

[54] **PROCESS FOR THE CONTINUOUS WET-TREATMENT UNDER PRESSURE**

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[22] Filed: **Mar. 26, 1973**

[21] Appl. No.: **344,987**

[30] **Foreign Application Priority Data**

Mar. 29, 1972 Germany..... 2215280

[52] U.S. Cl. **8/151; 68/DIG. 5**

[51] Int. Cl.² **D06B 3/02**

[58] Field of Search..... 8/151, 151.2; 68/5 E, 9, 68/DIG. 5, 158, 184

[57] **ABSTRACT**

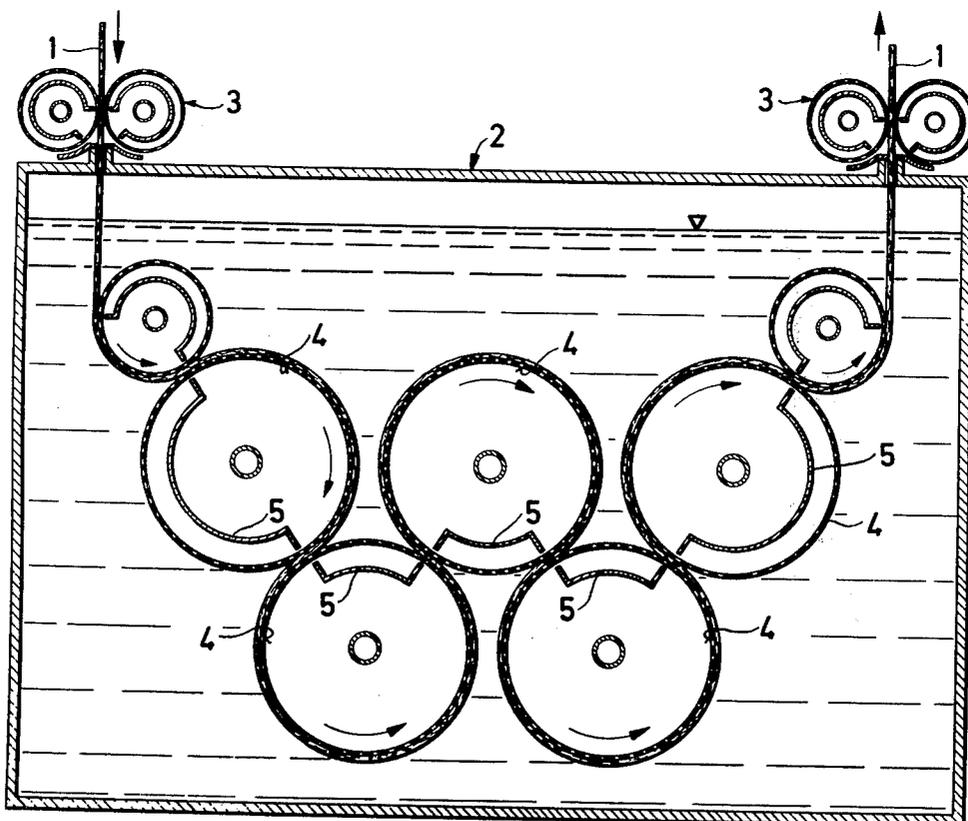
Process for the continuous wet-treatment of textile material under pressure on a sieve-drum device, by leading the textile material in its open-width continuously through a rotating sieve-drum device filled with the heated treatment bath and operating under atmospheric excess pressure, while the circulating liquor is pressed through the goods into the sieve-drums.

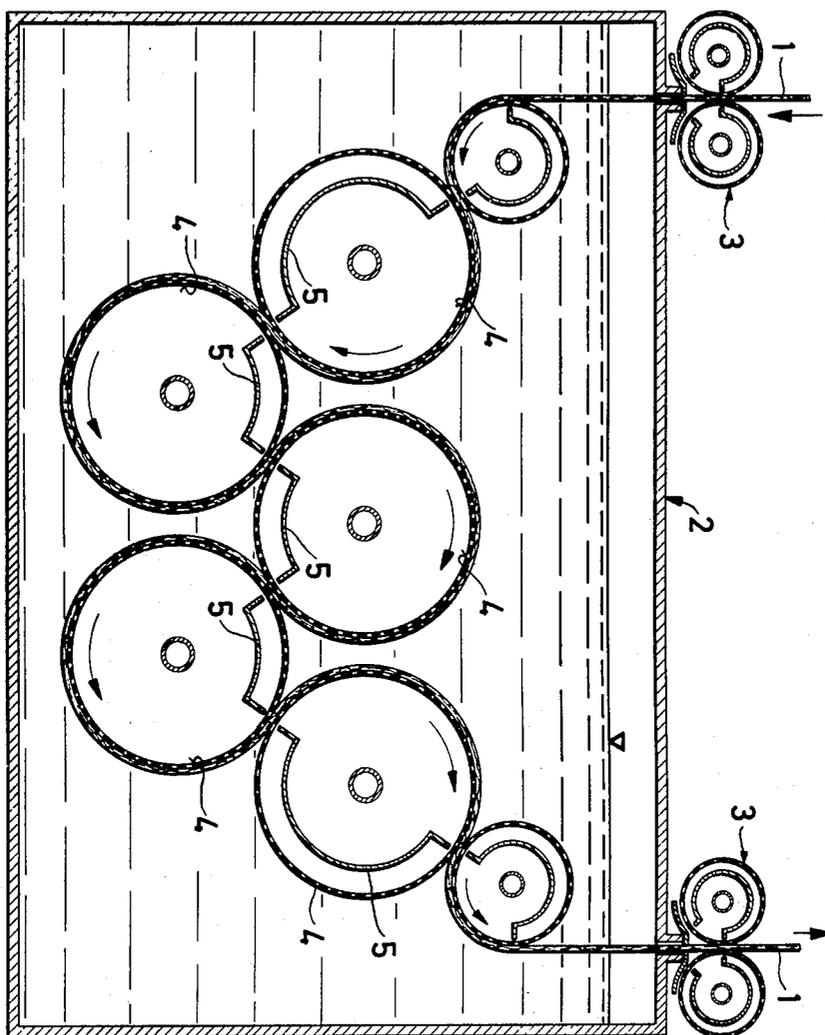
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3 Claims, 1 Drawing Figure





PROCESS FOR THE CONTINUOUS WET-TREATMENT UNDER PRESSURE

This invention relates to a process for the continuous wet-treatment of textile material under pressure and to a device for carrying out this process.

According to this process the textile material is led in its open-width continuously through a sieve-drum device filled with the heated treatment bath and operating under atmospheric excess pressure, while the circulating liquor is pressed through the goods into the sieve-drums.

The process of the invention especially applies to the continuous fixation of prints and dyeings but also to other types of wet-treatment, for example, the washing or soaping process or the reductive cleaning. This process is also suitable for the fixation of reactive dyestuffs on cellulose fibers with hot alkali solutions, i.e., according to the wet fixing process.

The textile material to be treated (1) is led over a suitable sealing (3), for example, a lip closure or a roller lock, into the sieve-drum device, (2) kept under atmospheric excess pressure. Those roller locks are known from "Textilpraxis" 1966, pages 691-692 and from German Pat. No. 1,760,732. In the interior of the pressure-resistant device, the material is led over perforated drums (4) through the hot bath.

These sieve-drums are in contact with one another along their broad sides and are subjected to suction draught when being in operation. They are rotatable round their axis, the rotation being initiated by means of a motor. Depending on the direction in which the material is put through, the drums in contact effect a counterrotation. Cover plates (5) firmly mounted in the drums and not moving with them, provide that the material is forwarded by the suction draught from one drum to the other. The diameter and the number and disposition of the drums can be adjusted to the conditions and technical data prevailing. The breadth of the drums depends on the textile materials to be treated and is within the range of from 50 to 300 cm, generally between 90 and 200 cm. The perforated curved surface of the drums coming into contact with the textile material, should have fine pores at intervals from one another of not more than 30 mm, preferably less than 15 mm. In some cases it is advantageous to cover the outer jacket of the perforated drum with one or several layers of a narrow-meshed, seamless sieve-fabric. In the pressure vessel, even several liquids may operate in different recycling systems, i.e., in separate compartments.

The liquid eliminated from the sieve-drums by suction can directly be recycled to the pressure vessel or to a stock bin under elevated pressure by intercalation of a cleaning device.

To increase the capacity and the dwelling time of the material in the hot liquid medium, the material can be folded within the device on an endlessly running conveyor belt. The device contains high-pressure saturated steam and a high-temperature bath heated to 105° to 145°C, preferably to 120° to 135°C. Suitable liquids are water or organic solvents or mixtures thereof. It is not necessary that the device be completely filled with the treatment bath. After the treatment completed, the material leaves the sieve-drum device over a further sealing (3) and may then be further treated on a washing or drying machine.

The device suitable to carry out the process of the invention allows to work with the textile articles without tension, also with over-feeding, so that the textile material can shrink to an optimum degree under these fixing conditions. This device, therefore, especially applies to the knitwear of synthetic fibers and to loose material, for example, flocks, fiber fleeces, cables or combed material.

In contradistinction to a fixation with dry heat or with high-temperature steam, the dyeings and prints fixed with a high-temperature bath show a better levelness and a better penetration of the dye. Moreover, not only an increased shrinkage but also a considerably better hand of the material is obtained, both not being different from that obtained in dyeings prepared discontinuously. The device of the invention thus enables the continuous dyeing also of articles of high quality.

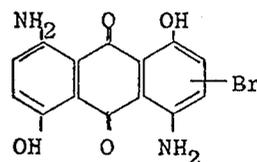
The high-temperature bath which may be heated up to 145°C, generally consists of water or a mixture of solvent with water or of a pure solvent or mixtures of such solvents. According to the nature of the dyestuffs to be fixed, the bath contains alkalis and salt or acids, acid donators and similar products. The high-temperature bath may also previously be sharpened with a portion of the padding liquor.

The advantage of the process of the invention lies in the fact that already very short treating times, depending on the liquid medium and the temperature, are sufficient to obtain a very good fixation of the dyestuffs. It is surprising that the dyestuffs are more rapidly fixed than loosened and removed by rinsing off, as expected, because of the bath heavily streaming through the material. The continuous operating method leads to an increased production speed while maintaining the advantages offered by wet fixation as compared with a fixation by means of dry heat or high-temperature steam.

The following Example illustrates the invention with reference to the attached drawing without limiting it thereto:

EXAMPLE

A flat fabric of texturized linear polyester fibers was padded at room temperature on a padding machine, at an aqueous liquor pick-up of 70%, with a liquor (pH 5, adjusted with acetic acid) which contained per liter 10 g of a blue disperse dyestuff of the formula



The material was then led, immediately thereafter, without intermediate drying, continuously and without tension, over a sealing into a pressure vessel and conducted over sieve-drums subjected to a relative suction draught and completely covered with the bath. The bath, in this case consisting of water without additives, streamed at 135°C through the material, the padded dyestuff thus being fixed. The material left the pressure vessel over a sealing. An even dyeing having a good hand of the material was obtained.

I claim:

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1. In a process for the continuous fixation of heat-fixable dyestuff on a textile material using a hot liquid as the fixation medium, the improvement which comprises: fixing said dyestuff upon said textile material under superatmospheric pressure conditions and at a temperature of from 105°C to 145°C, by passing the said textile material impregnated or printed with said dyestuff through a dyestuff-free fixation liquid at a temperature of 105°C to 145°C, said fixation liquid being contained within a pressure-sealed fixation zone, the pressure throughout said zone being maintained above atmospheric pressure, and over the surface of a rotat-

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ing perforated drum within said pressure-sealed fixation zone, while maintaining a pressure differential between the liquid and the interior of the said drum, such that liquid is caused to pass through the material and into the drum.

2. A process as claimed in claim 1, wherein the treatment bath has a temperature of from 120° to 135°C.

3. A process as claimed in claim 1, wherein the said textile material is passed over the surfaces of a plurality of rotating perforated drums.

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