DEVICE FOR PRESSURE DYING TEXTILE SAMPLES
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ABSTRACT OF THE DISCLOSURE

A dyeing device in which a sample holder is positioned in a receptable containing a dyeing bath and is connected to a magnetic core which is magnetically coupled to an external magnetic element, an actuator mechanism being provided for acting on the receptacle or the external magnetic element to move the same while the other remains stationary.

This invention relates to an apparatus for pressure dyeing textile samples, particularly for dyeing textile samples made of modern synthetic fibres where it is required to work at bath temperatures above 100° C.; since this kind of temperature cannot be provided in an open bath, dyeing must be performed under pressure in a closed bath. The device according to the invention has been devised for pressure dyeing of this kind. The device according to the invention is of use more particularly in apparatus having means for vertically reciprocating the samples to produce dyeing in order to produce repeated immersion of the samples in their respective open dye baths. According to the invention, the dyeing device comprises an autoclavable receptacle in whose interior are disposed the dye baths, the textile sample and means for vertically reciprocating the same in and relative to the dye bath. The vertically reciprocating agitation of the textile sample is produced by magnetic means which act from outside the receptacle upon a magnetic core mounted to be freely movable inside the receptacle, the core having fitted to it a holder for bearing the textile article being dyed. Preferably, the vertical reciprocation is communicated to the magnetic core disposed inside the receptacle by an alternating movement of equal amplitude of the external magnetic means, the recepable being rigidly connected to the frame of the machine in which the device is used. In another form of the invention, the vertical reciprocation is communicated to the receptacle and therefore to the bath by the action of the external magnetic means, the magnetic core which is received in the bath remaining floating. The external means can be permanent magnets or electromagnets.

A description will now be given of several embodiments of the invention, reference being made to the accompanying explanatory drawings wherein:

FIG. 1 is a view in vertical section of a complete textile sample dyeing apparatus including the device according to this invention;

FIG. 2 is a diagrammatic view in section of a pressure dyeing apparatus in which the recepable is stationary and the material holder moves, and

FIG. 3 is a view in vertical section of a part of the machine similar to that shown in FIG. 1, including a dyeing apparatus in which the receptacle is adapted to move and the material holder is stationary.

The dyeing apparatus comprises a frame 1 receiving a vessel 2, a cover 3, a heating device 4, a thermostat 5, a thermometer 6, a motor 7, an actuating mechanism 8 and a dyeing device 9. The vessel 2 has heat insula-

ion 10, a central column 11, a drain tube 12 and an overflow 13 for removing excess liquid, such as glycerin, ethylene glycol and the like, heated by the device 4. The thermostat 5 and thermometer 6 sense and control the temperature of the liquid. The heating device 4 is controlled by means of electric resistors 14 received in a protective insulating sheath 15. A control box 16 is provided for starting the motor 7 and controls the electrical components of the apparatus.

The actuating mechanism 8 comprises a tubular rod 17 and a central core 18. The rod 17 is connected to the end of a rod 19 operated by an eccentric pivot of a disc 20 operated by the motor 7, so that the rod 17 is reciprocated vertically. The vertical reciprocation is imparted to the other elements of the mechanism when in the coupled state. Radial arms 21 extend from the top end of the tubular rod 17, and extending from the arms 21 are rods 22 rigidly connected to agitators 23 moving moving in the liquid in the vessel 2.

A disc 24 is rigidly connected to the central core 18; extending from the disc 24 are arms 25 to whose outer ends dyeing devices 9 are fitted.

Each device 9 comprises an autoclavable-like receptacle 26 connected to a cover 27 from which a tubular extension 28 extends so that the connection between the cover 27 and the receptacle 26 is effected with insertion of the edge of an orifice in the cover 3 of the vessel 2. Disposed inside the receptacle 26, which contains a dyestuff, is a material holder or support member in the form of a perforate receptacle 29 suspended on a rod 30 capped at the top by a magnetic core 31. When attracted by a permanent magnet or electromagnet 32 disposed at the end of one arm 25, the core 31 moves vertically inside the extension 28, so that movements of the arm 25 which are produced by the actuating mechanism 8 lead to equal movements of the receptacle 29 in the dyestuff. The receptacle 29 is very well suited to receiving textile fibres on a rack, but instead a holder 33 for a hank 33a or a hook 34 for retaining a cloth pile 35 can be used.

The rods 30 are guided by means of a perforate partition 36 disposed inside the extensions 28 and by an aperture for the rods 30 in the covers 27.

Alternatively, the devices 9 take the form of autoclavable-like receptacles 37 (FIG. 3) which contain the dyestuff and from which extend extensions 38 so coupled with the radial arms 25 that the receptacles 37 are movable. Material holders of any of the three kinds hereinafter referred to (in FIG. 1, 33 in FIG. 2 and 34 in FIG. 3) may be disposed in the receptacles 37 and connected to rods 30 whose top end has a magnetic core 40. Outside the extensions 38, a magnetic element, such as a permanent magnet 41 or an electromagnet, is disposed and is connected to stationary support members 42 for retaining the rods 39 in position. In this case, therefore, the material holder is stationary. The rods 39 are prevented from moving laterally by guides 43 connected to the extension 39.

In both the alternatives described, although they operate in opposite manner, there is relative movement between the dyestuff-containing receptacles and the material holders receiving the textiles to be dyed; the results in either case are, therefore, the same.

The invention can be varied in detail as found advisable in the light of experiment and practice provided that such variations do not alter its main features as set forth in the following claims.

What I claim is:
1. In an apparatus for pressure dyeing textile samples, a dyeing device comprising an autoclavable-like receptacle containing a dye bath, a holder in said receptacle for a textile sample, and magnetic means for vertically reciprocating an autoclavable-like receptacle having a magnetic core disposed relative to said magnetic means, said magnetic means being vertically reciprocated, the said receptacle being movably mounted on a header, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to reciprocate vertically, the said header being adapted to recipro
3. A device as claimed in claim 1 wherein said external magnetic element is rigidly secured to a stationary frame and said actuating means is coupled to said receptacle to reciprocally move the same.

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