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3,103,755

APPARATUS FOR PROCESSING SHEET MATERIALS

Filed March 6, 1962

3 Sheets-Sheet 1

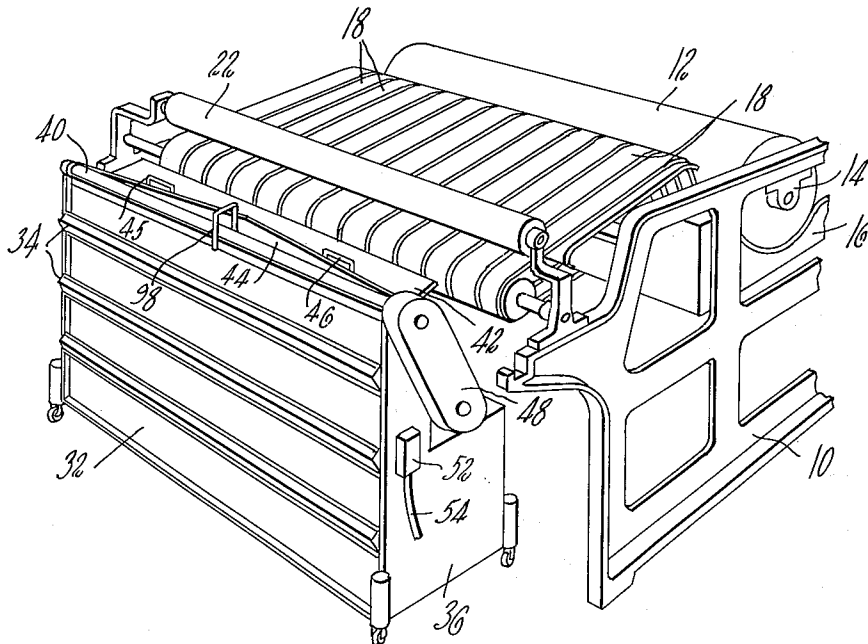


Fig. 1.

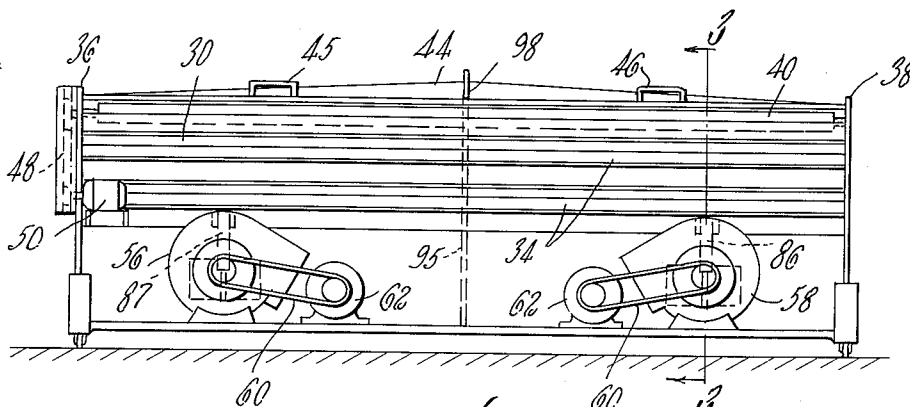


Fig. 2.

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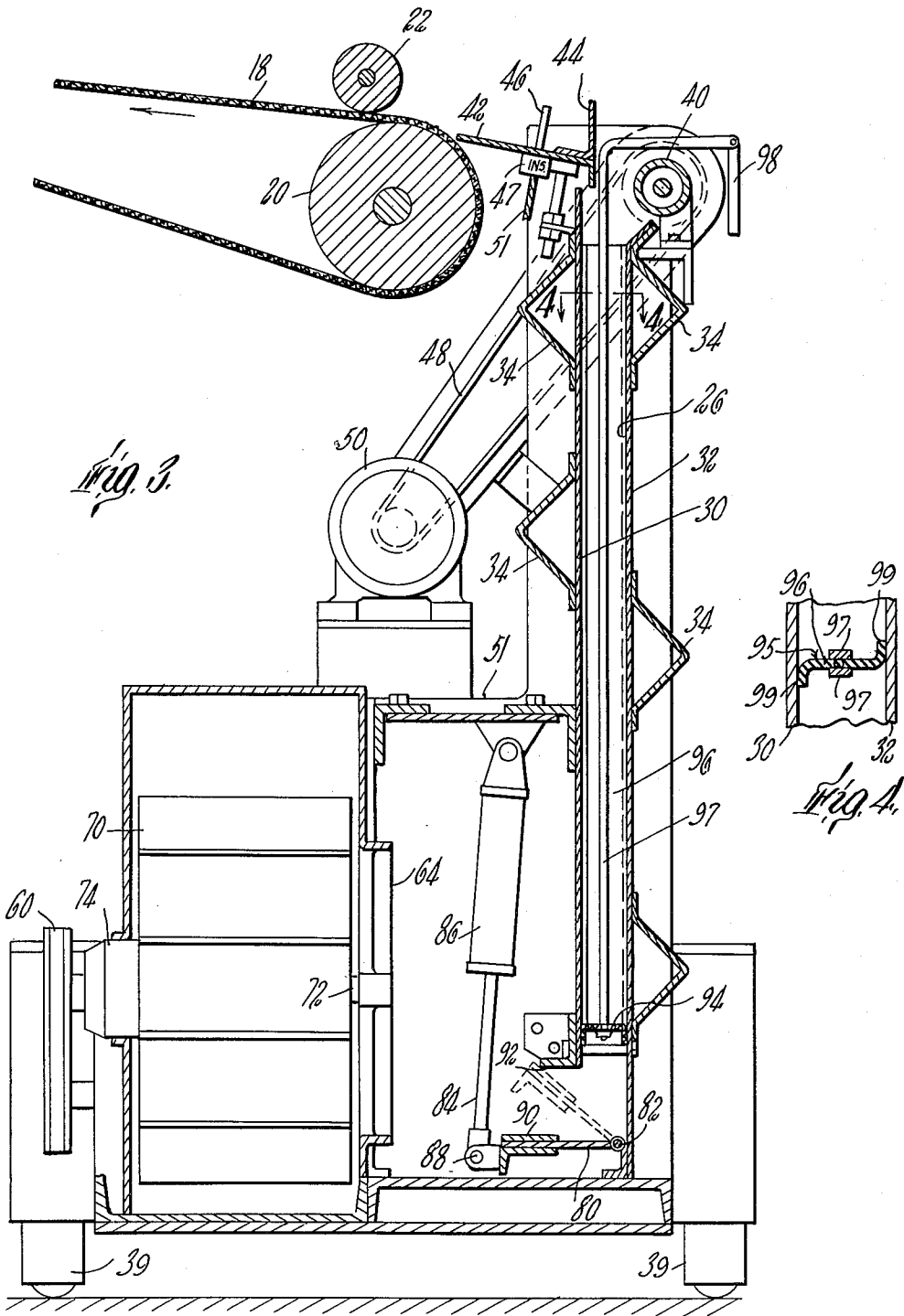
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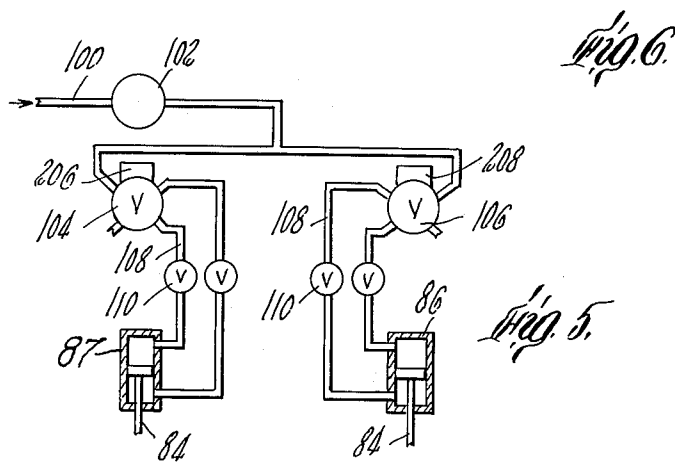
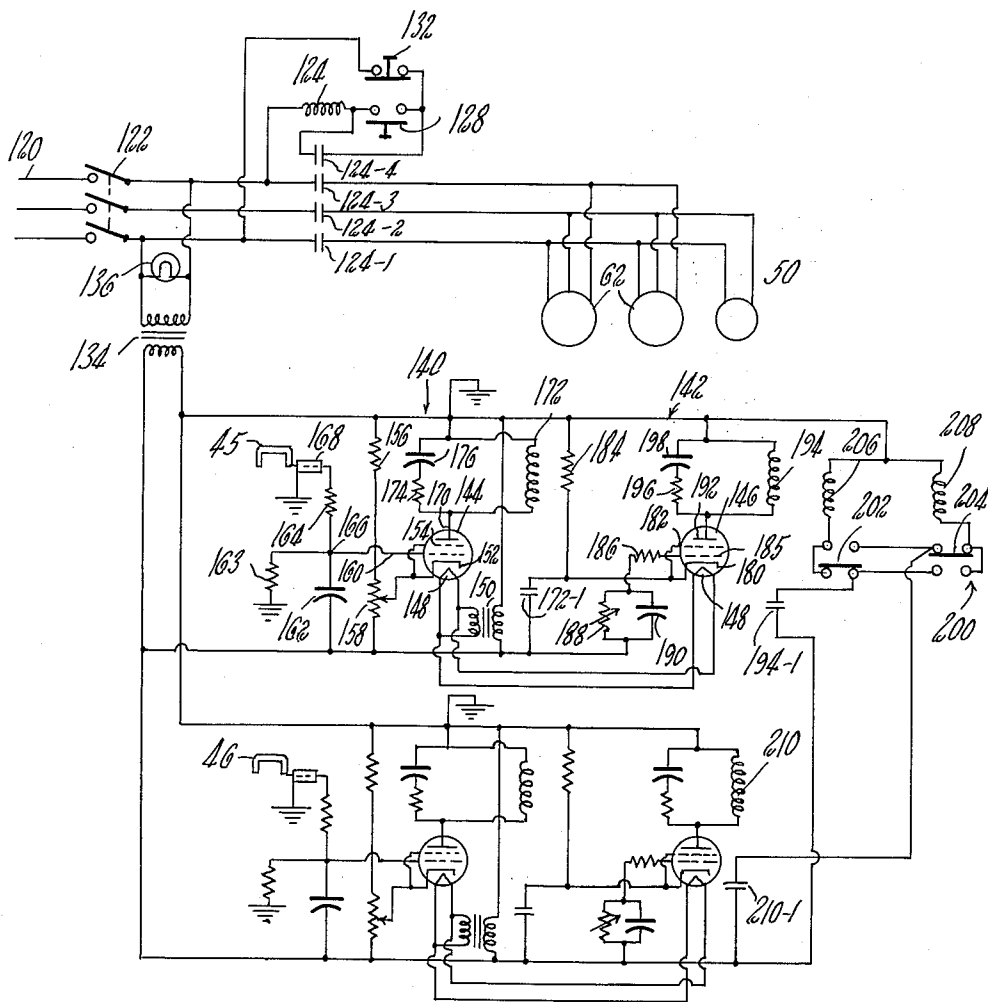
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APPARATUS FOR PROCESSING SHEET MATERIALS

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This invention relates to apparatus for processing sheet material and more particularly to sheet material sensing apparatus and actuating mechanisms useful for example in conjunction with fabric straightening apparatus for treating individual pieces of textile fabrics during a laundry operation.

In the ironing of fabrics such as sheets, towels and tablecloths those fabrics must be free of wrinkles, creases or folds prior to the ironing operation. Conventionally, one or more operators manipulate the fabrics to continuously smooth them prior to and as they are being drawn into the mangle for the ironing operation. This type of fabric manipulation requires skilled operators and limits the speed at which the ironing operation can be performed. In efforts to alleviate those problems various types of devices have been devised to remove the wrinkles and folds from the fabrics automatically or semi-automatically and to straighten the fabrics as required for proper ironing. A device of this type is disclosed by Bazelmans, in U.S. Patent No. 2,976,625. That device generates a moving column of air to stretch and shake the fabric in a wrinkle and fold removing operation. As the column of air provided by the device is continuously moving it is difficult for the operator to properly position fabrics in the ironer in the initial instance.

Accordingly, it is a specific object of the invention to provide new and improved apparatus for the treatment of textile fabrics immediately prior to an ironing operation in a commercial laundry.

A more general object of the invention is to provide new and improved sensing and control apparatus useful in the processing of sheet material.

Another object of the invention is to provide in an apparatus for straightening sheet fabric articles novel control apparatus which enables the operator easily to position the article properly relative to the processing apparatus and which, in response to the proper positioning of the article, actuates the straightening apparatus.

Another object of the invention is to provide improved apparatus for processing sheet fabric articles which provides a controlled flow of air to produce a straightening and smoothing action on fabrics during their processing as a function of the location of the fabrics relative to the associated processing apparatus.

A further object of the invention is to provide novel and improved moisture responsive electronic control circuitry.

Still another object of the invention is to provide novel and improved apparatus for processing moist sheet materials including moisture responsive control apparatus for supervising a portion of the sheet material processing cycle.

Still another object of the invention is to provide improved apparatus for straightening fabrics immediately

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adjacent and in conjunction with a commercial ironing apparatus whereby fabrics are suspended in a flow of air to straighten and remove wrinkles from the fabric incorporating novel electronic circuitry for controlling the application of the flow of air to the fabrics in response to fabric sensing mechanisms.

In accordance with a preferred embodiment of the invention there is provided fabric straightening apparatus useful in combination with a commercial laundry mangle for ironing fabrics. The apparatus includes a long, narrow, vertically disposed chamber including a pair of exhaust fans arranged to induce a flow of air down through the chamber which draws a fabric into the chamber prior to ironing in a stretching and shaping operation so that wrinkles and folds are removed therefrom. Adjacent the top of the chamber there is provided a fabric sensor responsive to moisture in the fabric and in the lower portion of the chamber there is provided a main valve structure which opens and closes the chamber to the flow of air induced by the operation of the fans. This valve is interlocked with the fabric sensor and is opened to permit flow of air through the chamber only in response to the detection of the presence of a moist fabric that is being presented to the mangle for ironing. Electronic circuitry connected to the sensor is operative to impose a variable time delay and after that variable time delay the circuitry operates the valve to permit flow of air through the chamber so that the fabric to be ironed is drawn into the chamber in the straightening operation. This electronic circuitry includes a phase sensitive stage and a time delay stage, each stage including a control element having an input circuit that controls an output circuit. The fabric sensor is connected to the input circuit of the phase sensitive stage through a phase shift circuit which produces a phase shift of the signal applied to that circuit when a moist fabric is sensed effective to change the state of conduction of its output circuit. This change is coupled to the input circuit of the time delay stage control element and, after a time delay imposed by a resistance capacitance network, the state of conduction of its output circuit is also changed and operates the main valve structure to permit air flow through the chamber. The apparatus is arranged for single lane operation with large articles such as sheets and for double lane operation with smaller articles such as towels, table tops, etc. Among the further features of the apparatus, a fabric feeding roll provided adjacent the upper chamber assists in the positioning of the fabric over the top of the chamber so that it will be drawn into the chamber easily for the desired straightening action; and a selective sensing arrangement adjustable for various sizes of fabrics that are to be processed. This embodiment of the invention is a compact unit which may be easily and quickly positioned in proper relation to the commercial mangle and acts on the fabrics in a controlled manner to straighten them in an efficient manner. The apparatus thus facilitates the necessary straightening operations and reduces the amount of manual labor heretofore involved in the feeding of the fabrics to the mangle.

Other objects, features and advantages of the invention will be seen as the following description of a preferred embodiment thereof progresses in conjunction with the drawings, in which:

FIG. 1 is a perspective view of sheet fabric processing

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apparatus constructed in accordance with principles of the invention positioned adjacent a commercial laundry mangle;

FIG. 2 is a rear elevational view of the sheet fabric processing apparatus of FIG. 1;

FIG. 3 is a sectional view of the sheet fabric processing apparatus constructed in accordance with principles of the invention taken along the line 3—3 of FIG. 2;

FIG. 4 is a sectional view of the chamber and removable barrier of the sheet processing apparatus taken along the line 4—4 of FIG. 3;

FIG. 5 is a schematic diagram of the pneumatic control circuitry employed in the apparatus illustrated in FIGS. 1—3; and

FIG. 6 is a schematic diagram of the electrical control circuitry employed in the embodiment of the invention illustrated in FIGS. 1—3.

With reference to FIG. 1 there is shown a commercial laundry mangle having side frames 10 which support a series of ironing rollers 12 (only one of which is shown) in bearings 14. Immediately below the rollers is a steam chest 16 and interposed between the rollers and the steam chest are input or feed belts 18 which are trained around an input roll 20 and are driven to carry fabric articles such as sheets, towels, tablecloths, etc. between the ironer rollers and the steam chest for an ironing operation. Disposed immediately above the feed belts 18 is a duffer or finger roll 22 which cooperates with those feed belts to grasp initially and retain the article to be fed to the ironer in engagement with the feed belts. In operation one or two operators (depending on the size of the article) will pick up the article to be ironed and place it in the nip between the duffer roll and the feed belts so that it will be carried by the feed belts past the several ironer rollers for the ironing process.

Mounted in front of the mangle is a fabric straightening apparatus which removes wrinkles and folds from the articles as they are being fed to the mangle. This apparatus includes a vertical chamber or well 26 into which the fabric is drawn under the influence of a moving stream of air. The chamber 26 includes two vertical side walls 30, 32 having smooth interior surfaces and to the outside surfaces of which are secured at spaced intervals longitudinally extending reinforcing angles 34. The end walls 36, 38 cooperate with the side walls to define the relatively narrow vertical chamber or well. The assembly is supported on leveling mechanisms 39 which enable accurate alignment with the mangle.

As better indicated in FIG. 3 at the top of the chamber on the outer side thereof a feed roll 40 is mounted and on the opposite or inner side there is supported a feed surface 42 to which is secured an electrically grounded vertical guide wall 44 and two fabric sensors 45, 46 which are electrically isolated from the support structure by insulators 47. A belt or other suitable drive mechanism 48 is coupled between the feed roll 40 and a drive motor 50 mounted on a support structure 51 that extends to the rear of the vertical chamber 26. Control circuitry is connected to the apparatus via a junction box 52 and cable 54 (shown in FIG. 1). Mounted on the rear surface of the structure as best shown in FIG. 2 are two turbine fans 56, 58, each of which is coupled by means of a conventional drive mechanism 60 to an electric motor 62. The support structure 51 provides a path for air flow from the base of the chamber 26 to the fan input baffle vane structure 64.

As indicated in FIG. 3, each fan includes an impeller 70 which is mounted for rotation on a shaft 72 which is supported by an inboard bearing in the baffle structure 64 and a main outboard bearing 74.

Communication between the vertical chamber 26 and each fan is controlled by a pair of valve members 80, each of which is pivotally secured along one edge to the base of outer wall 32 by pins 82. The piston rod 84 of a pneumatic control cylinder 86, 87 is secured to the oppo-

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site edge of each valve plate 80 through a coupling 88. Each valve plate has a seating surface 90 which seats against the longitudinally extending valve seat 92 when the valve plate 80 is raised by the piston 86 to the position indicated by the dotted lines in FIG. 3, and in that position air flow through chamber 26 under the influence of the fans is blocked. At the bottom of chamber 26, immediately above the valve plate 80, a coarse screen 94 is positioned which catches lint and similar debris, preventing flow of that material through the fans.

As indicated best in FIG. 4, the chamber 26 may be divided by a removable vertical barrier 95 in the form of a flexible strip 96 of rubber or other suitable material with reinforcing strips 97 on either side thereof. This barrier is positioned in the center of the chamber with a foot portion secured in a seat member between the screens 94. It is then rotated by handle 98 so that the flexible edges 99 of the barrier engage the smooth interior surfaces of the chamber in sealing relation so that two similar air flow systems are provided which may be separately controlled.

The pneumatic system which controls the two cylinders 86, 87 is shown in FIG. 5. An input line 100 having suitable conventional filters, regulators and lubricators generally indicated by the circle symbol 102 is connected to two solenoid operated four-way valves 104, 106. The output lines from the valve 108 are connected through flow control valves 110 to the upper and lower ends of the pneumatic cylinders. Thus the solenoid controlled valves 104, 106 raise and lower the valve plates 80 so that flow of air through the vertical chambers may be controlled.

A schematic diagram illustrating the control circuitry employed in the preferred embodiment of the invention is shown in FIG. 6. In this circuitry a 220-volt three phase A.C. power is applied on lines 120 via a main control switch 122 through line contacts 124-1, 124-2 and 124-3 controlled by contactor coil 124 to operate the two three-phase fan motors 62 and the single phase roll motor 50. The control circuitry for the contactor 124 includes a start switch 128 which has holding contacts 124-4 connected in parallel therewith and a stop switch 132. By closing the start switch 128 coil 124 is energized and closes line contacts 124-1, 124-2 and 124-3 and holding contact 124-4. With the closing of contact 124-4, indicating the circuit is established, a holding circuit is completed across the switch 128 so that coil 124 will remain energized independently of the position of the switch 128. The motors may be de-energized by operating the stop switch 132 which de-energizes the coil 124 and opens the line and holding contacts.

Control circuitry power is taken from two phases of the three-phase power line 120 via an isolation transformer 134 which steps down the voltage from 220 volts to 110 volts. Connected across the input terminal of the isolation transformer is an indicator lamp 136. The 110 volt power is applied to two similar control circuits, one associated with the fabric sensing element 45 and the other associated with the fabric sensing element 46. As the two circuits are identical, only the circuit associated with sensor 45 will be described in detail. That control circuit includes an amplifier stage 140 which provides a signal in response to the sensing of a fabric article by the sensor 45, and a relay control stage 142 which operates a valve control relay after a time delay imposed by the circuitry. Each stage includes a type 2D21 thyatron 144, 146 respectively. The filaments 148 of the thyatrons are connected via a filament transformer 150 to the 110 volt line. The cathode 152 and the screen grid 154 of the amplifier stage thyatron 144 are connected across that line by means of a voltage divider network including a fixed resistor 156 and a potentiometer 158 which provides a sensitivity adjustment. The control grid 160 of the amplifier stage thyatron is connected to a phase shifting network which includes a 4000 micro-microfarad capacitor 162, a ten megohm resistor

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163 and a one megohm resistor 164. These three elements are connected to the control grid via a common junction 166. The resistor 164 is connected through a shielded cable 168 to the fabric sensing element 45. The anode 170 of the amplifier stage thyatron is connected to an output circuit which includes a relay coil 172 having resistor 174 and capacitor 176 connected in series across the relay coil.

The relay control stage thyatron 146 has its cathode 180 and screen grid 182 connected via a resistor 184 to one side of the 110 volt power line and via contacts 172-1 to the other side of the power line. The control grid 185 of the tube 146 is connected through a resistor 186 and an RC time delay network including an adjustable resistor 188 and a capacitor 190. In a manner similar to the amplifier stage the anode 192 connected to a circuit including relay coil 194 and a series connection of resistor 196 and capacitor 198 connected in parallel with the coil 194.

The relay coil 194 controls contacts 194-1 which applies power through a three position selector switch 200 having movable elements 202 and 204 for controlling the energization of solenoid coils 206 and 208 that operate the pneumatic circuit four way control valves 104 and 106 respectively (FIG. 5). In a first position of the switch 200 movable elements 202 and 204 are both in their lower position. The closing of contacts 194-1 will complete a circuit to energize both solenoid coils 206 and 208. In a second position of the switch elements as illustrated in FIG. 6 the closing of the contacts 194-1 will energize only the solenoid coil 206 so that valve 104 will be operated. Associated with the second control circuit is a similar relay 210 operating contacts 210-1 which when closed will apply power to the solenoid coil 208 when the switch elements are in the position shown in FIG. 6. In the third position of the switch both elements 202 and 204 are in the upper position, and the closing of contacts 194-1 will not energize either solenoid coil but the closing of contacts 210-1 will energize both solenoid coils.

In the operation of the system when the main line switch 122 is closed and the start push button 128 is depressed the main line contactors 124 are closed to start the fan motors 62 and the roll drive motor 50. Power is also supplied to the control circuitry and lamp 136 is lighted, indicating that the control circuitry is energized. Depending on the type of articles to be ironed the control switch 200 is placed in one of the three selector positions. If compatibly small articles are to be processed both sensors 45 and 46 are employed and the control switch is placed in the position shown in FIG. 6. In addition, the removable barrier 95 normally would be positioned in the chamber 26 to define the two separate processing lanes and to prevent the air flow from one lane interfering with the other lane. However, if large articles, such as sheets, which extend over substantially the entire width of the mangle are to be processed, the barrier 95 will not be employed and the switch 200 will be set so that both solenoid coils 206 and 208 will be energized in response to only a single sensor, say sensor 45 for example, depending on the position of the switch. Each amplifier stage 140 is normally in non-conductive condition as the control grid is maintained at a potential substantially out of phase with that applied to the anode so that no conduction in the tube exists. When the operator places a wet article over the feeding roll 40 and on that the feed tapes 18 for engagement with the duffer roll 22 the electrode 45 is grounded producing a phase shift in the signal as applied to the control grid 160 of the thyatron 144 so that both the grid and the anode will be sufficiently positive at the same time during a power cycle to permit the tube to conduct and energize relay coil 172. When that coil is energized it closes the normally open contacts 172-1.

With the closing of those contacts the cathode of the

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relay control stage 180, which had been effectively connected directly to the same potential as the anode, is connected to the other side of the line and the relay control thyatron 146 is in condition for conduction whenever a sufficient potential difference between the cathode and the control grid is created. The RC time delay network has impressed the same signal on the control grid as is now on the cathode and starts to discharge so that a potential difference between the cathode and the control grid is produced after a time delay (which is adjustable through changing the value of resistor 188). After a pre-established time delay, in the order of one half second, tube 146 conducts and energizes relay 194 to close contacts 194-1 and energizes one or both of the solenoids 206, 208 depending on the position of the switch 200.

With the energization of the solenoids the associated valves 104, 106 are operated and the resulting fluid flow moves the pistons of the associated cylinders downward opening the valve plate 80 so that the fans may draw air through the vertical chamber 26. When this occurs the trailing portion of the article, the leading edge of which has been just placed on the feed tapes 18, is sucked down into the chamber and is subjected to a flapping action which straightens and removes wrinkles and any folds which may have been in the article. This straightening action under the influence of the air flow through the chamber continues until the article has been drawn entirely across the electrode 45 or 46 at which time the electrode ceases to be grounded and the circuitry is returned to its original state causing the amplifier stage 140 to cease conduction, de-energizing relay coil 172, which in like manner causes the relay control stage 142 to cease conduction and de-energizes relay 194. With this operation the energized valve 104, 106 is returned to its initial position so that the air flow through that valve causes the operated piston to be raised and close the main chamber valve to terminate the air flow. The operation is automatically repeated when the next moist article is placed in contact with sensor 45 or 46.

Thus it will be seen that the invention provides apparatus which controls the operation of a fabric straightening apparatus in response to the positioning of a fabric on the apparatus. This control is operative with adjustable time delay so that the operator may easily properly position the material to be ironed without interference due to a straightening action and then a straightening flow of air influence is initiated and continued until the fabric has been drawn entirely across the straightening apparatus. The feed roll 40 is preferably driven at at least twice the speed of the tapes 18 which feed the article through the mangle so that the roll will accelerate the movement of the fabric for quick entry into the chamber 26 and subsequent straightening action by the flow of air therethrough. The control circuitry reliably operates the air flow valve in response to the sensing of the moist article with adjustable time delay permitting accommodation of the control to different types of systems and operating conditions. The system permits the operator to obtain another article for feeding to the mangle during the interval that a prior article is being straightened and fed, enabling an increase in the number of articles processed. Further, each article does not necessitate continued attention by the operator during the ironing interval.

While a preferred embodiment of the invention has been shown and described various modifications thereof will be obvious to those skilled in the art and therefore it is not intended that the invention be limited to the disclosed embodiment or to details thereof and departures may be made therefrom within the spirit and scope of the invention as defined in the claims.

I claim:

1. A fabric processing apparatus for use in combination with a commercial laundry mangle having means for

feeding fabric articles progressively in an ironing operation, comprising

a sensor responsive to moisture in fabric articles adapted to be positioned in front of said mangle, said sensor providing a signal indicative of the presence of a moist fabric article when the article is positioned for engagement with said article feeding means,

means to provide a flow of air along the surface of a moist fabric article in a direction opposite to the direction that the article is being moved by said feeding means for exerting a tensioning, straightening and wrinkle removing influence on the article, and means responsive to a signal from said sensor indicating the presence of a moist article for operating said air flow providing means to produce a flow of air along the surface of the article in the direction opposite to its movement.

2. The fabric processing apparatus as claimed in claim 1 wherein said air flow providing means includes a long, narrow, vertically disposed chamber having its length disposed perpendicular to the feed direction of the fabric article,

fan means connected to the bottom of said chamber for producing a flow of air down through said chamber, and a valve structure in said chamber for controlling the flow of air through said chamber, and wherein said sensor includes an electrode member mounted above said chamber.

3. The fabric processing apparatus as claimed in claim 1 wherein said signal responsive means includes an amplifying element having an input circuit and an output circuit, said output circuit being coupled to said air flow providing means, and a phase shift circuit connected between said sensor and said input circuit so that a signal from said sensor indicative of the presence of a moist article produces a change in the phase of the signal applied to said input circuit effective to change the state of conduction of said output circuit of said amplifying element and operate said air flow providing means.

4. The fabric processing apparatus as claimed in claim 1 wherein said signal responsive means includes a control element normally in a first state of conduction,

and a time delay circuit connected to said control element so that said control element changes to a second state of conduction after a time interval of variable duration in response to the signal from said sensor to operate said air flow providing means.

5. Fabric straightening apparatus for disposition adjacent to and in front of a commercial laundry mangle which includes a fabric receiving surface and feeding means adapted to initially engage the leading edge of a sheet of fabric for drawing the fabric progressively over said receiving surface,

said straightening apparatus including means defining a long narrow chamber having an opening exposed directly to the atmosphere,

said opening being disposable at substantially the same elevation as said fabric receiving surface and extending substantially the full length of said fabric receiving surface,

said chamber extending downwardly from said opening and having an air outlet aperture at its lower end,

fabric sensing means disposed adjacent said opening for sensing the presence of a fabric positioned for engagement with said feeding means,

air moving means in communication with said outlet aperture and operative to draw atmospheric air through said opening and down through said chamber for exhaust through said outlet aperture, for drawing the trailing portion of the fabric engaged by said feeding means down into said chamber so as to hang freely down therein,

the flow of air down through said chamber exerting a tensioning, straightening and wrinkle removing in-

fluence on the trailing portion of said fabric as it is drawn up out of said chamber and into said fabric processing apparatus by said feeding means, and control apparatus responsive to said fabric sensing means for controlling the movement of air through said chamber.

6. The apparatus as claimed in claim 5 wherein said control apparatus includes time delay means for delaying the initiation of air flow through said chamber for a predetermined time after the initial sensing of a fabric by said fabric sensing means.

7. The apparatus as claimed in claim 5 wherein said control apparatus includes a valve member having a first position blocking said outlet aperture and preventing flow of air through said chamber and second position opening said outlet aperture and permitting unrestricted flow of air through said chamber, and means responsive to said fabric sensing means for moving said valve member between said first position and said second position.

8. A fabric processing apparatus for use in combination with a commercial laundry mangle having means for feeding fabric articles progressively in an ironing operation, comprising,

a sensor electrode responsive to moisture in fabric articles adapted to be positioned in front of said mangle, means to electrically insulate said fabric sensor electrode from ground,

an electronic phase sensitive control device having an input circuit and an output circuit,

the state of conduction of said output circuit being responsive to the phase of the signal applied to said input circuit,

a phase shift circuit connected between said fabric sensor electrode and the input circuit of said control device,

said phase shift circuit including a first section connected to ground and controlling the phase of the signal applied to said input circuit in the absence of moist fabric sensed by said sensor electrode,

and a second section connected to said fabric sensor electrode to produce a shift in the phase condition of the input signal when said sensor electrode is effectively connected to ground through the contact of moist fabric with said sensor electrode,

the signal applied to said input circuit via said phase shift circuitry in the absence of sensing of moist fabric by said sensor electrode producing a first state of conduction in said output circuit.

but the shift in phase of the input signal applied to said input circuit when moist fabric is sensed by said sensor electrode being sufficient to place the output circuit of said control device in a second state of conduction,

means to provide a flow of air along the surface of a moist fabric article in a direction opposite to the direction that the article is being moved by said feeding means for exerting a tensioning, straightening and wrinkle removing influence on the article, and means responsive to said control device being in said second state of conduction to actuate said air flow providing means to produce a flow of air along the surface of the moist fabric article sensed by said sensor electrode in the direction opposite to its movement.

9. Fabric straightening apparatus for disposition adjacent to and in front of a commercial laundry mangle which includes a fabric receiving surface and feeding means adapted to initially engage the leading edge of a sheet of fabric for drawing the fabric progressively over said receiving surface,

said straightening apparatus including means defining a long narrow chamber having an opening exposed directly to the atmosphere,

said opening being disposable at substantially the same elevation as said fabric receiving surface and extend-

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ing substantially the full length of said fabric receiving surface,
 said chamber extending downwardly from said opening and having an air outlet aperture at its lower end,
 means to provide a flow of air downwardly through said chamber along the surface of a fabric article in said chamber for exerting a tensioning, straightening and wrinkle removing influence of the fabric sheet in said chamber,
 a fabric sensor electrode disposed adjacent said opening for sensing the presence of a fabric positioned for engagement with said feeding means,
 means to electrically insulate said fabric sensor electrode from ground,
 an electronic phase sensitive control device having an input circuit and an output circuit,
 the state of conduction of said output circuit being responsive to the phase of the signal applied to said input circuit,
 a phase shift circuit connected between said fabric sensor electrode and the input circuit of said control device,
 said phase shift circuit including a first section connected to ground and controlling the phase of the signal applied to said input circuit in the absence of moist fabric sensed by said sensor electrode,
 and a second section connected to said fabric sensor electrode to produce a shift in the phase condition of the input signal when said sensor electrode is effectively connected to ground through the contact of moist fabric with said sensor electrode,
 the signal applied to said input circuit via said phase shift circuitry in the absence of sensing of moist fabric by said sensor electrode producing a first state of conduction in said output circuit,
 but the shift in phase of the input signal applied to said input circuit when moist fabric is sensed by said sensor electrode being sufficient to place the output circuit of said control device in a second state of conduction,
 and means responsive to said control device being in said second state of conduction for controlling said air moving means.

10. The control apparatus as claimed in claim 9 and further including a second electronic control device having an input circuit and an output circuit,
 a resistance capacitance time delay circuit connected to said input circuit of said second control device, means to effectively render said time delay circuit inoperative and maintain the output circuit of said second control device in a first state of conduction, and means responsive to the placing of the output circuit of said first control device in said second state of conduction to actuate said time delay circuit for applying a signal to the input circuit of said second control device effective to change the state of conduction of the output circuit of said second control device at a predetermined time after the output circuit of said first control device is placed in its second state of conduction.

11. The apparatus as claimed in claim 10 wherein said control apparatus includes a valve member having a first position blocking said outlet aperture and preventing flow of air through said chamber and a second position opening said outlet aperture and permitting unrestricted flow of air through said chamber,
 and means responsive to the output circuit of said second control device in said second state of conduction for moving said valve member between said first position and said second position.

12. Fabric straightening apparatus for disposition adjacent to and in front of a commercial laundry mangle which includes a fabric receiving surface and feeding

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means adapted to initially engage the leading edge of a sheet of fabric for drawing the fabric progressively over said receiving surface,
 said straightening apparatus including means defining a long narrow chamber having an elongated opening exposed directly to the atmosphere,
 said opening being disposable at substantially the same elevation as said fabric receiving surface and extending substantially the full length of said fabric receiving surface,
 said chamber extending downwardly from said opening and having an air outlet aperture at its lower end, air moving means in communication with said outlet aperture and operative to draw atmospheric air through said opening and down through said chamber for exhaust through said outlet aperture,
 the flow of air downwardly through said chamber drawing the trailing portion of the fabric engaged by said feeding means down into said chamber so as to hang freely therein with the flow of air exerting a tensioning, straightening and wrinkle removing influence on the trailing portion of the fabric as it is drawn up out of said chamber and into said fabric processing apparatus by said feeding means,
 and a damper valve disposed in said chamber between said opening and said outlet aperture,
 said damper valve being movable between a first position allowing substantially unrestricted air flow through said chamber under the influence of said air moving means and a second position preventing air flow through said chamber.

13. The apparatus as claimed in claim 12 and further including an electrically grounded guide surface and an electrically insulated fabric sensor electrode disposed adjacent said opening for sensing the presence of a fabric positioned for engagement with said feeding means, and means responsive to a change in electrical resistance between said guide surface and said fabric sensor electrode when a moist fabric bridges them to move said damper valve from said second position to said first position upon the sensing of fabric.

14. The apparatus as claimed in claim 12 and further including an elongated input roll supported on said chamber defining means and disposed immediately adjacent and parallel to said elongated opening,
 and means to drive said input roll at a speed faster than said feeding means for urging fabric into position over said elongated opening so that the trailing portion of the fabric may be easily drawn down into said chamber under the influence of the air flow through said chamber.

15. A fabric processing apparatus for use in combination with a commercial laundry mangle having means for feeding fabric articles progressively in an ironing operation,
 comprising sensor circuitry responsive to moisture in fabric articles including an electrode adapted to be positioned in front of said mangle so that articles fed to said mangle contact said electrode,
 means to electrically insulate said electrode from ground,
 an electrically grounded fabric article guide surface adjacent to but spaced from said electrode,
 and control means electrically connected to said electrode and said guide surface,
 said control means having first and second control states and being switched from said first control state to said second control state when a moist fabric article bridges said guide surface and said electrode and reduces the electrical resistance therebetween,
 means to provide an air flow along the surface of a moist fabric article in a direction opposite to the direction that the article is being moved by said mangle feeding means for exerting a tensioning,

straightening and wrinkle removing influence on the article,
 means responsive to said control means being in said second control state in response to said change in electrical resistance to actuate said air flow providing means to produce a flow of air along the surface of the moist fabric article sensed by said sensor electrode in the direction opposite to its movement by said feeding means.

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