

June 10, 1969

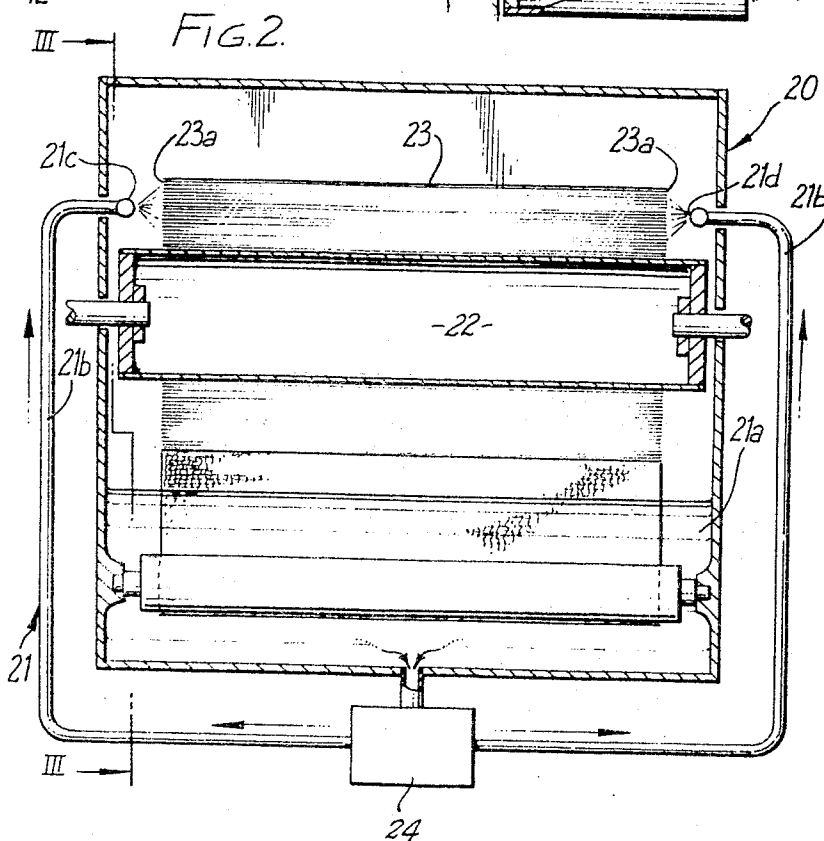
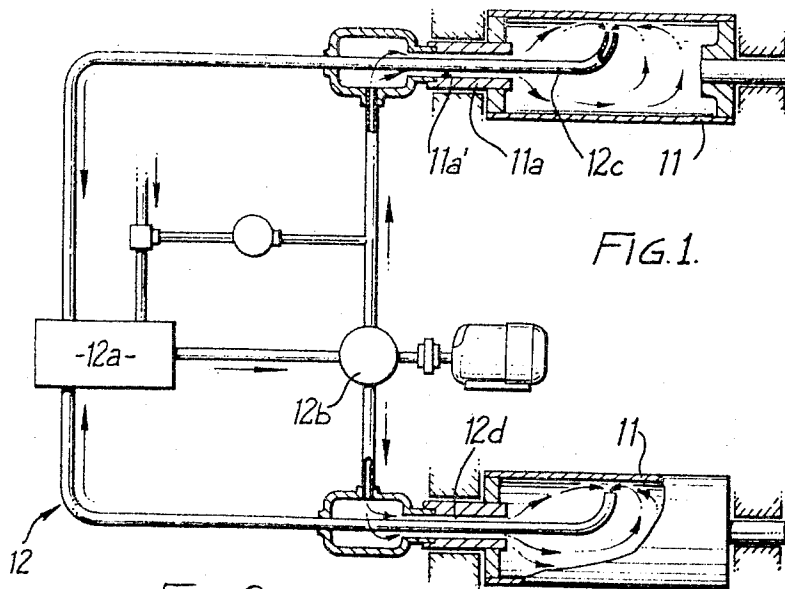
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3,448,470

JIG DYEING

Filed May 29, 1967

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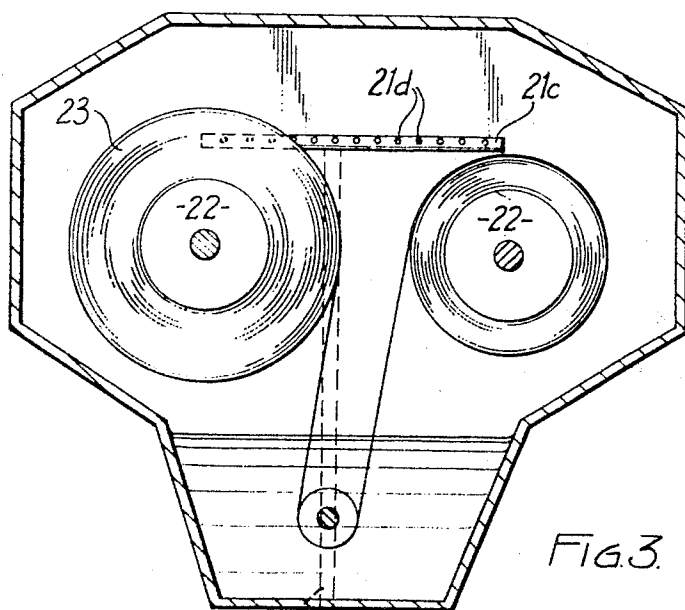


FIG. 4.

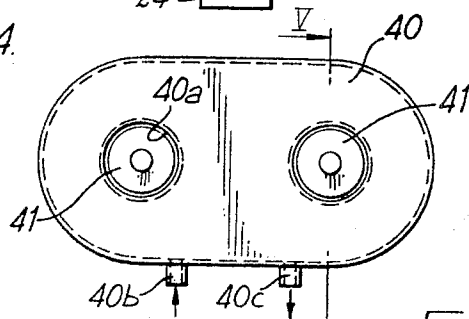
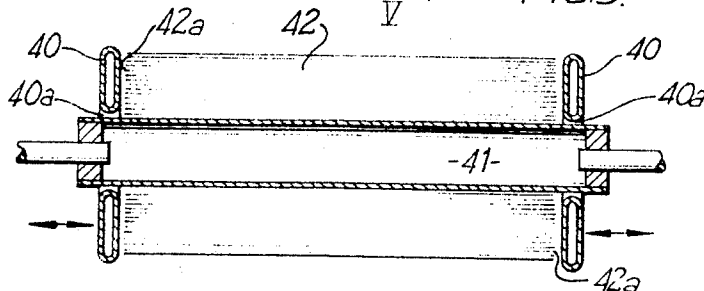


FIG. 5.



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3,448,470

JIG DYEING

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12 Claims

ABSTRACT OF THE DISCLOSURE

A jig dyer for textile fabrics includes heaters disposed radially inwardly of the rollers to maintain the wound fabric web at a constant temperature. If further includes heaters disposed radially outwardly of the rollers to continually apply heat to the exposed selvage portions of the wound fabric which would otherwise be subject to continual heat loss during dyeing."

The invention concerns the dyeing of textile materials.

In the dyeing of textile materials it is important that the temperature of the material under processing be maintained at a predetermined level thus to avoid dyeing faults, but difficulty is frequently experienced in this regard. For example, if a textile material under processing is wound onto a cold roller, the temperature of the material immediately falls thus to give rise subsequently to a dyeing fault in the fabric, it being appreciated that the fixation of some conventional dyestuffs, for example, reactive dyestuff is very sensitive to temperature variations. A similar effect obtains in the selvage regions of a fabric where such regions are frequently of a lighter shade than the body of the fabric due to cooling of the sides of the fabric whilst on the roller.

It is the primary object of the present invention to provide a method of and a means for avoiding or reducing the occurrence of the abovementioned difficulty.

Thus, according to the present invention, in the dyeing of textile materials in a dye jig we apply heat to those regions of the material wound on a support roller which are subject to heat losses so as to maintain the temperature of the material sensibly constant throughout both its width and length.

The invention also includes apparatus for practicing the method aforesaid and having a heater means whereby the part of the fabric on a roller subject to heat loss is heated thereby to maintain the temperature thereof at a substantially constant level. Usually the heater means will be such as to raise the temperature of the roll upon which the fabric is wound and also to provide a source of heat in closely adjacent disposition relative to the cloth selvage.

The heater means, as applied to the roller itself, feeds heating fluid to the interior of the roller, whilst the selvage region of the wound fabric which is normally subjected to heat losses is maintained at a required temperature by heated plates disposed adjacent the said regions, or by spraying the heated dye liquor onto the selvages.

The invention will now be described further, by way of example only with reference to the accompanying drawings illustrating three embodiments thereof and in which:

FIG. 1 shows, diagrammatically, a roller arrangement constructed in accordance with the invention;

FIG. 2 is a vertical section taken through a closed dye jig constructed according to the invention;

FIG. 3 is a section on line III—III of FIG. 2;

FIG. 4 is a side elevation of an alternative structure; and

FIG. 5 is a section on line V—V of FIG. 4.

Referring now to the drawings and in particular to FIG. 1 thereof, the rollers 11 of a dye jig are each arranged to receive a heating medium thereby to maintain the roller surface at or about a predetermined temperature level. The heating medium, in the form of a fluid, is taken from and returned to a heating circuit 12, the said circuit including a heat-exchange 12a and a pump 12b whereby the medium is circulated.

Each roller 11 has a hollow spindle 11a at one end thereof, the bore 11a' of the said spindle defining a passageway through which the heating medium return conduit 12c passes, the heating medium inlet 12d being constituted by the annular space between the return conduit 12c and the bore 11a'.

In operation, a heating medium is continuously applied to the interior of the rollers 11 through the respective hollow spindle 11a and is taken therefrom by the return conduits 12c, the latter having an end portion extending radially outwardly of the roller and terminating closely adjacent the inner wall thereof.

In an alternative arrangement, see now FIGS. 2 and 3, a closed dye jig 20 is provided with a means 21 whereby the selvages of the material on the rollers is continuously sprayed with dye liquor taken from the jig and, therefore, at the same temperature thereas. The means for applying dye liquor comprises a closed circuit system formed by the jig bath 21a, feed conduits 21b extending one on either side of the jig 20 and passing from the bottom of the jig to a position above the rollers 22, the said conduits 21b each terminating in a horizontally disposed spray member 21c having perforations 21d in that side thereof facing the roller.

In use, dye liquor is caused to flow from the dye bath 21a through the feed conduits 21b to be sprayed onto the selvage 23a of the material 23 wound on the roller 22. From the material, excess liquor falls into the dye bath to be recirculated in due course. A heating medium will be caused to pass through the rollers, and the arrangement of FIG. 1 could be utilized for this purpose.

As an alternative to applying heat to the selvage region by spraying dye liquor taken from the dye bath onto such regions, a hollow cheek piece 40 may be provided at each side of the jig in the manner shown in FIGS. 4 and 5, the pieces being positioned at the level of the rollers 41 and having openings 40a therein to receive the ends of the said rollers 41 so as to allow the adjustment of each cheek piece axially of the roller to a position closely adjacent the respective selvage 42a of a fabric 42, irrespective of the width of the fabric under processing. Inlet and outlet openings 40b, 40c respectively are provided in the underside of each cheek piece 40, and a heating medium is applied to the said pieces in any convenient manner, for example by a pump 24.

It will readily be appreciated that, by utilising the arrangements as above described, it will be possible to maintain at a requisite level the temperature of the fabric on a roller, the optimum advantage being obtained when both the body of the fabric (from the roller) and the selvages (from the cheeks or sprays) are heated.

The invention is not restricted to the particular features of the embodiment hereinbefore described since alternatives will readily present themselves to one skilled in the art. Thus, for example, the nature of the heating medium may be selected to suit particular requirements. Although in the embodiment shown in FIGS. 4 and 5 a single cheek piece is provided at each side of the rollers and extends so as to cover the selvage of fabric wound on each of the two spaced rollers, individual cheek pieces could be provided for each roller and, subject to the provision of a suitable rotating seal, each individual cheek piece could rotate with its respective roller.

What we claim is:

1. A method of dyeing textile materials in a dye jig which includes the step of applying heat to the selvage regions of a material wound on a support roller, which regions are normally subjected to heat losses, so as to maintain the temperature of the material sensibly constant in the region of such potential heat loss.

2. The method as claimed in claim 1 wherein said heat applying step includes the step of applying a heated fluid to the selvage regions of the wound material, the temperature of the fluid being substantially equal to that of the material.

3. The method as claimed in claim 2 wherein the heated fluid is taken from the dye bath.

4. The method as claimed in claim 2 wherein the fluid is sprayed onto the said selvage regions.

5. Textile dyeing apparatus including a heated roller upon which the material being dyed is wound, and a heater means disposed radially outwardly of the roller and adapted to maintain substantially constant the temperature in the selvage regions of the material wound on such roller.

6. Textile dyeing apparatus as claimed in claim 5 wherein the heated roller is hollow, said roller is adapted to receive a heating fluid and said apparatus includes a separate heat source for said heating fluid.

7. Textile dyeing apparatus as claimed in claim 5 wherein the said heater means comprises one or more cheek pieces disposed adjacent the said selvage regions.

8. Textile dyeing apparatus as claimed in claim 7 wherein the said cheek pieces are elongated and are adapted and arranged to apply heat to material wound on spaced parallel rollers.

9. Textile dyeing apparatus as claimed in claim 7

wherein the said cheek pieces are hollow and have inlet and outlet opening for the heating medium.

10. Textile dyeing apparatus as claimed in claim 5 wherein the said heater means comprises a spray tube through which a heating medium is applicable to the selvage regions.

11. Textile dyeing apparatus as claimed in claim 5 wherein the heater means is adjustable longitudinally of the rollers.

12. Textile dyeing apparatus of the type in which a web of fabric is wound from one roll to another roll while a stretch is festooned in a dye bath, said apparatus comprising:

heater means, inside of said rolls for heating the fabric wound thereon from inside the convolutions thereof at a predetermined temperature, and

heater means, outside of said rolls, for heating the selvage portions of the fabric wound thereon, from outside the convolutions thereof, to maintain the same at a constant predetermined temperature.

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U.S. Cl. X.R.

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