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(54) Procedure for the uneven dyeing or discoloring of garments and more generically of fabrics and yarns

(57) A procedure for the uneven dyeing/discoloring of textile material based on the use of wet treatment of the material inside a machine with revolving drum or with equivalent characteristics, a dye or bleach (P) characterized by the fact that said substance (P) is introduced into the machine inside special containers (1) made in material suitable to withstand the chemical and temperature characteristics of the treatment, and by the fact the said containers (1) have holes to allow the controlled and progressive release of the substance (P) as a result of the shacking of the containers and the material inside the machine.

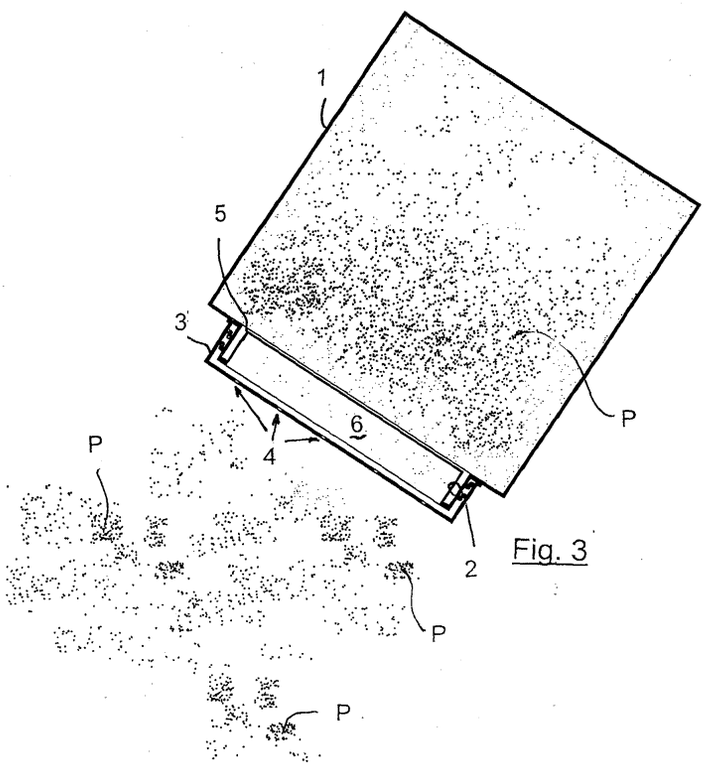


Fig. 3

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Description

[0001] This invention applies to the textile finishing sector and specifically describes a new procedure for the dyeing or discoloring (required, for example, to attain an aging effect) of garments and more generically of fabrics and yarns.

[0002] The current procedure available to unevenly dye and/or discolor garments, in order to attain one of the effects most in demand by current fashion trends and employed in particular for youth garments, consists in preliminarily ironing, softening and drying the garments, in performing a final neutralizing phase and in dying/discoloring the garments. The latter process consists in impregnating granules of rough permeable but highly absorbent material (usually pumice) with a liquid dyeing or discoloring substance, depending on requirements. These granules are inserted, together with the dry garments that have to be treated, into a machine with revolving drum, which is allowed to run dry for a preset time. At the end of the cycle, the granules are disposed of or recycled so that they can be used for subsequent treatments.

[0003] This procedure has several disadvantages. The most immediate disadvantage originates from the fact that it is necessary to preventively impregnate the rough material particles, which complicates and slows down operations, besides exposing operators to the fumes of the dyeing or discoloring fluid substance or to accidental contacts.

[0004] Similar problems occur also during the drying phase of garments and fabrics, which is carried out before the dyeing/discoloring using different machines. In the current procedure, it is not possible to eliminate this phase, because the use of the revolving drum in non dry conditions would lead to the almost immediate release of the dyeing/discoloring granules, thus causing their dilution in the treatment bath, their homogenization and decay due to the presence of aggressive chemical substances, and the impossibility of applying the color stains/streaks.

[0005] This new procedure for the uneven dying/discoloring of garments enables to solve the above-described problems.

[0006] The new procedure for the uneven dying/discoloring of garments and more generically of fabrics and yams, referred to in this invention, has the essential characteristics specified in the first claim.

[0007] The remaining characteristics and advantages of this procedure for the uneven dying/discoloring of garments and more generically of fabrics and yams, referred to in this invention, shall be illustrated in greater detail in the description of the procedure that is provided as example only, without any whatsoever limitation, also thanks to the following drawings:

- Figure 1 schematically illustrates an exploded view of the containers designed to hold the bleaching or dying material used in the procedure referred to in the invention
- Figure 2 provides a scale drawing of the cap of the container of Figure 1
- Figure 3 provides an axial section of the container shown in the previous figures, as it would appear during the distribution of the powder substance required to perform the procedure described in this invention.

[0008] In the procedure referred to in this invention, the material to be unevenly dyed/discolored is inserted directly into a machine with revolving drum so that it can be preliminarily evenly dyed with known methods and repeated cycles (that shall described in the pages that follow), if required.

[0009] After the preliminary dyeing, if required, the dye is disposed of and the material centrifuged. If the material does not require a preliminary dyeing or has been already dyed before its insertion into the machine, it is only necessary to centrifuge it by adding the required amount of water. At this point, it is necessary to insert into the drum the material, which still has a very high level of humidity, together with the containers that hold the chemical dyeing or discoloring substance, preferably in powder. The containers, which are made in a material suitable to withstand the chemical aggression and the temperature typical of the treatment, i.e. usually plastic like ordinary polypropylene or similar polymeric materials, have small holes to allow the gradual release of the substance and its distribution on the material that needs to be bleached/dyed.

[0010] More specifically one of these containers, as shown in the figures, can be constituted by a simple cylindrical container (1) sealed on the top (2) by a screwed cap (3). The cap, as Figure 2 clearly shows, has several small holes (4) to allow the release of the powder. The size, number and arrangement of holes vary according to the desired result, as explained in the sections that follow. In the preferred configuration, the opening (2) can be fitted with a diaphragm (5), which snap in place at a greater depth as compared to the cap (3). The opening and the cap are placed at a specific distance in order to form a hollow space (6 of Figure 3).

[0011] The diaphragm (5) also has holes, though not visible in the figures, because it is used to obstruct the flow of the powder so that it can be released gradually and progressively, depending on the desired result. The powder flow is schematically illustrated and marked as P in Figure 3. To load the chemical substance (P) into the container it is obviously necessary to remove the cap (3) and the diaphragm (5).

[0012] After inserting the container, it is necessary to start rotating the drum for a preset interval of time, which varies according to the desired final effect. The shacking of the containers causes the powder (P) to be released, in a controlled and progressive manner (see Figure 3), through the holes (4) and its uneven but consistent dis-

tribution on the fabric. The chemical aggression produced by the powder substance combined with the mechanical shacking and mixing action, caused by the rotation of the drum, enable to attain the uneven dyeing/discoloring. The use of containers with an axially symmetrical shape and holes on one side helps to attain a more irregular and uneven distribution (in terms of quantity and direction) of the substance inside the containers.

[0013] At the end of this phase, which can have a varying duration depending on circumstances (type of material, type of substance, desired effect, etc.), it is necessary to add water to the drum in order to neutralize the chemical substance and fix the treated material. The empty containers can be left inside the machine during this final phase and removed together with the dyed/discolored material. However, if they still contain a small amount of substance, it is advisable to preventively remove them, because the impregnation phase would cause the release of the residual chemical substance and lead to a consistent distribution of the color. All the containers have to be reloaded before the next cycle.

[0014] The above-described procedure offers a significant advantage as compared to the existing one described in the introduction, because it radically simplifies and accelerates the preliminary production phases (dyeing, softening batch or centrifuging) and the dyeing/discoloring (or aging) phase, eliminating the need of transferring the material to a different machine. This result is attained through the use of containers capable of gradually releasing the substance and designed to contain either a powder or liquid substance. The physical containment and distribution action of the containers prevents an immediate and uncontrolled release of the fluid substance even in presence of a high humidity.

[0015] In addition, the containers holding the chemical substance are prepared outside the machine in conditions that do not require total dryness or the availability of other machines or baths. The workers in charge of this operation are not exposed to fumes and do not risk coming into contact with chemically aggressive fluids, because the powder chemical substance is handled in dry conditions and maintained segregated and inert until its introduction into the machine after the loading of the containers. Although this advantage is less significant when using a liquid substance, even in this case the handling conditions are far less critical as compared to those of the known procedure, as there is no impregnation bath that could expose operators to accidental contacts with the chemical substance that is topped into the containers from cans.

[0016] The above description is obviously very generic as the procedure can be adapted and changed according to requirements; for example, as described above, for manufacturing requirements. Changes and adaptations can be easily implemented using the traditional methods typically employed in this field. The preferred dyeing/discoloring agent is powder, because it allows to distribute spots of color on the fabric. However, the use of liquid substances offers equally interesting effects, i.e. the distribution of stains and veneering, caused by the application of small drops of liquid and by its sagging.

[0017] This procedure enables therefore to use oxidizing or reducing agents to bleach/discolor a dyed fabric. Other applications may require the use dyeing pigments with different properties and concentrations (it is also possible to add different substances to the individual containers), along with suitable fixing agents. In this case the treatment shall consist in an uneven dyeing of the material, regardless of whether it had already been dyed or not. These types of effect usually require an additional phase to fix the dye on the textile fibers, which is achieved through the introduction and generation of steam inside the drum. It is also possible to use binding resins (for metal, shot or color effects). Even in this case, an additional drying phase is required to fix the dye on the fabric before the final washing.

[0018] The preliminary dyeing, when used, may include two different phases and dyes: an initial dying with a dye resistant to the chemical bleaching substance that will be subsequently used and a subsequent dyeing phase with a more intense yet less resistant dye. In this case the final result consists in a series of stains/streaks of the second color on the first background color.

[0019] As explained above, the shape of the containers, the number of containers introduced into the drum and the distribution of the holes can be selected in function of the desired effect. The procedure does not require the compulsory use of a machine with a revolving drum, as it can be easily employed with similar machines, for example with vibration machines.

[0020] Other variants and/or changes may be applied to the procedure for the uneven dyeing/discoloring of garments and more generically of fabrics and yams referred to in this invention, without any limitation of its scope.

Claims

1. Procedure for the uneven dyeing/discoloring of textile material, consisting in a wet treatment of the material carried out by means of a machine with revolving drum and/or similar machines and **characterized by** the fact that the dyeing/bleaching substance is inserted in to the machine in closed containers, made of a material suitable to withstand the chemical and temperature characteristics of the treatment, with holes to allow the progressive and controlled release of the substance as a result of the shacking of the containers and material inside the machine.

2. Procedure as per claim 1, **characterized by** the fact that the containers have an axially symmetrical body, are sealed on one end by a screw type cap

having several small holes to allow the release of the chemical substance.

3. Procedure as per claim 2, **characterized by** the fact that the opening of these containers is blocked by a diaphragm, snapped in place at a greater depth as compared to the cap, which is placed at a specific distance from the cap to allow the formation of a hollow space and by the provision of holes on the diaphragm.

4. Procedure as per one of the above-described claims, **characterized by** the fact that the treatment phase is preceded by the impregnation or centrifuging of the material inside the machine.

5. Procedure as per claim 1, 2 or 3 above, **characterized by** the fact that the treatment phase is preceded by preliminary even dyeing and centrifuging phases.

6. Procedure as per claim 4, **characterized by** the use of a discoloring substance and two different sub-cycles, respectively carried out using a dyeing agent with a greater resistance to the chemical aggression of the substance employed and a less resistant dyeing agent.

7. Procedure as per claim 5, **characterized by** the fact that second dye has a less intense color than the one used for the first cycle.

8. Procedure as per claims 1, 2, 3 or 4 above, **characterized by** the mixture of the dye with suitable fixing agents and by the introduction or generation of steam inside the machine in order to fix the dye onto the fabric after the treatment.

9. Procedure as per claims 1, 2, 3 and 4 above, **characterized by** the fact the chemical agent used is a dye mixed with a binding resin fixed on the fabric by means of a drying phase carried out after the treatment.

10. Procedure as per one of the above claims, **characterized by** the use of a posttreatment neutralization of the chemical agent and finishing of the fabric attained by means of the addition of water in the machine or the removal of the containers.

11. Procedure as per one of the above claims, **characterized by** the use of powder dyes or bleaches inserted into the containers.

12. Procedure as per one of the above claims, **characterized by** the use of liquid dye or bleaches inserted into the containers.

13. Procedure as per one of the claims above, **characterized by** the use of textile material consisting of garments, fabrics or yarns.

14. Procedure for the uneven dyeing/discoloring of garments and more generically of fabrics and yams substantially equivalent to the one described above and illustrated in the enclosed drawings.

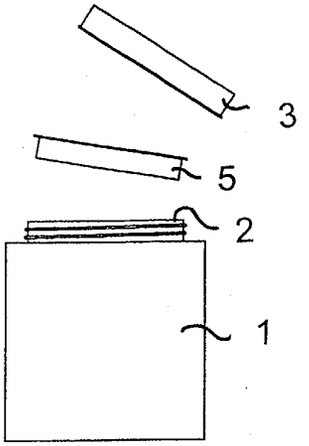


Fig. 1

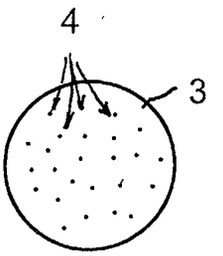


Fig. 2

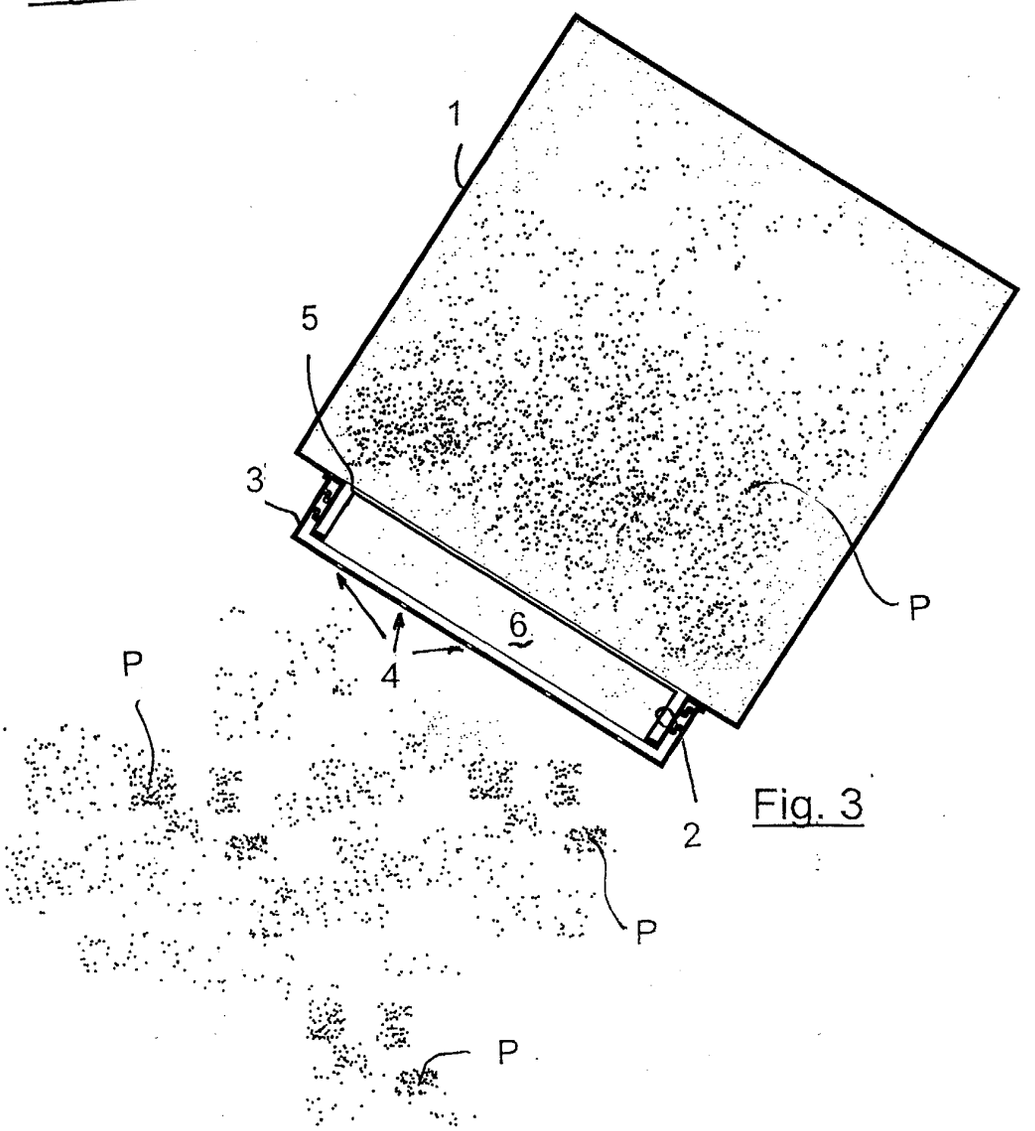


Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 04 07 6998

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

D06P
D06L
D06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	28 October 2004	Koegler-Hoffmann, S

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