DRY CLEANING FINISHING METHOD AND APPARATUS

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[54] DRY CLEANING FINISHING METHOD AND APPARATUS

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Abstract

A dry cleaning finishing method and apparatus for use in combination with a steam clothes press for mixing and pressurizing a liquid so that it can be easily applied to garments being pressed comprises a supply tank that meters the liquid material into a pressure tank. Steam condensate mixed with steam from the clothes press provides the chemically pure water, heat and pressure to the pressure tank that mixes with the sizing concentrate and forces the water-sizing mixture to a spray gun for use when needed or desired by the pressman.

11 Claims, 3 Drawing Figures
DRY CLEANING FINISHING METHOD AND APPARATUS

This application is a continuation-in-part of application Ser. No. 268,885 filed July 3, 1972 now abandoned.

This invention relates to a method and apparatus for mixing and dispensing a liquid material on garments as they are being pressed on a steam press.

After clothes have been washed or dry-cleaned and are ready to be pressed it is often desirable to apply a sizing material that gives a "like-new" body and affords greater protection and longer life to the garment. For some garments, such as sheer blouses or dresses little or no sizing is desirable, but a fine spray of distilled water is required to remove "dry wrinkles".

Sizing material has been used previously by drycleaners but heretofore there was no convenient, efficient or economical system for applying it to garments. Generally, one of two methods was used. Either the sizing material was added to the cleaning liquid in the cleaning tank or it was applied directly to the garment at the press from pressurized spray cans. The first method did not provide a homogeneous mixture and often caused chunks or globs of sizing to occur on the garments. Also, it did not provide a means for applying the sizing in localized spots where needed. The latter method proved to be highly expensive and failed to solve the supply problem where a large volume of garments were being processed.

One object of the present invention is to solve the aforesaid problems by providing an apparatus that makes available to the presser an instantly useable supply of distilled water or some other liquid from a relatively large source that will accommodate long production periods.

Another object of the present invention is to provide an apparatus that utilizes the steam condensate from a conventional clothes press to heat, mix, dilute and convey sizing under existing steam pressure to a controllable spray gun so that it can be conveniently available to the presser.

Yet another object of the present invention is to provide an improved method for applying sizing to garments at a clothes press that is more convenient to use as well as more economical and is independent of the normal pressing operation without adding to, modifying or changing the normal steam supply to the garment press.

Another object of the present invention is to provide a mixing tank for liquid to be used in a dispensing system and in combination with a means for supplying a material such as sizing and a source of pressurized air or steam to mix the material within the tank and force it out at a controllable rate when needed.

Other objects, advantages and features of the invention will become apparent from the following detailed description of one preferred embodiment taken in conjunction with the drawing, in which:

FIG. 1 is a schematic diagram of a sizing dispensing apparatus embodying the principles of the present invention;

FIG. 2 is an enlarged view in side elevation of the pressure tank for the apparatus of FIG. 1; and

FIG. 3 is a top view of the tank shown in FIG. 2.

With reference to the drawing, FIG. 1 shows a method and apparatus utilizing the principles of the present invention as applied to the dispensing of a sizing material during garment press operations. In general, the system comprises a pressure tank 10 to which is connected a supply vessel 12 containing the sizing material or other additive that is to be mixed with another liquid such as water in the tank. The term "sizing material" includes any suitable water soluble substance of the type that is well known in the dry cleaning field and which will add body to the garment. For example, an organic substance such as water soluble cellulose or protein is suitable. The supply vessel 12 is located above the pressure tank so as to feed the sizing material to the tank by gravity flow via a conduit 14 containing a controllable valve 16. A conventional steam press 18 is supplied with steam from a suitable source 20 through a pair of conduits 22. Connected to this same steam source is a conduit 24 that passes through a trap 26 to a make-up or condensation tank 28 in the usual manner. The conduit 24 receives condensed steam that is collected as distilled water at the press and this water is subjected to the normal pressure of the steam in the lines 22. Between the press and the trap is a branch conduit 30 that is connected to the pressure tank and therefore, distilled water is forced into the tank by the pressure of the steam at the press.

Conduit 30 contains a control valve 32 and a check valve 34 to permit flow into the tank only. Fixed to the top of the pressure tank is a flexible hose or conduit 36 extending to a hand nozzle or spray gun 38 of any suitable type that is controllable to vary its flow rate.

In FIG. 2 and 3, the pressure tank 10 is shown in greater detail with the supply vessel 12 attached. In the embodiment shown it comprises a base plate 40 preferably of a light metal such as aluminum to which is welded a cylindrical body portion 44. A circular cover 46 welded to the body has three spaced apart nipples 48, 49 and 50 to receive and connect with the outlet conduit 34, the supply conduit 14 and a vent pipe 52. The latter, as shown in FIG. 1, is also provided with a controllable valve 54.

The nipple 46 is actually the upper end of a standpipe 56 that extend through the cover and well down into the lower end of the pressure tank. The bottom end of the standpipe 56 is beveled so that an opening with a maximum area will be exposed to the mixing liquid within the pressure tank. Near the bottom of the pressurized tank 10 is another nipple 58 that provides a connection with the conduit 30. The opening of this nipple within the pressure tank is on the opposite side of the beveled opening of the standpipe 56 so that wet steam that is almost entirely condensed but still under pressure will enter the pressure tank, but will not immediately enter the standpipe 56 before it performs its mixing and heating function.

In operation, the sizing material flows by gravity from the vessel 12 into the pressure tank 10 and when the desired amount has been received therein the valve 16 is closed. Steam condensate from the press 18 is now furnished through the branch conduit 30 to the pressure tank. The amount of steam condensate to provide the desired amount of mixing and water content can be controlled by the control valve 32. Within the tank, any steam that is present with the steam condensate provides heat and an agitation action that thoroughly mixes the sizing with the steam condensate or other liquid and breaks down any lumps or globs of sizing. The lower end of the standpipe 56 extends within the pressure tank to near its bottom so that it is thoroughly
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immersing the mixture of sizing and water. The pressure within the tank provided by the steam pressure at the press through conduits 24 and 30 forces the mixed water and sizing through the standpipe and the hose 36 to the dispensing nozzle 38. The latter is easily handled by the press operator to dispense a fine spray of mixed water and sizing on garments as they are being pressed.

From the foregoing it is apparent that the present invention provides a method and apparatus that facilitates the mixing, storage and dispensing of a sizing material for use in garment pressing. In utilizing the distilled water and steam pressure available from a conventional presser device, the apparatus will operate with efficiency and economy by means of a spray applicator that is convenient to use and easy to manipulate.

To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

We claim:

1. A method for producing and applying a homogenized mixture of an additive material and chemically pure water to a garment being processed by an apparatus supplied with steam under pressure, said method comprising the steps of:

   providing a closed tank having at least two inlets and one outlet; moving chemically pure water formed from condensed steam at said apparatus to one of said inlets to said tank;
   supplying a preselected additive material to said tank through its other said inlet;
   utilizing the pressure of the steam supplied to said apparatus for forcing said chemically pure water into said tank to mix with said additive material therein;
   further utilizing the pressure of the steam supplied to said apparatus for forcing the mixture of additive material and water from said tank and directing it to a dispensing means on a conduit connected to said outlet of said tank; and
   applying the mixture of additive material and water with said dispensing means to a garment.

2. The method as described in claim 1 wherein said apparatus is a garment press supplied with steam.

3. The method as described in claim 2 including the steps of controlling the flow of water and additive to said tank to provide a mixture of desired additive concentration.

4. The method as described in claim 1 wherein said additive material is a sizing comprised of a water soluble cellulose.

5. The method as described in claim 1 wherein said additive material is a sizing comprised of a water soluble protein.

6. An apparatus adapted for use in combination with a garment press unit supplied with steam under pressure from a steam source and having means for collecting condensed steam, said apparatus comprising:

   a pressure tank having at least two inlets and one outlet;
   an additive supply means connected to one inlet of said pressure tank;
   an internal conduit means having one open end located within said pressure tank and extending outside of said tank and forming said tank outlet;
   external conduit means connected to said tank outlet and including a controllable nozzle at its end;

   and conduit means connected to said means for collecting condensed steam as distilled water and subjected to the pressure of steam from said source, said conduit means providing a fluid path to said steam pressure tank through the other said tank inlet; whereby steam pressure from said source forces said distilled water to dilute and mix with said additive in said tank and thereafter force the water and additive mixture through said controllable nozzle.

7. The apparatus as described in claim 6 wherein said additive supply means comprises a vessel located above said tank and connected thereto by a conduit containing a controllable valve.

8. The apparatus as described in claim 7 wherein said additive is a sizing material that is at least partially soluble in water.

9. The apparatus as described in claim 6 wherein said tank comprises a base member having a uniform thickness, a tubular cylindrical body member welded at its lower end to said base member and a circular cover member welded to the upper end of said body member.

10. The apparatus as described in claim 6 wherein said internal conduit means is a standpipe having a lower end with a beveled opening in a plane that intersects the longitudinal axis of the standpipe at an angle, said standpipe extending to near the lower end of said tank and said tank opening for the steam being located to the rear of said beveled opening.

11. An apparatus adapted for use in combination with a garment press unit furnished with a supply of steam from a steam source and a steam condensate from the said garment press, said apparatus comprising a pressure tank;

   an additive supply means connected to said pressure tank;

   an internal conduit means having one open end located within said pressure tank and an outlet extending outside of said tank;

   external conduit means connected to said outer end and including a controllable nozzle at its end;

   and means providing a fluid path from said steam condensate source to said pressure tank through a tank opening;

   whereby steam condensate from the condensate return line of a garment press is forced into the tank by the existing steam pressure and serves to heat and mix with the sizing concentrate so that the resulting mixture can be forced from the tank by the existing steam pressure through a controllable spray nozzle.

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