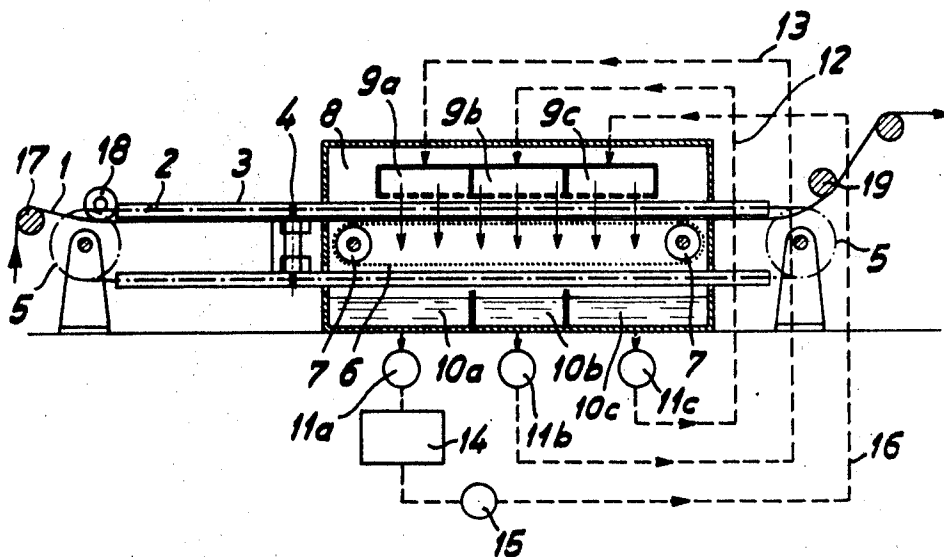


July 7, 1970

A. BECKER
DEVICE FOR THE CONTINUOUS TREATMENT OF
A WEB OF FABRIC WITH FLUID
Filed Sept. 23, 1968

3,518,848



1

3,518,848

DEVICE FOR THE CONTINUOUS TREATMENT OF A WEB OF FABRIC WITH FLUID

Arno Becker, Stuttgart-Vaihingen, Germany, assignor to Bruckner-Trockentechnik KG, Leonberg, Wurttemberg, Germany

Filed Sept. 23, 1968, Ser. No. 761,701

Claims priority, application Germany, Sept. 27, 1967, 1,610,911

Int. Cl. D06c 3/02; D06f 35/00

U.S. Cl. 68—18

5 Claims

ABSTRACT OF THE DISCLOSURE

The device for the continuous treatment of a web of fabric with fluid comprises a pair of laterally spaced endless feeding and clamping members for holding the edges of the fabric web. A belt conveyor comprising an endless fluid-permeable conveyor belt travels between the spaced endless feeding and clamping members and supports the web. A fluid spraying device is arranged above the conveyor belt.

BACKGROUND OF THE INVENTION

This invention relates to a device for the continuous treatment of a web of a fabric with fluid, especially for washing, impregnating and dyeing.

In order to treat fabric webs (especially textile webs) with fluid in a continuous method, for instance for washing, impregnating or dyeing, it is known to feed the web in multiple passes over rollers through a treatment zone filled with fluid, the fabric repeatedly passing vertically upwards or downwards and being guided by the rollers.

These are however fabric webs which do not withstand longitudinal tension; these include hosiery goods, knitted goods and curtains. If such fabric webs are passed in the usual manner over rollers through a treatment zone filled with fluid, an appreciable longitudinal tension is present in the web, since the motive force must be applied through the material. With tension-sensitive materials this longitudinal tension results in considerable "shrinkage," i.e., an undesired reduction of the fabric width, and this shrinkage effect is usually greatly increased by the fluid treatment.

SUMMARY OF THE INVENTION

The aim of the invention is thus to provide a device which eliminates the disadvantages of known constructions and enables a textile web to be treated with fluid in a continuous method, while precisely controlling the textile width, in particular either completely avoiding any reduction of the material width in the fluid treating zone or limiting said reduction to a very small and predictable amount. The device should also meet these requirements with fabric webs of very considerable width.

According to the invention this aim is achieved by the provision of two endless feeding and clamping members holding the edges of the fabric web, together with an endless fluid-permeable conveyor belt on which the web is laid, and which takes the fabric web in a tensioned and braced condition below a fluid-spraying device.

Since the whole width of the fabric web lies on the conveyor belt, it is not subjected to any appreciable longitudinal tensile stress during the fluid treatment. Also the conveyor belt absorbs the pressure applied by the fluid sprays to the fabric web, so that even very wide webs do not sag but lie practically flat on the conveyor belt.

The undesired "shrinkage" of the fabric web is also

2

largely prevented by the feeding and clamping members which hold the edges of the web. They enable the desired behaviour of the web in the fluid-treatment zone to be achieved in a precisely reproducible manner (for instance specific longitudinal and transverse shrinkages, or shrinking in the longitudinal direction alone while the full width of the web is maintained, etc.).

BRIEF DESCRIPTION OF THE DRAWING

The drawing is a diagrammatic view of an apparatus embodying the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The device shown is used for the continuous treatment of a fabric web 1 with fluid, e.g., for washing, impregnating or dyeing.

The device includes two endless chains 2 holding the edges of fabric web 1 and forming feeding and clamping members for web 1. These chains 2, which can be provided with needles or clamps for holding the edges of the web, run in guides 3 which are transversely adjustable relative to one another by means of turnbuckles (for adaptation to the web width) and are each pivoted to a transversely adjustable bracket at 4 (whereby the angle between the two chains holding the web edges may be varied). The two chains are deflected around driven chain wheels 5.

The device of the invention also includes a fluid-permeable endless conveyor belt 6, formed for instance as a sieve belt and carried on driven rollers 7.

This conveyor belt 6 is inside a chamber 8 containing spray means comprising three elements 9a, 9b, 9c.

In the lower part of chamber 8 are three fluid-receiving vessels 10a, 10b, 10c corresponding to the three above-mentioned spray elements 9a, 9b, 9c. Receiving vessel 10c is connected through pump 11c and conduit 12 to spray element 9b, receiving vessel 10b through pump 11b and conduit 13 with spray element 9a, and receiving vessel 10a through pump 11a, purifying and renewing means 14, a further pump 15 and conduit 16, with spray element 9c.

The fabric web 1 fed over a roller 17 is affixed by a crimping device 18 to the chains 2, provided for instance with needles. Inside chamber 8 the fabric web 1 lies with its full width on conveyor belt 6 and is intensively sprayed from above with fluid through the spray elements 9a, 9b, 9c. Since the described connection of the receiving vessels with the individual spray elements feeds the fluid in cascade manner in contraflow to the material, an intensive treatment effect is produced.

Behind chamber 8 the fabric web 1 is removed over roller 19 from the needles of chains 2 and is fed to any further desired treatment means (e.g., a squeezing device or a drier). The web can however be fed on the same chains directly through a drier or other device.

What is claimed is:

1. A device for the continuous treatment of a fabric web with fluid, for washing, impregnating and dyeing, comprising a pair of laterally spaced endless feeding and clamping members for holding the edges of the fabric web, a belt conveyor comprising an endless fluid-permeable conveyor belt traveling between the spaced endless feeding and clamping members, for supporting the fabric web between said members, and a fluid spraying device arranged above the conveyor belt.

2. A device according to claim 1 wherein the endless feeding and clamping members comprise chains fitted with means for holding the edges of the web.

3

3. A device according to claim 1 wherein the endless feeding and clamping members are carried in guides which are transversely and angularly adjustable relative to one another.

4. A device according to claim 1 wherein the spray means comprises a plurality of successive spray elements, a separate fluid-receiving vessel being arranged below the conveyor belt to receive the overflow from each spray element, and means being provided for delivering fluid from each of a plurality of the vessels to the preceding spray element.

5. A device according to claim 4 comprising means for delivering fluid from the frontmost fluid-receiving vessel through a purifier to the last spray element.

4

References Cited

UNITED STATES PATENTS

1,786,031	12/1930	Scott	26—61
2,724,254	11/1955	Zanger	26—61
3,250,099	5/1966	North et al.	68—62
3,031,732	5/1962	Carlisle	26—57

FOREIGN PATENTS

674,841	11/1963	Canada.
---------	---------	---------

WILLIAM I. PRICE, Primary Examiner

U.S. Cl. X.R.

68—205; 26—57