July 3, 1945. K. CLARK 2,379,788

IRONING MACHINE

Filed May 21, 1938 3 Sheets-Sheet 1

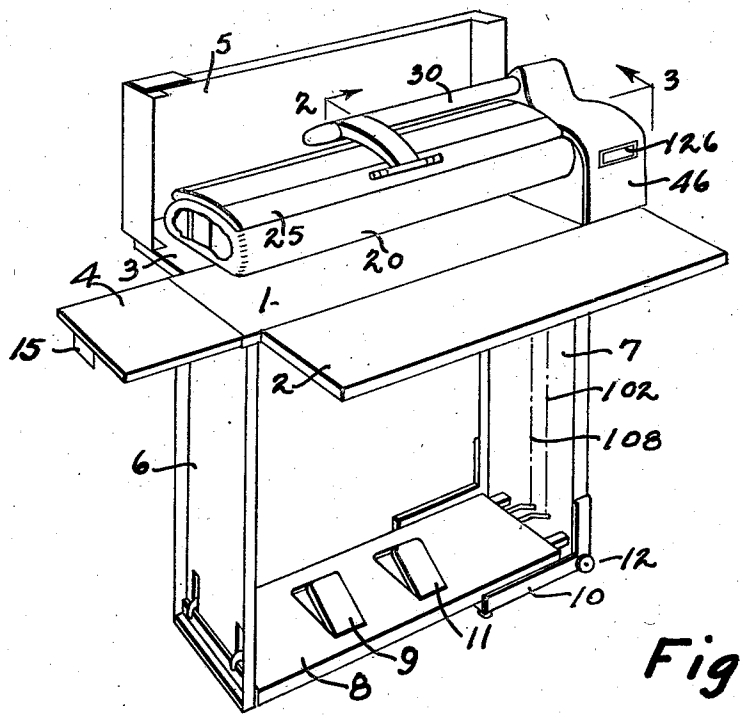


Fig 1

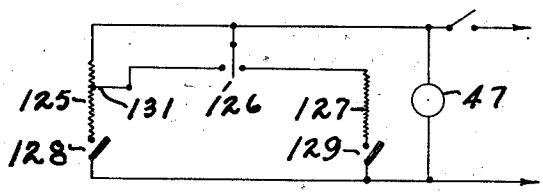
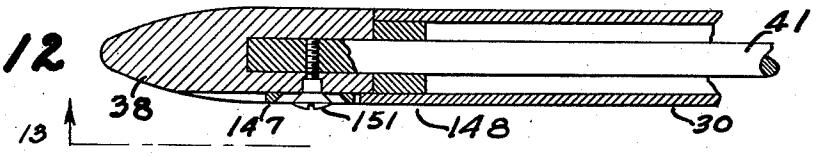


Fig II

Fig 12



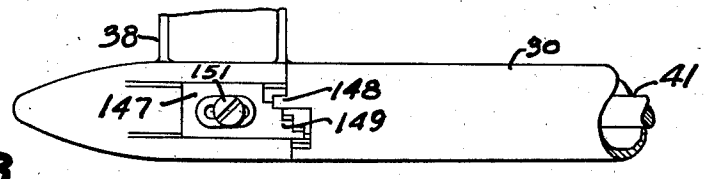


Fig 13

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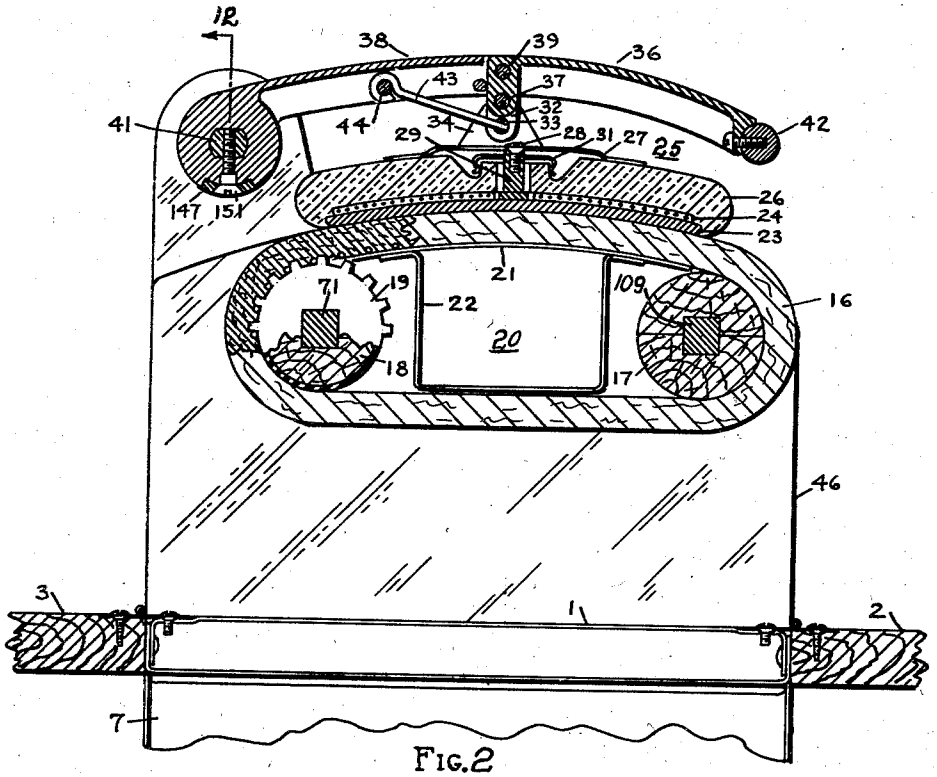

FIG. 2

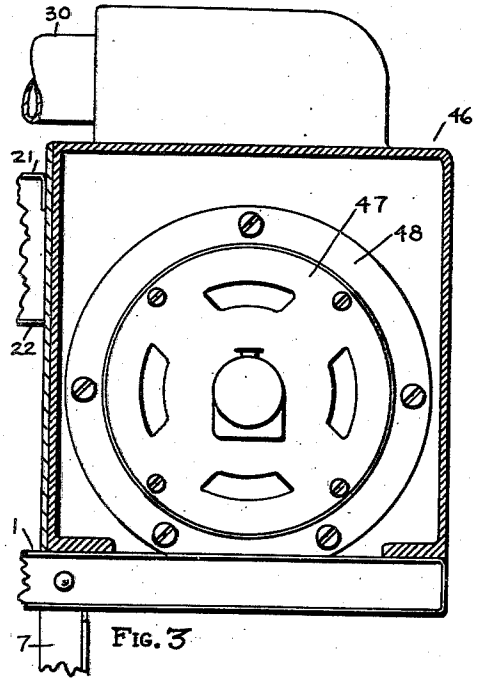

FIG. 3

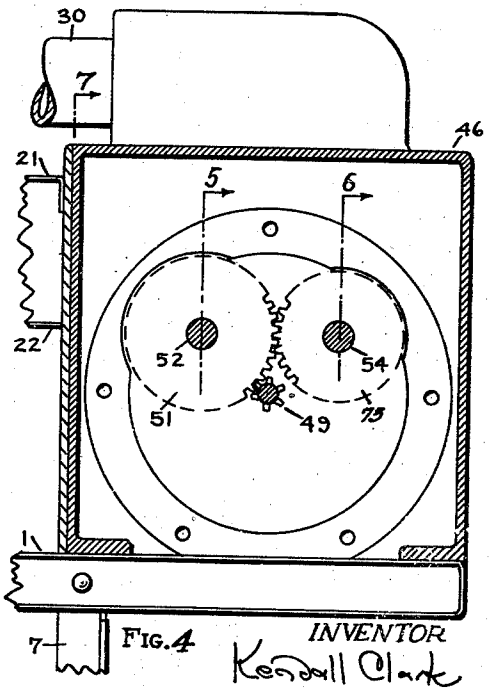

FIG. 4

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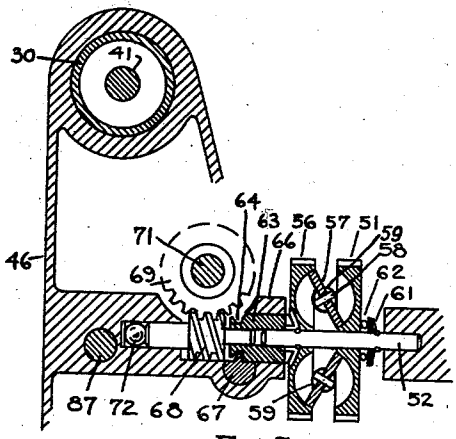

FIG. 5

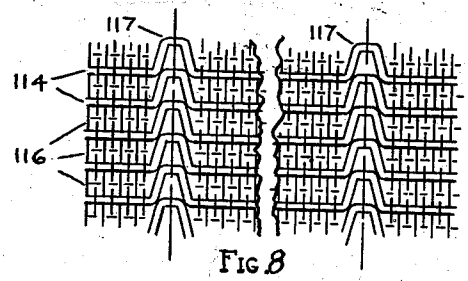

FIG. 8

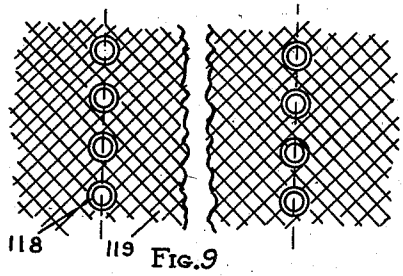

FIG. 9

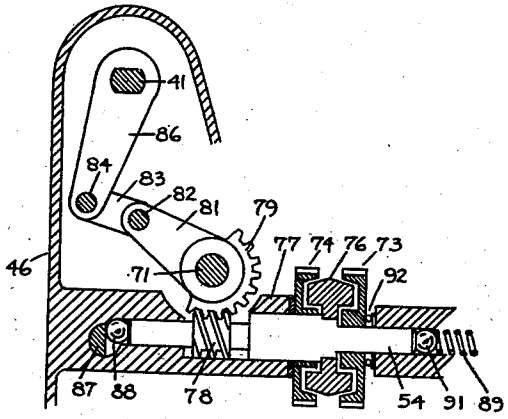

FIG. 6

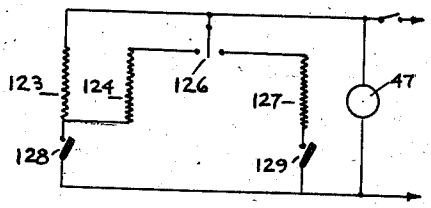

FIG. 10

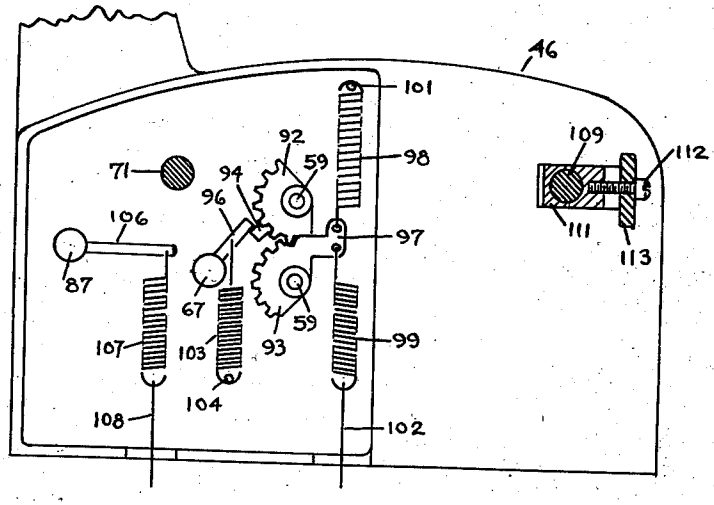

FIG. 7

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Patented July 3, 1945

2,379,788

UNITED STATES PATENT OFFICE

2,379,788

IRONING MACHINE

Kendall Clark, South Bend, Ind.

Application May 21, 1938, Serial No. 209,227

9 Claims. (Cl. 38—11)

This invention relates to an ironing machine. The ironing machine has many novel features that make it especially convenient for domestic and household use.

One of the objects of the present invention is to provide an ironer that can be used interchangeably and concurrently as either a power driven ironer or as a flat bed ironer, thereby combining the advantages of the mangle ironer for flat work with the advantages of the flat bed ironer for garments.

Another object of the invention is to provide novel means for controlling the speed at which garments and fabrics pass through the ironer, the speed at all times being controllable at the will of the operator during the actual ironing operation.

A further object of the invention is to provide novel means for controlling the ironing pressure at the will of the operator during the actual ironing operation.

An additional object is to provide a novel ironer heating element whereby the operator is protected from receiving burns from the iron by a heat insulating protective barrier.

Another object is a novel heat control for the ironer heating element, whereby a portion of the heating element may receive the entire electrical input available, with means for disconnecting the remainder of the heating element, thereby preventing excessive current consumption.

Still another object of the invention is to provide novel means for quickly releasing the ironer heating element from the work in case of necessity or emergency.

The above and further objects and novel features of the invention will more fully appear from the following detailed description when read in connection with the accompanying drawings. It is to be expressly understood, however, that the drawings are for the purpose of illustration only and are not intended as a definition of the limits of the invention.

In the drawings wherein like reference characters refer to like parts throughout the several views,

Figure 1 is a perspective view of one form of the ironer with the cabinet unfolded, as embodied in the present invention;

Fig. 2 is a cross sectional view of the ironer head and adjacent parts taken substantially through the section indicated at 2 in Fig. 1;

Fig. 3 is a cross sectional view of the mechanism taken substantially through the section indicated at 3 in Fig. 1, and showing the driving motor;

Fig. 4 is similar to Fig. 3, but with the motor removed, showing internal gearing;

Fig. 5 is a cross sectional view of the roller drive mechanism taken substantially through the section indicated at 5 in Fig. 4;

Fig. 6 is a cross sectional view of the ironer pressure mechanism taken substantially through the section indicated at 6 in Fig. 4;

Fig. 7 is an end view of the mechanism housing taken substantially as indicated at 7 in Fig. 4;

Fig. 8 is a detailed view showing the base structure of the padded endless belt;

Fig. 9 is a detailed view showing an alternative base structure of the padded endless belt;

Fig. 10 is a diagram showing the electrical connections of the ironer;

Fig. 11 is a diagram showing alternative electrical connections for the ironer;

Fig. 12 is a detailed view showing the mechanism for limiting the vertical motion of the heated ironing element taken along the section line 12 of Fig. 2; and

Fig. 13 is a view taken along the line 13 of Fig. 12.

One embodiment of the present invention is illustrated in the drawings, by way of example, in the form of a domestic household ironing machine. The unit comprises a heated ironing element operating in conjunction with a resilient ironing pad. The resilient pad is arranged in an endless belt and passes around two rollers. Means is provided for driving one of the rollers at variable speed, thereby causing the surface of the resilient pad to move at a corresponding variable speed. Means is provided to bring the heated ironing element into contact with the ironing pad and also to vary the pressure between the ironing element and the ironing pad. The mechanism is mounted on a folding work table which becomes a cabinet enclosing the ironer when folded.

The ironer as shown in Figure 1 is fastened to the top of the work table 1. Additional working surface is provided by a front shelf extension 2. In a similar manner the working surface is extended to the rear by the rear shelf 3. A side extension 4 is also provided. To prevent articles from falling off the rear of the work table a vertical barrier 5 extends upward from the rear edge of the shaft 3. The table 1 is supported on legs 6 and 7 which carry a pedal base 8, having control pedals 9 and 11. This cabinet may be folded into a compact case which rests on the base 10. The novel features of the cabinet are described and claimed in a copending application.

The operator regulates and controls the speed

at which garments and fabrics pass through the ironer by foot pressure on a speed control pedal 11. Foot pressure on the pressure control pedal 9 regulates and controls the ironing pressure. The mechanisms governed by the control pedals are shown in Figures 2 to 8 inclusive.

Figure 2 shows a detailed cross section of the ironing mechanism. A resilient ironing pad 16 is formed in an endless belt and passes endlessly around two rollers 17 and 18. The rear roller 18 is driven by power and has several sprocket gears 19 spaced along its length. The teeth of the sprocket gears engage driving members in the endless belt (to be described in more detail later), thereby driving the padded belt and maintaining it in alignment. The upper surface of the endless ironing pad is given a slightly convex form by causing it to pass over the convex member 21. The convex member is given rigidity by welding it to the channel member 22. This construction provides an ironing pad with a relatively flat upper surface. Hereinafter these associated parts will be referred to as the lower buck 20.

Mechanical motive power for the roller drive mechanism is provided by an electric motor 47, as seen in Figure 3. The motor is supported on a motor mounting plate 48.

A motor pinion gear 49, as seen in Figure 4, meshes with an intermediate gear 51 rotating shaft 52. The intermediate gear 51 is part of the roller drive mechanism (to be described in more detail later) and also meshes with a gear 73 rotating shaft 54. The gear 73 is a part of the ironing pressure mechanism (to be described in more detail later).

The intermediate mechanism between the speed control pedal 11 and the roller drive is shown in Figure 7. The rate of traverse of the endless padded belt 16 around the rollers 17 and 18 is controlled by the pull on a wire 102 which is proportional to the operator's foot pressure on the speed control pedal 11. The lower end of the wire 102 is fastened to the pedal mechanism, and the upper end to spring 99. Spring 99 has a moderate prewound tension and normally acts as a rigid tension link. If for any reason an excessive pull is applied to the mechanism, the spring 99 stretches and protects the mechanism from damage. The upper end of the spring 99 is fastened to a projection of a gear segment 93. The gear segment 93 meshes with a second gear segment 92, and together they rotate the stub shafts 59 to effect a change in the speed ratio of the variable speed transmission. Arm 94 rotates with the gear segment 92 and engages an arm 96 fastened to the clutch control shaft 67. The initial movement of the gear segments and arm 94 permit the arm 96 and shaft 67 to be rotated by the pull of a tension spring 103. The rotation of shaft 67 engages the clutch mechanism. An increase in the pull on the wire rotates stub shafts 59, which act on the variable speed transmission to increase the rate of traverse of the endless belt around the rollers 17 and 18. A return spring 98 returns the parts to their original positions and disengages the clutch when the pull on wire 102 is released.

The roller drive mechanism and the variable speed transmission are shown in detail in Figure 5. The gear 51 and a corresponding gear 56 are parts of the variable speed transmission. Held in compression between the gears are a plurality of wheels 57 engaging and rolling on toroidal surfaces formed on the inner faces of the gears. The wheels 57 rotate on pins 58. The wheels 57 and the pins 58 are carried by the stub shafts 59 which are arranged to rotate the axes of the wheels. Rotation of the gear 51 causes rotation of the wheels 57 by virtue of the frictional contact between the wheel and the toroidal inner face of the gear. Rotation of the wheels 57 is in turn transmitted to the gear 56 by virtue of the frictional contact between the wheel and the toroidal inner face of the gear. In the arrangement shown in Figure 5 gear 56 rotates at a slower speed than gear 51 and in the opposite direction. As the axes of wheels 57 are inclined to the vertical by the rotation of the stub shafts 59, the speed of rotation of gear 56 is increased. Compression on the wheels 57 is maintained by a spring washer 61 acting through a thrust bearing 62.

Projecting teeth on a clutch member 63 are arranged to engage in a slot in the left face of the gear 56. The clutch member 63 is free to slide and rotate with respect to the bearing 66 and also to the shaft 52. An annular groove 64 is formed around the circumference of the clutch member 63 and is arranged to engage with a projection on the clutch shifting shaft 67. Rotation of the shaft 67 causes an axial movement of the clutch member 63, and serves to engage or disengage the clutch member from the gear 56. The clutch member 63 is splined to an extension of a worm 68 and is free to slide axially on it. Thrust from the worm is taken up by a ball thrust 72. The worm 68 meshes with a worm gear 69 driving shaft 71 and the roller 18.

The lower surface of a heated ironing element 23, as shown in Figure 2, is given a concave form parallel to that of the padded upper surface of the lower buck 20. An electrical heating element 24 is provided to heat the ironing element. The electrical heating element 24 is clamped against the ironing element 23 by the member 26. The member 26 is divided into front and rear sections and is preferably made of a heat insulating substance such as a ceramic, although a high temperature Bakelite or brake lining material might be used. The clamping force holding the above items together is provided by a flat spring 27. The spring 27 is fastened by a screw 28 to a pillar 29. Pillar 29 is secured to the ironing element 23. A second clamping spring 31 holds the front and rear halves of the member 26 against the front and rear edges of the ironing element 23. The edges of the members 26 have a slight undercut, and the edges of the ironing element have a slight bevel to engage the undercut. Hereinafter, these associated parts will be referred to as the upper buck 25.

The intermediate mechanism between the pressure control pedal and the ironing pressure mechanism is shown in Figure 7. The ironing pressure and the raising and lowering of the upper buck 25 are controlled by the pull on wire 108. The lower end of the wire 108 is fastened to the pedal 9, and the upper end is fastened to a spring 107. Spring 107 has a moderate amount of prewound tension and normally acts as a rigid tension link. If for any reason an excessive pull is applied to the mechanism, the spring 107 stretches and protects the mechanism from damage. The upper end of spring 107 is fastened to an arm 106. The arm 106 applies a torque to shaft 87 proportional to the pull on the wire 108. An initial pull on wire 108 causes the ironer pressure mechanism to go into action and results in the lowering of the upper buck to the surface of the lower buck 20. Any further pull on the wire tends to in-

crease the applied pressure between the upper buck and the lower buck. A release of the pull on the wire 108 first results in a release of the ironing pressure and then causes the upper buck to rise.

The vertical motion of the upper buck is adjusted as shown in Figures 12 and 13 by the lateral motion of a sliding member 147. The sliding member 147 is normally held in a fixed position in the swinging arm 38 by the screw 151 and therefore normally moves with the shaft 41 and swinging arm 38. By releasing the screw 151, the sliding member 147 may be moved laterally to align any one of its steps 149 with the stationary projection 148 on the support arm 30. The various steps allow the sliding member 147 to move various distances in an upward direction as viewed in Fig. 13 before its movement is stopped by the engagement of one of the steps with the projection 148. Through the connection of the sliding member 147 with the swinging arm 38, the movement of the swinging arm in its upward direction is thereby limited to limit the maximum opening between the upper and the lower bucks 25 and 20.

Clockwise rotation of a shaft 41, as shown in Figure 2, by the ironing pressure mechanism rotates the arm 38 and lowers the upper buck 25 to engage the lower buck 20. A clockwise torque subsequently applied to the shaft 41 by the ironing pressure mechanism develops ironing pressure between the upper buck and the lower buck.

The arm 38 is connected to the upper buck through an emergency release mechanism. The emergency release mechanism consists essentially of a locking toggle linkage actuated by lever 36. In the normal position, shown in Figure 2, the toggle acts as a rigid compression link to transmit any force applied by the arm 38 directly to the upper buck. However, should the occasion arise, the upper buck may also be raised by lifting on a handle 42 of the lever 36, even though the arm 38 is temporarily held in the engaging position. This action causes the lever 36 together with a crosspin 37 to rotate counterclockwise about a cross pin 39. Link 32 engaging the cross pin 37 is caused to rotate clockwise about a cross pin 33. The distance between cross pin 39 and cross pin 33 is thereby shortened, and since the cross pin 39 engages the arm 38 which is temporarily held, the upper buck is lifted. A small link 43 pivoted on cross pin 44 in lever 38 and fastened to cross pin 33, maintains the upper buck in its proper position with respect to the lever 38.

The ironer pressure mechanism is shown in detail in Figure 6. Gears 73 and 74 rotate in opposite directions on shaft 54 and mesh respectively with gears 51 and 56 of Figure 5. A frictional clutch member 76 is fastened to shaft 54 and is arranged to engage either gear 73 or gear 74 depending on the axial location of the shaft. A worm 78 rotates with the shaft 54. The worm meshes with a worm gear segment 79, rotatable on shaft 71. An arm 81 rotates with the worm gear segment and through a mechanical system comprising cross pin 82, link 83, cross pin 84, and arm 86, causes a rotational movement of shaft 41. The pressure control shaft 87 is cut half way through to afford a bearing face for a ball thrust bearing 88. Clockwise rotation of the shaft 87 by the pedal 9 causes the ball 88 to thrust against the end of the shaft 54 and move it axially to the right. This movement causes the frictional clutch member 76 to engage the gear 73, thereby imparting rotation to shaft 54. Gear 73 rotates clockwise as viewed from the right end of Figure 6, and consequently shaft 54 rotates in the same direction. The worm 78 and the shaft 54 are free to move axially. The rotation of the worm 78 accomplishes a double purpose. First, through the above described mechanism, it serves to impart a rotational movement to shaft 41, thereby supplying movement and pressure to the upper buck 25. Secondly, the rotation of the worm causes it to act as a screw against the worm gear segment as a nut, causing a reactive thrust against the thrust ball 88 and the shaft 87. This reaction is of a small magnitude until the motion of the shaft 41 is retarded by the upper buck engaging the lower buck 20. After the upper buck engages the lower buck, the intermediate mechanism, namely, the arm 38, shaft 41, the arm 86, the link 83 and the arm 81 prevents any further rotation of the gear segment 79. Now, any further rotation of the worm will result in an increasing reaction thrust against the shaft 87 and an increasing clockwise torque on the shaft 41. When the reaction thrust on the shaft 87 becomes greater than the original applied thrust, the shaft 87 is caused to rotate in a counterclockwise direction. The counterclockwise rotation of the shaft 87 is accompanied by an axial movement of the shaft 54 and a disengagement of the frictional clutch member 76 from the gear 73. Any further increase in the original applied thrust results in an increased reactive thrust. Since the reactive thrust is derived from the thrust of the worm against the worm gear teeth, any increase in the original thrust is transmitted through the mechanism and appears as an increase in ironing pressure on the upper buck. A complete release of the original thrust permits the shaft to move axially to the left by the expansion of a spring 89 acting against a ball thrust bearing 91. The axial movement of the shaft 54 to the left causes the frictional clutch member 76 to engage the gear 74 rotating in a counterclockwise direction. Counterclockwise rotation of the worm 78 acting through the mechanism described above results in a release of the ironing pressure and lifts the upper buck from the lower buck. The lifting of the upper buck continues until the mechanism, namely the sliding member 147 strikes the adjustable stop. On striking the adjustable stop 149 (Fig. 13), the mechanism, namely, the shaft 41, the arms 86 and 81, the link 83, the worm gear 79 and the worm 78 builds up a reactive thrust on the shaft 54 until the reactive thrust overcomes the thrust from the spring 89. When the reactive thrust overcomes the spring thrust, the shaft 54 moves slightly to the right and disengages the frictional clutch member 76 from gear 74. A thrust bearing 92 is provided to take the thrust from the clutch action.

The constructional details of the endless padded belt are shown in Figure 8. Parallel wires 114 are secured to a fabric backing 116. The wires have a plurality of bends 117 engaging the sprocket gears 19 on the roller 18. The bends in the wires serve several purposes. They provide means for maintaining the spacing of the wires. In engaging the sprocket teeth they maintain the endwise location of the belt on the rollers. They also prevent the wires from shifting endwise with respect to each other. Padding is built up upon this wire and fabric base, and the assembly is covered with a plain cloth wrapper. An alternative belt base is shown in Figure 9. Metal eyelets 118 are fastened to the fabric belt 119. The

eyelets are spaced to engage the teeth of the sprockets 19.

The tightening device for the endless padded belt is also shown in Fig. 7. The idling roller 17 is carried on a shaft 109. The end of shaft 109 bears in a bearing block 111. The block 111 is threaded to take a tightening screw 112. The head of screw 112 extends through a projection 113 of the housing 46. By turning the tightening screw, the bearing block is drawn toward the right and increases the center distance between shafts 71 and 109. Increasing the center distance between shafts 71 and 109 tightens the endless padded belt 16.

The ironer heating element 24 has three heating resistances. The resistances are connected according to the diagram shown in Figure 10. The maximum electrical current consumption of domestic ironing machines of this type is limited by the specifications of the electrical code. It is occasionally desirable to concentrate all the available heating capacity on a portion of the ironer element, such as the half adjacent to the open end (left half) of the ironer, see Figure 1. In order to concentrate the heating capacity in one end of the element and still not exceed the limit on current consumption, it is found necessary to disconnect the other end of the element. The circuit shown in Figure 10 does this by means of a single pole double throw switch 126. With switch 126 thrown to the right, current flows through the heating resistance 127 located in the left hand half of the ironer heating element, and current also flows through the heating resistance 123 in the left hand half of the ironer element. Thermostatic switches 129 and 128 control the temperatures of the respective right and left hand halves of the ironer element. When it is desirable to concentrate the heating capacity in the left half of the ironer element, the switch 126 is thrown to the left and energizes a third heating resistance 124, also located in the left hand half of the ironer element. The resistance 124 is thereby connected in parallel with resistance 123 and increases the heating capacity of the left end of the ironer element. The heat developed by the two resistances is controlled by the thermostat 128.

A brief summary of the operation of the ironing machine is now given.

The machine assembly as shown in Figure 6 is moved to the location where it is intended to be used. The operator then separates the upper cabinet mechanism from the right hand base by lifting on handle 15. When the upper section is raised to the position shown by the dotted lines in Figure 5, the left hand leg 6 is automatically released. Similarly a little further lifting on the handle 15 automatically releases the base section 8. The shelves 2 and 4 and the back and cover 3 and 5 are then unfolded. The appliance cord is then plugged into a convenient outlet, and the machine is ready to iron as soon as the heating element is up to ironing temperature.

As soon as the motor is started the motor acting through the mechanism of the ironer automatically lifts the upper buck into the open position. During this operation the motor drives the motor pinion 49 and the gear 51 which is loose on the shaft 52. Gear 51 drives gear 53 which in turn drives the variable speed member 57 and gear 56. Gear 56 meshes with gear 74 which turns loosely on the shaft 54. A stiff spring 89 in the housing mechanism acting through the thrust bearing 91 forces the shaft 54 and the clutch member 76 into engagement with the mating clutch surface in the gear 74. The rotation of the gear 74 turns the clutch member 76 which in turn drives the worm 78. The worm 78 turns the worm gear 79 which lifts the upper buck through the medium of the linkage 81, 83, 86, the shaft 41, and the arm 38.

Let us suppose that the operator wishes to iron a partially pleated skirt. The operator would place the bottom of the skirt over the open end of the lower buck and would smooth out any apparent wrinkles by stretching the skirt with her hands. She would then place the first pleat in position toward the front of the lower buck. A light pressure from the operator's left foot on the pressure control pedal 9 then forces the upper buck lightly against the pleat in the skirt where the combined action of the heat and pressure presses the pleat in place.

The pressure of the operator's foot on the pressure control pedal 9 pulls wire 108 which rotates shaft 87. The other end of shaft 87 is cut flat along a diameter and acts as a cam against the thrust ball 88 to move the shaft 54 against the counterthrust ball 91 and the counterthrust spring 89. The axial movement of the shaft 54 causes the clutch member 76, which is pinned to the shaft 54 to engage the corresponding clutch surface in the gear 73. The rotation of the clutch member 76 turns the shaft 54 and the worm 78 in a direction to screw the worm 78 through the teeth of the worm gear 79 and exert a pressure on the thrust ball 88 and the cammed end of the shaft 87. As long as the axial pressure on the shaft 54 due to the camming action from the shaft 87 is greater than the reaction of the worm 78 as it tends to screw through the worm gear 79, the clutch member 76 will remain in engagement with the corresponding clutch surface in the gear 73. The rotation of the shaft 54 during his phase of the operation will rotate the worm gear 79 and the arm 81 in a direction such that the linkage 83 and 86 will turn the shaft 41 to move the arm 84 and the upper buck into engagement with the lower buck. As soon as the upper buck engages the lower buck, a reaction to the rotation of the arm 81 is developed through the linkage 83, 84, cross shaft 41, and arm 38. However, since the worm 78 is still turning, the worm 79 continues to try to turn and the reaction which prevents it from turning increases. Ultimately a point will be reached where the rotational reaction of the worm gear 78, due to the reaction on the arm 81, equals the axial thrust on the shaft 54 due to the rotation of the cam on the end of shaft 87. At this point all the forces are in balance, and if there were no friction in the device, there would be no force tending to hold the driving surfaces of the clutch together. However, the friction present in the device permits a slight amount of overdrive to the point where the axial screw thrust overcomes the axial cam thrust, and the shaft 54 moves to disengage the clutch 76 from the gear 73.

It is interesting to note that as the force is increased on the pedal 9 a greater reaction is necessary to cause the clutch to disengage. This greater reaction of course is the result of a greater pressure between the upper and lower buck. The mechanism therefore performs as a thrust amplifying device which permits the engagement and pressure between the upper and lower buck to be readily controlled by the operator.

If the operator so desires, she may add a sheen or luster to the pressing by stepping lightly on

the speed control pedal 11. The mechanism of the ironer will then advance the article being ironed on the endless padded belt 20 under the heated surface of the upper buck 25, and the combined heat, pressure, and sliding friction will produce a lustrous sheen on the fabric.

When ironing a skirt or other pleated garment, the variable speed control permits the operator to pause and form a each pleat before it enters under the upper buck. In a similar manner when she comes to a portion of the skirt that is not pleated, she can press harder on the speed control pedal and that portion of the skirt will move rapidly under the heated upper buck. If a portion of one of the pleats should accidentally get under the upper buck in a manner such as to cause a wrinkle, she can readily raise the upper buck by taking her foot off the pressure control pedal 9 and straighten the wrinkle. A light pressure of her foot again on the pressure control restores the upper buck to the ironing position, and she can then proceed with the ironing.

The speed control mechanism for the endless moving belt consists of a variable speed drive and a clutch. When the operator wishes the belt to move, she presses on the speed control pedal 11 which pulls on the wire 102. The wire 102 pulls on the lever 97 which turns the shafts 58 and 59 through the intermediary of the gears 93 and 92. The shafts 58 and 59 vary the inclination of the idler wheels 57. The first motion of the shaft 58 permits the lever extension 94 to move away from the lever 96 on the shaft 61. Spring 103 pulling on the lever 96 rotates the shaft 67 which causes the clutch 66 to engage with the rear surface of the gear 56. The drive mechanism is then completed between the motor and endless padded belt through the intermediary of the motor pinion 49, gear 52, gear 53, idler wheel 57, gear 56, clutch 66, shaft 52, worm 68, worm wheel 69, cross shaft 71, and sprockets 19. Any further pressure of the operator's foot on pedal 11 causes the shafts 58 and 59 to turn the idler wheels 57 in a direction such that the speed of the gear 56 is increased with a corresponding increase in the speed of the endless padded belt. A release of the pressure of the operator's foot on the pedal 11 causes the reverse of the above operation, whereby the speed of the belt is decreased and finally stopped.

It might also be mentioned here that men's trousers may be neatly pressed on this ironing machine. The upper surface of the lower buck is long and narrow and slightly convex. The trousers can be laid across this surface and smoothed out by hand. A damp cloth is then placed over the trousers and pressure of the operator's foot on the pressure control pedal brings the upper buck down against the lower buck. When ironing trousers a considerable pressure is needed to do an effective pressing job, and the operator would probably press the pressure control all the way down. The mechanism of the ironer multiplies the pressure of the operator's foot by one hundred or two hundred times depending on the position and proportions of the linkages. The upper surface of the lower buck is sufficiently wide and long for most pressing operations.

A man's suit coat may be rapidly ironed by placing it over the lower buck with the bottom of the coat toward the right side of the machine. The front of the coat is ironed by pressing, and the back is ironed by a combination of the pressing and the motion of the endless belt. The sleeves are ironed by pressing. The collar is ironed with the endless belt motion by having the collar only in contact with the extreme left end of the lower buck, and the remainder of the coat resting on the table surfaces.

Sheets, pillow cases, and flat work are easily and rapidly ironed by using the power feed with the endless belt. Fancy work such as dresses and ruffles can easily be handled by the pressing method, and the more difficult parts can be handled on the extreme left end of the machine by either using it as a pressing machine or with the powered endless belt feed.

The alternative electrical hookup shown in Figure 11 is very similar to the hookup shown in Figure 10. The resistance 125 is tapped at 131, and a wire run to the single pole double throw switch 126. With the switch thrown to the left a portion of the resistance 123 is bypassed. An increased current flows through the remainder of the resistance giving an increased heating effect.

While one illustrative embodiment of my invention has been described in detail, it is not my intention to be limited to this embodiment, or otherwise than by the terms of the appended claims.

I claim:

1. An ironing machine comprising an endless moving belt conveying articles to be ironed, a heated ironing element, power means, transmission means between said power means, belt and ironing element, controllable means responsive to motion of the operator's foot for actuating said transmission means to cause said power means initially to move said ironing element at a rapid rate into engagement with said belt and thereafter to apply a variable pressure proportionally to the pressure of the operator's foot, and controllable means responsive to motion of the operator's foot for actuating said transmission means to cause said power means to rotate said belt and to vary the speed of rotation of said belt in response to movement of the operator's foot.

2. An ironing machine comprising an ironing element, an ironing pad, a source of power, a clutch and an infinitely variable speed drive connecting said source of power and said ironing pad for moving the ironing pad across the surface of the ironing element at variable speeds, means for lowering and raising said ironing element into and out of contact with said ironing pad, and a two-way clutch means for connecting said last mentioned means to said source of power to raise and lower said ironing element.

3. An ironing machine comprising an ironing pad, an ironing element, moving means for moving the ironing pad and said ironing element toward each other, a source of power, an operating element operable by the user while ironing for controlling said moving means, means including a lost motion arrangement connecting said operating element and said moving means, and a clutch means controlled by said operating element for connecting said source of power to said moving means to move said ironing pad relative to said element by power derived from said source.

4. An ironing machine comprising an orbitally moving ironing pad member, a shoe ironing member movable to and away from said pad member, power means for moving said members, transmission means connecting said power means and said ironing members, and pedal means operable by sustained movement of the operator's foot in

one direction controlling said transmission means to move said pad member orbitally at varying speed in response to motion of the operator's foot in said one direction and operable by sustained movement of the operator's foot in one direction to cause said power means and transmission means to move said shoe ironing member to said pad member, and operable by return movement of the operator's foot to cause said power means and transmission means to move said shoe ironing member away from said pad member.

5. An ironing machine comprising an orbitally moving ironing pad member, a shoe ironing member movable to and away from said pad member, power means for moving said members, transmission means connecting said power means and said ironing members, and pedal means operable by sustained movement of the operator's foot in one direction controlling said transmission means to move said pad member orbitally and operable by sustained movement of the operator's foot in one direction to cause said power means and transmission means to move said shoe ironing member to said pad member and to apply varying pressure by said shoe ironing member on said pad member in accordance with the pressure applied by the operator's foot, and operable by return movement of the operator's foot to cause said power means and transmission means to move said shoe ironing member away from said pad member.

6. An ironing machine comprising an orbitally moving ironing pad member, a shoe ironing member movable to and away from said pad member, power means for moving said members, transmission means connecting said power means and said ironing members, and a unitary operator controlled device operable by sustained movement in one direction and operable while ironing controlling said transmission means to start and move said pad member orbitally at varying speed and movable in the opposite direction to stop said pad member, a unitary operator controlled device operable by sustained movement in one direction to control said transmission to move said shoe ironing member to said pad member and movable in the opposite direction to move said ironing member away from said pad member.

7. An ironing machine comprising an orbitally moving ironing pad member, a shoe ironing member movable to and away from said pad member, power means for moving said members, transmission means connecting said power means and said ironing members, and a unitary operator controlled device operable by sustained movement in one direction and operable while ironing controlling said transmission means to start and move said pad member orbitally at varying speed and movable in the opposite direction to stop said pad member, a unitary operator controlled device operable by sustained movement in one direction to control said transmission, to move said shoe ironing member to said pad member and to apply varying pressure on said pad member proportionally to the movement of said last named operator controlled device and movable in the opposite direction to move said ironing member away from said pad member.

8. An ironing machine comprising an orbitally moving ironing pad member, a shoe ironing member movable to and away from said pad member, power means for moving said members, transmission means connecting said power means and said ironing members, a clutch in said transmission means controlling the connection between said power means and said shoe ironing member, operator controlled means, operable while ironing, controlling said transmission means and clutch to move said pad member orbitally and to move said shoe ironing member to and away from said pad member, and means responsive to pressure of said shoe ironing member on said pad member to vary the operation of said clutch in proportion to the pressure applied to said operator controlled means.

9. An ironing machine comprising a belt pad member, a pair of rollers supporting said pad member, a stationary support for the upper part of said pad member between said rollers, supporting means at one end of said rollers and stationary support providing a cantilever support for said pad member at one end and providing an open end for said pad member at the other end, a shoe ironing member movable to and away from said pad member, power means and transmission means to move said pad member orbitally and said shoe ironing member to and away from said pad member and pedal means operable by sustained movement of the operator's foot in one direction controlling said transmission means to move said pad member orbitally at varying speed in response to motion of the operator's foot in said one direction and operable by sustained movement of the operator's foot in one direction to cause said power means and transmission means to move said shoe ironing member to said pad member, and operable by return movement of the operator's foot to cause said power means and transmission means to move said shoe ironing member away from said pad member.

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