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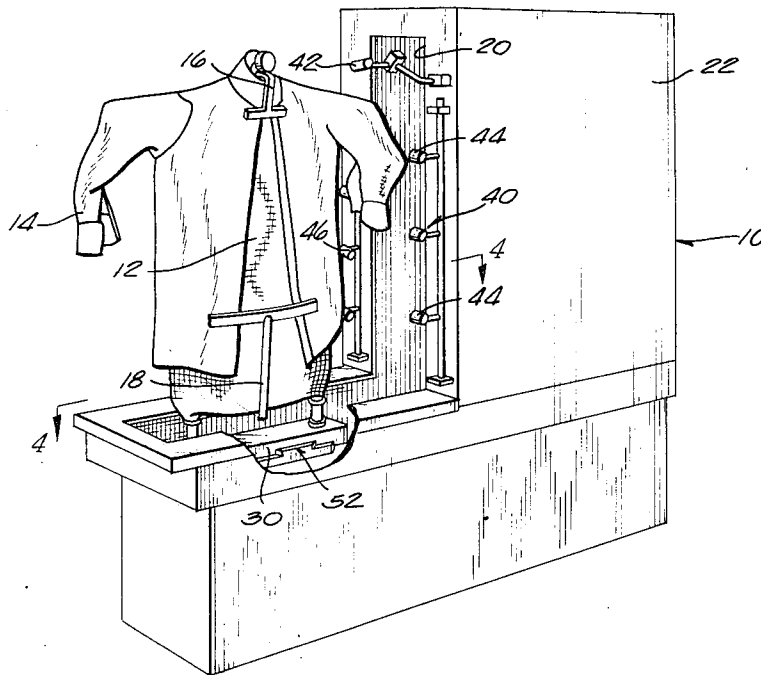
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[54] **WATER SPRAY DEVICE FOR A GARMENT PRESS**
 3 Claims, 6 Drawing Figs.

[52] U.S. Cl..... **239/128,**
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 [51] Int. Cl..... **B04b 1/24,**
 B44d 3/42
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 70; 239/128, 135, 132.5, 124; 165/110 X; 62/506

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ABSTRACT: Water spray device for a garment finisher or the like having a high-pressure steam system including a water separator tank and a high-pressure waterline connecting the separator tank with spray nozzles, this high-pressure line being in heat exchange relation with water in a vented sump with said sump water being admitted through an automatic float valve from the high-pressure line itself, operable thereby to cool fluid in the high-pressure line to well below the condensation temperature thereof to minimize flashing upon being sprayed from the nozzles. Moreover, a control is disclosed including cooperating cam and cam follower means that actuates solenoid valves for spraying automatically responsive to the position of the garment as it is moved past the nozzles from the dressing position to the finishing position.



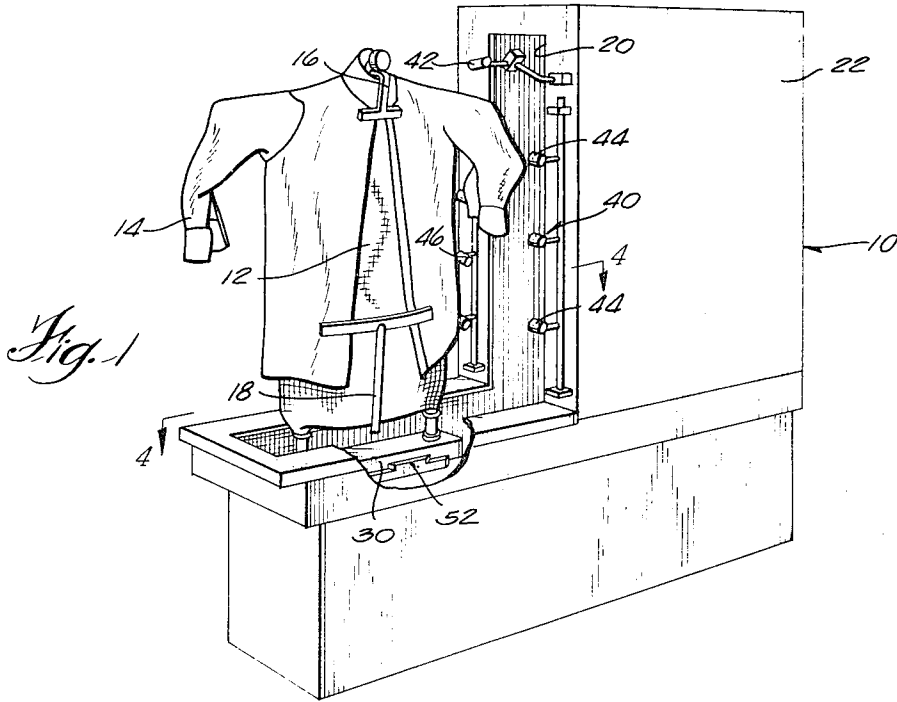


Fig. 1

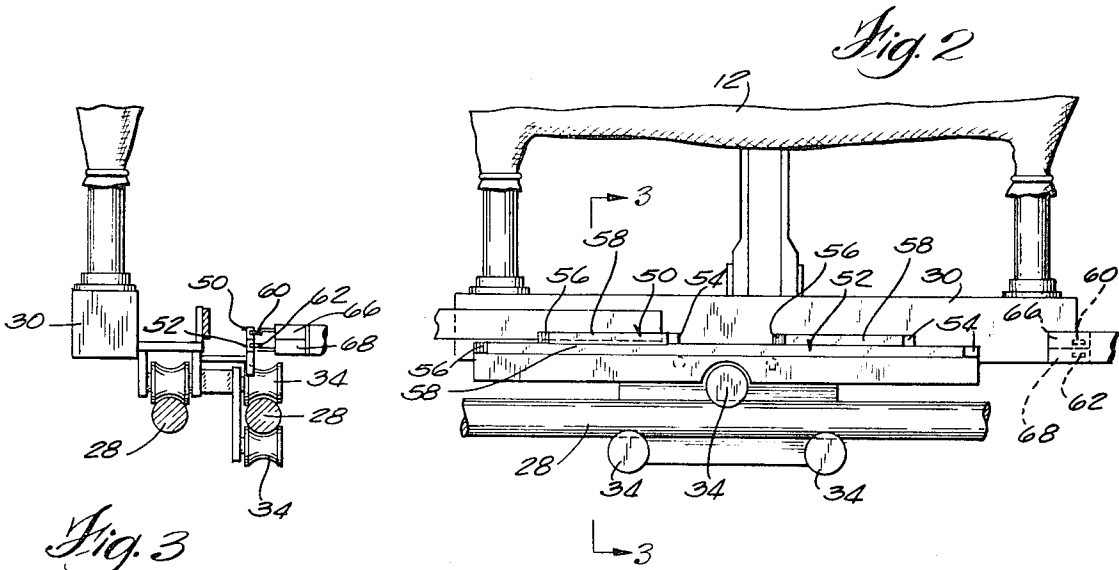


Fig. 2

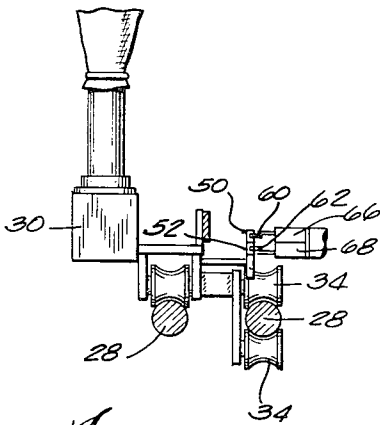
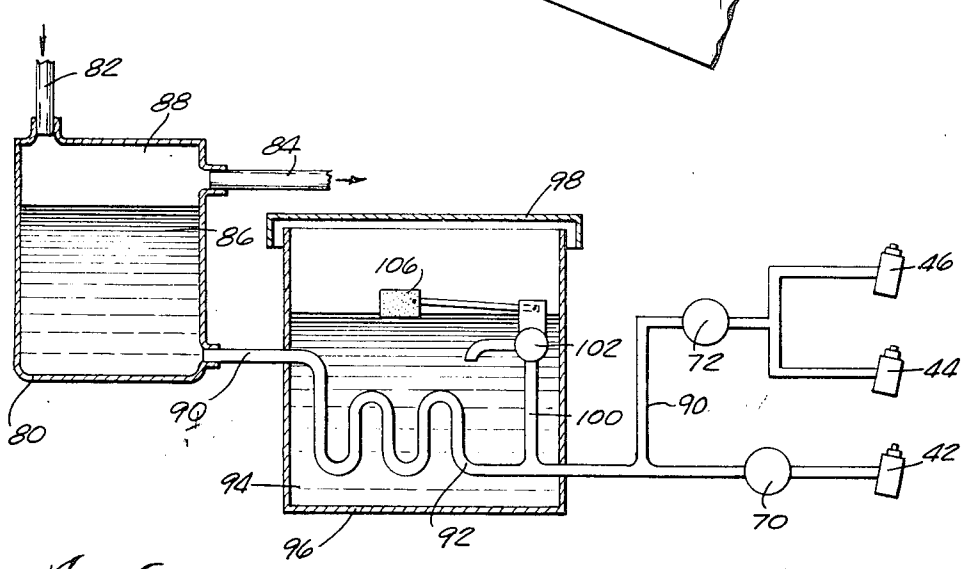
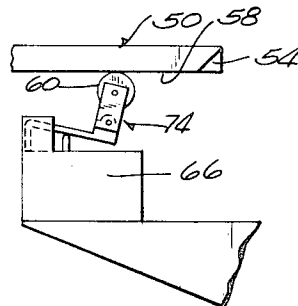
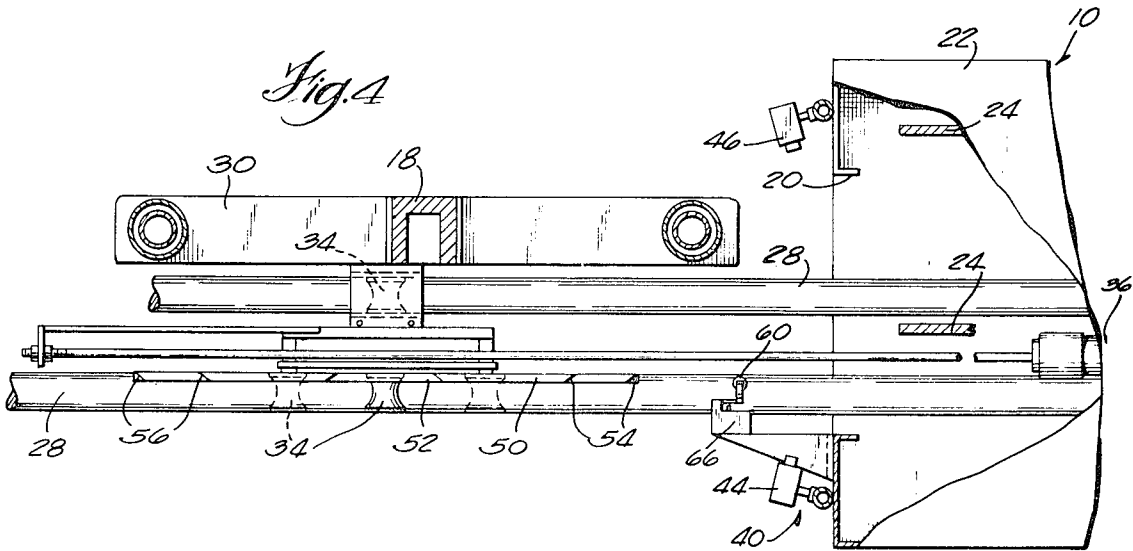


Fig. 3

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WATER SPRAY DEVICE FOR A GARMENT PRESS

In finishing certain garments, particularly those manufactured from synthetic materials or blends, it is frequently desirable to steam or water spray the garment for conditioning just before finishing. Conventional garment finishers or presses use a high-pressure steam system, frequently from between 60 p.s.i.g. and 140 p.s.i.g., for heating the air, press faces or the like as required or for spray conditioning the garment. It is quite common to obtain spray water from the steam system by tapping off the closed steam separator tank below the normal condensate level for connection through an appropriate control valve or the like to the spray nozzle. It has been noted however that frequently the water flashes to steam as it is sprayed from the high-pressure line. This probably occurs since the temperature of water in the high-pressure waterline is near its high-pressure condensation temperature in excess of 300° F., while the atmospheric vaporization temperature is probably less than 212° F.

This invention provides improved means for spraying water from a conventional high-pressure steam system in a garment finisher such as to eliminate or minimize flashing, and an automatic control for such spraying.

A specific object of this invention is to provide a water spray outlet from a high-pressure steam system where the connecting high-pressure line is cooled within a vented water sump fed water from the connecting line itself.

Another object of this invention is to provide an improved control for the water spray than can be tied in to work automatically responsive to the position of the garment as it is moved from the dressing position past the nozzle to the finishing position.

These and other objects will be more fully understood and appreciated after reviewing the following specification, the accompanying drawings forming a part thereof, wherein:

FIG. 1 is a perspective view of a typical shirt press on which the subject water spray device is attached and operated;

FIG. 2 is an enlarged front elevational view of the particular buck carriage on the press disclosed in FIG. 1, showing also the cam of the automatic water spray control disclosed herein;

FIG. 3 is an elevational sectional view as seen generally from line 3—3 in FIG. 2;

FIG. 4 is a sectional plan view, as seen generally from line 4—4 in FIG. 1, showing the buck carriage, the spray nozzles, and the water spray control;

FIG. 5 is an enlarged plan view of the particular cam and follower mechanism of the spray control, similar to FIG. 4 except showing the components in different operative positions; and

FIG. 6 is a schematic view of a preferred connection to a typical high pressure steam system, for the water spray discharge as taught herein.

The illustrated shirt press 10 can be similar in construction to any typical prior art press, such as described in the common assignee owned U.S. Pat. No. 2,743,854. Basically the press includes a form or buck 12 onto which a shirt 14 is dressed with appropriate clamps 16 and 18 holding the shirt collar and tail in place. Sleeve extenders (not shown) under the shirt shoulders extend into the sleeves to hold them away from the shirt body which is to be finished. The buck 12 is supported by carriage means to move from the dressing position shown in FIG. 1 through opening 20 to a finishing position within the press cabinet 22. Opposing press faces 24 are then moved laterally against the buck to press the shirt dressed thereon. To support this buck movement, spaced parallel rods 28 extend horizontally between the dressing and pressing positions and a buck support member 30 has rollers 34 that rest on and straddle the rods 28. As seen in FIG. 4, a power cylinder 36 connected between the press frame and the buck support 30 moves the buck along the rods 28 between the dressing and finishing positions.

The shirt 14 is dressed over the buck 12 in its outer dressing position (FIG. 1), after which the power cylinder 36 is actuated to move the shirt through opening 20 into the pressing

cabinet 22. To condition moisten the shirt before it is actually finished, be it a wool, cotton or blend, a spray device 40 is mounted on the face of the cabinet 22 surrounding the opening 20 to be passed by the shirt as it moves on the track 28 within the cabinet. Specifically, the spray device 40 has nozzle 42 adjusted to spray downwardly across the shoulders of the shirt and has nozzles 44 and 46 adjusted to spray the front and rear, respectively, of the shirt. Since the shirt collar and cuffs are typically pressed on one unit (not shown) and the shirt body subsequently pressed on a second unit of the type disclosed herein, the front and rear sprays can be continuous on the shirt as it moved past the nozzles to the finishing position, whereas the shoulder spray from nozzle 42 should be interrupted to preclude spraying the finished shirt collar.

Particular structure suitable for controlling the spray in the manner desired is shown in FIGS. 2 through 5. This includes cams mounted to and carried with the buck support 30 which actuate cam followers supported by the press frame. The cams 50 and 52 are elongated plate elements each having a leading edge 54, a trailing edge 56 and a flat interconnecting position 58. A cam follower 60 and 62 is positioned to engage the respective cam track 50 and 52, and each cam follower is connected to an appropriate control switch 66 and 68 having a pair of contacts that are closed as the follower is actuated. Each switch is in circuit with a solenoid valve 70 and 72 that controls flow to the nozzles as will be noted. The linkage between each follower and its switch is a one-way articulated lever 74 effective to actuate the switch only as the shirt is moving toward the finishing position and the leading cam edge 54 initially engages the cam follower, whereas the arm collapses and is not effective to actuate the switch when the shirt is moving from the cabinet and the trailing edge 56 initially engages the cam follower.

In FIG. 6 a preferred connection is shown from a high-pressure steam system to the nozzles useful for discharging water only as a spray. The steam system ordinarily includes a closed steam separator tank 80 having a steam inlet line 82 and a steam return line 84 each connected to the tank well above the tank bottom. Water 86 thus tends to accumulate up to approximately the lower level of the steam return line 84 and the space 88 above the water is filled with vaporous steam. A high-pressure waterline 90 connects the tank 80 below the normal water level with the spray nozzles 42, 44 and 46 through the solenoid control valves 70 and 72.

The high-pressure waterline 90 is directed in heat exchange relation as at 92 through water 94 located in a vessel 96 having a vented open top 98. Connected off the line 90 is a diverter line 100 which discharges to within the tank 96, and a valve 102 in the line 100 is controlled by a float 106 riding on the water 94 to maintain the water level generally constant as shown. The water in the tank 96, being exposed to atmosphere, will vaporize at any temperature in excess of the atmospheric vaporization temperature so that ultimately the water will reach a temperature of approximately 212° F. This sump water thus cools through the heat exchanger section 92 the water in the high-pressure waterline 90 to approximately 212° F. or slightly higher which is well below the possible 300° F. plus condensate temperature of the high-pressure water. Upon opening the control valve 70 or 72, as dictated by the actuation of the cam follower by the cam, the nozzles are exposed to the lower temperature high-pressure water in the line so that water spray only is discharged to atmosphere from the nozzle and there is a little tendency of the spray to flash into steam. Since water only is sprayed, the appropriate nozzle construction and orientation can be most accurately controlled to give a preferred spray pattern over the shirt specifically in the areas required with the spray patterns from adjacent nozzles set to meet exactly with both a minimum of unsprayed strip therebetween or spray overlap. The cam 50 is interrupted to stop spraying from nozzle 42 when the collar of the shirt passes beneath the nozzle.

The particular water spray device operates in a most efficient manner in that water only is discharged from the spray

and there is little tendency for spray flashing. Moreover, the automatically timed cooperation between the buck supported cam and the frame supported follower through the one-way articulated switch provides for accurate spray pattern control exactly as desired on the garment as it moves past the nozzles. Since water only is used for the spray and such is at a nominal high pressure, it is possible to use a nozzle with a nominal back pressure such that when the control valve initially opens that the spray from the nozzle is immediately in its predesigned pattern and also immediately stops when the valve closes. The invention has application other than on the shirt press shown, and in fact, can be used with any steam system water sprays particularly as applied on a garment finisher.

What is claimed is:

1. In combination, a water spray nozzle and a high-pressure steam system including a high-pressure line connected to the nozzle, a water sump top vented to atmosphere and having a closed lower portion suitable for holding water therein, the high-pressure line extending in heat exchange relationship to the sump water effective to cool thereby high-pressure water

therein to substantially less than the high-pressure condensation temperature, control valve means in the high-pressure line downstream of the sump, and means to maintain water in the sump to a certain minimum level, and including a line open to the sump and connected to a source of water and a control valve in the line, wherein said water source line is connected to the high-pressure line and discharges to the water sump below the minimum water level.

2. The combination according to claim 1, wherein the steam system includes a water separator tank having a connection to the system at an upper location of the tank so that high-pressure condensate water can accumulate therebelow within the tank, and said high-pressure line is tapped off the tank below the water level thereof.

3. The combination according to claim 1, wherein said water source line is connected to the high-pressure line near a downstream location thereof of that as disposed in heat exchange relationship to the sump water.

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