Sept. 21, 1965 F. H. RICHTERKESSING 3,207,391

TROUSER TOPPING APPARATUS AND ELECTRICAL CONTROL SYSTEM THEREFOR

Filed April 24, 1962 4 Sheets-Sheet 1

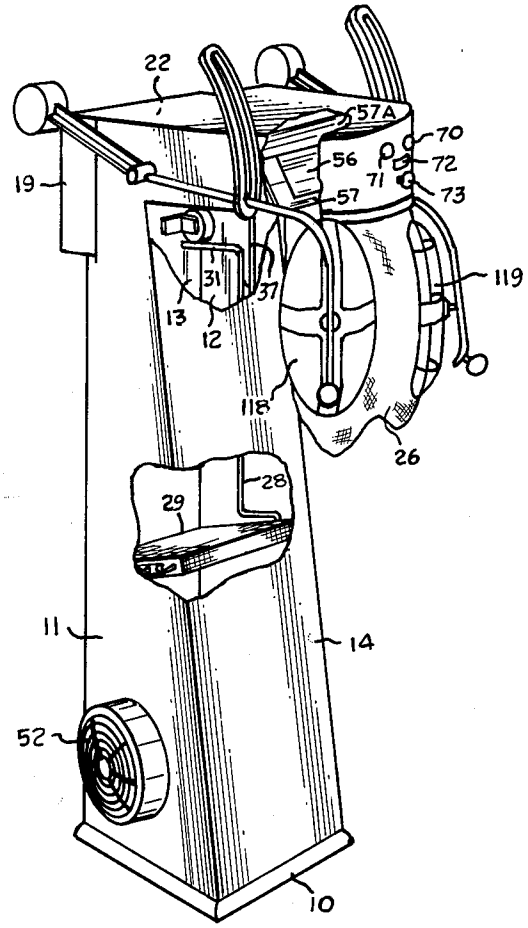


FIG. 1

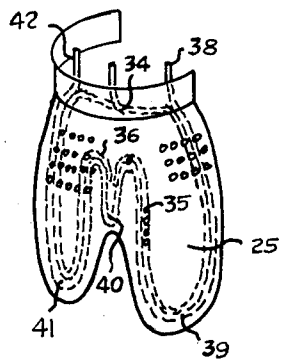


FIG. 7

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TROUSER TOPPING APPARATUS AND ELECTRICAL CONTROL SYSTEM THEREFOR

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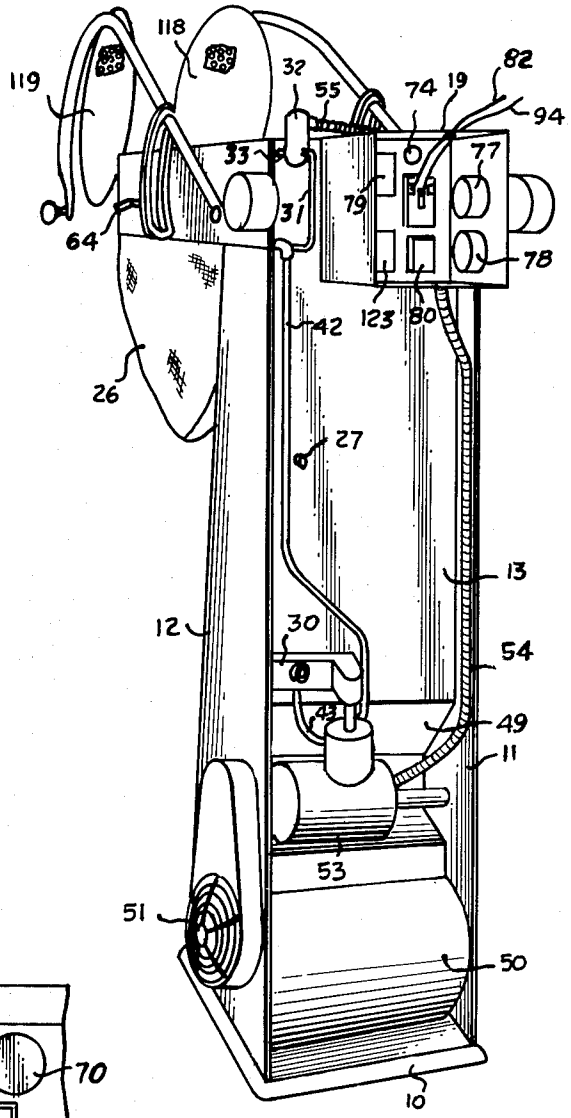


FIG. 2

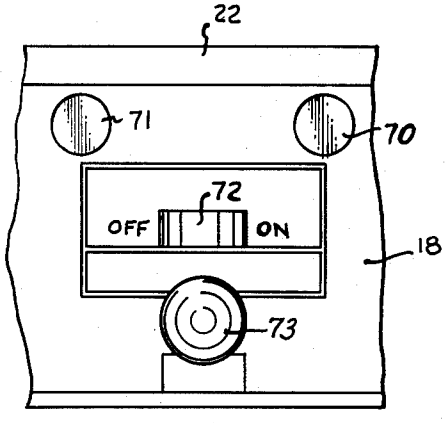


FIG. 8

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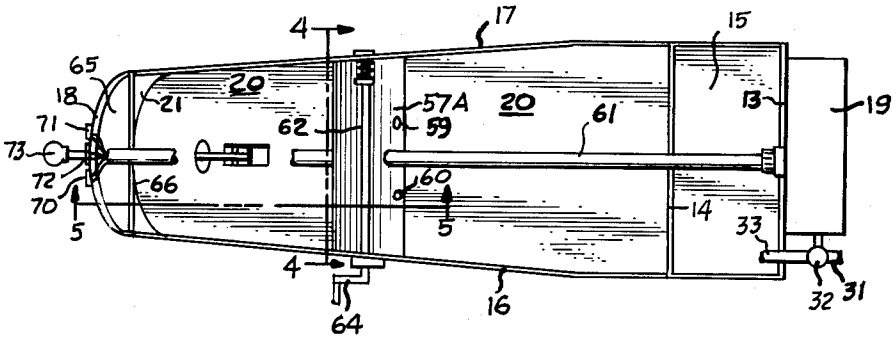


FIG. 3

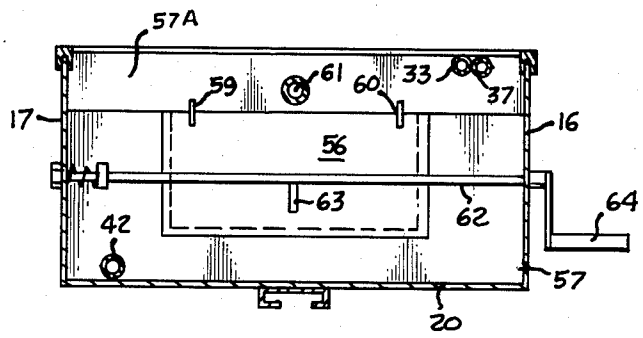


FIG. 4

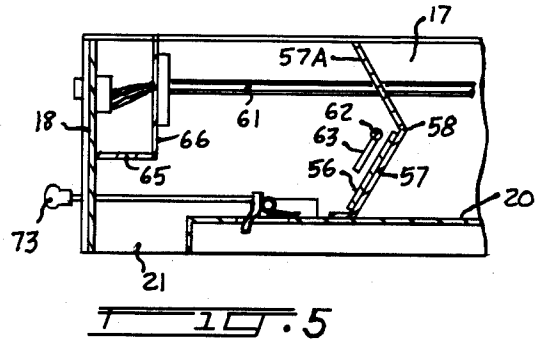


FIG. 5

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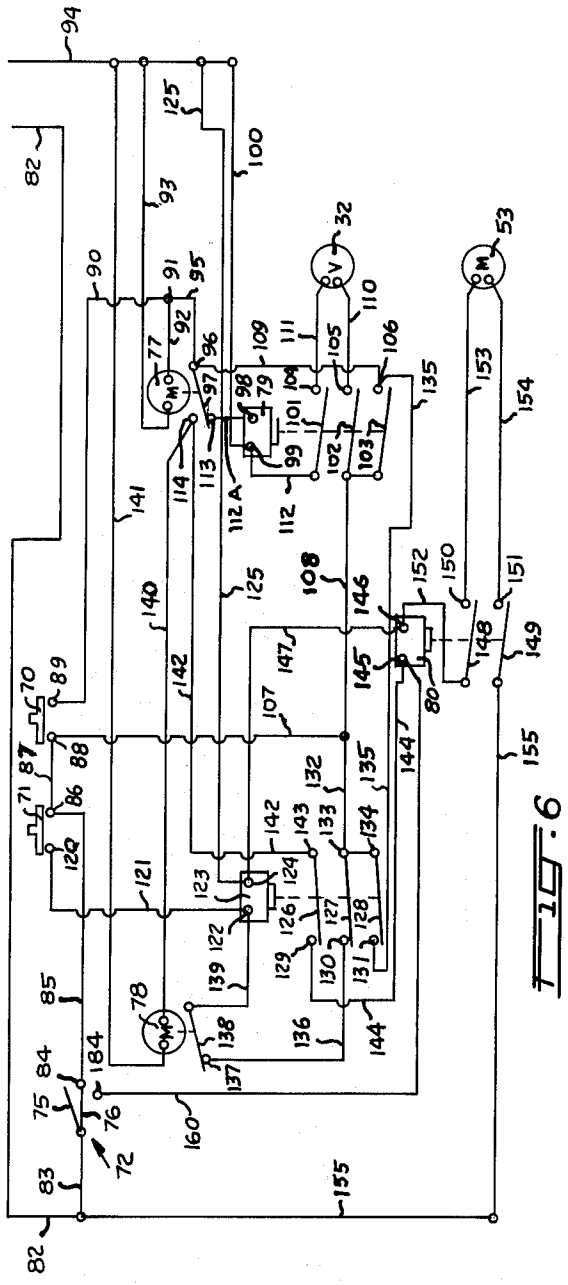


FIG. 6

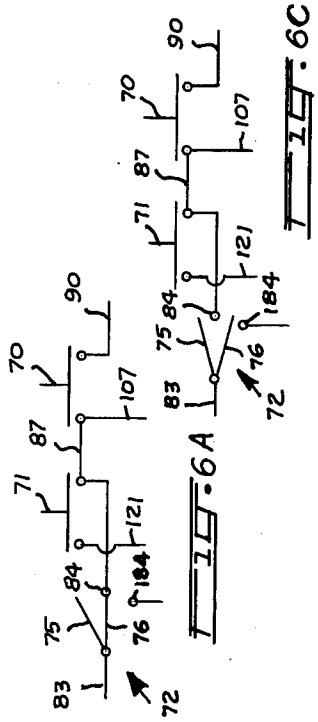


FIG. 6A

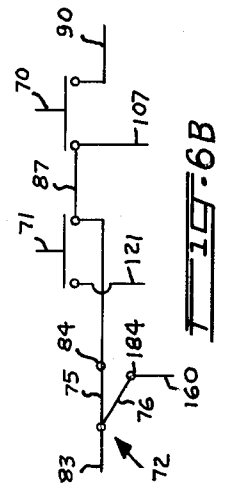


FIG. 6B

FIG. 6C

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United States Patent Office 3,207,391 Patented Sept. 21, 1965

3,207,391

TROUSER TOPPING APPARATUS AND ELECTRICAL CONTROL SYSTEM THEREFOR

Frank H. Richterkessing, Louisville, Ky., assignor to W. M. Cissell Manufacturing Company, Louisville, Ky., a corporation of Kentucky

Filed Apr. 24, 1962, Ser. No. 189,918
10 Claims. (Cl. 223—73)

This invention relates to trouser topping apparatus and more particularly to an electrical control system for the same.

During a normal day's operation the operator of a trouser topping apparatus may be called upon to process a wide variety of sizes of trousers; trousers which are pleated and trousers which have no pleats; trousers which have portions weakened by wear; and trousers of many varieties of fabric ranging from relatively fragile fabrics such as rayon acetates to relatively durable fabrics such as suede, chamois, or leather trimmed materials. Such processing includes not only certain manipulations of the trousers with respect to the apparatus, but also the supplying of steam and air to the trousers at appropriate times and in appropriate amounts. The supplying of these processing fluids preferably is selectively governed by an electrical control system under the direction of the operator who is required to exercise his judgment as to the processing requirements of the particular pair of trousers under treatment. Accordingly, a need exists for such a control system which will enable the operator to employ the machine under optimum processing conditions at all time. It is a purpose of this invention to satisfy that need.

An object of the invention is to provide a trouser topping apparatus for processing upon the same machine a wide variety of trousers.

Another object is to provide an electrical control system for governing the supply of processing fluids to a trouser topping apparatus and with a wide flexibility in its capabilities for supplying such fluids.

Another object is to provide an electrical control system for governing the supply of processing fluids to a trouser topping apparatus under an automatic program which may be cancelled by the operator at any time.

A further object is to provide an electrical control system for governing the supply of steam and air to a trouser topping apparatus including the optional supplying of preconditioning steam alone or concurrently with air; the supplying of conditioning steam followed by air; and the supplying of air alone.

Other objects and advantages will become more apparent as the description proceeds and when considered in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view, with portions broken away, of a trouser topping apparatus employing the invention.

FIG. 2 is a perspective view of the apparatus shown in FIG. 1 taken from the rear and with the cover of the electrical junction box removed and with wiring omitted.

FIG. 3 is a top plan view of the air duct portion of the housing with its top plate removed, and with parts broken away.

FIG. 4 is a sectional view taken on line 4—4 of FIG. 3 and to a larger scale.

FIG. 5 is a partial sectional view to a larger scale taken on line 5—5 of FIG. 3.

FIG. 6 is an across-the-line wiring diagram of the electrical circuit and showing the overriding switch in its normal and second position.

FIG. 6A is a detail view of a portion of the circuit with the overriding switch in its second position, but shown to a larger scale.

FIG. 6B is a view similar to FIG. 6A but with the overriding switch in its first position.

FIG. 6C is a view similar to FIG. 6A but with the overriding switch in its third position.

FIG. 7 is a perspective view of the metallic portion of the buck, and

FIG. 8 is a detail view to an enlarged scale showing a suitable arrangement and location of the operator-actuated controls on the air duct portion of the apparatus.

In accordance with the invention, a trouser topping apparatus with a housing and a buck supported upon that housing, is provided with an electrical control system for selectively governing the flow of conditioning steam and air from respective sources to the buck and for the purposes of finishing trousers supported upon that buck. The electrical control system includes first, second, and third circuits with corresponding first, second and third switches located for convenient visual and physical access for the operator, and in addition separate steam and air timers are arranged in certain circuits in order to secure greater flexibility of operation than could be obtained by only a single timer.

Referring first to FIGS. 1 and 2 a trouser topping apparatus of the type more fully disclosed in my co-pending application, Serial No. 184,627, filed March 12, 1962, and assigned to the same assignee as the present invention, includes a generally vertical hollow housing with a base **10** adapted to rest upon a floor and with parallel side walls **11** and **12**. A generally vertical back wall **13** and a sloping front wall **14** complete the vertical housing and provide a generally rectangular opening **15** (FIG. 3) at the upper end thereof. Suitably attached to the vertical portion of the housing is a generally horizontally extending air duct portion comprising a single sheet having a right hand side wall **16**, a left hand side wall **17**, and a curved front wall **18**. These side walls converge toward each other as best seen in FIG. 3, and the back wall **13** is extended to form the back wall of the air duct portion. Mounted upon the rear surface of the extending wall **13** is an electrical junction box **19** the contents of which will later be described

A flat floor plate **20** for the air duct extends forwardly from the upper edge of wall **14** and terminates adjacent the junction of side walls **16** and **17** with the curved front wall **18** thus to form a downwardly directed opening **21** through which heated air is to pass. In addition, a flat cover plate **22** is affixed to the top edges of the respective walls of the air duct and with a suitable gasket being interposed therebetween to confine steam and air against escape between the confronting parts.

As best seen in FIGS. 1 and 7, a buck and bag assembly is supported from the air duct front wall and extends downwardly therefrom. In general, the preferred buck used with this invention will include a bifurcated and perforated metallic member **25** having a convex outer surface conforming closely to the proper cut of the trousers to be finished and with a bag **26** having fluid-pervious padding (not shown) interposed between the bag and buck. This bag, which also is fluid-pervious, has an entrance mouth surrounding the opening **21** from the air duct. The buck and bag are adapted to receive a supply of conditioning steam under alternative presteaming and automatic control cycles of the present invention and to moisten thereby the trousers supported upon that buck and bag. In addition, the buck is adapted to be heated from a steam source independently of the moistening of the garment. Moreover, air supplied to the buck under the control arrangement of the present invention is heated by passage across a steam heater.

In general, when used with the present invention the steam system which is more fully disclosed and claimed in my copending application, Serial No. 180,069, filed

March 12, 1962, now Patent No. 3,171,575 and assigned to the same assignee as the present invention, includes an inlet pipe 27 (FIG. 2) entering the back wall of the housing and passing into a separator (not shown) mounted within that housing. From the lower end of the separator wet steam and condensate passes through a conduit 28 (FIG. 1) to the upper end of an inclined heater 29 across which all air moving into the air duct passes. Condensate from the heater passes to a collector 30 (FIG. 2) located at the rear of the housing. From the upper end of the separator one conduit 31 leads dry steam to a solenoid valve 32 from which a conduit 33, located within the air duct portion of the housing, directs such steam to a header 34 affixed in heat exchange relation to the metallic buck 25 as seen in FIG. 7. This header extends into a pair of perforated conduits 35 and 36 having spaced holes therein serving to direct the dry steam into the bag for the purpose of conditioning trousers emplaced on the bag and buck. A portion of this steam finds its way through the perforations of the buck, the steam and air-pervious padding of that buck, and to the exterior of the front of the bag as seen in FIG. 1. In like manner, the flow of air later to be described, takes a similar path.

From the upper end of the separator another conduit 37 leads dry steam for buck heating purposes to a buck heating conduit 38 which has loop portions 39, 40 and 41 connecting as a continuous conduit with the return conduit 42. This return conduit (FIG. 2) leads to the collector 30 by way of an interposed water leg 43.

Mounted adjacent the base of the housing is a blower 50 having end intakes 51 and 52 and driven by an electric motor 53 the control of which forms an important part of the present invention. Conductors housed in a cable 54 leading from the control box 19 connect with the motor, and other conductors housed in a cable 55 leading from that control box connect with the solenoid valve 32. Air moved upwardly in the housing by the blower passes above an inwardly offset wall 49 (FIG. 2) and across the heater 29, thence through the opening 15 at the top of the housing, through the air duct portion of the housing, downwardly through opening 21, and into the open mouth of bag 26. Since the heater is operable at all times, as is the heating of the buck, all air reaching the bag is in heated condition. As will be understood, the blower normally operates at constant speed and in order to provide the operator with a means for regulating pressure of air reaching the bag, a damper arrangement as best disclosed in said co-pending application Serial No. 184,627, is provided. This may conveniently include a damper 56 normally resting in closed position over a rectangular aperture in a lower partition section 57 extending transversely of the air duct, and with the lower partition section joined to an upper partition section 57A. The partition may be formed of a single sheet of metal bent into V-shape and with the apex 58 facing upstream and forming a recess on its downstream side against which the damper may be pivotally mounted with a knife edge bearing therewith. Suitable pins 59 and 60 support the damper for its pivotal movement. Suitable apertures in the partition receive the respective steam conduits 33, 37 and 42, as well as the tube 61, later to be described. In addition, suitable sealing means are provided in the top edges of all walls of the air duct and partition to confine steam and air under the top plate 22 (FIG. 1). A rotatable shaft 62 also is mounted in the side walls of the air duct and with its axis generally parallel to the pivoted axis of the damper and downstream therefrom. Projecting from the shaft and rigidly fixed thereto is an abutment 63 against which the damper is raised into contact under pressure supplied by the blower. A crank 64 is attached to the shaft externally of side wall 16 for regulating the maximum opening of the damper, and thus the pressure of air downstream of that opened damper as such air passes opening 21 (FIGS. 3 and 5). Mounted above this opening 21 is a chamber having an imperforate floor 65 and a rear wall 66 through which the tube 61 passes in sealed relation, with the resultant that when top cover 22 is sealed in place, the interior of the chamber is unaffected by the hot air and steam passing through opening 21. Suitably mounted within this chamber on the inside surface of front wall 18 are the contacts of a first switch 70, a second switch 71, and an overriding third switch 72, the respective locations of which on the outside surface of front wall 18 are best shown in FIG. 8 and which locations are chosen for ready visual and manual access to the operator of the machine. In addition, a manually operable knob 73, the function of which is disclosed and claimed in said co-pending application, Serial No. 184,627, but which forms no part of the present invention, also is located on the front wall 18.

All electrical connections from the respective control switches 70, 71 and 72 are suitably housed in tube 61 and extend into the control box 19 through the exit end 74 of that tube, as seen in FIG. 2. From this point the connections extend to the several timers, relays, line terminals, motor, and solenoid valve as best shown in FIG. 6 and to which reference now is made. The first or presteam switch 70 and the second or automatic cycle switch 71 preferably comprise normally open microswitches while the third or manual air switch 72 comprises a switch having dual blades 75 and 76 and being movable between a first position, a second position, and a third position depending upon the action taken by the operator of the machine. The switch 72 moreover, is biased to occupy normally the second position as indicated in FIGS. 6 and 6A. The steam timer 77 and the air timer 78 may be of any conventional construction and having means for adjusting their timing period within a range of from 0 to 60 seconds. Normally, the steam timer is set for a period of about 4 seconds and the air timer is set for a period of about 20 seconds of operation. Conventional RBM relays 79 and 123 are actuated respectively at the conclusion of the respective timing periods of timers 77 and 78, thus to control the circuits to the respective solenoid valve 32 and the motor 53. A conventional automatic relay 80 also is provided for carrying out certain control functions later to appear.

With the foregoing general description of the trouser topping apparatus in mind, reference now is made to the detailed electrical circuit shown in FIG. 6 and which represents the situation obtaining at the time a garment is located upon the buck in readiness for finishing. Assuming first that the garment is of the pleated type requiring presteaming, the operator then pushes the exposed button of normally open switch 70 whereupon a starting circuit is made from supply line 82, conductor 83, blade 76 of the third switch 72, terminal 84, conductor 85, terminal 86, conductor 87, terminal 88, closed switch 70, terminal 89, conductor 90, terminal 91, conductor 92, winding of motor of timer 77 and conductor 93 to return line 94. At the same time a circuit is made from terminal 91, conductor 95, terminal 96, timer contact 97, terminal 113, conductor 112A, terminal 98 of relay 79, terminal 99 of that relay and conductor 100 to return line 94 whereupon the relay 79 is energized. Energization of that relay moves the several relay arms 101, 102 and 103 into contact with the respective relay terminals 104, 105 and 106. Raising of arm 103 against terminal 106 completes a retaining circuit for relay 79 from terminal 88, conductors 107 and 108, arm 103, terminal 106, conductor 109, terminal 96, contact 97, terminal 113, conductor 112A, relay 79, terminal 99 and conductor 100 to return line 94 whereupon relay 79 remains energized after switch 70 returns to its normally open position. As this occurs, the running circuit of the steam timer, herein called the first circuit, is established from terminal 88, conductors 107 and 108, relay arm 103, terminal 106, conductor 109, terminal 96, conductor 95, terminal 91,

conductor 92, timer 77 and conductor 93 to return line 94 and this circuit is maintained throughout the allotted presteaming period even though the first switch 70 has returned to its normally open position. Simultaneously with the establishment of this first circuit, a branch circuit is made through relay arm 102, terminal 105, conductor 110, the coil of solenoid valve 32, conductor 111, terminal 104, relay arm 101, conductor 112, terminal 99, and conductor 100 to return line 94. Opening of valve 32 then permits dry steam to pass into conduit 33 leading into the buck and to condition the garment. Upon expiration of the period for which steam timer 77 is set, the timer then moves its contact 97 from terminal 113 to terminal 114, but since terminal 114 is not energized, no other circuits can be made. Moreover, upon movement of the timer contact 97, the relay 79 is de-energized and the first circuit to the timer 77 is interrupted.

The above described presteaming is customarily employed when the pleats of trousers require softening before being laid, as by means of the pleat setters 118 and 119 shown in FIGS. 1 and 2 and more fully described in co-pending application, Serial No. 190,008, filed April 25, 1962, and assigned to the same assignee as the present invention.

When, therefore, the pleats are softened, the operator then lays the pleats, moves the pleat setter to clamping position, and then pushes the button of the second or automatic switch 71. When this switch first closes, a starting circuit is made from supply line 82 and conductor 83 through blade 76 of switch 72, terminal 84, conductor 85, terminal 86, closed switch 71, terminal 120, conductor 121, terminal 122 of the automatic relay 123, through the relay coil and its terminal 124, and conductor 125 to return line 94. As the coil of relay 123 is thus energized, the several relay arms 126, 127 and 128 close upon their respective terminals 129, 130 and 131.

As this occurs, a running circuit for the steam timer again is established, this time from terminal 88, conductor 107, conductor 132, terminal 133, terminal 134, relay arm 128, terminal 131, conductor 135, terminal 106, conductor 109, terminal 96, conductors 95 and 92 winding of motor of timer 77, and conductor 93 to return line 94. Simultaneously, a branch circuit is made from terminal 133, relay arm 127, terminal 130, conductor 136, terminal 137, contact 138 of air timer 78, conductor 139, terminal 122, through coil of relay 123, relay terminal 124, and conductor 125 to return line 94; thus holding relay 123 energized when the second or automatic cycle switch 71 returns to its normally open position. Moreover, upon establishing of the described circuit for energizing the motor of steam timer 77, a branch circuit also is made from terminal 88, through conductors 107 and 132, terminals 133 and 134, relay arm 128, terminal 131, conductor 135, terminal 106, conductor 109, terminal 96, timer contact 97, terminal 113, conductor 112A, terminal 98, relay 79, terminal 99, conductor 100, to return line 94. As the coil of relay 79 is thus energized, the several relay arms 101, 102 and 103 close upon their respective terminals 104, 105 and 106. Raising of relay arms 102 and 103 closes a circuit through relay arm 102, terminal 105, conductor 110, coil of valve 32, conductor 111, relay arm 101, conductor 112, terminal 99 and conductor 100 to return line 94. This circuit again causes steam to be supplied to the previously moistened trousers now being held upon the buck under the pleat setters. This steam will be supplied until timer 77 moves its contact from terminal 113 to terminal 114 and at which time the relay 79 becomes de-energized.

Under the described circumstances, shifting of timer contact 97 to terminal 114 now establishes an air timer circuit, herein called the second circuit, and including the circuit from conductor 109, terminal 96, contact 97, terminal 114, conductor 140, winding of motor of air timer 78 and conductor 141 to return line 94. At the same time a branch circuit is made from terminal 114, conductor 142, terminal 143, relay arm 126, terminal 129, conductor 144, terminal 145 of relay 80, the coil of that relay, relay terminal 146, conductor 147, terminal 124 of the automatic relay, terminal 146, conductor 147, terminal 124 of the automatic relay, and conductor 125 to return line 94. This circuit closes the blower relay and causes its arms 148 and 149 to close upon the respective terminals 150 and 151. As this occurs, a branch circuit is made from terminal 146 of the fan relay 80, conductor 152, relay arm 148, terminal 150, conductor 153, the winding of blower motor 53, conductor 154, terminal 151, relay arm 149, and conductor 155 to line 82. This energization of the motor 53 causes heated air to be forced into the buck and bag assembly thus to dry and to shape the previously steam conditioned trousers.

At the conclusion of the allotted time, the air timer 78 then moves its contact 138 from terminal 137 thus interrupting the circuit through the automatic relay and causing its arm 126, 127 and 128 to move to the position shown in FIG. 6. As this occurs, the second circuit to the air timer is de-energized, as is the branch circuit to the blower relay 80; thus causing that relay to open and to de-energize the blower motor. However, when this occurs the trousers will have been finished and the operator moves the same from the buck and prepares for the processing of the next garment.

As known to those skilled in the art, from time to time a maladjustment of the trousers on the buck, or a shifting of pleats of the trousers after processing has started, or other factors, may dictate that the processing be interrupted. It is a feature of the present invention that the program of processing may be cancelled at any time. As indicated by FIGS. 6C and 8, the third switch 72 is so mounted and constructed that by pushing the same to its third position indicated as OFF in FIG. 8 and schematically shown in FIG. 6C, both of its blades 75 and 76 are removed from the corresponding terminals 84 and 184 at which time all circuits through the system are overridden and de-energized.

The invention further provides for situations encountered in operation wherein it is desirable to dry the bag and its padding preparatory to processing a pair of trousers, or wherein it is desirable to supply heated air continuously even while steaming during the presteaming or the automatic cycles above described. Assuming then, that the operator wishes to dry the bag, he moves the third or manual air switch 72 to the ON position in FIG. 8 corresponding to the first position as shown in FIG. 6B. The switch 72 may, if desired, be equipped with a detent to hold it in this ON position without requiring the operator to retain manual pressure therein. Conversely, since the movement of this switch to its third or OFF position instantly overrides and de-energizes the existing circuits, and since the switch is biased toward its normal or second position of FIG. 6A, there is no requirement for a detent to hold it in its OFF position.

Upon moving switch 72 to its manual air supplying position of FIG. 6B in order to dry the bag, and, with switches 70 and 71 both open since no steam is desired, a circuit, herein called the third circuit, is made from line 82, conductor 83, blade 76, terminal 184, conductor 160, terminal 145 of blower relay 80, the relay coil, terminal 146, conductor 147, terminal 124 of the automatic relay, and conductor 125 to return line 94. This circuit is maintained until the operator sees fit to move switch 72 back to its normal or second position. As relay 80 is thus energized, its arms close upon terminals 150 and 151, whereupon a circuit is made from conductor 155, relay arm 149, terminal 151, conductor 154, winding of blower motor 53, condctor 153, terminal 150, relay arm 148, conductor 152, terminal 146, conductor 147, terminal 124, and conductor 125 to return line 94. Normally, this arrangement is employed to accelerate the heating of the apparatus as by lowering the pleat setters into engagement with

the padded buck and then after establishing the air circulation, permitting it to continue for about one minute. The hot air being forced into the buck and bag heats all metallic parts of the structure and serves to dry the fabric portions of the bag and buck padding.

In like manner, when certain types of trousers such as suede, chamois or leather trimmed trousers are to be finished, the operator from experience will realize that full air pressure is desirable for holding the trousers taut during the steaming operation, and thus will move the third switch **72** to its first position as seen in FIG. 6B before pressing the button of the first switch **70** for a presteaming operation or the button of the second switch **71** for the automatic cycle operation. As will be apparent, the operation of the steam timer **77** as described with respect to the circuits established by pushing of switch **70** will in no way be influenced by the fact that switch blade **76** is simultaneously bridging terminal **184** and holding blower relay **80** in energized condition. Similarly, the operation of the steam timer followed by operation of the air timer as described with respect to the circuits established by pushing of switch **71** will not be changed by the fact that switch blade **76** is simultaneously bridging terminal **184** and holding blower relay **80** in energized condition. In this situation, relay **80** is energized from the time steam timer **77** starts to operate, and when its contact shifts to terminal **114** to cause air timer **78** to operate, the additional energizing circuit to the blower relay merely is superimposed on the circuit already in effect.

Having thus described the invention, it will be seen that the operator is provided with a variety of control means which he can readily employ in processing a wide variety of garments on the same trouser topping apparatus. While in accordance with the patent statutes I have shown what at present is considered to be the preferred embodiment of my invention, it will be obvious that various changes and modifications may be made therein without departing from my invention and I, therefore, aim, in the appended claims, to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A trouser topping apparatus having a housing, a buck supported upon said housing, means including a solenoid valve for supplying conditioning steam to said buck, means including a motor and a blower driven thereby for supplying air to said buck; and an electrical system for selectively controlling the energizing of said valve and said motor;

said system comprising a steam timer and a steam relay controlled by said timer and operable to open and close said valve,

a normally open steam timer switch for controlling the starting of said timer,

an overriding switch movable between first, second and third positions, and

a blower relay controlled by said overriding switch and operable to start said motor,

said overriding switch when in its first position establishing circuits to said timer switch and to said blower relay, when in its second position establishing a circuit only to said timer switch, and when in its third position interrupting the circuits to each of said timer switch and said blower relay.

2. Apparatus as defined in claim **1** including means for heating air supplied to said buck by said blower whereby said buck may be dried and heated when said overriding switch occupies its said first position and said timer switch is open.

3. Apparatus as defined in claim **1** wherein said overriding switch normally occupies its said second position, thereby to require a positive action by the operator in order to supply steam and air simultaneously to said buck.

4. Apparatus as defined in claim **1** including means for establishing the energizing circuit to said steam timer through the closed steam relay following the temporary closing of said steam timer switch thereby to permit said steam timer switch to reopen and to leave said steam relay under control of said steam timer.

5. Apparatus as defined in claim **1** wherein said steam timer includes an adjustable setting thereby to vary selectively the period during which steam is supplied to said buck.

6. A trouser topping apparatus having a housing, a buck supported upon said housing, means including a solenoid valve for supplying conditioning steam to said buck, means including a motor and a blower driven thereby for supplying air to said buck, and an electrical system for selectively controlling the energization of said valve and said motor; said system including, a steam timer and a separate air timer, means for energizing said solenoid valve and supplying steam to said buck as said steam timer begins to operate, and then energizing said air timer and motor and supplying air to said buck after said steam timer ceases its operation, means for selectively energizing said motor during the energization of said solenoid valve thereby to provide a simultaneous flow of air and steam to said buck, and means including said steam timer and said solenoid valve and providing an automatically terminated adjustable timing period for energizing said solenoid valve independently of subsequent operation of said air timer and said motor, whereby a presteaming operation under control exclusively of said steam timer is conducted without requiring the presence of the operator of said apparatus in order to interrupt the presteaming operation.

7. Apparatus as defined in claim **6** a hand-operated switch including for selectively interrupting the operation of each of said timers.

8. A trouser topping apparatus having a housing, a buck supported upon said housing, means including a solenoid valve for supplying conditioning steam to said buck, means including a motor and a blower driven thereby for supplying air to said buck, and in electrical system for selectively controlling the energization of said valve and said motor;

said system comprising a steam timer and a steam relay controlled by said steam timer and operable to open and close said valve,

a normally open steam timer switch for controlling the starting of said steam timer during a presteaming operation,

an automatic relay and a blower relay,

a normally open automatic cycle switch for controlling the closing of said automatic relay during a combined steaming and drying operation,

said automatic relay upon closing serving to establish a circuit through said steam timer and said steam relay thereby to supply steam to said buck under control of said steam timer,

an air timer having a normally open circuit thereto,

said steam timer being adapted to close said open circuit and to start said air timer simultaneously with the opening of said steam relay,

means in said closed circuit to said air timer for energizing said blower relay thereby to supply air to said buck during operation of said air timer, and

an overriding switch movable between first, second and third positions,

said overriding switch when in its first position establishing circuits to said steam timer and automatic cycle switches and to said blower relay, when in its second position establishing circuits only to said steam timer and automatic cycle switches and when in its third position interrupting circuits to said steam timer and automatic cycle switches and to said blower relay.

9. Apparatus as defined in claim **8** wherein each of said steam and air timers include an adjustable set-

ting thereby to vary the periods during which steam and air may be supplied to said buck.

10. In a trouser topping apparatus having a housing and a buck supported on said housing, means for automatically presteaming for a predetermined period of time a pair of trousers positioned on said buck prior to conducting an automatic secondary steam and hot air operation on the trousers on the buck and comprising,

an electrical system including, a solenoid valve for supplying conditioning steam to said buck, a steam timer having an automatically terminated adjustable timing period, a steam relay connected to and controlled by said timer, and operable to open and close said valve,

and a normally open steam timer switch for controlling the starting of said steam timer at the beginning of a presteaming operation and for energizing said relay as said switch is closed, said switch being adapted to reopen after said relay is energized, and said relay including a retaining circuit causing said relay to hold said valve open during the simultaneous energization of said timer and said relay following the return of said switch to its open position, whereby a presteaming operation under control exclusively of said steam timer is conducted without requiring further action on the part of the operator of said apparatus.

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