

D. H. BENJAMIN & J. W. GILBERT.  
IRONING MACHINE.

APPLICATION FILED JULY 13, 1907.

967,310.

Patented Aug. 16, 1910.

3 SHEETS—SHEET 1.

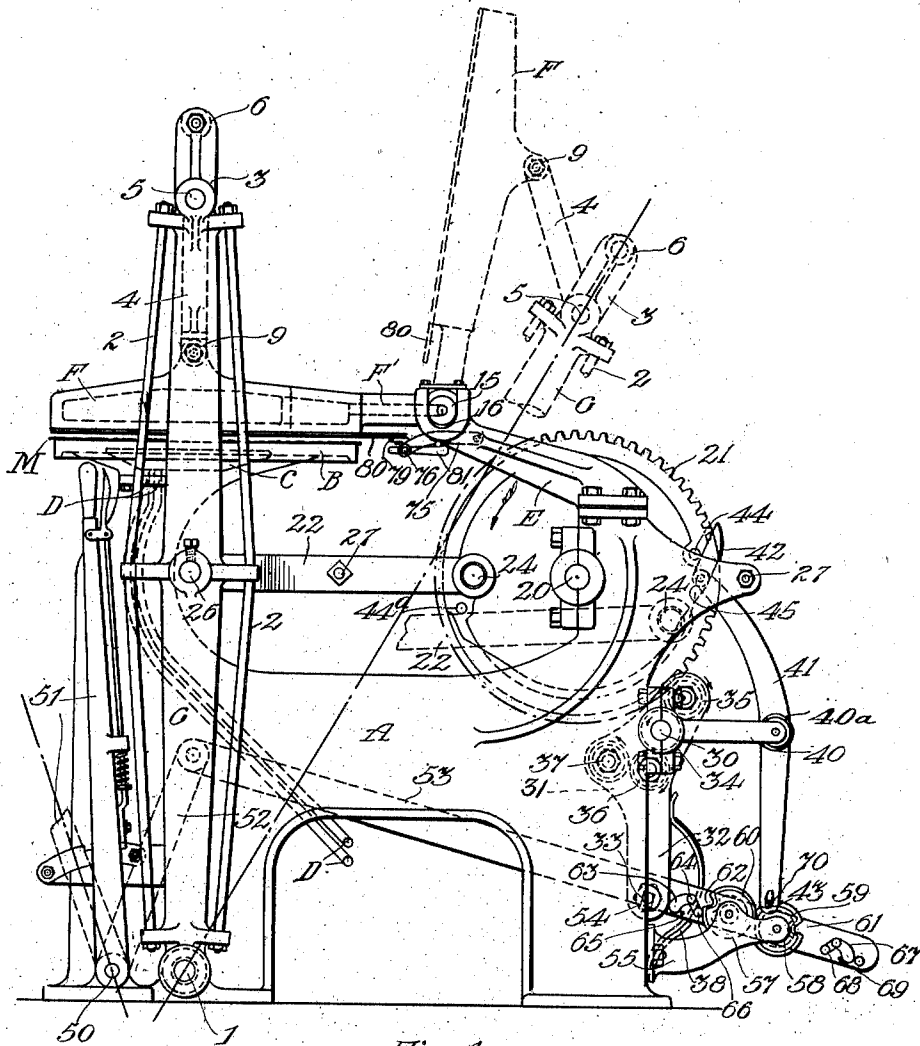


Fig. 1.

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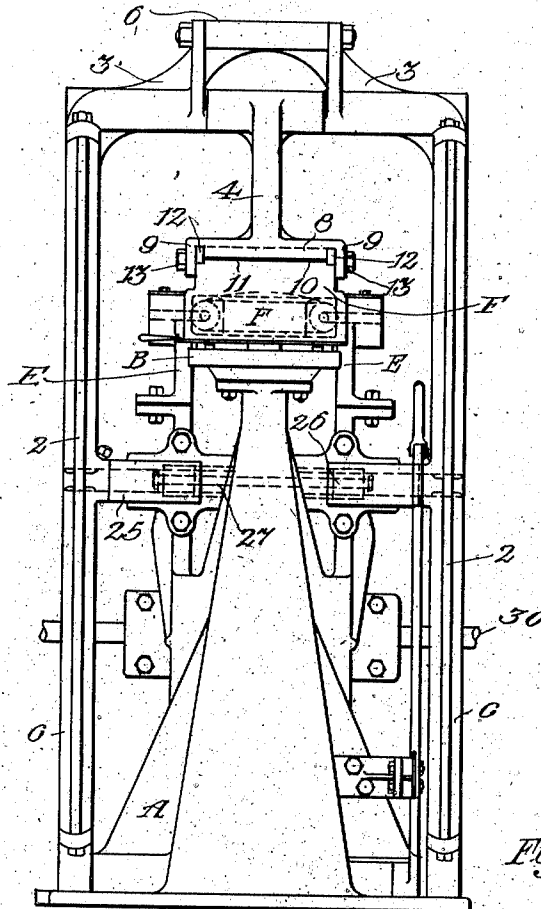


Fig. 5.

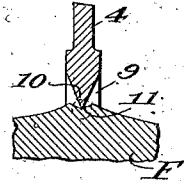


Fig. 6.

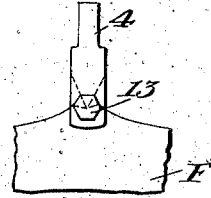


Fig. 2.

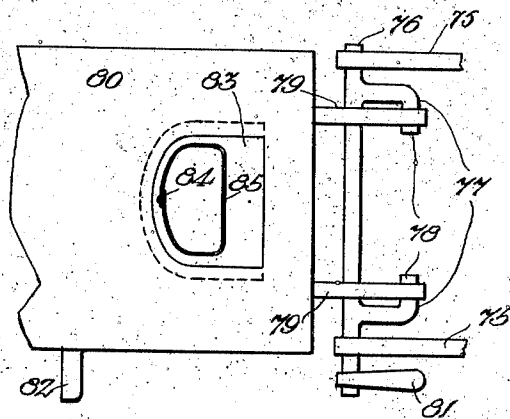


Fig. 4.

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3 SHEETS—SHEET 3.

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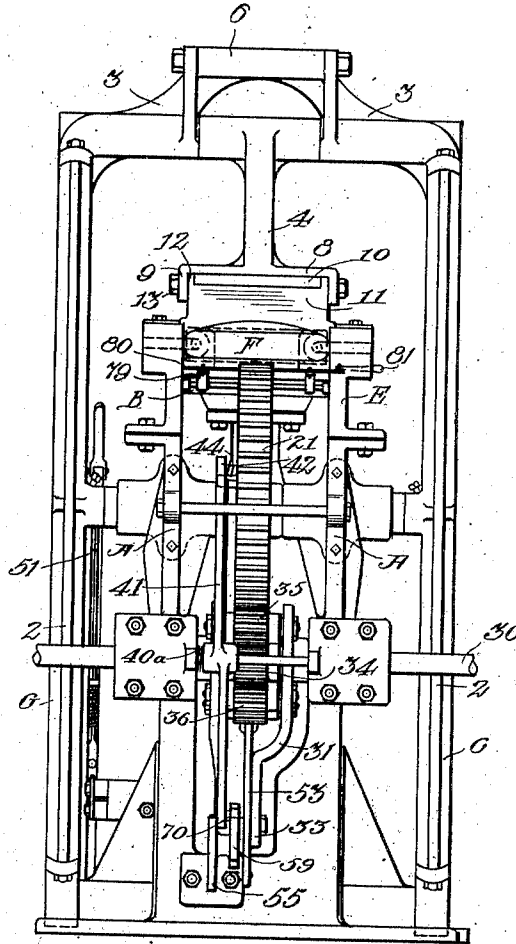


Fig. 3.

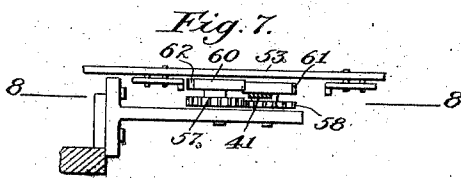


Fig. 7.

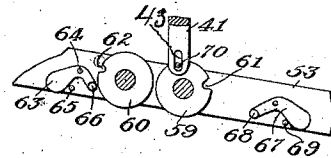


Fig. 8.

Witnesses:-

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# UNITED STATES PATENT OFFICE.

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## IRONING-MACHINE.

967,310.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed July 13, 1907. Serial No. 383,535.

*To all whom it may concern:*

Be it known that we, DANA H. BENJAMIN and JAMES W. GILBERT, citizens of the United States, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Ironing-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to an improved ironing machine, and we declare that the following is a full, clear, concise and exact description thereof, sufficient to enable one skilled in the art to make and use the same, reference being had to the accompanying drawings in which like letters and numerals refer to like parts throughout.

The invention is here shown as applied to a press constructed for laundry work and includes among its features new mechanical appliances in a new arrangement whereby we are enabled to apply great power in the work of the machine and at the same time to remove the upper presser sufficiently from the lower plate to allow free access for the work.

In the drawings Figure 1 is a side view of the press; Fig. 2 is a front view of the same, and Fig. 3 is a rear view, broken lines in certain of the figures showing parts removed. Fig. 4 is a detail view of a plate which is lowered upon the shirt bosom after it is laid on the felts or other covering of the lower plate; Figs. 5 and 6 are details of the connections between the upper presser-plate and the operating link connected therewith, showing the bearing of the latter on the former; Fig. 7 is a detail view, looking down from above, of gear mechanism for reversing the operation of certain parts.

Referring to the drawings in detail, the machine comprises a frame which is indicated by A, on which are mounted secondary frames to support particular parts and which will be pointed out later. The frame comprises a lower stationary plate B having a smooth plain surface and recessed interiorly, as indicated at C, into which space are passed steam pipes D for the proper heating of the plate. The frame also comprises rigid arms E one on each side of the machine, mounted on the frame A and which supports the movable upper plate or presser F which is pivotally supported by the arm F' extending from one side thereof and pref-

erably integral therewith and journaled in the arms E.

On the sides of the machine toward the front and adjacent the bottom is pivotally mounted a yoke G. This yoke is journaled at 1 and has corresponding side members and is suitably strengthened by braces 2 and has a transverse beam 3 at the top at the middle point of which swingably depends link 4 supported on a shaft 5 mounted in the transverse beam 3. As the middle portion of this cross beam 3 is cut out for the support of the link 4 we provide a brace construction, indicated by 6, extending from one side of the cut-out to the other and forming the upper portion of the transverse arm 3 so as to tie the ends of the arm together in a rigid construction. This link terminates in a transverse arm 8 with downward depending lugs 9, between which extends a transverse knife edge 10. The upper face of the upper presser plate F terminates in a transverse elevation having a groove 11 to correspond with the knife edge 10 and receive the same. This surface of member F also has upright lugs 12 which lie along-side of lugs 9 and through which is passed on each side the pin 13 to journal the yoke and the presser together, the axis of the bolts 13 being coincident with the line on which the knife edge 10 plays in the groove 11. By this construction we retain all the effect of the bearing but obviate the necessity of feeding the same with oil. A particular feature of the bearing which the plate F has on the arms E is the fact that the bearings in the arms which receive the shaft 15 in arm F' are slightly elongated vertically. This permits the upper presser plate F to be swung on the bearings. The lower presser plate B is normally provided with felts M for the support of the goods to be pressed and when the upper member is brought down upon the goods its pressure would not be perfectly parallel with the surface of the lower member if the journals were rigidly held. It is for that reason that the bearings are slightly elongated vertically, as indicated at 16, so that the free movement of the upper member in purely vertical direction is permitted by the elongation of the bearings.

In the frame is mounted a shaft 20 on which is mounted gear-wheel 21, and from the gear wheel to the yoke G is a pitman

22. The revolution of the gear-wheel 21 will, therefore, swing the yoke which by reason of the bearing of the link 4 on the shaft 5 lifts the upper plate F and swings it in the upper position (Fig. 1). The pitman is made up of two similar members one mounted on boss 24 on each side of the wheel 21, each curved outward near the end and terminating in sleeve 25 by which it is mounted on the shaft 26 extending transversely from one portion G of the yoke to the other. The pitman has an intermediate stud 27 connecting the parts to give rigidity.

It is to be noted that the arm or yoke G swings on center 1 while plate F swings on center 15, the yoke and the plate being connected by link 4. The centers are so located that the swing of the yoke, while it carries the plate F over into pressing position, also, in its full movement, forces plate F into pressing action. That is to say the construction and arrangements of these members is such that the upper presser is brought into place and forced into action by one movement or operation of the device, a single mechanism performing the two operations which have customarily been done in two distinct operations by several devices or mechanisms.

A shaft 30 (Fig. 3) is mounted in the frame on which is pivotally supported a gear frame 31 having a lower depending arm 32 which is provided with a pin 33 to engage arm 53. The shaft 30 supports in the gear frame a gear 34 which meshes on one side with the gear 35 and on the other side with a train of gears 36 and 37. In the normal position of this gear-frame none of these gears is in contact with gear 21, but in one operative position the gear 35 meshes with gear 21 and in the other operative position gear 37 meshes therewith.

The power of the machine is applied through shaft 30 by suitable means, which need not be particularly shown or described, so that when the gears are in the position shown in Fig. 1, the gear 34 is turned in the direction indicated by the arrow and gear 35 is likewise turned in the direction there shown which turn gear 21 as indicated by the arrow thereon. In reverse position gear 37 is in contact with gear 21 turning it in opposite direction. Suitable means are provided in connection with the gear frame to maintain it normally in neutral position, as for instance, a spring 38.

Mounted rigidly on the main frame is an arm 40 which carries swinging arm 41 which extends upwardly and terminates in an elbow 42. At the opposite end the arm is provided with an elongated slot 43. On the gear wheel 21 are mounted studs 44 and 44<sup>a</sup> one of which, as the wheel is revolved, its movement being reciprocal through half a turn, contacts with the elbow 42 on one sur-

face, as indicated in full lines in Fig. 1, and the other stud, in the other position of the gear, contacts with the opposite surface 45. Adjacent the front of the frame is a shaft 50 on which is mounted an ordinary lever and notched segment indicated in general by 51, and on the same shaft is rigidly mounted link connection 52 carrying link 53, the latter member extending to the rear of the machine and being provided with square cut-out 54. Bracket 55 is mounted on the frame and has two intermeshing gear wheels 57 and 58, each of which has an extended flange 59 and 60 notched at 61 and 62. On the link arm 53 is mounted gravity dog 63 pivoted at 64 whose movement in one direction is stopped by pin 65. Mounted on one end of the dog is a pin 66 adapted to engage in cut-out 62. On the opposite side is a like dog 67 with lug or pin 68 and likewise stopped by pin 69 and whose lug or pin 68 is adapted to register with the cut-out 61 in the flange of gear 59. The shaft which carries arm 41 on the bracket or arm 40 is provided with a spring 40<sup>a</sup> which normally keeps the elbow on the upper end of the arm inward to be engaged by one or the other of pins 44 or 44<sup>a</sup>.

In the position of the parts shown by full lines in Fig. 1 lever 51 has been thrust from the operator, the notch in link 53 has engaged stud 33 and shifted the gear frame and put gear 35 into engagement with gear 21 when the gear wheel 21 will start on a half turn in the direction shown by the arrow thereon. The moment wheel 21 starts on its half revolution pin 44 leaves contact with elbow 42 which permits the upper end of arm 41 to swing inward. This carries the other end to the right. Wheel 58 has pin 70 which registers in the slot at the lower end of arm 41. The swinging of the arm turns the wheel 58 to the right and wheel 57 to the left and brings the cut-out 62 to register with and receive stud 66 on dog 63. When the stud 44<sup>a</sup> on wheel 21 has come to contact with edge 45 on the arm 41 it rocks that arm and turns wheel 58 to the left and 57 to the right which lifts link-arm 53 by reason of pin 66 being in cut-out 62 so as to clear it from the stud 33 mounted on the gear frame which is then free to assume its normal position where none of its gears contact with gear 21, when the machine becomes inoperative. This half revolution of the gear wheel 21 has, by connection of the pitman 22, swung the yoke G and raised the upper presser plate F into the position shown by dotted lines. The next succeeding operation will bring the upper presser plate F down into contact with the lower presser plate B and is accomplished as follows: The operator swings the lever 51 to the other locking position, drawing the arm 53 toward him, which engages the pin 33 in

notch 54 so that the complete movement of the link by the operator tilts the gear frame to bring gear 37 into contact with gear 21 which gives the latter gear a half turn in the opposite direction. This half turn frees stud 44<sup>a</sup> of its contact allowing wheel 58 to be turned to the right so that its notch engages stud or pin 68. Stud 44 comes to bear on the elbow 42 and again throws out the upper end of arm 41 which correspondingly turns wheel 58 to the left and lifts link 53 as in the other case. This again disengages the gear frame and allows the gear 37 to escape contact with the gear 21. This operation has brought the upper presser F down into contact with the lower presser and applied pressure to the article placed on the lower presser or plate.

It will thus be seen that the construction we have provided consists in this feature of an automatic stop at each end of the stroke, either upward to lift the swinging plate F or downward to perform the operation of pressing, and the adjustment is such that the gears maintain operative contact to their full efficiency until the full completion of the operation and are then instantly disconnected.

On the secondary frame or arms E are mounted brackets 75 in which is journaled a shaft 76 which has rearward extending arms 77 with studs 78 parallel with the shaft 76. On the studs are journaled arms 79 which carry brass plate 80 which is to be lowered upon the shirt bosom when it is laid on the felts or other covering of the lower plate B. The shaft 76 has mounted thereon a handle 81 and plate 80 has projecting handle or lug 82. When the bosom has been laid on the felts, plate 80 is lowered thereon, it being cut-out at 83 with an aperture for the neck-band of the shirt, the collar having been secured by button 84. The handle 81 is then pressed downward which swings the arms 77 to the farthest traveling circle thereby drawing the curved edge of the cut-out or aperture 83 closely against the front portion of the neck-band which is shown as 85, the edge of the plate being under the collar and close up to the connecting edge between the collar and the bosom, and thus straightening and flattening the bosom of the garment. The upper presser member F is then brought down upon the plate with its interior cut-out corresponding to the cut out in the brass plate, the edge of the cut-out being somewhat removed from the corresponding edge of the brass plate, the cut-out of the presser being indicated in dotted lines in Fig. 4. the edge of the presser F being near enough to transmit the necessary heat to perfect the pressing operation. After the garment has been pressed the handle 81 is lifted again which shoves the plate forward so that its edge

will clear the collar and collar button when the plate is lifted out of its position by lifting the handle 82.

Instead of employing the brass plate 80, which is applicable to bosoms of a single flap or ply, it may be desired to use a plate of smaller dimensions in ironing shirts with double bosom the plate being of a size to overlie only one portion of the bosom or the other.

We show means for applying heat to the upper plate which is hollow, as indicated within the dotted lines shown in Fig. 1, the recess extending through the center of the arm F', to and through the shaft on which the arm is mounted to the journals, the shaft being provided at each end with a bib for the mounting of the steam connection. While we show the device as applicable for the use of steam heat, it will be understood that any other suitable heating means can be applied.

Changes, modifications and variations may be made by one skilled in the art, without departing from the spirit and scope of our invention.

Having described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In an ironing machine having a stationary plate with a smooth face and provided with means for heating the same, the combination of a movable plate mounted to be swung in the sector of a circle into and out of contact with the article to be operated on, the trunnions of which plate are mounted in elongated bearings, mechanism for so swinging the movable member and for exerting pressure upon the movable plate, the trunnions of the swinging plate being mounted to play in elongated bearings whereby such pressure is applied at a right angle to the fixed plate, substantially as set forth.

2. In an ironing machine having a stationary heatable plate, the combination of a movable plate mounted to be swung in the sector of a circle and provided with means for heating the same, and mechanism for moving the swinging member in the sector of a circle into and out of engagement with the article to be operated on and for exerting a pressure upon the fixed plate, the movable plate being mounted in elongated bearings and adapted for pressure in said bearings vertical to the plane of the stationary plate, substantially as set forth.

3. In an ironing machine having a stationary plate with a smooth face and provided with means for heating the same, the combination of a movable plate provided with means for heating the same mounted to be swung in the sector of a circle into and out of contact with the article to be operated on, the trunnions of which movable

plate are mounted to play in elongated bearings, and mechanism for swinging the movable member in the sector of a circle into and out of contact with the article to be operated on and for exerting the pressure of the movable plate in a line vertical to the plane of the fixed plate, substantially as set forth.

4. In an ironing machine having a stationary plate with a smooth face and provided with means for heating the same and a sheet of felt supported on the stationary plate, the combination of a movable plate mounted in vertically elongated bearings to be swung into and out of contact with the article to be operated on and to exert pressure in a line at right angles to the face of the fixed plate, a plate between the former plates having means for effecting a sliding adjustment thereof and mechanism for swinging the movable plate into and out of contact to press the article to be operated on, substantially as set forth.

5. In an ironing machine having a stationary heatable plate and a sheet of felt supported on the same, the combination of a movable plate whose trunnions are mounted in elongated bearings at one side of said stationary plate to be pressed down on the work with its face automatically maintained parallel with the fixed plate and provided with means for heating the same, mechanism for swinging said plate into and out of position to press the article to be operated on and for pressing the same, and a plate intermediate the said plates mounted to be adjustable to position the article to be pressed, substantially as set forth.

6. In an ironing machine, a frame, a fixed plate, a swinging plate journaled to play in an elongated bearing at one side of the fixed plate and a swinging yoke pivotally supporting the swinging plate by which combination the swinging of the yoke carries the said plate into pressing position relative to the fixed plate and applies pressure thereto on a line vertical to the face of the fixed plate, substantially as described.

7. In an ironing machine, a frame, a fixed plate, a swinging plate journaled to play in an elongated bearing at one side of the fixed plate and a swinging yoke pivotally supporting the swinging plate by which combination the swinging of the yoke carries the said plate into pressing position relative to the fixed plate and applies pressure thereto on a line vertical to the face of the fixed plate, and a plate disposed against the fabric and between the former plates, substantially as described.

8. In an ironing machine having a stationary recessed plate for passing heat into and through the same and for supporting the article to be operated on, the combination of a pivoted swinging member mounted to swing in the sector of a circle into and

out of contact with the article to be operated on, an intermediate metal plate provided with a neck-opening mechanism for moving the metal plate for straightening and stretching the garment to be operated on, and mechanism for operating the swinging member and for exerting a pressure on the article to be operated on, substantially as set forth.

9. In an ironing machine, the combination with a stationary plate and a swinging plate mounted to be moved into and out of operating position, of an intermediate metal plate provided with a neck-opening and mechanism for moving the metal plate for straightening and stretching the garment to be operated on, substantially as set forth.

10. In an ironing machine, the combination of a stationary plate provided with means for heating the same, a movable plate mounted to be swung into and out of contact with the article to be operated on, the trunnions of which movable plate are mounted in elongated bearings, an intermediate plate adapted for transmitting pressure to the fabric, and mechanism for operating the swinging plate, the same being journaled for play in its bearings whereby to apply its pressure vertical to the plane of the fixed plate, substantially as set forth.

11. In an ironing machine, a stationary heatable plate, a movable heatable plate, an intermediate plate provided with a neck-opening and mechanism for moving the metal plate for straightening and stretching the garment to be operated on, and mechanism for swinging the movable plate in the operation of pressing, said mechanism comprising means for automatically stopping its action at each end of the stroke, substantially as set forth.

12. In an ironing machine having a stationary plate with a smooth face and provided with means for heating the same, the combination of a movable plate provided with means for heating the same and mounted to be swung in the sector of a circle into and out of contact with the article to be operated on, the trunnions of which movable plate are mounted in elongated bearings, an intermediate metal plate provided with a neck-opening and mechanism for moving the metal plate for straightening and stretching the garment to be operated on, and mechanism for swinging the movable member into and out of contact with the article to be operated on and for exerting pressure upon the movable plate at a single operation of said mechanism, substantially as set forth.

13. In an ironing machine having a stationary recessed plate for passing heat into and through the same and for supporting the article to be operated on, the combination of a pivoted swinging member whose

trunnions are mounted in vertically elongated bearings at one side of said stationary plate mounted to swing into and out of contact with the article to be operated on and to press said article, means for swinging said member and mechanism arranged automatically to stop the action of such means at each terminus of the movement of the swinging plate, substantially as set forth.

14. In an ironing machine having a stationary plate with a smooth face and provided with means for heating the same, the combination of a movable plate mounted to be swung into and out of pressing position, the trunnions of said plate being mounted in elongated bearings whereby to apply its pressure vertically to the stationary plate, means for swinging the movable plate, a power mechanism comprising means for automatically disconnecting the same from said means at each end of the swinging stroke, substantially as set forth.

15. In an ironing machine, the combination with a stationary heatable plate, of a movable plate whose trunnions are mounted in vertically elongated bearings to be swung in the sector of a circle and provided with means for heating the same, reciprocating mechanism for moving the swinging member into and out of engagement with the article to be operated on and for pressing the same, a revolving shaft and means for connecting the shaft and the mechanism at either end of the stroke and automatically disconnecting them at the other end, substantially as set forth.

16. In an ironing machine, a stationary heatable plate, a movable heatable plate, whose trunnions are mounted in vertically elongated bearings at one side of said stationary plate, means for swinging the movable plate in a reciprocating movement, a power shaft, means for connecting the two to swing the former in either direction and means for automatically disconnecting the same at each end of the reciprocating stroke, in combination, substantially as described.

17. In an ironing machine, the combination with a frame, of a fixed heatable plate, a swinging heatable plate whose trunnions are mounted in vertically elongated bearings at one side of said fixed plate, means for swinging the second named plate into contact with the other and applying pressure thereon, said means automatically maintaining the plate faces in parallel position during the application of pressure, substantially as described.

18. In an ironing machine, the combination with a fixed heatable plate, of a swingable heatable plate mounted relative thereto in bearings elongated vertically to the plane of the fixed plate for vertical play of said swingable plate, means for swinging the

swingable plate, the same being mounted on a bearing separate from that of the swingable plate whereby the movement of said means is operative to bring the face of the swingable plate parallel with that of the fixed plate and to crowd it thereto with the faces maintained parallel, substantially as described.

19. In an ironing machine, the combination with a fixed plate, of a swinging yoke, a swingable plate whose trunnions are mounted in vertically elongated bearings at one side of said fixed plate, means for reciprocating the said yoke, the said means comprising members automatically cooperating to stop action of the reciprocating means at each end of the movement of said yoke, substantially as described.

20. An ironing machine comprising a swingable heatable member and means for swinging the same, the said means comprising a reciprocating gear, a swinging gear frame adapted to contact therewith whereby to reciprocate said gear, and means for displacing the gear frame from operative position at stated points in the operation of the machine, substantially as described.

21. In an ironing machine, the combination with a fixed plate, of a movable plate mounted in bearings elongated whereby it may be pressed against the fixed plate, the faces of the two being maintained in parallel position, and means for swinging the movable plate, the said means comprising mechanism automatically stopping the said means at given points in the operation of the machine, substantially as described.

22. In a device of the character described, the combination with a fixed plate, of a swingable plate, a yoke connected to swing the same, means for reciprocating the yoke, gears and a gear rack pivotally mounted whereby to transmit power to the said means in reverse directions, and means to disconnect the said gears at each end of the stroke of the said mechanism, substantially as described.

23. An ironing machine comprising a fixed plate and a swinging plate mounted relative thereto, a yoke operatively connected with the swinging plate and means for reciprocating the yoke, said means comprising a gear wheel operatively connected with the yoke, a gear frame with gears and operative to reciprocate the gear wheel, and means automatically operative at each end of said reciprocating movement of the gear wheel to disconnect the gear of the said frame from the said gear wheel, substantially as set forth.

24. An ironing machine comprising a frame, a fixed plate and a swinging plate, whose trunnions are mounted in vertically elongated bearings at one side of said fixed plate, a revolving shaft, a reciprocating rotary mechanism, means for connecting the

mechanism of the revolving shaft with the rotating mechanism at each end of its stroke, and lever means for disconnecting the two at such end, substantially as set forth.

- 5 25. An ironing machine comprising a frame, a fixed plate and a swinging plate, a yoke, reciprocating rotary mechanism connected therewith, gears and a gear frame adjustable to transmit power to said rotary  
10 mechanism in either direction, means operative at certain positions of the rotary mechanism to release the gears therefrom and lever means operative to throw the  
15 gears again into action, substantially as described.

26. In an ironing machine, the combination with a frame and a fixed heat plate thereon, of a yoke pivotally mounted relative thereto, a heating plate mounted in

elongated bearings and connected with the yoke to be swung thereby in the said bearings, the connection of the said swingable plate and the said yoke being formed by a link pivotally connected with the swingable plate and bearing thereon to press the same  
25 against the fixed plate by means of an angle edge on one of the members bearing in a socket in the other of said members which form the means for applying pressure on  
30 the upper plate, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

DANA HOWARD BENJAMIN.  
JAMES WALLACE GILBERT.

Witnesses:

PAUL KOCHENDERFER,  
J. K. LAUDERSMICH.