E. F. STEGEMAN.

ELECTRIC FLAT IRON.

APPLICATION FILED SEPT. 10, 1912.

1,055,951.

Patented Mar. 11, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

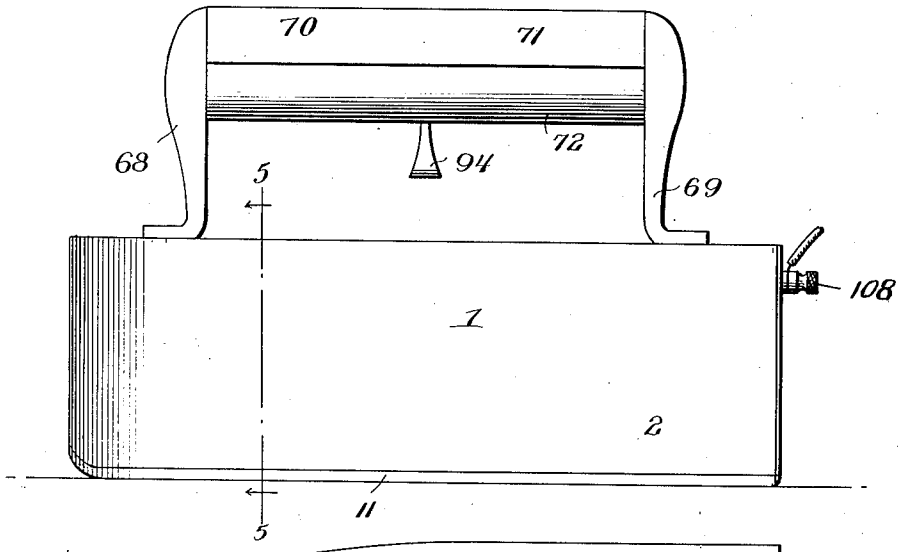


Fig. 2.

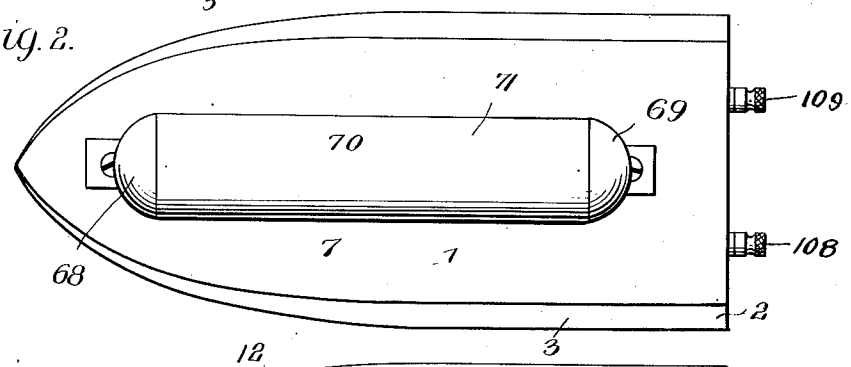
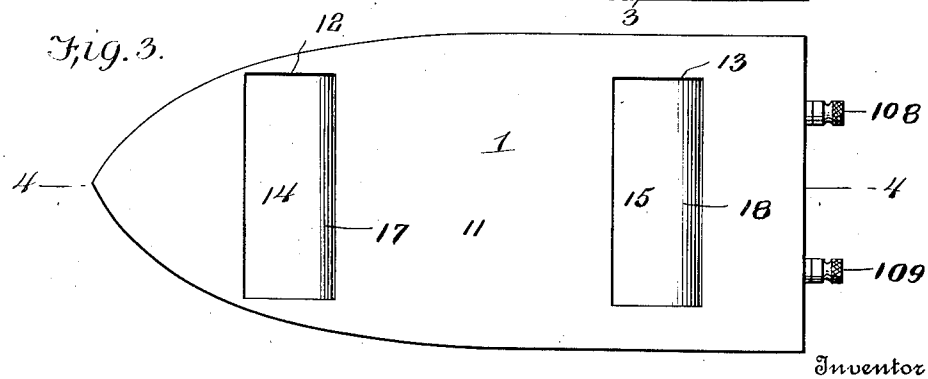


Fig. 3.



Witnesses
William Smith,
Dudley B. Howard.

Inventor
E. F. Stegeman.

By Victor J. Evans
Attorney

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3 SHEETS—SHEET 2.

Fig. 4

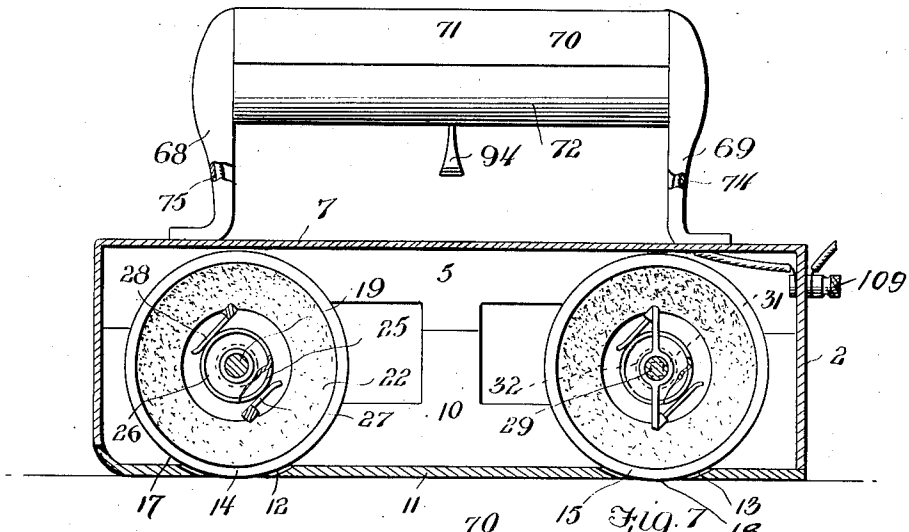


Fig. 7

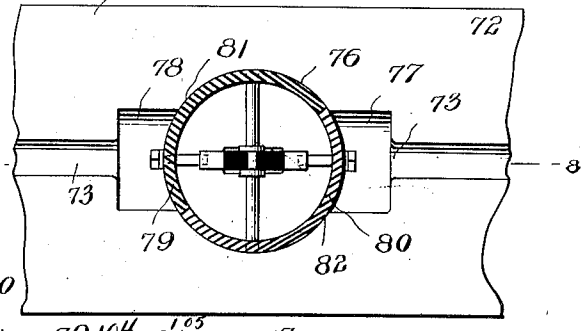


Fig. 5

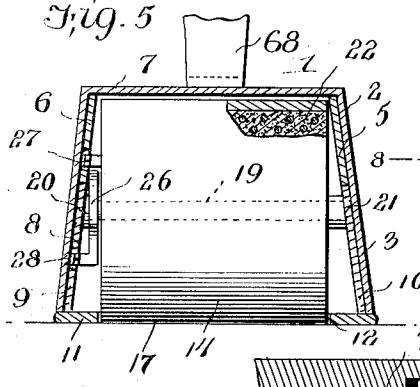
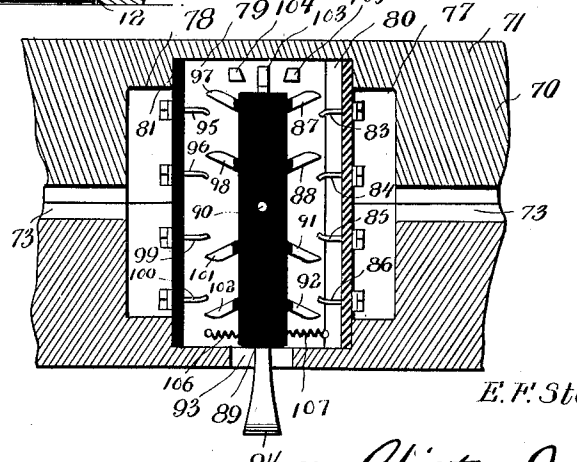


Fig. 8.



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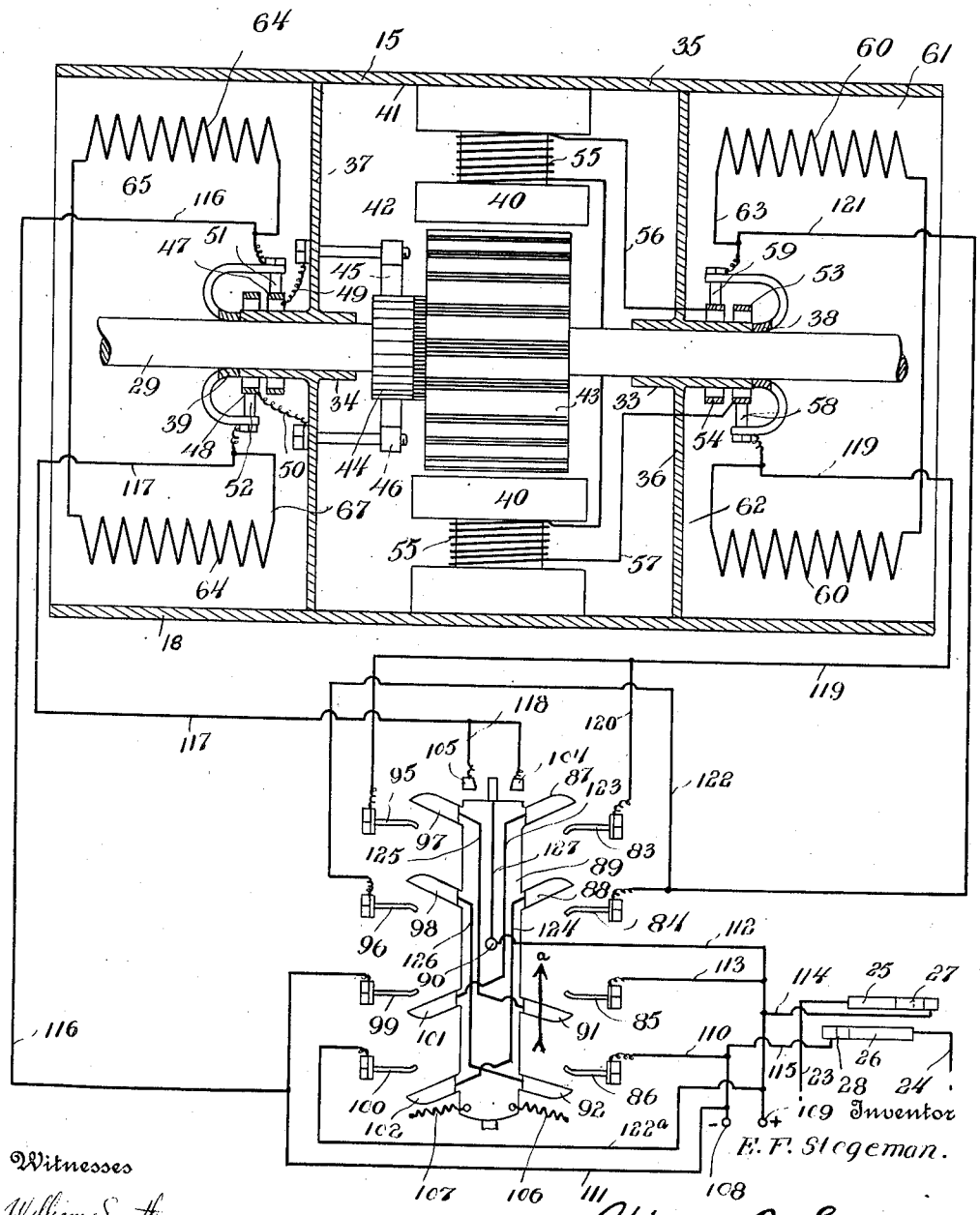
3 SHEETS—SHEET 3.

Fig. 6.



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Dudley B. Howard

Inventor

E. F. Stegeman.

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

EDWARD F. STEGEMAN, OF ROLLINSVILLE, COLORADO.

ELECTRIC FLAT-IRON.

1,055,951. Specification of Letters Patent. Patented Mar. 11, 1913.

Application filed September 10, 1912. Serial No. 719,615.

To all whom it may concern:

Be it known that I, EDWARD F. STEGEMAN, a citizen of the United States, residing at Rollinsville, in the county of Gilpin and State of Colorado, have invented new and useful Improvements in Electric Flat-Irons, of which the following is a specification.

This invention relates to an electric flat iron adapted to be used for pressing clothes and like purposes, the primary object being to provide a device of this character which has supporting rolls adapted to move across the surface of the material being pressed.

A further object of the invention is to provide means for operating one of the rolls so as to propel the device and thus save a lot of labor in the operation thereof, the device being further provided with heating elements disposed within the said rolls and connected to a suitable source of current, the same source being used to furnish motive power to the operating roll.

Another object of the invention is to provide an electrical switch device in the handle of the flat iron, which may be readily actuated by the hand of the operator so as to cause rotation of the operating roll in either direction, the said switching device adapted normally to be maintained in neutral position, wherein the current is completely cut off from the propelling motor and the heating elements.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a side elevation of the device. Fig. 2 is a top plan view thereof. Fig. 3 is a bottom plan view. Fig. 4 is a longitudinal sectional view taken on the line 4—4 of Fig. 3. Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 1, showing the propelling roll in partial longitudinal section. Fig. 6 is a diagrammatic view of the wiring of the device, showing the propelling roll in longitudinal section. Fig. 7 is a fragmentary, longitudinal, sectional view taken through the handle of the device and showing the switch structure. Fig. 8 is a similar sectional view taken at right angles to Fig. 7.

In the drawings, 1 designates the body of the flat iron which comprises an outer shell 2, constructed preferably of heat insulating material, and which has its bottom open and is provided with upwardly tapering side walls 3, the said side walls converging forwardly to form a pointed end. A frame 5 is positioned within the shell 2 and comprises an upper section 6 abutting the top wall 7 of the shell and a lower section 8 having separable side walls 9 and 10. A base plate 11 is attached to the lower edge of the section 8 of the frame and bears against the lower edge of the shell 2. This plate 11 is provided with spaced, transverse openings 12 and 13 through which the supporting rolls 14 and 15 slightly protrude so that the lower, active face 16 of the plate 11 is tangential to the peripheral surfaces 17 and 18, respectively, of the said rolls.

The roll 14 is hollow in construction and is provided with a cylindrical shaft 19 whose extremities are journaled in suitable bearings 20 and 21 carried by the side walls 9 and 10, respectively, of the lower section 8 of the frame. Suitable heating elements 22 in the form of resistance coils are provided within this roll and are connected by conductors 23 and 24 with the collector rings 25 and 26 mounted upon the shaft 19 at one end thereof and exteriorly of the roll. Suitable brushes 27 and 28 are secured to the corresponding side wall 10 of the lower section of the frame for a purpose to be described more fully hereinafter.

The roll 15 is the propelling roll of the device and is constructed entirely different from the roll 14. The central shaft 29 upon which this roll is mounted has its ends squared, as at 31, so as to be held rigid within brackets 32 carried by the side walls 9 and 10 of the lower section of the frame. The central portion of the shaft 29 is cylindrical and has rotatably mounted therein the spaced hubs 33 and 34 upon which the outer, cylindrical portion 35 of the roll 15 is mounted by means of the parallel webs 36 and 37, respectively. The roll is held against longitudinal movement upon the shaft 29 by means of the adjustable sleeve members 38 and 39, which latter are adapted to be rigidly secured to the said shaft. The motor which is adapted to rotate the said roll is of the rotary field type, the pole pieces 40 of the field magnets being secured to the inner periphery 41 of the cylindrical portion of the roll within the space 42 provided between the webs 36 and 37, so as to be housed therein. The armature 43 of the motor is rigidly mounted upon the shaft 29 in the plane of the pole pieces 40. A suit-

able commutator 44 is attached to the shaft 29 and is adapted to be contacted with by the brushes 45 and 46 to the web 37. A pair of collector rings 47 and 48 are mounted upon the hub 34 outside the casing inclosing the spaces 42, and are electrically connected with the brushes 45 and 46, respectively, by means of the conductors 49 and 50. Suitable brushes 51 and 52 are attached to the sleeve member 39 so as to be in contact with the collector rings 47 and 48, respectively. A second pair of collector rings 53 and 54 are mounted upon the outer portion of the hub 33, and are electrically connected with the field windings 55 by means of the conductors 56 and 57, suitable brushes 58 and 59 being attached to the sleeve member 38 and disposed in contact with the said collector rings 53 and 54, respectively.

Heating elements or coils are provided within the end portion 61 of the roll exteriorly with respect to the web 36 thereof, and are connected with the brushes 58 and 59 by means of the conductors 62 and 63. A second set of heating elements 64 is positioned within the opposite end portion 65 of the roll in connection with the brushes 51 and 52 through the medium of the conductors 66 and 67, respectively.

Upon reference to Figs. 6, 7 and 8, it will be seen that I have provided a switch device carried by the handle of the iron, and which may be readily operated by the hand of the operator in starting the propelling motor and cutting the heating elements simultaneously into circuit, and which is readily operable to reverse the direction of the said motor, by changing the polarity of the field current.

The handle of the flat iron consists of the curved metal end portions 68 and 69, and the wooden grip portion 70, which latter consists of the longitudinally split sections 71 and 72 having a central bore 73 provided therebetween in communication with the interior of the body 1 through the medium of the central openings 74 and 75 provided in the said end portions 68 and 69, respectively, of the handle. The grip portion 70 of the handle is centrally provided with an enlarged cylindrical recess 76 and reduced recesses 77 and 78 in communication therewith. Supporting plates 79 and 80 of insulating material are secured to the annular shoulders 81 and 82 provided at the juncture of the recess 76 with the reduced recesses 77 and 78, respectively. An upper pair of fixed contacts 83 and 84 and a lower pair of fixed contacts 85 and 86 are mounted within the plate 79 so that the upper pair of contacts 83 and 84 is disposed in the path of movement of a pair of movable contacts 87 and 88 attached to the upper portion of a contact member 89 pivoted at 90 within the recess 76. The lower pair of fixed contacts 85 and 86 are disposed in the path of movement of a lower pair of movable contacts 91 and 92 carried by the lower portion of the member 89. The lower portion of the member 89 is extended through an elongated slot 93 in the section 72 of the grip portion of the handle so as to form an operating or handle portion 94 which is adapted to be positioned between the fingers of the operator's hand when grasping the grip portion 70 of the handle. An upper pair of fixed contacts 95 and 96 is mounted within the plate 80 in the path of a corresponding pair of movable contacts 97 and 98 attached to the upper portion of the member 89, and a lower pair of fixed contacts 99 and 100 is secured to the same plate in the path of a lower pair of movable contacts 101 and 102 attached to the lower portion of the member 89. A movable contact 103 formed on the upper end of the member 89 is adapted to contact with either of the fixed contacts 104 and 105 attached to the upper portion of the plates 79 and 80, respectively. The contact member 89 is normally maintained in a vertical, neutral position by means of the opposed helical springs 106 and 107, the contacts carried thereby being out of engagement with the fixed contacts when in this position.

Referring particularly to Fig. 6 it will be understood that I have connected a lamp cord leading from a lamp socket to the binding posts 108 and 109 attached to the end portion 69 of the handle. A conductor 110 leads from the binding post 108 to the fixed contact 86, and a conductor 111 connects the conductor 110 with the fixed contact 99. The binding post 109 is connected with the pivot 90 of the movable contact member 89 by means of a conductor 112, and a conductor 113 connects the conductor 112 with the fixed contact 85. Conductors 114 and 115 lead from the conductors 112 and 110 to the brushes 27 and 28, respectively, thus connecting the heating coils within the roll 14 in shunt with the remainder of the circuits which will be presently described. A conductor 116 leads from the conductor 111 to the brush 51 carried by the shaft 29 of the propeller roll, and the coacting brush 52 is connected by means of the conductor 117 with the fixed contact 104, the contact 105 being connected with the said conductor 117 by means of the short branch conductor 118. The brush 58 carried by the sleeve member 38 mounted upon the opposite end of the shaft 29 is connected by means of the conductor 119 to the fixed contact 95, a branch conductor 120 leading therefrom to the fixed contact 83. The coacting brush 59 is connected through the medium of the conductor 121 with the contact 84, a branch conductor 122 leading therefrom to the opposite fixed

contact 96. A conductor 122ª connects the conductor 112 with the fixed contact 100. Conductors 123 and 124 embedded within the body of the member 89 connect the movable contacts 87 and 88 carried thereby with the contacts 101 and 102, respectively, and similar conductors 125 and 126 connect the contacts 97 and 98, respectively, with the contacts 91 and 92. A conductor 127 connects the pivot 90 of the member 89 with the contact 103.

Upon movement of the operating portion 94 of the movable contact member 89 in the direction of the arrow *a*, the movable contacts 91 and 92 will engage the contacts 85 and 86, the movable contacts 97 and 98 will engage the fixed contacts 95 and 96, and the movable contact 103 will engage the fixed contact 105. In this position of the movable contact, current passes through conductor 112, to the pivot 90, of the member 89, and through conductor 127, contact 103 and 105, conductor 118, conductor 117 to brush 52. Current is admitted through the armature winding of the motor and out through conductor 116, to conductor 110 through which it passes to the binding post 108 and thence to the source. At the same time, current passes in through the binding post 109, conductors 112 and 113, through fixed contact 85, movable contact 91, conductor 125, movable contact 97, fixed contact 95, then through conductor 119 to brush 58. After passing from this point through the field 20, the current passes out through brush 59, conductors 121 and 122 to fixed contact 96, then through movable contact 98, conductor 126, movable contact 92, fixed contact 86, and conductor 110 and binding post 108, from which point it passes to the source of supply. The heating element 64 is connected as will be seen by the conductors 66 and 67 in shunt with the armature circuit, and the heating element 60 is connected by means of the conductors 62 and 63 in shunt with the field circuit. When the movable contact member 89 is thrown in the opposite direction, current will pass in through binding post 109, conductor 112, conductor 122ª, contact 100, and movable contact 102, through conductor 124 carried by the movable switch member, then through movable contact 88, fixed contact 84, and conductor 121, to the brush 59. The current then passes through the field windings of the motor in a reverse direction to its longitudinal direction, then from the brush 58 through conductor 119 and 120, fixed contact 83, movable contact 87, conductor 123, movable contact 101, fixed contact 99, conductors 111 and 110, through binding post 108, to the source. The armature current at the same time passes in through conductor 112, pivot 90, conductor 127, movable contact 103, fixed contact 104, conductor 117, to brush 52. After passing through the armature winding, the current passes from brush 51 through conductors 116 and 111 to conductor 110 back through binding post 108 to the source.

It will thus be seen that, upon operation of the movable switch member in either direction, that the direction of the armature will remain the same, whereas, the direction of the field current in its shunt circuit will be reversed, and that in either case all of the heating elements will be connected in parallel with the main circuits as described. When the movable switch member is permitted to assume its neutral position, the motor and the heating elements will be cut out of circuit. This construction and wiring of the electrical components of the device permits of making the shell of the flat iron body and the heating rolls of comparatively massive, heavy metal, so as to be particularly efficient in operation, without being hard to manipulate by the operator, as the device is self-operable. It is merely necessary for the operator to guide the iron in its course and to operate the switch device in order to change the direction thereof after rendering the same inoperative, as desired.

What is claimed is:

1. A flat iron comprising a body, means for propelling said body, and heating means carried by said propelling means.

2. A flat iron comprising a body, means for propelling said body, and electrical means carried by said propelling means for heating the body.

3. A flat iron comprising a body, a plurality of cylindrical rolls pivoted to said body and engageable with the surface to be ironed, and means for rotating one of said rolls to propel the body.

4. A flat iron comprising a body, rolls pivoted to said body and engageable with the surface to be ironed, means carried by said rolls for heating the same, and means for rotating one of said rolls to propel the body.

5. A flat iron comprising a body, rolls journaled in said body and engageable with the surface to be ironed, means for heating said rolls and electrical means for operating one of said rolls to propel the body.

6. A flat iron comprising a hollow body having an active under face and a plurality of openings in communication with said face, and rolls journaled in said body and extending into said openings with their peripheral faces tangential with the active face of said body and means for rotating one of said rolls to propel the body.

7. A flat iron comprising a body, rolls journaled in said body and engageable with the surface to be ironed, electrical means for operating one of said rolls to propel the body in either direction, and means for regulating said operating means.

8. A flat iron comprising a body, rolls journaled in said body and engageable with the surface to be ironed, an electric motor forming a part of one of said rolls, an electrical circuit for said motor, and means provided in said circuit for reversing the direction of rotation of said motor.

9. A flat iron comprising a body, rolls journaled in said body and engageable with the surface to be ironed, one of said rolls comprising a shaft fixedly secured to said body, and a cylindrical body portion journaled on said shaft, a motor forming a part of said roll and consisting of an armature fixed to said shaft, and a field attached to the cylindrical body, an electric circuit for said armature, a field circuit in shunt with the armature circuit and means for reversing the polarity of the field circuit.

10. A flat iron comprising a body, a handle for said body, a plurality of rolls journaled in said body and engageable with the surface to be ironed, a motor forming a part of one of said rolls, an electrical circuit for the armature of said motor, a field circuit for said motor in shunt with the armature circuit, and means carried by said handle by which the polarity of the field circuit may be changed, said means further serving to make and break the armature circuit.

11. A flat iron comprising a body, a handle for said body, a plurality of rolls journaled in said body and engageable with the surface to be ironed, a motor forming part of one of said rolls, an armature circuit for said motor, a field circuit for said motor in shunt with the armature circuit, electrical heating elements carried by said rolls and connected in shunt with the said armature circuit, and a switch device carried by said handle and operable to make or break the armature circuit and the heating element circuits, said means further adapted to change the polarity of the field circuit.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD F. STEGEMAN.

Witnesses:
E. H. RIDER,
H. LONGNECKER.