June 14, 1960 J. KINZELMAN 2,940,194

SKEWED ROLLER TYPE TENSIONING FOR IRONING MACHINES

Filed Jan. 13, 1956 3 Sheets-Sheet 1

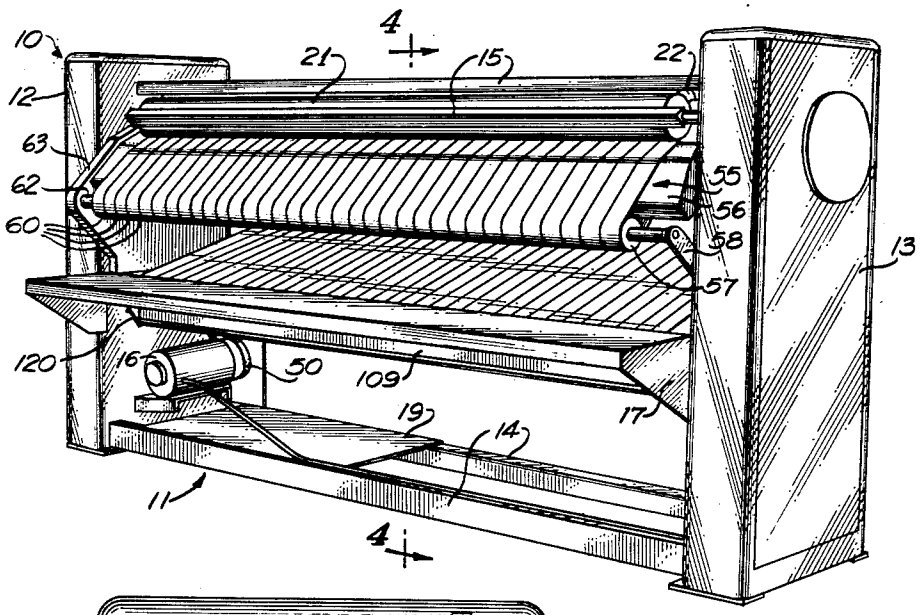


Fig. 1

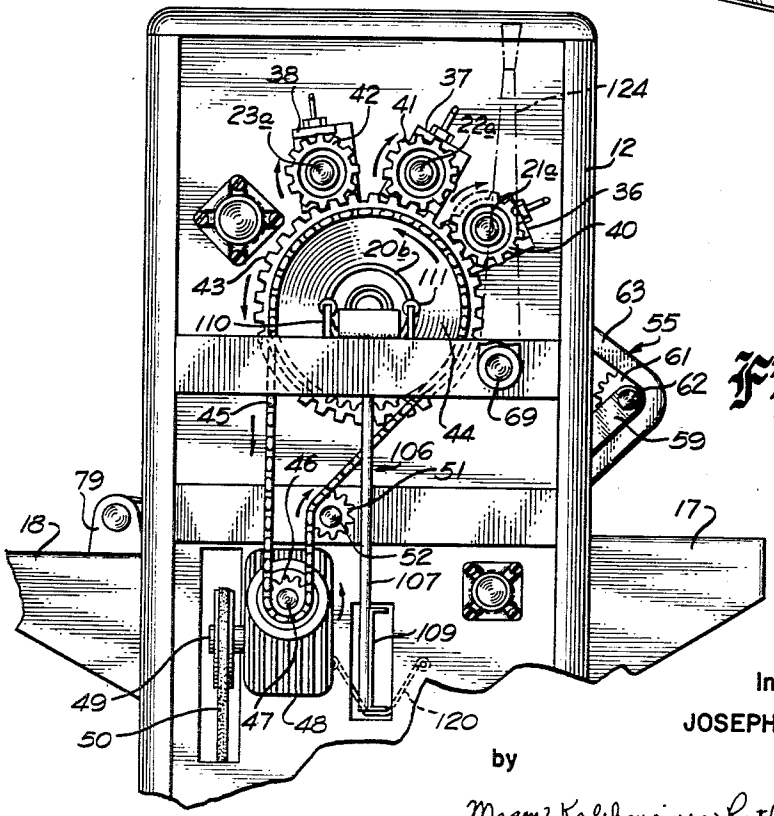


Fig. 2

Inventor
JOSEPH KINZELMAN

by

Mason, Kolehmainen, Rathbun and Wyss
Attorneys

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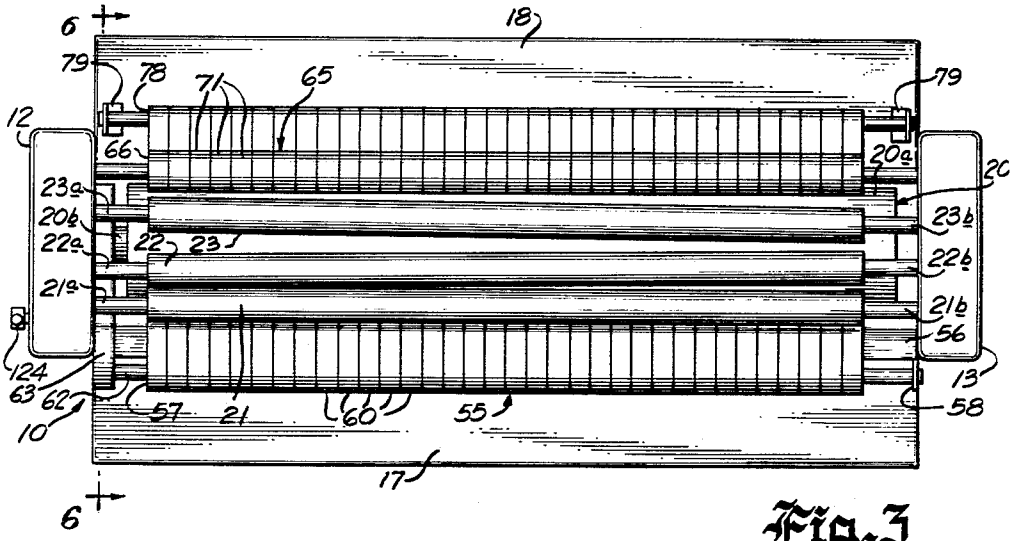


Fig. 3

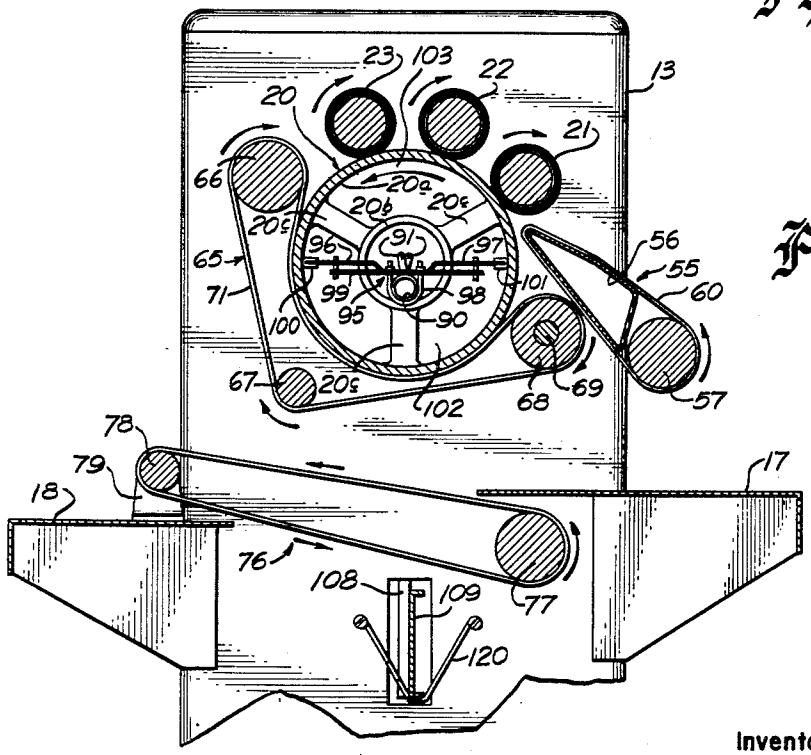


Fig. 4

Inventor

JOSEPH KINZELMAN

by

Mason, Kolisch, Mairen, Rathbun and Wyss.

Attorneys

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SKEWED ROLLER TYPE TENSIONING FOR IRONING MACHINES

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Fig. 5

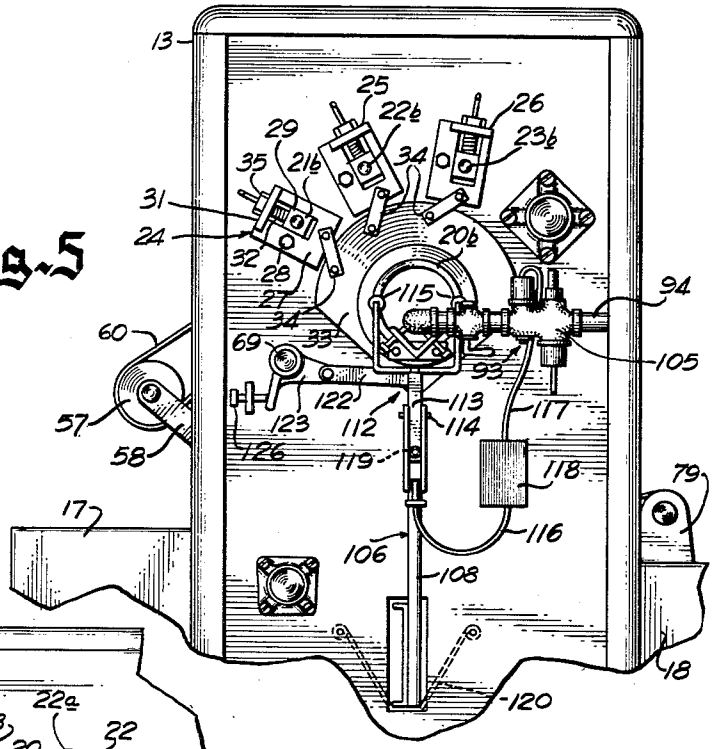
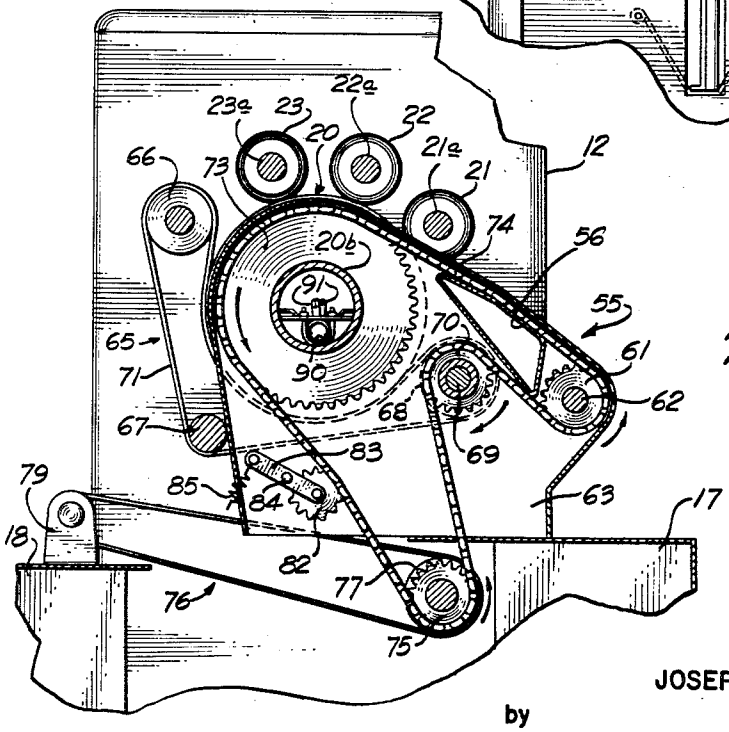


Fig. 6



Inventor
JOSEPH KINZELMAN

by
Mason, Kolehmainen, Rathburn and Wyss.
Attorneys

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SKEWED ROLLER TYPE TENSIONING FOR IRONING MACHINES

Joseph Kinzelman, Northbrook, Ill., assignor to Gasway Corporation, Chicago, Ill., a corporation of Illinois

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13 Claims. (Cl. 38—49)

This invention relates generally to mangles or ironing machines and, more particularly, to machines of this type as used in commercial laundering operations.

Specifically, the present invention relates to improvements in power-driven ironers of the type in which the material to be ironed is advanced between a heated main roll and a plurality of cooperating pressure rolls biased into contact with the main roll. In order to obtain a finished product which is free from wrinkles and creases, it is essential, in ironing machines of the character described, to apply both longitudinal and lateral tension to the work as it is being ironed. One of the principal difficulties in the prior art arrangements has been the lack of suitable means for applying tension laterally of the work, since generally this tension has been applied by stretching the opposed sides or edges of the work, with the result that undesirable outwardly protruding "dog ears" are formed.

It is a principal object of the present invention, therefore, to provide a simple, yet efficient, means for applying tension both laterally and longitudinally of the work, in order to enhance the appearance of the finished product.

A further object of the invention is to provide a new and improved means for controlling the application and release of pressure urging the ironing rolls into engagement with the main roll.

A further and more specific object of the invention is to provide an ironer of the type described above in which the pressure rollers are inclined slightly in opposite directions with respect to the path of movement of the work being treated, in order to apply tension directed toward both of the lateral edges of the work.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the specification taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a perspective view of an ironing machine characterized by the features of the present invention;

Fig. 2 is an enlarged, fragmentary view looking sidewise of the left end of the machine shown in Fig. 1 with the end panel removed in order to facilitate the illustration of the working parts of the machine;

Fig. 3 is an enlarged top view of the machine shown in Fig. 1, particularly illustrating the disposition of the ironing or pressure rolls with respect to the main roll for the purpose of applying laterial tension to the work;

Fig. 4 is an enlarged, fragmentary sectional view taken along a line substantially corresponding to the line 4—4 in Fig. 1;

Fig. 5 is an enlarged, fragmentary view looking endwise toward the right end of the machine shown in Fig. 1, again having the end panel removed in order to facilitate the illustration; and

Fig. 6 is an enlarged, fragmentary sectional view taken along a line substantially corresponding to the line 6—6 in Fig. 3.

Referring now to the drawings, and more particularly to Fig. 1 thereof, the present invention is there illustrated

as embodied in a power driven ironing machine, generally indicated as 10. The working parts of the machine 10 are supported upon a frame 11 formed by a pair of spaced end sections 12 and 13 interconnected by a plurality of braces 14 at the bottom and by similar braces 15 at the top. The bottom braces 14 support a generally horizontal plate 19 mounting the prime mover for the machine which, as illustrated in Fig. 1, comprises an electric motor 16.

To facilitate handling of the work being ironed, a pair of work shelves 17 and 18 are supported by the end sections 12 and 13 and extend toward the front and rear, respectively, of the machine, as is best shown in Fig. 2. As illustrated in Fig. 4, the mangle or ironing portion of the apparatus of the present invention includes an internally heated main roll or drum 20 and a plurality of spaced apart ironing or pressure rolls 21, 22 and 23, preferably provided with padding on their outer surfaces. The pressure rolls cooperate with the main roll to define an ironing zone for ironing work as it is advanced therebetween. The main roll 20 is preferably in the form of a metal cylinder, such as steel, and includes a central portion 20*a* of relatively large diameter and a pair of smaller diameter hub portions or trunnions 20*b* journaled within the end sections 12 and 13. A plurality of spaced spokes 20*c* interconnect the central portion 20*a* and the hubs 20*b* at each end of the main roll but, as will be apparent from Fig. 4 of the drawing, the spokes 20*c* are relatively small and, as a result, both ends of the main roll are substantially open to atmosphere.

The opposed ends of each of the ironing rolls 21, 22 and 23 are preferably reduced somewhat, as indicated at 21*a*, 21*b*, 22*a*, 22*b*, 23*a* and 23*b*. These reduced end portions are suitably journaled and supported upon the end sections 12 and 13 in a manner described more fully below. More specifically, reduced portions 21*b*, 22*b* and 23*b* are respectively journaled within support means 24, 25 and 26 pivotally mounted upon the end section 13. The latter support means are identical in construction and each comprises a generally U-shaped frame or bracket 27, supported upon a pivot pin or bolt 28 which is, in turn, secured to the end section 13. A bearing member 29 is slidably retained within the channel of the U-shaped bracket 27 and is provided with a centrally disposed opening for receiving the reduced end portion of the ironing roll. An externally threaded rod 30 extends outwardly from the bearing member 29 and through an enlarged opening in an end plate or cover 31 of the bracket for the purpose of guiding the bearing member in its sliding movement within the channel. A spring 32 encircling the rod 30 and interposed between the cover 31 and the bearing member 29 normally urges the bearing member toward the bottom or lower extremity of the channel. In this manner, the ironing rolls 21, 22 and 23 are urged or biased towards the periphery of the main roll and are under sufficient pressure to provide effective ironing of the work. To adjust the latter pressure and the spacing between each of the ironing rolls and the main roll 20, an adjustable nut 35 is provided in engagement with the threaded portion of the rod 30 and with the cover 31. Adjustment of the nut 35 obviously alters the spacing between the bearing member 29 and the cover 31 and hence alters the pressure exerted by spring 32.

To provide for unitary movement of the pressure rolls away from the main roll in a manner described more fully below, the support means 24, 25 and 26 are each connected to a toggle plate 33 by means of a pivoted link 34. Rotation of the toggle plate 33 induces the support means 24, 25 and 26 to pivot in unison about their pivot pins in order to move the ironing rolls away from the main roll 20, thereby to release pressure to facilitate removal of the work piece or adjustment of its position in the ironing zone.

Support means 36, 37 and 38, similar to those just described, are provided on the end section 12 for accommodating the reduced portions 21*a*, 22*a* and 23*a* of the ironing rolls, as is best shown in Fig. 2 of the drawings. In addition, the reduced portions 21*a*, 22*a* and 23*a* extend outwardly beyond the support means 36, 37 and 38 to receive drive gears 40, 41 and 42, respectively. The latter gears each mesh with a relatively large spur gear 43 fixedly mounted upon the hub 20*b* of the main roll 20. A sprocket 44 in engagement with a drive chain 45 is mounted on the hub 20*b* at a position adjacent to the spur gear 43. The latter chain also engages and meshes with a relatively small sprocket 46 driven by the output shaft 47 of a gear reduction box 48 of conventional construction. Input shaft 49 of the gear reduction box is driven through a belt and pulley assembly 50 by the motor 16. An idler sprocket 51 mounted on a stub shaft 52 maintains the chain 45 in engagement with the sprockets 44 and 46. The motor 16 and the gear reduction box 48 are so designed that the sprocket 46 is driven at suitable predetermined speed in a counter-clockwise direction, as viewed in Fig. 2. Conventional speed control means may be provided, if desired to vary the speed of rotation of the sprocket 46, but such a means has not been illustrated in the drawings. With the sprocket 46 driven in a counter-clockwise direction as viewed in Fig. 2, the main roll 20 is likewise rotated in a counter-clockwise direction, while the ironing rolls 21, 22 and 23 are rotated in a clockwise direction, thereby to effect the advancement of work from the front of the ironing machine 10 to the rear.

In order to facilitate the supply of work to the ironing zone defined between the main roll 20 and the ironing rolls 21, 22 and 23, there is provided a feeding assembly indicated generally at 55 and best shown in Figs. 1, 2, 4 and 6 of the drawings. This feeding assembly includes a hollow guide housing 56 formed of sheet metal or the like and fixedly secured at its opposed ends to the end sections 12 and 13. The assembly 55 further comprises a driven feed roller 57 mounted on shaft 62, which shaft is secured at one end to an arm 58 extending laterally from the end section 13 and at the other end to an arm member 59 secured to the end section 12. A plurality of endless ribbons 60 are wrapped around the guide housing 56 and the feed roller 57 and are disposed in side by side relationship in order to form a substantially continuous feeding surface for delivering work to the ironing zone. A sprocket 61 fixedly mounted on the shaft 62 functions to impart rotation to the roller 57 as described below.

In order to return the work issued from the ironing zone to the front of the machine to facilitate one- or two-man operation, there is provided a work return means indicated generally at 65 and shown in Figs. 4 and 6 of the drawings. The latter work return means comprises a pair of idler rollers 66 and 67 having their opposed ends respectively journaled within the end sections 12 and 13. The work return means further comprises a hollow driven roller 68 mounted for rotation about a support shaft 69 journaled within the end sections 12 and 13. A sprocket 70 is fixedly secured to and functions to rotate the driven roller 68. A plurality of endless ribbons 71 are disposed in side by side relationship and are wound over the idler rollers 66 and 67 and the driven roller 68 in such manner that a continuously moving surface is provided in engagement with a substantial portion of the under side of the main roll 20.

In order to drive the roller 68 of the work return means 65 and the roller 57 of the work feed means 55, there is provided a sprocket 73 mounted on the hub 20*b* of the main roll 20 adjacent to and just inside section 13, together with a chain 74 meshing with the sprockets 61, 70 and 73 in the manner shown in Fig. 6. The chain 74 also engages a sprocket 75 for the purpose of driving a conveyor mechanism indicated at 76 which serves to transfer work from the front shelf 17 to the rear shelf 18. Specifically, the conveyor mechanism 76 comprises a driven roller 77, best shown in Fig. 4, having its opposed ends journaled within the end sections 12 and 13. The end of the roller 77 disposed adjacent the end section 12 receives the sprocket 75, which, as indicated above, functions to drive the roller. The conveyor mechanism further comprises an idler roller 78 suitably journaled within upstanding bosses 79 formed at opposite ends of the work shelf 18. To complete the conveyor mechanism a plurality of endless ribbons are wound around the rollers 77 and 78 in such manner that a continuously driven conveying surface is formed by means of which work may be transported from the front shelf 17 to the rear shelf 18.

Returning now to the drive mechanism, it will be observed that tension is maintained on the chain 74 by means of a tensioning assembly. This assembly includes an idler sprocket 82 having teeth engaging the chain 74 and mounted within the bifurcated portion of an arm 83 which is pivotally supported upon a pin 84 secured to the end section 12. A tension spring 85 having one end secured to the end section 12 and the other end secured to one extremity of the arm 83 urges the latter arm to pivot in a counter-clockwise direction, as viewed in Fig. 6, to maintain tension on the chain 74. As indicated above, the main roll 20 is driven by the chain 45 in a counter-clockwise direction as viewed in Fig. 6, with the result that the driven roller 57 of the feed assembly 55 is rotated in a counter-clockwise direction, the roller 68 of the work return means 65 is driven in a clockwise direction and the roller 77 of the conveyor mechanism 76 is driven in a counter-clockwise direction. For purposes of safety, a cover guard or shield 63 may be attached to the end section 12 to house the tensioning assembly, the chain 74 and the various sprockets engaged by this chain.

The main roll 20 is internally heated by means of a suitable gas burner disposed near the center of the roll. This gas burner includes an elongated gas manifold 90 having a length substantially coextensive with the main roll 20 and having the end thereof disposed adjacent the end section 12 closed by means of a cap. A plurality of gas burners, preferably of the Bunsen type, extend vertically upwards from the gas manifold 90 and are in fluid communication with the manifold to receive a supply of fuel to be burned. The manifold 90 is connected through suitable valving indicated generally at 93 in Fig. 5 to a gas inlet pipe 94.

As is best shown in Figs. 4 and 6, the gas manifold 90 carries a plurality of spaced brackets 95 which serve to support a pair of radially extending horizontal baffles 96 and 97 disposed within the main roll 20. Specifically, each of the brackets 95 comprises a clamp 98 embracing the manifold 90 and having attached thereto a horizontally extending support arm 99 which functions to engage the under side of the baffles 96 and 97 to hold them in position. The extreme outer ends of the baffles 96 and 97 are provided with flexible, heat-resistant strips 100 and 101, respectively, which are preferably formed of asbestos or the like. These heat-resistant strips extend along the entire length of the baffle and engage the inner wall of the rotatable main roll 20 for the purpose of providing an effective air seal. Since the ends of the main roll 20 are both open, a supply of combustion-supporting air flows into the lower chamber 102. In this manner an adequate supply of combustion-supporting air is assured without the use of a blower system or a pressurized air supply. The combustion products created by the burners 91 are, of course, hotter and lighter than the relatively cool air within the chamber 102. As a result, these combustion products are collected within the chamber 103 and are exhausted to atmosphere through the open ends of the main roll 20. The escape of combustion products at the ends of the roll creates a chimney

effect which facilitates the flow of air into the lower chamber 102 to provide an efficient gas burning action.

To control the flow of gas to the manifold 90, the valving 93 referred to above includes a solenoid-operated valve 105 which is adapted to be automatically controlled in response to the axial thermal expansion of the main roll 20 in order to maintain an accurate predetermined temperature of the main roll. Specifically, a temperature control means, shown in Figs. 2 and 5 and indicated at 106, is provided which includes a caliper or micrometer formed by a pair of vertically extending arms 107 and 108 interconnected by a horizontally extending leg 109. The arm 107 is provided with a bifurcated end portion 110 carrying a pair of contact buttons 111 in engagement with the end of one of the hubs 20*b* of the main roll. In engagement with the other hub of the main roll is an assembly 112 pivotally mounted on the arm 108. This pivoted assembly includes an arm member 113 mounted for pivotal movement about a pin 114 attached to the arm 108 and having an upper bifurcated section carrying a pair of contact buttons 115 in engagement with the hub 20*b* of the main roll. The lower end of the arm member 113 carries a switch operating button 119 which is adapted to engage a microswitch or the like mounted on the arm 108. When the microswitch is closed an electrical circuit is completed to energize the solenoid-controlled valve 105. The described electrical circuit includes insulated conduits 116 and 117 passing through a junction box 118 mounted on the end section 13 and leading to the operating coil of the solenoid in valve 105. When the temperature of the main roll reaches a desired predetermined value, sufficient axial expansion occurs to pivot the assembly 112 about the pin 114 until the operating button 119 closes the microswitch, whereupon the solenoid-actuated valve 105 is actuated to shut off or reduce the supply of gas to the manifold 90. With the gas supply within the main roll cut off or reduced, the temperature of the roll begins to drop slightly until the assembly 112 is pivoted in the reverse direction by an amount sufficient to break the switch contacts of the microswitch and open the valve 105, thereby restoring the flow of gas to the manifold 90.

The temperature at which the switch contacts will close may be varied by adjusting the position of the operating button 119 on the arm member 113. To this end, the button 119 may be mounted upon the end of an adjustable bolt or the like passing through a tapped bore in the arm member 113. As the bolt is threaded into or out of the bore, the operating button 119 is moved toward or away from the microswitch on the arm 108, thus varying the amount of axial expansion of the main roll necessary to bring the contacts into engagement. Due to the action of the caliper formed by the arms 107 and 108 and the leg 109, the temperature variation between the opening and closing of the switch contacts can be regulated to a few degrees, with the result that the temperature of the main roll is maintained substantially constant at the proper temperature for ironing the work. The caliper is suspended from the frame 11 by means of a pair of flexible suspension wires 120 attached to the end sections 12 and 13 and cradling the opposed ends of the leg 109 as is shown in Figs. 2 and 4 to provide a bias type mounting. Except for these suspension wires, there is no physical contact between the caliper and the frame of the ironing machine, and as a result heat transfer to the temperature control means by way of conduction is minimized. In addition, the bias type mounting of the caliper prevents distortion of the frame 11 due to the heat created within the main roll 20 from affecting the control provided by the temperature control means 106. Accordingly, as a result of both of the factors discussed above, i.e. the bias type mounting and the suspension of the caliper from the frame, the temperature control is responsive almost exclusively to the axial thermal expansion of the main roll.

Turning now to the operation of the ironing machine of the present invention, it will be observed that the equipment illustrated is set up for two-man operation, wherein both of the operators are stationed in front of the machine adjacent to the front shelf 17. The work to be ironed is applied to the feed means 55 and from there is passed to the ironing zone formed between the main roll 20 and the ironing rolls 21, 22 and 23. In order to maintain tension longitudinally of the work while it is in the ironing zone, the rolls 22 and 23 are driven somewhat faster than the first roll 21. To this end, the gear 40 is provided with a greater number of gear teeth than the gears 41 and 42. The faster running speeds of the ironing rolls 22 and 23, of course, produce a pull or longitudinal tension on the work advanced through the ironing zone, thus smoothing the material.

In accordance with an important feature of the present invention, lateral tension is applied to the work by skewing or inclining the ironing rolls 22 and 23 in the manner illustrated in Fig. 3. Specifically, the ironing rolls 22 and 23 are so mounted that their longitudinal axes are inclined slightly in opposite directions with respect to a line extending transversely of and normal to the direction of movement of the work through the ironing zone. Obviously, the longitudinal axes of the ironing rolls 22 and 23 are also inclined slightly in opposite directions with respect to the longitudinal axis of the main roll 20. Actually, the amount of inclination is only a fraction of an inch, but this has been exaggerated somewhat in the drawings in order to facilitate the illustration. The roll 22 tends to draw the work to the left, as viewed in Fig. 3, while the inclination of the roll 23 tends to move the work to the right, with the result that an overall tension directed laterally of the work is provided. The combination of lateral and longitudinal tension on the work insures a finished product which is free from wrinkles and creases.

Work issuing from the ironing zone is picked up by the work return means 65 and is returned to the front of the machine 10 for removal by the operators. To this end, the work passing between the ironing roll 23 and the main roll 20 is guided into the area between the ribbons 71 and the main roll, and hence is advanced along the under side of the main roll. Work flowing from between the ribbons 71 and the main roll 20 is, of course, deflected downwardly by the ribbons 60 of the work feed means 55 for removal from the machine. The finished work may be transferred from the front shelf 17 to the rear shelf 18 for storage by use of the conveyor mechanism 76. The above-described operation, as previously indicated, can be performed by two operators stationed at one side of the machine or, in the event that relatively narrow work is being ironed, even one-man operation is possible. In the event that four-man operation is desired, the work return means 65 may be dispensed with, and the work issued from the ironing zone may be gathered or collected by operators stationed at the rear of the ironing machine.

In accordance with another important feature of the present invention, the pressure between the ironing rolls 21, 22 and 23 and the main roll 20 may be released by moving all of the ironing rolls in unison away from the main roll. To this end, similar mechanism may be provided on each of the end sections 12 and 13, although only the mechanism on the end section 13 is visible in the drawings (Fig. 5). Specifically, the toggle plate 33 is connected by a link 122 to a bell crank 123 fixedly secured to the end of the shaft 69, which shaft also serves to support the driven roller 68 for the work return means. As indicated above, a similar toggle plate and link are attached to the support means 36, 37 and 38 at the end section 12 with the link being connected to another bell crank on the shaft 69. In addition, the end of the shaft 69 extends beyond the end section 12 and receives on its outer end a manually operable, pressure

release handle 124 which, of course, may be employed to rotate the shaft 69. When the handle 124 is in its vertical position, illustrated in Fig. 2, the rollers 21, 22 and 23 are urged or biased against the main roll 20 to perform the ironing operation. Whenever it is desired to move the ironing rolls away from the main roll, the handle 124 may be rotated in a clockwise direction, as viewed in Fig. 2, in order to pivot the bell crank 123 in a counter-clockwise direction, as viewed in Fig. 5. The bell crank 123 and the link 122 cooperate to form an over-center control linkage, with the result that initial rotation of the crank 123 induces a slight counter-clockwise movement of the toggle plate 33. This slight movement of the toggle plate acts through the links 34 to draw the support means 24, 25 and 26 downwardly to compress the springs 32. As soon as the over-center linkage has passed its center point, the toggle plate 33 will be moved in a clockwise direction to pivot the support means 24, 25 and 26 about the support pins 28 in a counter-clockwise direction. The described pivoting of the support means, of course, forces the bearing members 29 outwardly away from the center of the main roll, with the result that the ironing rolls 21, 22 and 23 are all moved in unison away from and out of engagement with the main roll. The described pressure release mechanism may be used in order to remove or adjust the position of work in the ironing zone or may be used as an emergency release for safety purposes. Pressure is reapplied between the ironing rolls and the main roll by returning the handle 124 to its vertical position, at which time the action of the pressure release mechanism described above will be reversed. The over-center linkage, of course, urges the bell crank 123 to pivot in a clockwise direction, as viewed in Fig. 5, but this pivoting action is limited by an adjustable stop 126 fixedly secured to the end section 13. In view of the foregoing description, it will be recognized that the shaft 69 performs the dual function of supporting the driven roller 68 for the work return means 65 and for supporting the actuating structure for the pressure release mechanism described above, thus effecting a reduction in the number of parts employed, with a consequent decrease in the cost of construction of the machine.

While a particular embodiment of the invention has been shown as described, it will be understood, of course, that the invention is not limited thereto, since many modifications may be made, and it is therefore contemplated by the appended claims to cover any such modifications as fall within the true spirit and scope of the invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In an ironing machine, a rotatable drum of relatively large diameter, and a plurality of spaced rollers for holding material to be ironed against the outer surface of said drum and cooperating with the drum to create an ironing zone through which the material is moved, at least two of said rollers having their longitudinal axes inclined in opposite directions with respect to a line extending normal to the direction of movement of the material in such manner that lateral tension is applied to the material.

2. In an ironing machine, a rotatable drum of relatively large diameter, and a plurality of spaced rollers for holding material to be ironed against the outer surface of said drum and cooperating with the drum to create an ironing zone through which the material is moved, at least two of said rollers having their longitudinal axes inclined in opposite directions with respect to the longitudinal axis of the drum in such manner that tension is applied to the material transversely of its direction of movement.

3. In an ironing machine, a drum of relatively large diameter, a plurality of spaced rollers for holding material to be ironed against the outer surface of said drum and cooperating with said drum to define an ironing zone, means for rotating the drum and the spaced rollers to move the material being ironed through the ironing zone, at least one of said rollers having its longitudinal axis inclined with respect to the axis of the drum, the surface of said one roller and the surface of the drum engaging said material along a line which is inclined with respect to a line extending normal to the direction of movement of the material entering between the drum and said one roller in order to direct the material leaving the drum and said one roller along a line extending normal to the axis of said one roller so that said one roller cooperates with the drum and with the other rollers to apply lateral tension to the material.

4. In an ironing machine, a rotatable drum of relatively large diameter, a series of spaced rollers for holding material to be ironed against the outer surface of said drum, means for rotating the drum, and means for rotating the rollers of said series at different speeds in order to apply tension to the material along its direction of movement, at least two of said rollers having their longitudinal axes inclined in opposite directions with respect to the longitudinal axis of the drum in such manner that tension is applied to the material transversely of its path of movement.

5. In an ironing machine, a rotatable drum of relatively large diameter, a series of spaced rollers for holding material to be ironed against the outer surface of said drum, means for rotating the rollers of said series at different speeds in order to apply tension to the material along its direction of movement, at least two of said rollers having their longitudinal axes inclined in opposite directions with respect to a line extending normal to the direction of movement of the material in such manner that lateral tension is applied to the material.

6. A roll type ironer comprising a frame including a pair of spaced end members, a cylindrical rotatable main roll supported on said frame, a plurality of ironing rolls spaced about a portion of the outer periphery of the main roll in order to define an ironing zone in which work is advanced between the main roll and the ironing rolls, means including an endless ribbon disposed adjacent said ironing zone for receiving and advancing the work, the last-named means including a roller in engagement with said ribbon, a shaft rotatably supporting said roller and having end portions extending beyond said roller and through said end members, means supporting each end of each of said ironing rollers, and means including mechanism mounted on each of the end portions of said shaft for moving all of the ironing roller support means in unison in order selectively to move the ironing rollers toward or away from the main roll.

7. A roll type ironer comprising a frame including a pair of spaced end members, a cylindrical rotatable drum supported on said frame, a plurality of ironing rolls spaced about a portion of the outer periphery of the drum in order to define an ironing zone in which work is advanced between the drum and the ironing rolls, means including an endless ribbon disposed adjacent said ironing zone for receiving and advancing the work, the last-named means including a roller in engagement with said ribbon, a shaft rotatably supporting said roller and having end portions extending beyond said roller and through said end members, a common drive means for rotating said drum, said ironing rolls and said roller, support means on said end members for each end of each of said ironing rolls, separate structures on each of said end members interconnecting the ironing roll support means for the respective ends of the ironing rolls and mechanism mounted on each of the end portions of said shaft for engaging said structures in order selectively to move the ironing rolls in unison toward or away from the drum.

8. A roll type ironer comprising a frame including a pair of spaced end members, a cylindrical rotatable main roll supported on said frame, a plurality of ironing rolls

spaced about a portion of the outer periphery of the main roll in order to define an ironing zone in which work is advanced between the main roll and the ironing rolls, means including an endless ribbon disposed adjacent said ironing zone for receiving and advancing the work, the last-named means including a drive roller for driving said ribbon, a shaft rotatably supporting said drive roller and having end portions extending through said end members, a common drive means for rotating said main roll, said ironing rolls and said drive roller, support means in each of said end members for supporting the respective ends of each of said ironing rolls, separate structures on each end member interconnecting the support means for the respective ends of the ironing rolls, and mechanism mounted on each of the end portions of said shaft for engaging said structures in order selectively to move the ironing rolls in unison toward or away from the main roll.

9. In combination, a rotatable drum, first and second rollers substantially coextensive in length with said drum for holding sheet material against the outer surface of said drum, means supporting the first of said rollers in a first skewed position with respect to the drum so that the first roller cooperates with the drum to direct the material in a direction extending perpendicular to the axis of the first roller, and means supporting said second roller in a second and different skewed position with respect to the first roller so that the second roller and the drum cooperate to direct the material in a direction extending perpendicular to the axis of the second roller, said first and second skewed positions being so related that lateral tension is applied to the material as it passes between the drum and the rollers.

10. In combination, a rotatable ironing drum, first and second rollers for holding sheet material against the outer surface of said drum and cooperating with said drum to define an ironing zone, and means supporting the ends of said rollers and said drum in positions wherein said rollers have their longitudinally axes so inclined with respect to the longitudinal axis of the drum that the first roller cooperates with the drum to direct the material in a first direction extending perpendicular to the axis of the first roller while the second roller cooperates with the drum to direct the material in a second direction different from said first direction and extending perpendicular to the axis of the second roller, said rollers and said drum being so positioned that they cooperate to apply tension to the material by pulling it towards both of its side edges as it is moved through the ironing zone.

11. In an ironing machine, a rotatable drum, a plurality of rollers cooperating with the drum to define an ironing zone through which material to be ironed is moved in a predetermined direction, means for supporting one end of each roller adjacent one end of the drum and for supporting the opposed end of each roller adjacent the other end of the drum, said supporting means including means for positioning a first of said rollers with its axis at said one end located along a first radius of said drum and with its axis at said opposed end located along a second and different radius of said drum and said supporting means further including means for positioning a second of said rollers with its axis at said one end disposed along a third radius of said drum and with its axis at said opposed end disposed along a fourth radius of said drum, said third and fourth radii differing from each other and from said first and second radii, the included angle between said first and third radii being different from the included angle between said second and fourth radii, whereby said first and second rollers cooperate with the drum to apply tension to the material in a direction extending laterally of the predetermined direction.

12. In an ironing machine, a rotatable drum, a plurality of rollers cooperating with the drum to define an ironing zone through which material to be ironed is moved in a predetermined direction, means for supporting one end of each roller adjacent one end of the drum for supporting the opposed end of each roller adjacent the other end of the drum, said supporting means including means for positioning a first of said rollers with its one end located in advance of its opposed end with respect to the predetermined direction of movement of the material and said supporting means further including means for positioning a second of said rollers with its one end trailing its opposed end as related to the predetermined direction of movement of the material, whereby said first and second rollers cooperate with the drum to apply tension to the material in a direction extending laterally of the predetermined direction.

13. In an ironing machine, a drum of relatively large diameter, a plurality of spaced rollers for holding material to be ironed against the outer surface of said drum and cooperating with said drum to define an ironing zone, means for rotating the drum and the spaced rollers to move the material being ironed through the ironing zone, and means for positioning at least one of said rollers in skewed position with respect to the direction of movement of the material through the ironing zone with the axis of said one roller located along different radii of said drum at the opposed ends of said one roller so that said one roller cooperates with said drum and with the other rollers to apply lateral tension to the material.

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