Oct. 3, 1939. H. McK. MITCHELL 2,175,086

IRONING MACHINE

Filed Nov. 15, 1937

Fig. 1.

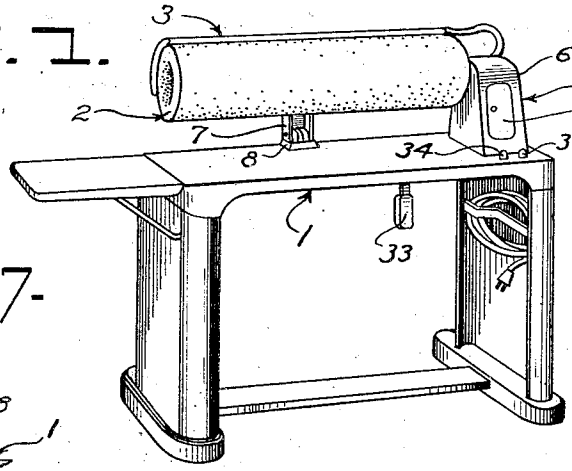


Fig. 6.

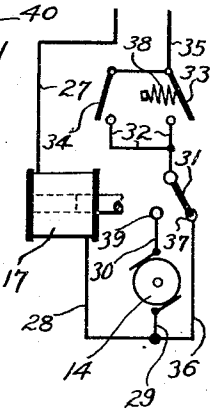


Fig. 7.

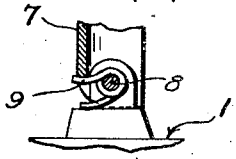


Fig. 2.

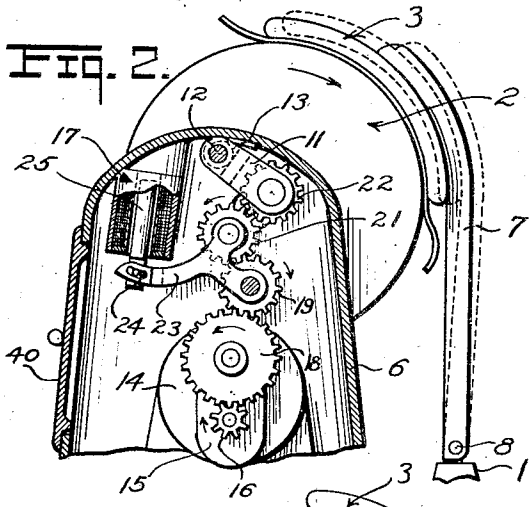


Fig. 4.

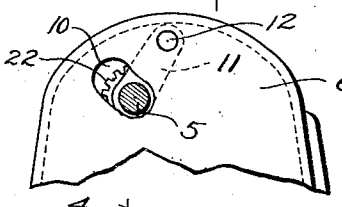


Fig. 5.

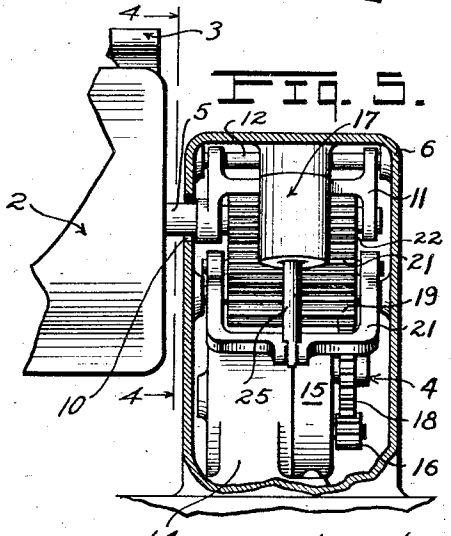
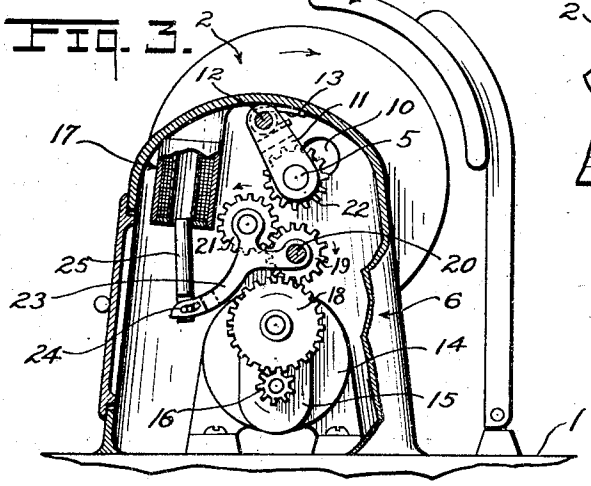


Fig. 3.



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UNITED STATES PATENT OFFICE

2,175,086

IRONING MACHINE

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Application November 15, 1937, Serial No. 174,524

6 Claims. (Cl. 38—59)

This invention relates to improvements in electrically operated ironing machines, particularly the household type, wherein a rotary ironing roll and an ironing shoe are supported for relative movement into and out of ironing or pressing position upon a stand or like support.

An object of this invention is to provide an ironing machine of the character described, in which the operating means for effecting relative movement of the shoe and roll and for rotating the roll comprises a simple, inexpensive, compact unit arranged so that access may be readily had thereto for repair or renewal of parts and to provide for a convenient and reliable operation of the machine.

Another object of this invention is to provide an ironing machine of the character described, wherein the roll and shoe are relatively moved by an electrically operated prime mover which is independent of the motor employed for rotating the shoe but arranged to be energized simultaneously therewith, to simplify the control and operation of the machine.

Another object of the invention is to provide an ironing machine of the character described, wherein a drive means between the motor and roll is normally inoperative and permits of free rotation of the roll in either direction preliminary to an ironing operation, whereby upon turning of the roll the piece to be ironed thereon may be positioned as desired, with respect to the shoe.

A further object is to provide an ironing machine of the character described, wherein the normally inoperative drive means between the motor and roll includes bodily movable drive elements adapted to be moved by electro-magnetic or other electrically operated means, render the drive means operative to rotate the roll and also move the roll and shoe into pressing position, said electro-magnetic means being operative to maintain the roll and shoe in such position while the roll is stationary as well as rotating.

I have shown in the accompanying drawing, a preferred embodiment of my improvements, subject to modification, within the scope of the appended claims, without departing from the spirit of my invention.

Referring to the drawing:

Fig. 1 represents a perspective view of an ironing machine constructed in accordance with this invention,

Fig. 2 is an enlarged fragmentary end elevation of the machine showing in side elevation the control means and the other elements, as when the roll and shoe are in ironing position, the housing for the control means being broken away and shown in section for clarity of illustration,

Fig. 3 is a view similar to Fig. 2, showing the parts as when the machine is in normal or inoperative position.

Fig. 4 is a fragmentary sectional view taken on the plane of line 4—4 of Fig. 5,

Fig. 5 is an enlarged sectional elevation of the control means, showing the latter in front elevation and the housing therefor in section and broken away,

Fig. 6 is a wiring diagram employed in connection with this invention,

Fig. 7 is an enlarged fragmentary sectional view of the spring loaded pivotal mounting for the ironing shoe.

The embodiment of the ironing machine of this invention, shown in detail in the accompanying drawing, comprises generally a stand or frame 1 supporting a rotary ironing roll 2 and an ironing shoe 3 for relative movement into and out of operative position. A suitable means 4 is disposed on the stand 1 adjacent an end of the roll for supporting the roll and controlling and operating the machine.

In accordance with this invention the ironing roll 2 is provided with the usual padded ironing surface and is supported from one end by a shaft 5 extending into a housing 6 so as to be controlled and operated by the means 4. The shoe 3 is of the usual heated type heated by any suitable means, not shown, and is supported on a standard 7 pivoted as at 8 upon the stand, there being spring means 9 associated with the pivot 8 so that the shoe will yield with reference to the roll during the ironing operation. The arrangement of the shoe and roll is such that they are free at one end for the endwise insertion of pieces to be ironed and are also substantially free at the other end for the same purpose, it being noted that the housing 6 is comparatively small and terminates below the plane of the upper side of the roll and adjacent ends of the roll and shoe.

The means 4 for controlling and operating the machine is designed to produce relative bodily movement of the shoe and roll to dispose them in pressing position, and as here shown, moves the roll to the shoe, rather than the shoe to the roll, although if desired the shoe could be moved to the roll. Accordingly the shaft 5 extends through the slot 10 in the adjacent side of the housing 6, whereby the roll may be moved bodily towards and away from the shoe. This shaft is

journaled in the ends of an inverted U-shaped bearing bracket 11 which is pivotally suspended from a shaft 12 extending across the upper side of the housing. A spring 13 mounted upon the shaft 12 engages the bracket 11 so as to normally hold the roll 2 spaced from the shoe, as shown in Fig. 3.

Mounted within the housing is an electric motor 14 having suitable gear reduction means 15 for producing a low speed of the driving pinion 16 thereof. This pinion forms a part of a drive means which is normally inoperative to rotate the roll 2 and which also serves as a drive connection between an electrically operated prime mover, such as a solenoid magnet 17, and said roll for the purpose of bodily moving said roll upon energization of said prime mover. This drive means includes an idler gear 18 meshing with the drive pinion 16 and a gear 19 mounted upon a shaft 20 journaled within the housing. The gear 19 drives a movable pinion 21 which is normally spaced from a similar pinion 22 fixed to the shaft 5. The pinion 21 is supported by a U-shaped lever 23, the free ends of which are pivotally supported by the shaft 20, whereby on moving said lever the pinion 21, while remaining in mesh with the pinion 19, will be moved into meshing contact with pinion 22, whereby to render the drive means operative. The outer end of the lever 23 has a pin and slot connection 24 with the armature 25 of the solenoid magnet 17 fixed within said housing. When the solenoid is energized the armature 25 is moved upwardly and rocks the lever 23 so as to move the gear 21 into contact with the gear 22 and then move both of said gears, the shaft 5 and the roll 2 bodily, whereby the roll 2 will be disposed in substantial contact with or in pressing relation to the shoe 3, as shown in Fig. 2. When the solenoid is deenergized the roll 2, shaft 5 and gear 22 thereon gravitate to normal position thereof, as shown in Fig. 2, aided by the spring 13, whereas the lever 23, supporting gear 21 and the armature 25 will likewise gravitate to a position rendering the drive means inoperative, as shown in Fig. 3.

The electric circuit and circuit closing means for operating and controlling the motor and the solenoid are arranged so that the motor and solenoid are in series and will be simultaneously energized, but may also be operated independently for a pressing operation with the roll 2 stationary. As shown in Fig. 6, the solenoid 17 and motor 14 are connected in series by means of conductors 27, 28, 29 and 30, a two-way switch 31, conductors 32, parallel connected knee and hand operated switches 33 and 34, respectively, and conductor 35. A conductor 36 extends from conductors 28 and 29 to one of the poles 37 of the two-way switch 31, so that said switch 31 may be manipulated to close the circuit for the solenoid while leaving the circuit for the motor opened. It will be seen that the knee operated switch 33 is provided with a spring 38 to move it into open position when operating pressure is removed therefrom. The hand operated switch 34 is suitably mounted upon the stand as is the two-way switch 32.

In ironing operations requiring the rotation of the roll 2 the two-way switch 31 is moved to contact the pole piece 39 and this connects the motor 14 and solenoid in series so that when either of the switches 33 or 34 is closed, said motor and solenoid will be simultaneously operated. When thus operated the solenoid 17 rocks the lever 23 so as to move the gear 21 against the gear 22 and then move both gears bodily, whereby the roll 2 is bodily moved into ironing position with respect to the shoe 3. Inasmuch as the solenoid remains energized the roll 2 will be held in ironing position and upon deenergization of the solenoid, as when either of the switches 33 or 34 is opened, the roll 2 will gravitate into position shown in Fig. 3, spaced from the shoe and pinion 21 which will also gravitate out of meshing engagement with the gear 22. When in this position the roll 2 may be freely turned in either direction to position pieces placed thereon as desired, to facilitate pressing action when the roll is moved into contact with the shoe.

It is now seen that by having a separate electrically operated means for performing the double function of shifting the roll 2 into ironing position and moving the driving gears into operative position to rotate the roll, a positive and reliable operation of the machine is made possible and the operating and control mechanism takes the form of a single, compact unit, access to which may be readily had through a door 40 in the housing 6.

I claim:

1. An ironing machine comprising a rotary ironing roll, an ironing shoe, means supporting said roll and shoe for relative movement to dispose the same in ironing and non-ironing positions, an electric motor for rotating said roll, normally inoperative drive means between said roll and motor and including drive members certain of which are respectively carried by the roll and geared to the motor and are bodily movable to dispose the roll and shoe in ironing position and to render the drive means operative to rotate the roll and electro-magnetically operated means for bodily moving said drive members into and maintaining the same in operative position.

2. An ironing machine comprising a rotary ironing roll, an ironing shoe, means supporting said roll and shoe for movement of the roll into and out of ironing relation with respect to the shoe, independent electrically operated devices respectively operative for moving into ironing position and rotating the roll, an electrical circuit including said electrically operated devices and circuit control means operable for simultaneously and independenty operating the electrical devices.

3. An ironing machine comprising a rotary ironing roll, an ironing shoe, means supporting said roll and shoe for movement of the roll into and out of engagement with the shoe, an electric motor for rotating said roll, normally inoperative drive means associated with said roll and motor and including drive members certain of which are respectively mounted on the roll and geared to the motor and are bodily movable into and out of driving engagement with one another and for moving the roll into engagement with the shoe and electrically operated means for so moving said drive members.

4. An ironing machine comprising a rotary ironing roll, an ironing shoe, means supporting said roll and shoe for movement of the roll into and out of engagement with the shoe, an electric motor for rotating said roll, normally inoperative drive means associated with said roll and motor and including drive members which are respectively carried by the roll and geared to the motor and normally disengaged but are bodily movable into and out of driving engagement with one another and for moving the roll into engagement with the shoe and electrically operated means for so moving said drive members, and control means selectively operable for simultaneously operating

the motor and said electrical means and operating the electrical means independently of said motor.

5. An ironing machine comprising a stand, an ironing shoe supported thereon, a rotary ironing roll mounted on the stand for movement into and out of engagement with the shoe, a support on said stand, a bearing movable on the support, a shaft fixed to one end of said roll and journaled in said bearing, a gear mounted on said shaft, a lever pivoted on the support, electrically operated means for moving said lever, a gear carried by said lever and adapted to be moved so as to engage and bodily move the shaft carried gear upon movement of the lever by said electrically operated means, an electric motor, and a gear train in permanent driving connection with said movable gear and motor.

6. An ironing machine comprising a stand, an ironing shoe supported thereon, a rotary ironing roll mounted on the stand for movement into and out of engagement with the shoe, a support on said stand, a bearing movable on the support, a shaft fixed to one end of said roll and journaled in said bearing, a gear mounted on said shaft, a lever pivoted on the support, electrically operated means for moving said lever, a gear carried by said lever and adapted to be moved so as to engage and bodily move the shaft carried gear upon movement of the lever by said electrically operated means, an electric motor, and a gear train in permanent driving connection with said movable gear and motor, an electrical circuit embracing said motor and said electrically operated means and circuit closing means selectively operative for simultaneously energizing the motor and said electrically operated means or energizing the electrically operated means exclusively of the motor.

HENRY McKAY MITCHELL.