

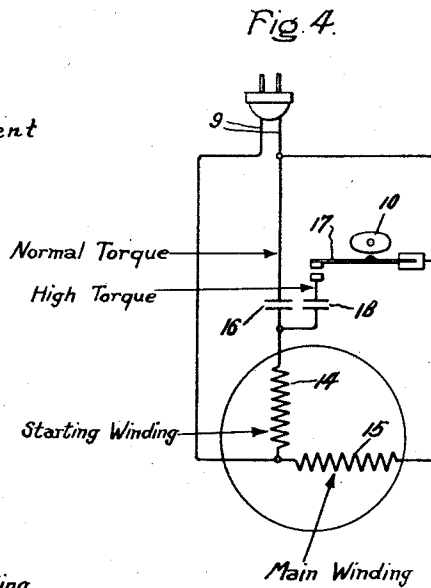
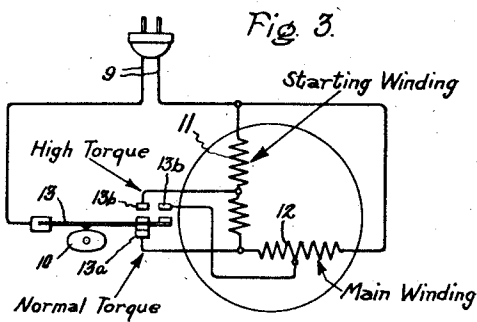
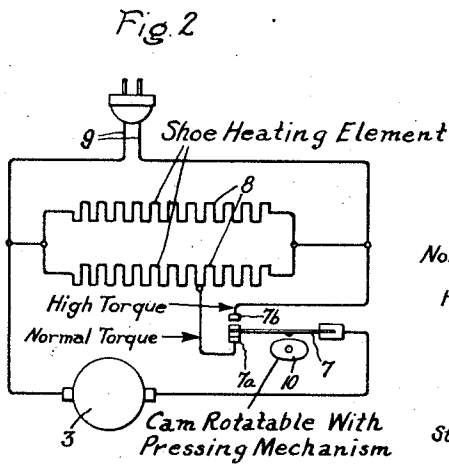
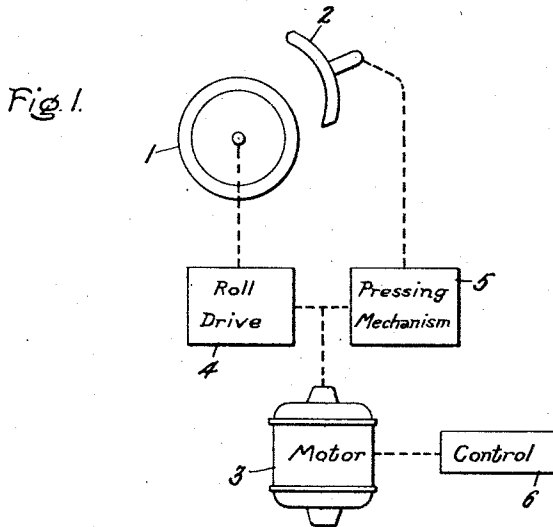
Feb. 5, 1946.

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2,393,958

ROTARY IRONER

Filed July 27, 1944



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UNITED STATES PATENT OFFICE

2,393,958

ROTARY IRONER

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Application July 27, 1944, Serial No. 546,784

4 Claims. (Cl. 38—56)

The present invention relates to rotary ironers having motor driven mechanism for driving the roll and for moving the roll and shoe into and out of engagement.

In such ironers, the pressing mechanism for moving the roll and shoe into and out of engagement, normally in use only a small fraction of the ironing time, imposes a high torque load on the driving motor.

The object of our invention is to provide an improved arrangement for increasing the motor torque during operation of the pressing mechanism, and for a consideration of what we believe novel in our invention, attention is directed to the following description and the claims appended thereto.

In the accompanying drawing, Fig. 1 is a diagram of the mechanism and control of a rotary ironer, and Figs. 2, 3 and 4 are diagrams of arrangements for obtaining higher torque during operation of the pressing mechanism.

Referring to Fig. 1 of the drawing, there is diagrammatically shown a rotary ironer having a roll 1, a shoe 2, a motor 3 driving the roll through a roll drive 4, pressing mechanism 5, also driven by the motor, for moving the roll and shoe into and out of engagement by moving the shoe or roll, and a control 6 for the motor, roll drive, and pressing mechanism. These are the common components of a rotary ironer. During normal ironing the material is arranged on the roll while it is stationary and separated from the shoe and the control is then actuated to operate the pressing mechanism effecting engagement of the roll and shoe and to start rotation of the roll to feed the material under the shoe.

When the ironing of the material is finished, the control is actuated to operate the pressing mechanism to effect separation of the roll and shoe and to stop the roll so another piece of material can be arranged on the roll.

The operation of the pressing mechanism at the beginning and end of each ironing operation normally requires only a small fraction of the time for the ironing operation. The torque requirements of the pressing mechanism are usually higher than the torque requirements of the roll drive. The pressing mechanism torque requirements are highest just before the roll and shoe are moved into or out of engagement. These peak torque requirements have been a limiting factor in the selection of the driving motor.

In Fig. 2 is diagrammatically shown an arrangement for overcoming the high torque requirements of the pressing mechanism in which the

driving motor 3 is normally connected by a switch 7 and contact 7a to a tap on the shoe heating element 8 across the power supply 9. The voltage across the tap on the heating element is somewhat less than the voltage of the power supply and the motor torque which varies with the square of the motor voltage, is sufficient to drive the roll with the roll and shoe in engagement. The switch 7 is controlled by a cam 10 coordinated with the pressing mechanism to move the switch 7 from the contact 7a to a contact 7b connecting the motor across the full voltage of the power supply during the operation of the pressing mechanism. The increase in motor voltage increases the motor torque. While the higher voltage, higher torque operation of the motor constitutes an overload, it is not harmful due to the small fraction of the time the motor operates under this overloaded condition.

The control for the switch 7 is diagrammatically shown as a cam 10 rotatable with the pressing mechanism and shaped to shift from the normal torque contact 7a to the high torque contact 7b during that part of the operation of the pressing mechanism having high torque requirements.

The arrangement shown in Fig. 2 is generally applicable to all types of electric motors. In Figs. 3 and 4 are shown arrangements particularly adapted to single phase motors. In Fig. 3 is shown a single phase motor having a starting winding 11 and a running winding 12, the starting winding being open circuited (by means not shown) after the motor is up to speed. Under normal torque conditions the switch 13, similar to switch 7, is closed on contact 13a, connecting the full motor winding across the power supply 9. When high torque is required, the switch 13 is closed on contacts 13b connecting part of the motor winding across the power supply. This increases the flux density in the motor and results in higher torque. The switch 13 may be controlled in the same manner as the switch 7 so that the high torque connection is utilized only when the pressing mechanism is in operation. In Fig. 4 is shown a single phase capacitor motor having a starting winding 14 and a running winding 15. The starting winding is normally in series with a condenser 16. During high torque requirements, a switch 17, controlled in the same manner as the switch 7, connects an additional condenser 18 in parallel with the condenser 16, increasing the phase shift in the starting winding and thereby increasing the motor torque.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. In a rotary ironer having a roll, a shoe, roll driving mechanism, and pressing mechanism for moving the roll and shoe into and out of engagement, said pressing mechanism normally being in operation a small fraction of the ironing time and having higher than normal torque requirements, a motor for driving said mechanisms, said motor having high and normal torque outputs, and a control operated automatically by movement of the pressing mechanism and in timed relation therewith for shifting to said high torque output during operation of said pressing mechanism and to said normal torque output during operation of the roll driving mechanism.

2. In a rotary ironer having a roll, a shoe, roll driving mechanism, and pressing mechanism for moving the roll and shoe into and out of engagement, said pressing mechanism normally being in operation a small fraction of the ironing time and having higher than normal torque requirements during at least a part of its operation, a motor for driving said mechanisms, said motor having high and normal torque outputs, control means actuated automatically by a moving part of the pressing mechanism for shifting to the high torque output for the time during which higher than normal torque is required and to the normal torque output at other times.

3. In a rotary ironer having a roll, a shoe, a heating element for the shoe, roll driving mechanism, and pressing mechanism for moving the roll and shoe into and out of engagement, said pressing mechanism normally being in operation a small fraction of the ironing time and having higher than normal torque requirements, a motor for driving said mechanisms, switching means for connecting the motor to a normal voltage tap in series with part of said heating element and to a higher voltage tap, and means operated automatically in response to movement of the roll and shoe into and out of engagement with each other for shifting to said high voltage tap during operation of said pressing mechanism and to said normal voltage tap at other times.

4. In an ironing machine, pressing elements which move toward and away from each other, an electric heating unit for the pressing elements of the machine, an electric motor for operating the machine including the moving of the pressing elements toward and away from each other, an electric switch, and means operated automatically by movement of the pressing mechanism and in timed relation therewith for connecting into circuit with the motor a part of the electric heating unit for reducing the motor torque at times other than when the pressing elements are being moved toward and away from each other.

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