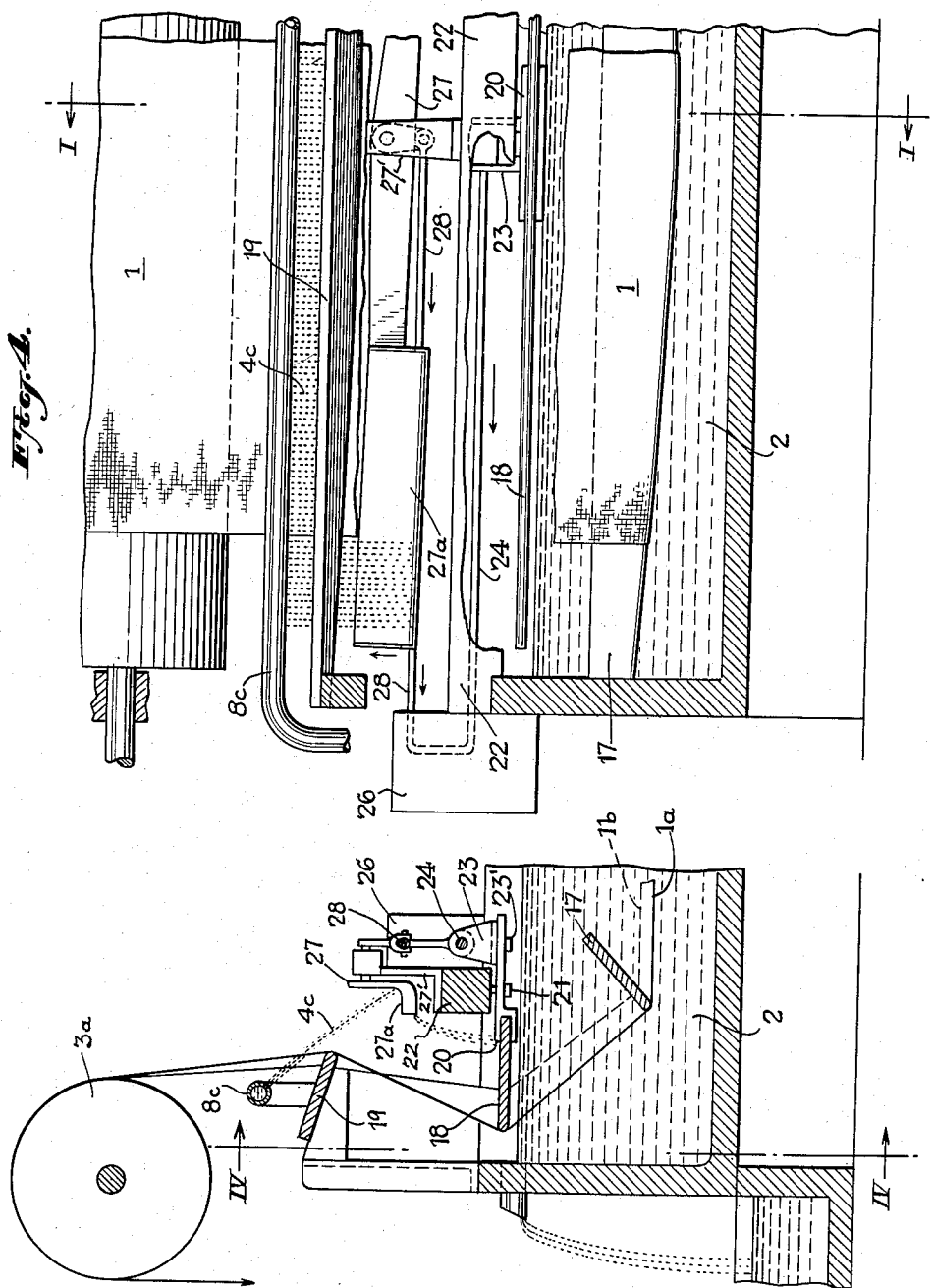
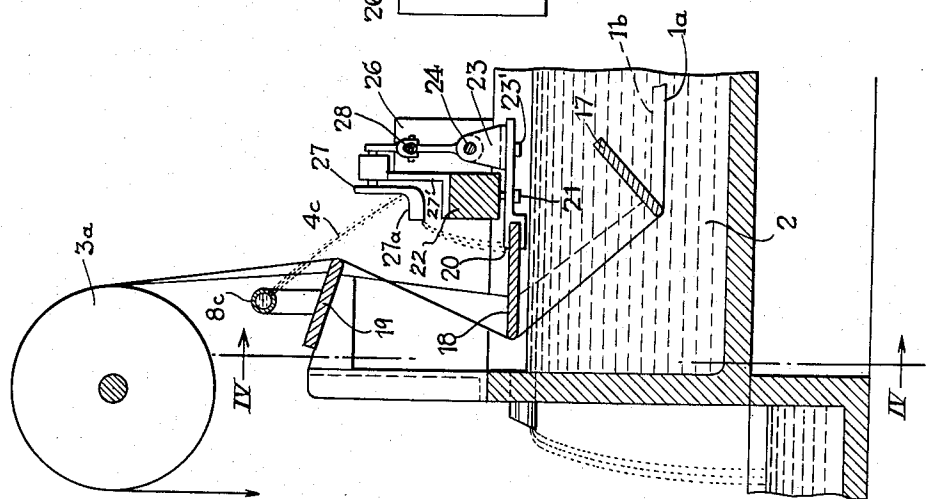


Fig. 3.



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APPARATUS FOR WET TREATMENT OF A
CONTINUOUS WIDE STRIP OF FABRICCarl Gustav Hanhart, Thalwil, Zurich,
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5 Claims. (Cl. 68—175)

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The invention relates to an apparatus for the continuous wet treatment of wide strips of woven material, particularly for acid treatment and washing of woven silk fabrics.

The apparatus according to the invention comprises means for controlling the movement of the strip of fabric into the treating bath by means of jets of the treating liquid. The container in which the treatment is performed comprises an inlet portion formed by a partition which is movable for changing the figuration of the inlet portion, the strip of fabric being guided into the inlet portion by the aforementioned jets. Additional guiding elements are arranged in the container by which the strip is guided while it moves through and out of the bath.

Further features of the invention will appear from the appended claims, the description and the accompanying drawing, in which a constructional example of the arrangement for carrying out the method is illustrated purely by way of example.

Figure 1 is a longitudinal section through the inlet portion of the apparatus according to the invention, the section being made along line I—I of Figure 4.

Figure 2 is a longitudinal section through the complete apparatus, the section being also made along line I—I of Figure 4 and certain parts being shown in a different operating position.

Figure 3 shows a modified form of the delivery end of the apparatus, also in section on line I—I of Figure 4.

Figure 4 is a part transverse sectional view taken along line IV—IV of Figure 3.

Like parts are designated by like numerals in all figures of the drawings.

In the illustrated constructional form of the apparatus, a strip of fabric is fed to a trough or container 2 from a roller or reel 3 and is deposited by two rows of jets 4a, 4b between an end wall 2a of the container and a partition 5 on the surface of the bath, on which it is held in more or less pronounced folded condition, as is shown in Figure 1, or fills the available space between the partition 5 and the rear wall of the container 2a to a desired depth as shown in Fig. 2. Air included in the fabric prevents undesired quick sinking thereof into the bath. If the jets 4a and 4b are stationary, the material will arrange itself freely in the inlet portion of the container. Feeding of the material into the container can be controlled by moving the jets, i. e. by changing their direction, whereby more uniform folds are formed, as illustrated diagram-

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matically in Figure 2, and the strip is folded and deposited layer upon layer until a desired length has been inserted in the bath.

Suspension of open-weave and heavy fabrics may be assisted by a light, grate-like support 6 (Figure 1).

The jets are produced by holes in the walls of pipes 8a and 8b, which holes are located close together. The tubes 8a, 8b rotatably mounted in stuffing boxes 9a, 9b so that the direction of the jets 4a, 4b can be changed. The jets are so directed and adjusted so that the jets emerging from different tubes intersect on a common line across the strip of fabric and hold the strip of fabric in a desired position. Tubes 8a and 8b are provided with levers 7a, 7b, respectively, which are preferably coupled by a rod 10, so that the tubes are rotated simultaneously. This common drive of the two tubes swivels them in a definite ratio so that the two rows of jets 4a, 4b place the strip of fabric in orderly folds, as diagrammatically shown in Figure 2.

The partition member 5 by which the container 2 is divided into an inlet chamber and a main bath chamber, as well as the guide members 17, 18, and 19 consist of a material whose physical structure facilitates the wet sliding treatment of the strip of fabric, i. e. the material is capable of being polished and wetted. To this end and to permit unhindered observation of the strip of fabric, plate glass has been found to be particularly suitable. The partition 5 is secured to a frame 11. The latter is secured by means of a pivot 12 and a clamping plate 13 to a support 14. The support 14 can be displaced on the lateral wall of the container and fixed in the desired position by means of a screw lever 15.

The strip of fabric is drawn by means of a roller 3a through the bath around a convexly curved edge 16 of the partition 5, and past convexly curved edges of guide members 17, 18, 19. Before reaching the roller 3a, the fabric is again subjected to the action of a row of jets 4c which is arranged immediately above the guide member 19.

The guide member 18 is adjustable in the horizontal direction, so that when the strip of fabric deviates from its central position it can be returned into this position.

The adjustment of the guide member 18 for correcting deviations of the fabric from the central position may be effected manually or automatically. For this purpose the guide member 18 is secured to a holder 20 and is adapted to be swung horizontally about a pivot 21 secured

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to a beam 22 by manipulation of a handle 25. The latter is pivoted to a side wall of container 2 and has an arm fulcrumed to one end of a control rod 24, the other end of which is made fast to a bracket 23 which is movably connected with holder 20 by a pin 23'.

As has been mentioned, the correction may also be effected automatically by pivoting a lever 27 having two arms of equal length to a bracket 27' mounted on beam 22 which is supported by a side wall of container 2. The free ends of lever 27 are provided with buckets 27a extending beyond the sides of the strip of fabric (Figures 3 and 4) and adapted to receive the jets of liquid 4c beyond the lateral edges of the strip of fabric and to swing lever 27 by the impact and the weight of the liquid forming the jets. For example, if the fabric deviates from its central position to the left (Figure 4), it covers more jets 4c at the left end of the balance beam or lever 27 than at the right end of the lever (not shown). In this way, the balance beam 27 is tilted somewhat and its movement is transmitted by a rod 28 to the control rod 24. A conventional power amplifier 26 may be interposed between rods 28 and 24 to amplify the rather weak impulses produced by the jets 4c on lever 27. The amplifier 26 is not illustrated as it does not form part of the present invention. A clockwise movement of lever 27 moves rods 28 and 24 to the left and rocks the left-hand side of the guiding element 18 in the forward direction i. e. out of the plane of Fig. 4, which causes the strip of fabric to slip back to the right into the central position.

I claim:

1. An apparatus for wet sliding treatment of a continuous wide strip of fabric with a liquid, comprising a container having an inlet portion for continuously receiving the fabric and having an outlet portion from which the fabric is adapted to be continuously withdrawn, substantially flat guide members disposed in said container, the planes of said members extending substantially transversely to the direction of movement of the fabric in the container and intersecting the fabric, said members individually having a guide edge portion in sliding contact with and diverting the course of the fabric as it moves through the container and being convexly curved in the plane of its member and toward the fabric for bending and spreading the fabric transversely to its direction of movement, one of said members being pivotally mounted in said container and rockable in its plane about a fulcrum disposed on the center line of the convex curvature of said edge portion, and actuating means disposed outside of said container and connected with said rockable member for moving it about its fulcrum.

2. An apparatus for wet sliding treatment of a continuous wide strip of fabric with a liquid, comprising a container having an inlet portion for continuously receiving the fabric and having an outlet portion from which the fabric is adapted to be continuously withdrawn, substantially flat guide members disposed in said container, the planes of said members extending substantially transversely to the direction of movement of the fabric in the container and intersecting the fabric, said members individually having a guide edge portion in sliding contact with and diverting the course of the fabric as it moves through the container and being convexly curved in the plane of its member and toward the fabric for bending and spreading the fabric transversely to its di-

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rection of movement, one of said members forming a partition separating said inlet portion from the rest of the container and being swingably mounted on said container for changing the configuration of said inlet portion.

3. An apparatus for wet sliding treatment of a continuous wide strip of fabric with a liquid, comprising a container having an inlet portion for continuously receiving the fabric and having an outlet portion from which the fabric is adapted to be continuously withdrawn, substantially flat guide members disposed in said container, the planes of said members extending substantially transversely to the direction of movement of the fabric in the container and intersecting the fabric, said members individually having a guide edge portion in sliding contact with and diverting the course of the fabric as it moves through the container and being convexly curved in the plane of its member and toward the fabric for bending and spreading the fabric transversely to its direction of movement, one of said members forming a partition separating said inlet portion from the rest of the container and being mounted on said container swingable about an axis substantially parallel to its guide edge portion for changing the configuration of said inlet portion.

4. An apparatus for wet sliding treatment of a continuous wide strip of fabric with a liquid, comprising a container having an inlet portion for continuously receiving the fabric and having an outlet portion from which the fabric is adapted to be continuously withdrawn, substantially flat guide members disposed in said container, the planes of said members extending substantially transversely to the direction of movement of the fabric in the container and intersecting the fabric, said members individually having a guide edge portion in sliding contact with and diverting the course of the fabric as it moves through the container and being convexly curved in the plane of its member and toward the fabric for bending and spreading the fabric transversely to its direction of movement, one of said members forming a partition separating said inlet portion from the rest of the container, and support means displaceably mounted on said container and supporting said last mentioned member swingably about an axis substantially parallel to its guide edge portion for changing the configuration of said inlet portion.

5. An apparatus for wet sliding treatment of a continuous wide strip of fabric with a liquid, comprising a container having an inlet portion for continuously receiving the fabric and having an outlet portion from which the fabric is adapted to be continuously withdrawn, substantially flat guide members disposed in said container, the planes of said members extending substantially transversely to the direction of movement of the fabric in the container and intersecting the fabric, said members individually having a guide edge portion in sliding contact with and diverting the course of the fabric as it moves through the container and being convexly curved in the plane of its member and toward the fabric for bending and spreading the fabric transversely to its direction of movement, one of said members being pivotally mounted in said container and rockable in its plane about a fulcrum disposed on the center line of the convex curvature of said edge portion, a row of nozzles mounted on said container, said row extending substantially parallel to the fabric and transversely to the direction of its movement, said row being longer

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than the width of the fabric and extending beyond both lateral edges of the fabric, said nozzles being adapted to discharge jets of treating liquid toward the fabric and past its lateral edges, a control lever swingably connected with said container and having two arms of equal length, a bucket means connected with the free end of each arm, said bucket means being adapted to receive the jets of liquid beyond the lateral edges of the fabric and to swing said lever by the impact and the weight of the liquid forming the jets, and means connecting said control lever and said rockable member for transmitting the motion of the former to the latter.

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