Jan. 6, 1953 H. H. BABCOCK 2,624,135

IRONING MACHINE WITH RECIPROCATING IRONING SHOE

Filed March 9, 1948 2 SHEETS—SHEET 1

Fig. 1.

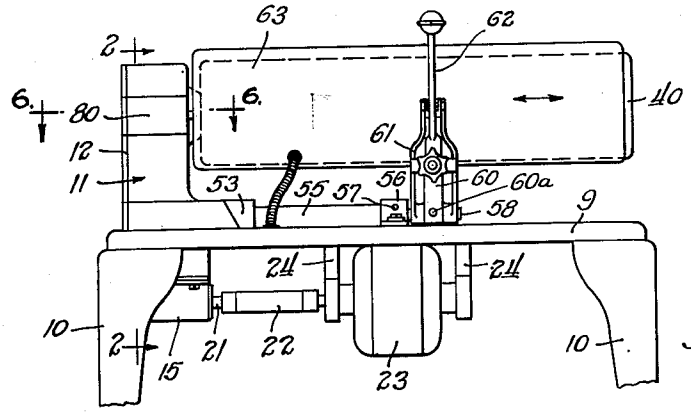


Fig. 3.

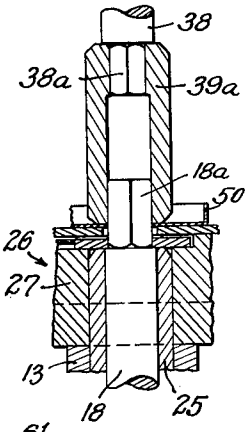
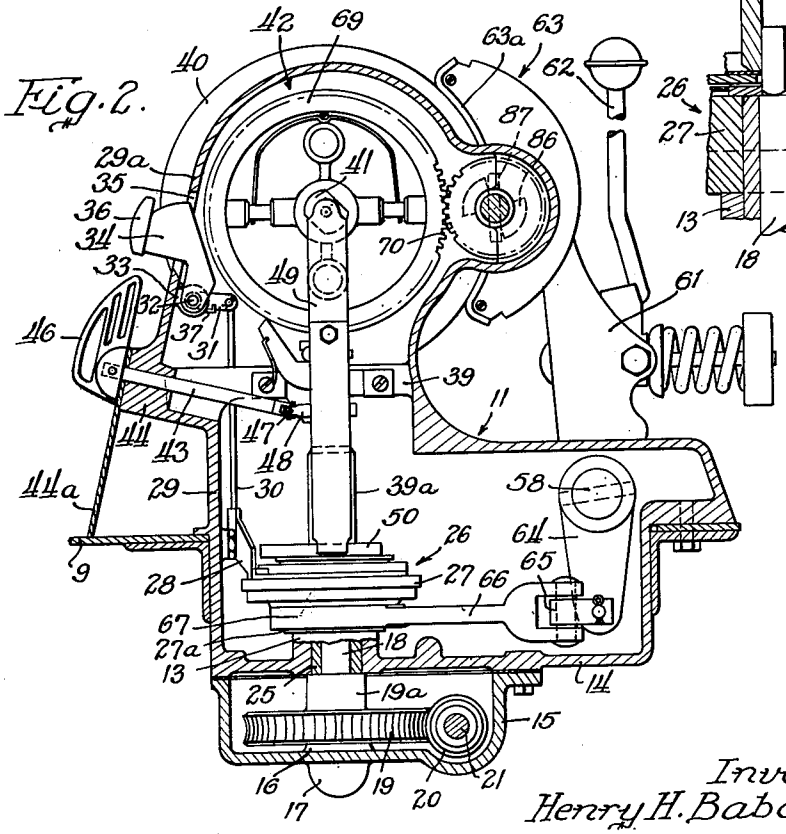


Fig. 2.



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Filed March 9, 1948 2 SHEETS—SHEET 2

Fig. 6.

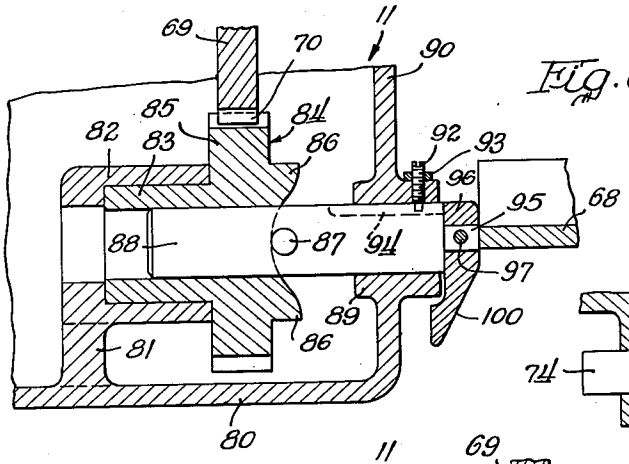


Fig. 5.

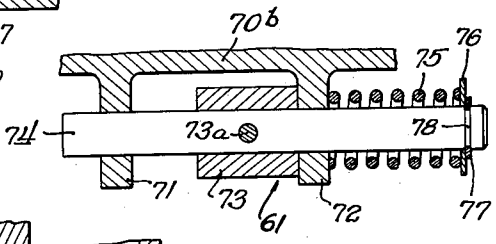


Fig. 7.

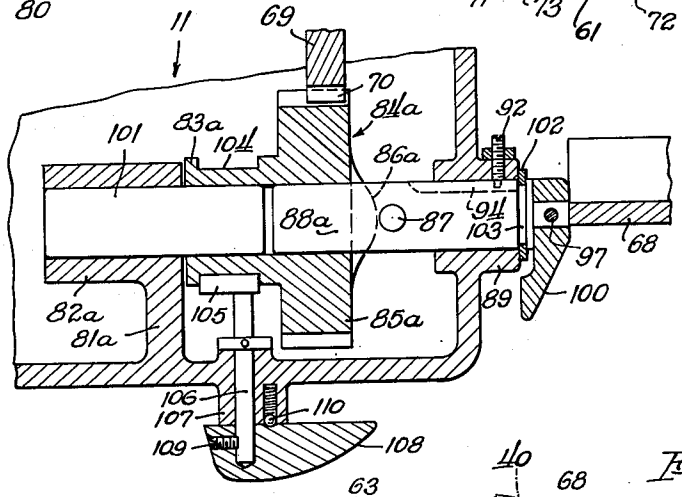


Fig. 8.

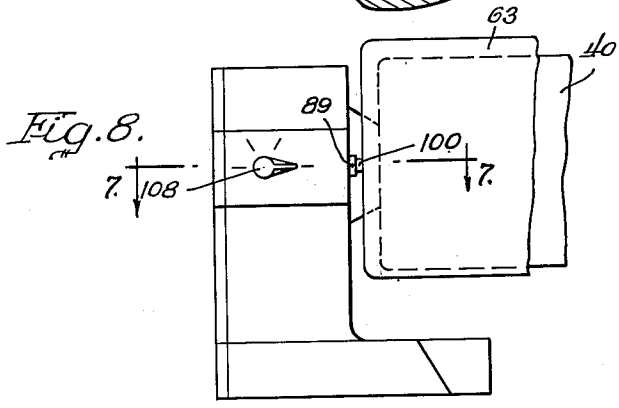
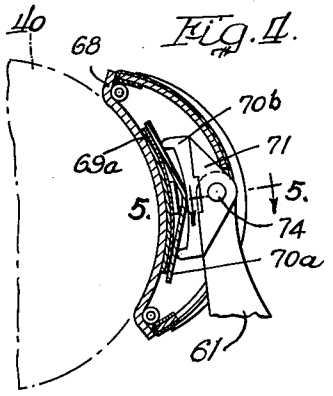


Fig. 4.



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UNITED STATES PATENT OFFICE

2,624,135

IRONING MACHINE WITH RECIPROCATING IRONING SHOE

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Application March 9, 1948, Serial No. 13,836

14 Claims. (Cl. 38—47)

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This invention relates to ironing machines, and has to do with ironing machines intended more particularly for domestic use.

In ironing articles by hand, it is customary to move the iron over the articles in first one direction and then another, such directions being in general substantially perpendicular to one another. This has the effect of smoothing out the articles and preventing wrinkles or creases therein. Further, the changes in direction of movement of the iron, in contact with the article, subjects the threads of the fabric to substantially the same pressure and tension both lengthwise and transversely of the article, avoiding any distortion thereof and imparting thereto a desirable smoothness and sheen. Hand ironing thus produces a noticeably better finish to the articles than it is possible to accomplish by machine ironing, as usually practiced, but is open to the objection that it involves more time and labor than ironing by machine.

There is disclosed, in Patent No. 2,217,522, issued October 8, 1940, to Frederick K. Mueller an ironing machine in which the shoe is reciprocated lengthwise of the cooperating roll, this machine, in operation, closely approximating hand ironing and imparting to the articles that smoothness and sheen characteristic of articles ironed by hand. In the machine of the Mueller patent, the ironing shoe is carried by a reciprocatory and rockably mounted shoe operating shaft mounted in appropriate bearings, this shaft, and with it the shoe supporting arm and the shoe, being reciprocated in the operation of the machine. When the shoe is in cooperating relation to the roll, it is subjected to substantial pressure which reacts on the shoe operating shaft and tends to bend or spring that shaft to a certain extent. That results in the bearings supporting the reciprocating shaft being subjected to objectionable pressure which tends to cause excessive wear of such bearings. My invention is directed to simple and efficient means for reciprocating the ironing shoe of the machine while avoiding subjecting the bearings for the shoe operating shaft to objectionable wear. More particularly, I provide means whereby the shoe may be reciprocated without reciprocating the shoe operating shaft and the shoe supporting arm mounted on that shaft. To that end, I provide means whereby the shoe is mounted on the shoe supporting arm for movement thereby to and from the roll and is also mounted on the shoe supporting arm for relative reciprocation lengthwise of the roll, such mounting means including means for reciprocating the shoe. Further, the shoe reciprocating

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means comprises means whereby the extent of travel of the shoe in either direction may be adjusted, during reciprocation thereof, and reciprocation of the shoe may be prevented, to suit the character and condition of articles being ironed. That is desirable as conducive to best results. Further objects and advantages of my invention will appear from the detailed description.

In the drawings:

Figure 1 is a rear view, partly broken away, of an ironing machine embodying my invention, showing the shoe at the limit of its movement in one direction lengthwise of the roll;

Figure 2 is a fragmentary sectional view, on an enlarged scale, taken substantially on line 2—2 of Figure 1, certain parts being shown in elevation and broken away;

Figure 3 is a vertical sectional view, on an enlarged scale, of the roll drive shaft and associated parts, certain parts being shown in elevation and certain other parts being shown partly broken away and in section;

Figure 4 is a vertical sectional view, on an enlarged scale, of the shoe, with the upper portion of the shoe supporting arm shown in elevation;

Figure 5 is a horizontal sectional view, on an enlarged scale, of the shoe mounting means, taken substantially on line 5—5 of Figure 4, certain parts being shown in plan;

Figure 6 is a fragmentary horizontal sectional view, on an enlarged scale, of the gear housing, showing the plunger and associated parts for reciprocating the shoe, the face plate of the shoe being shown fragmentarily and in section, this view being taken substantially on line 6—6 of Figure 1 and certain parts being shown in plan;

Figure 7 is a view similar to Figure 6, but showing a modification, this view being taken substantially on line 7—7 of Figure 8 and certain parts being shown in plan; and

Figure 8 is an elevational view, as seen from the rear and on a reduced scale, of the gear housing and associated parts of an ironing machine embodying the modification of Figure 7, the shoe and the roll being shown fragmentarily.

I have illustrated my invention, by way of example, as embodied in an ironing machine which is, in general, similar to that disclosed in the above identified Mueller patent and to that disclosed in Patent No. 2,054,631, issued September 15, 1936, to Rudolph W. Janda, for ironing machine.

The machine comprises a suitable stand having a top bed plate 9 supported by depending legs 10. A main gear housing 11, closed at its outer end by a removable cover plate 12, is appropriately

mounted upon bed plate 9, at one end thereof, and extends downward therethrough. A sleeve 13 is formed integrally with, and extends upward from, bottom wall 14 of housing 11.

A worm gear housing 15, appropriately secured to and depending from housing 11, is provided with a collar 16 aligned with a depending bearing boss 17, the latter receiving the lower end portion of a shaft section 18, which passes upward through collar 16. A worm wheel 19 is secured upon shaft section 18 and meshes with a worm 20 fixed on a shaft 21 rotatably mounted in housing 15, the latter shaft being driven, through a flexible coupling 22, by an electric motor 23 suspended from bed plate 9 by hanger brackets 24.

Shaft section 18 passes upward through a bushing 25, mounted in sleeve 13 with its lower end contacting the upper end of hub 19*a* of worm wheel 19. Bushing 25 extends above sleeve 13, through an eccentric and clutch assembly designated generally by the reference number 26. The assembly 26 is similar to the eccentric and clutch assembly disclosed in the above identified patent to Rudolph W. Janda and in Patent No. 1,867,839, issued July 19, 1932, to Rudolph W. Janda, and need not be illustrated nor described here in detail, a brief description thereof being sufficient.

Assembly 26 comprises a member 27, loose on bushing 25, having a depending eccentric 27*a* seating at its lower end upon the upper end of sleeve 13. Suitable means is provided for clutching and declutching member 27 to and from shaft section 18. This clutch means is controlled by a trip finger 28 pivoted to the front wall 29 of gear housing 11 and normally held in operative position. Finger 28 is connected, by a rod 30, to an arm 31 secured upon a pin 32 loosely mounted through a lug 33 extending inward from upper portion 29*a* of front wall 29 of housing 11. An angle lever 34 has its lower end secured upon pin 32, extends through a slot 35 in wall portion 29*a*, and is provided at its outer end with a head or knob 36. Lever 34 normally is held in its outer position by a coil wire spring 37 disposed about pin 32, with one arm engaged beneath arm 31 and its other arm extending across the top of lug 33, in rear of lever 34 and effective as a stop for limiting outward movement thereof. Spring 37 also serves normally to hold trip finger 28 in normal position, effective for declutching member 27 from shaft section 18 and maintaining it declutched.

When lever 34 is moved inward a short distance, trip finger 28 is moved into inoperative position, releasing the clutch means, which is spring actuated, thus clutching member 27 to shaft section 18 for rotation therewith. Lever 34 is moved inward but momentarily, and is then released, returning trip finger 28 to operative position. Rotation of member 27 with shaft section 18 continues during a predetermined portion, about 180°, of the ensuing rotation of shaft section 18, at which time an element of the clutch contacts finger 28 and member 27 is declutched from shaft section 18. In this manner member 27 is clutched to shaft section 18, turns therewith to a predetermined extent, and is then automatically declutched therefrom. The particular clutch means employed is not of the essence of my invention, though I preferably employ the clutch means disclosed in Patent No. 1,867,839, above referred to. Suffice it to state that suitable means is provided for optionally clutching member 27 to shaft section 18 for rotation therewith to a predetermined extent, and declutching member 27 from the shaft section when it has been turned to the desired extent.

Shaft section 18 is disposed below and coaxially with an upper shaft section 38 rotatably mounted through a relatively thick rib 39 extending from the inner end wall of gear housing 11. Shaft section 38 is provided, at its lower end, with a reduced squared stud 38*a* which fits into a corresponding bore in the upper end of a coupling member 39*a*. Shaft section 18 is provided, at its upper end, with a reduced squared stud 18*a* which fits into a corresponding bore in the lower end of member 39*a*. In this manner, the two shaft sections are coupled together for rotation as a unit.

An ironing roll 40, provided with a suitable pad, extends from gear housing 11 inward over bed plate 9 thereabove and parallel therewith. Roll 40 is mounted for rotation about its axis, and is secured to a shaft 41, extending into gear housing 11 and appropriately mounted for rotation. Conveniently the roll 40 and shaft 41 are mounted and secured together in the manner disclosed in the two above identified Patents No. 1,867,839 and No. 2,054,631. The particular manner of mounting roll 40 and shaft 41, and connecting them together, is not of the essence of my invention, and need not be set forth in greater detail. Suffice it to state that the roll and the shaft are rotatably mounted and connected together in an appropriate manner.

Roll shaft 41 is driven, as desired, from shaft section 38 through a change speed gearing assembly indicated generally by the reference number 42. The assembly 42 is similar to that disclosed in Patent No. 2,054,631, and need not be described here in detail beyond noting that it comprises a ring member 69 having external gear teeth 70, providing an external ring gear. It has associated therewith suitable control means whereby shaft 41, and consequently roll 40, may be driven at either one of two speeds, or rotation of the roll may be prevented, as desired. The control means is operated by a control rod 43 mounted for turning movement through a boss 44 at the bottom of upper portion 29*a* of front wall 29 of gear housing 11. Rod 43 also extends through and projects outward beyond a plate 44*a* seating upon the outer face of boss 44, suitably secured thereto and extending downward therefrom to the upper surface of bed plate 9. An operating handle 46 is secured upon the outer end of rod 43, the inner end of which is connected, by a universal connection 47, to the forward end of a turnably mounted control member 48. Means is also provided, comprising a two-part control lever 49 and a cooperating eccentric 50 rotatable with member 27, for automatically enabling and disabling the drive between assembly 42 and roll shaft 41, in accordance with predetermined turning of the latter. The variable speed driving means and associated control means referred to are fully disclosed in Patent No. 2,054,631 and need not be described in greater detail here. If desired, any other suitable means may be provided for driving the roll shaft, such, for example, as the means disclosed in Patent No. 1,867,839 or in Patent No. 2,026,345, issued on December 31, 1935, to Rudolph W. Janda, for Ironing Machine. It will be seen, from what has been said, that the shaft sections 18 and 38, together with hub coupling member 39*a*, constitute a unit or shaft and that this shaft has appropriate driving connection to the roll for driving or rotating the latter from the motor 23. The ironing machine

illustrated and so far described is, in general, similar to that disclosed in Patent No. 2,054,631.

Gear housing 11 is provided, at its rear inner corner, with an exterior boss 53. An elongated tube or sleeve 55 is mounted at its outer end in boss 53, extends therefrom along bed plate 9 in close proximity thereto and parallel with roll 40, and has its inner end portion secured in a bracket 56 in an appropriate manner, as by a set screw 57, which bracket is bolted or otherwise suitably secured to bed plate 9. A shoe operating shaft 58 extends through bushings (not shown) mounted in the ends of sleeve 55 and is mounted therein for rocking movement about its axis. Shaft 58 extends through the outer end of sleeve 55 and boss 53 into gear housing 11, and also projects through the inner end of sleeve 55 a considerable distance beyond bracket 56, as shown in Figures 1 and 2.

A shoe operating arm 60 is suitably secured, as by means of a pin 60a, on the inner end of shaft 58, and is straddled by a bifurcated shoe supporting arm 61, loosely mounted at its lower end on shaft 58 and confined against relative movement lengthwise thereof by arm 60. Means, including an emergency release lever 62, is provided for normally coupling the arms 60 and 61 together for movement as a unit. An ironing shoe 63, conveniently heated by electrical resistance elements contained therein, is mounted upon the upper end of arm 61 for movement therewith to and from roll 40. This shoe is of known construction and comprises a face plate 68 having a concaved ironing or operating surface conforming in transverse curvature and in length to the cooperating surface of the roll 40. It will be clear that the shoe 63 is mounted on shaft 58 and connected thereto for movement therewith, when the arms 60 and 61 are coupled together. The arrangement of the arms 60 and 61 and the associated coupling means and the shoe is similar to that disclosed in Patent No. 2,026,345. It is not essential to my invention, however, that this particular arrangement be used, and any suitable means may be provided for supporting the shoe and operatively connecting it to its associated operating shaft.

An arm 64 (Figure 2) is secured upon the outer end of shoe operating shaft 58, within gear housing 11, and extends downward therefrom. The lower end of arm 64 is connected, by a universal connection 65, to the rearward end of a connecting rod 66 provided at its forward end with an eccentric strap 67 fitting about eccentric 27a. Turning of eccentric 27a to predetermined extent, into one position, turns shaft 58 about its axis in one direction, and turning of the eccentric from that position through 180° into its other position, turns shaft 58 about its axis in the other direction. In this manner eccentric 27a serves to turn shoe operating shaft 58 about its axis in alternately opposite directions and to predetermined extent, effective for moving the shoe 63 to the roll 40 in cooperating relation therewith and moving the shoe away from the roll out of such cooperating relation.

The shoe 63 is of known construction and comprises face plate 68 and associated heating elements 69a secured to the plate by means of suitably spaced clamp members, the central one of which is shown at 70b, bearing on a clamp plate 70a, the clamp members 70b being secured in position by screw studs welded to face plate 68 and passing through the clamp members 70b, these studs receiving nuts screwed thereon, as is known.

In Figure 4 the securing stud and nut have been omitted for clearness of illustration.

The central clamp member 70b is provided with a pair of spaced rearwardly extending ears 71 and 72 rigidly secured thereto, conveniently formed integral therewith. The ears 71 and 72 receive between them a sleeve 73 fixed to the upper end of the shoe supporting arm 61, conveniently formed integral therewith. A shaft 74 extends through sleeve 73 and is fixed therein in an appropriate manner, conveniently by a pin 73a passing therethrough and through sleeve 73. The shaft 74 passes through and slidably receives the ears 71 and 72, and projects a substantial distance beyond ear 72. A compression coil spring 75, mounted about the projecting portion of shaft 74, is confined between ear 72 and a washer 76 disposed about shaft 74 and restrained against relative outward movement by a snap ring 77 engaging in a circumferential groove 78 in shaft 74. It will be seen that the shoe 63 is mounted on the upper end of shoe supporting arm 61 for movement thereby to and from roll 40, is pivoted on shaft 74 for turning movement thereabout to fit accurately to roll 40, and is slidable on shaft 74 lengthwise thereof so as to have reciprocating movement relative to arm 61 lengthwise of roll 40. The compression spring 75 urges shoe 63 toward gear housing 11, its movement in that direction being limited by contact of ear 72 with sleeve 73, as shown in Figure 5.

The gear housing 11 is provided, at its upper portion, with a rearward projection 80 having an interior forwardly extending web element 81 (Figure 6) spaced inward a short distance from the outer side of housing 11. Web element 81 is provided with an integral inwardly extending sleeve 82 in which is rotatably mounted an elongated tubular hub 83 of a cam member 84. The member 84 comprises a spur pinion 85 provided at its inner face with suitably shaped and disposed cam elements or lobes 86. The pinion 85 is in mesh with the external gear member, comprising the gear teeth 70, of the ring gear 69 and is driven thereby when the roll 40 is driven.

The cam elements 86 are disposed to contact a pin 87 secured through a plunger 88 diametrically thereof and projecting beyond the sides of this plunger. The plunger is slidable through a tubular boss 89 integral with inner side wall 90 of gear housing 11, and slidably mounted at its outer portion in the cam member 84, which is free to rotate on plunger 88 and in sleeve 82. A screw 92, threaded through boss 89 and locked in position by a jam nut 93, engages in a lengthwise keyway or groove 94 in plunger 88 and restrains it against turning movement while leaving it free for lengthwise movement. The plunger 88 is provided at its outer end with a coaxial reduced stud 95, upon which a cam head 96 is fixed in an appropriate manner, conveniently by means of a pin 97, for a purpose which will appear presently.

The plunger 88 is so disposed that stud 95 is aligned with face plate 68 of the shoe 63, when the latter is to the roll 40, and the extent of movement of shoe 63 toward the gear housing 11, by compression spring 75, is such that the adjacent end of plate 68 is then in contact with stud 95 and cam head 96, with ear 72 (Figure 5) spaced a slight distance away from sleeve 73 of shoe supporting arm 63. Under such conditions, when cam member 84 is rotated incident to driving of roll 40, the shoe 63 is reciprocated by plunger 88 in cooperation with compression spring 75, in an obvious manner.

In the movement of shoe 63 away from roll 40, face plate 66 is moved clear of cam head 96. The shoe 63 is then moved toward the gear housing 11, by compression spring 75, to a position in which ear 72 contacts sleeve 73 as in Figure 5. The cam head 96 is provided with a rearwardly extending cam element 100. Usually, when the shoe 63 is moved away from roll 40, the plunger 88 is in its outer position shown in Figure 6. It may, however, occasionally be in its projected or inner position at that time. The cam element 100 of head 96 is so disposed and of such extent that it will be contacted by face plate 66 of shoe 63, in the movement of the latter to roll 40, in either position of plunger 88. The shoe 63 is thus shifted to the right, as viewed in Figure 5, as it moves to the roll. That assures that, in either position of plunger 88, the shoe face plate 66 will be brought into proper cooperating relation to plunger 88, when the shoe 63 is moved to roll 40.

In the modification shown in Figures 7 and 8, hub 83*a* of cam member 84*a* is slidable on a stud 101 fixed in collar 82*a* of web element 81*a*. Outward movement of plunger 88*a* is limited by a snap ring 102 engaging in a circumferential groove 103 formed in plunger 88*a* adjacent the inner end thereof. Hub 83*a* is provided with a circumferential groove 104 of considerable width and appreciable depth or radial extent. Groove 104 snugly receives an adjusting disc 105 fixed on a rod 106 rotatably mounted through a boss 107 integral with the back wall of projection 89 of gear housing 11. An adjusting handle 108 is suitably secured on the outer end of rod 106, conventiently by a set screw 109. Handle 108 may be held in any one, selectively, of a plurality of positions, by spring pressed ball detent means 110 of known type, mounted in boss 107, cooperating with appropriately disposed recesses in the contiguous face of handle 108. The back wall of projection 89 is provided with suitably disposed markings or indicia, as shown, cooperating with handle 108 to indicate the angular adjustment of rod 106, and of disc 105. It will be clear, from what has been said, that by turning rod 106 the cam member 84*a* may be adjusted toward and away from pin 87 secured through plunger 88*a*. The particular means for adjusting the cam member 84*a* is not of the essence of my invention, and it may be adjusted in any suitable manner.

The pinion 85*a* has a wide face relative to ring gear 69 and maintains mesh therewith during its adjustment. In Figure 7, the cam member 84*a* is in its outermost position, in which cam elements or lobes 86*a* thereof clear the pin 87. Accordingly, in that position of cam member 84*a* rotation thereof does not cause reciprocation of plunger 88*a* and the shoe 63 is not reciprocated. Turning disc 105 through 180°, from its position shown in Figure 7 to its opposite position, shifts cam member 84*a* to its innermost position, in which the cam elements 86*a* are effective for imparting maximum inward movement to plunger 88*a*. The shoe 63 is then reciprocated and is moved to maximum extent lengthwise in both directions, when it is to the roll and during rotation of the cam member 84*a*. By turning the disc 105 to a position between its two extreme positions, the extent of reciprocatory movement of the shoe 63 may be varied from zero to maximum. Further the extent of reciprocatory movement of the shoe 63 may be adjusted during reciprocation thereof. This enables the operator to observe the effect produced upon an article being ironed and to adjust the extent of movement of the shoe to obtain the desired results, which is conducive to maximum efficiency.

The ability to adjust the extent of reciprocatory movement of the shoe 63 is of considerable practical importance. Certain articles, such as finely woven sheer fabrics, may require but slight movement of the shoe to produce the best results, whereas more coarsely woven fabrics may require greater or increased movement of the shoe. Pile fabrics, on the other hand, may be ironed to best advantage without reciprocation of the shoe. Also, the moisture content of the articles being ironed will influence the extent of reciprocatory movement of the shoe required for best results. By separating the articles according to kind and condition, as is usual, the operator can, by observation, readily adjust the shoe operation for maximum efficiency for the articles of any selected group. That facilitates the ironing operation and renders possible the desired finish of the ironed articles. Also, the shoe is reciprocated only while against the roll, and reciprocation thereof is automatically stopped when it is moved away from the roll. That is advantageous in that it avoids the waste of energy for reciprocating the shoe when it is not in cooperating relation to the roll, and reduces wear on parts, conducive to increased life of the machine. While the shoe reciprocating means conveniently is driven by the roll drive means, that is not essential to the broader concept of my invention and, within such broader concept, the shoe reciprocating means may be driven in any suitable manner.

As above indicated, and as will be understood by those skilled in the art, changes in construction and arrangement of parts of my invention may be restorted to without departing from the field and scope thereof, and I intend to include all such variations, as fall within the scope of the appended claims, in this application in which the preferred forms only of my invention have been disclosed.

I claim:

1. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, and means for driving said roll comprising gearing within said housing; a cooperating shoe movable toward and away from said roll and mounted for reciprocating movement lengthwise thereof, means for moving said shoe toward and away from said roll, means for reciprocating said shoe comprising a plunger slidable through said one side of said housing actuated by said roll driving means and disposed for endwise contact with said shoe when the latter is toward said roll in cooperating relation thereto, said plunger being otherwise free from said shoe, and means yieldingly urging said shoe endwise toward said plunger to position to be contacted thereby when said shoe is toward said roll.

2. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, a shoe supporting arm movable to and from said roll, and means for driving said roll comprising gearing within said housing; a cooperating shoe carried by said arm movable thereby toward and away from said roll and mounted on said arm for relative reciprocating movement lengthwise of said roll, means for moving said shoe toward and away from said roll, a reciprocatory plunger extending through

said one side of said housing disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto, means yieldingly urging said shoe lengthwise toward said plunger, and means actuated by said roll driving means cooperating with said yielding means for reciprocating said plunger and thereby reciprocating said shoe.

3. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, and means for driving said roll comprising gearing within said housing; a cooperating shoe movable toward and away from said roll and mounted for reciprocating movement lengthwise thereof, means for moving said shoe toward and away from said roll, a reciprocatory plunger extending through said one side of said housing disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto, means yieldingly urging said shoe lengthwise toward said plunger, means for positioning said shoe lengthwise for contact with said plunger in the movement of said shoe toward said roll in cooperating relation thereto, and means actuated by said roll driving means cooperating with said yielding means for reciprocating said plunger and thereby reciprocating said shoe.

4. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, and means for driving said roll comprising gearing within said housing; a cooperating shoe movable toward and away from said roll and mounted for reciprocating movement lengthwise thereof, means for moving said shoe toward and away from said roll, a reciprocatory plunger extending through said one side of said housing restrained against turning movement and disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto, means yieldingly urging said shoe lengthwise toward said plunger, the latter having at its outer end a cam element disposed to be contacted by and to shift said shoe lengthwise into position for contact with said plunger in the movement of said shoe toward said roll in cooperating relation thereto, and means actuated by said roll driving means cooperating with said yielding means for reciprocating said plunger and thereby reciprocating said shoe.

5. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, means for driving said roll comprising gearing within said housing, a rockably mounted shoe operating shaft, and a shoe supporting arm mounted on said shaft movable thereby toward and away from said roll; a cooperating shoe mounted on said arm for movement thereby toward and away from said roll and for reciprocating movement relative to said arm lengthwise of said roll, a reciprocating plunger having rectilineal movement only extending through said one side of said housing disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto, a cam member rotatably mounted in said housing driven by said gearing, said plunger being provided with an abutment disposed for contact with said cam member, and yielding means urging said shoe lengthwise toward said plunger.

6. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, means for driving said roll comprising gearing within said housing, a rockably mounted shoe operating shaft, and a shoe supporting arm mounted on said shaft movable thereby toward and away from said roll; a cooperating shoe mounted on said arm for movement thereby toward and away from said roll and for reciprocating movement relative to said arm lengthwise of said roll, a reciprocating plunger extending through said one side of said housing disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto, a cam member rotatably mounted in said housing driven by said gearing, said plunger being provided with an abutment disposed for contact with said cam member, means yieldingly urging said shoe lengthwise toward said plunger, and means providing relative adjustment between said cam member and said abutment effective for varying the stroke of said plunger for adjusting the extent of travel of said shoe.

7. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, means for driving said roll comprising gearing within said housing, a rockably mounted shoe operating shaft, and a shoe supporting arm mounted on said shaft movable thereby toward and away from said roll; a cooperating shoe mounted on said arm for movement thereby toward and away from said roll and for reciprocating movement relative to said arm lengthwise of said roll, a reciprocating plunger extending through said one side of said housing disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto, a cam member rotatably mounted in said housing driven by said gearing, said plunger being provided with an abutment disposed for contact with said cam member and the latter being slidable lengthwise of said plunger, means yieldingly urging said shoe lengthwise toward said plunger, and means for adjusting said cam member toward and away from said abutment.

8. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, means for driving said roll comprising gearing within said housing, a rockably mounted shoe operating shaft, and a shoe supporting arm mounted on said shaft movable thereby toward and away from said roll; a cooperating shoe mounted on said arm for movement thereby toward and away from said roll and for reciprocating movement relative to said arm lengthwise of said roll, a reciprocating plunger extending through said one side of said housing disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto and otherwise free from said shoe, a cam member rotatably mounted in said housing coaxial with said plunger and driven by said gearing, said plunger being provided with an abutment disposed for contact with said cam member for moving said plunger outward, and yielding means urging said shoe lengthwise toward said plunger.

9. In an ironing machine comprising a gear housing, a rotatably mounted roll extending from one side of said housing, means for driving said roll comprising gearing within said housing, a rockably mounted shoe operating shaft, and a shoe supporting arm mounted on said shaft movable thereby toward and away from said roll; a cooperating shoe mounted on said arm for movement thereby toward and away from said roll and

for reciprocating movement relative to said arm lengthwise of said roll, a reciprocating plunger extending through said one side of said housing disposed for contact at its outer end with the adjacent end of said shoe when the latter is toward said roll in cooperating relation thereto, a combined pinion and cam member rotatably mounted in said housing coaxial with said plunger and driven by said gearing, said pinion and cam member having cam elements at its outer side and said plunger having limited movement inward of said housing and being provided with an abutment disposed for contact with said cam elements for moving said plunger outward, means for adjusting said pinion and cam member axially of said plunger toward and away from said abutment member, and yielding means urging said shoe lengthwise toward said plunger.

10. In an ironing machine comprising a rotatably mounted roll, means for driving said roll, a rockably mounted shoe operating shaft, and a shoe supporting arm fixed to said shaft movable thereby toward and away from said roll; a shoe cooperating with said roll movable by said arm toward and away from said roll and mounted for reciprocating movement relative to said arm lengthwise of said roll, and power means connectable to said roll driving means and having operating connection to said shoe and to said shaft effective for reciprocating said shoe during rotation of said roll and when it is toward the latter and for operating said shaft.

11. In an ironing machine comprising a rotatably mounted roll, means for driving said roll, a rockably mounted shoe operating shaft, and a shoe supporting arm fixed to said shaft movable thereby toward and away from said roll; a shoe cooperating with said roll mounted on said arm for movement thereby toward and away from said roll and for reciprocating movement relative to said arm lengthwise of said roll, and means connectable to and actuated by said roll driving means and having operating connection to said shoe and to said shaft effective for reciprocating said shoe during rotation of said roll and when it is toward the latter and for operating said shaft.

12. In an ironing machine comprising a rotatably mounted roll, means for driving said roll, and a shoe operating arm movable toward and away from said roll; a shoe cooperating with said roll movable by said arm toward and away from said roll and mounted for reciprocating movement relative to said arm lengthwise of said roll, a reciprocating member disposed for endwise contact with said shoe when the latter is toward said roll and to clear said shoe when the latter is away from said roll whereby said reciprocating member is rendered effective by movement of said shoe toward said roll and ineffective by movement of said shoe away from said roll, means yieldingly urging said shoe endwise toward said reciprocating member to position to be contacted thereby when said shoe is toward said roll, and power means connectable to said roll driving means and having operating connection to said reciprocatory member and to said arm effective for reciprocating said reciprocatory member and thereby reciprocating said shoe when the latter is toward said roll during rotation of the latter and for operating said arm.

13. In an ironing machine comprising a rotatably mounted roll, and means for driving said roll; a cooperating shoe movable toward and away from said roll mounted for reciprocating movement lengthwise thereof, means actuatable by said driving means and effective for moving said shoe toward and away from said roll, means for reciprocating said shoe comprising yielding means urging said shoe lengthwise in one direction and a reciprocatory member free from said shoe disposed for endwise contact therewith when said shoe is toward said roll in cooperating relation thereto and effective for moving said shoe lengthwise in the other direction in opposition to said yielding means, and means actuatable by said driving means for intermittently moving said member in said other direction and adjustable for varying the effective length of stroke of said member and thereby adjusting the extent of lengthwise travel of said shoe during reciprocation thereof.

14. In an ironing machine comprising a rotatably mounted roll, and means for driving said roll; a cooperating shoe movable toward and away from said roll mounted for reciprocating movement lengthwise thereof, means actuated by said driving means and effective for moving said shoe toward and away from said roll, means for reciprocating said shoe comprising yielding means urging said shoe lengthwise in one direction and a reciprocatory member free from said shoe disposed for endwise contact therewith when said shoe is toward said roll in cooperating relation thereto for moving said shoe lengthwise in the other direction in opposition to said yielding means, and cam means actuatable by said driving means and effective for intermittently moving said member in said other direction and adjustable from an ineffective position to a maximum effective position for varying the effective length of stroke of said member from zero to maximum and thereby adjusting from zero to maximum the extent of lengthwise reciprocation of said shoe.

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