Aug. 21, 1928. 1,681,214

R. S. BLAIR

CONSTRUCTION FOR FLATIRONS

Filed Feb. 26, 1923

Fig. 1.

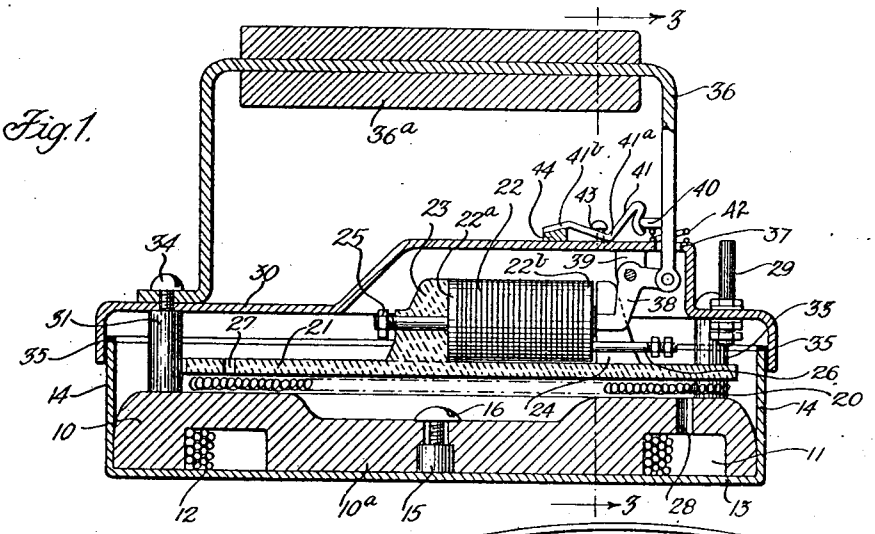


Fig. 2.

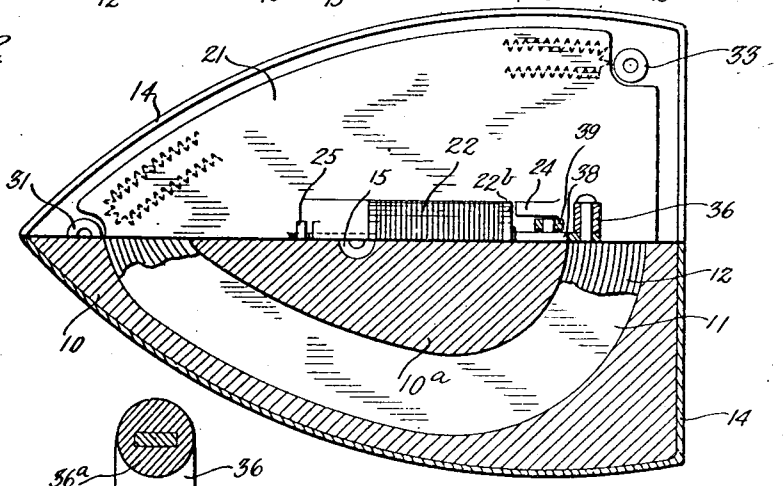


Fig. 3.

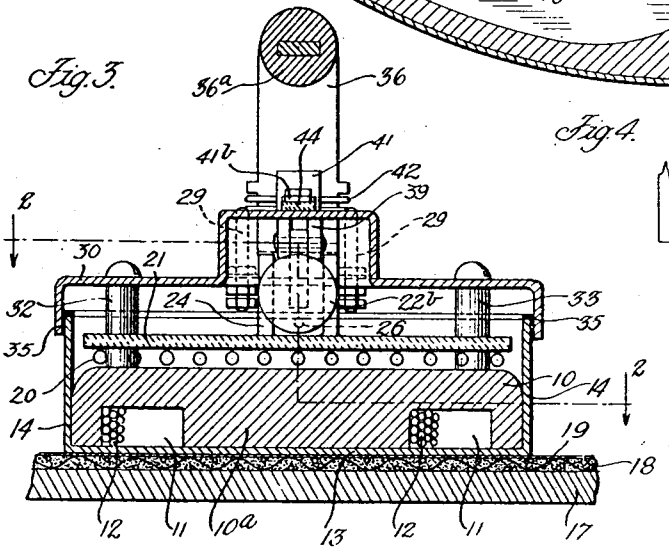
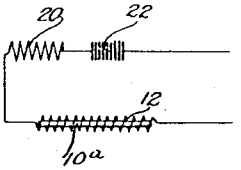


Fig. 4.



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CONSTRUCTION FOR FLATIRONS.

Application filed February 26, 1923. Serial No. 621,157.

This invention relates to construction for flat-irons and the like and more particularly to electric flat-irons. One of the objects thereof is to provide a construction of the above nature dependable and efficient and well adapted to meet the requirements of practical use. Another object is to provide a construction of the above nature adapted for easy and convenient manipulation. Another object is to provide a device of the above nature which is simply constructed and adapted to be manufactured at low cost. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts as will be exemplified in the structure to be hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of the various possible embodiments of this invention,

Figure 1 is a vertical, sectional elevation;

Figure 2 is a plan view in section, the section being taken on the line 2—2 of Fig. 3;

Figure 3 is a vertical section, the section being taken on the line 3—3 of Fig. 1; and

Figure 4 is a diagrammatic representation of the wiring employed.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now to the drawing in detail, there is shown a base member 10 of iron, in the lower surface of which is formed a groove 11 preferably following the general contour of the outer edge of the member 10. Within this groove 11 are disposed electromagnet coils 12, the central portion 10^a of the base member 10 thus forming a central downwardly directed core of a magnet. The coils 12 are held in the groove 11 by means of a plate 13 of some non-magnetic metal such as aluminum covering the lower face of the base member 10 and provided with upwardly extending side walls 14 forming a portion of the casing of the flat-iron. The plate 13 is preferably provided upon its inner surface with a lug 15 which is inserted in a central opening in the base member 10. A screw 16 threaded into the lug 15 holds the plate 13 snugly up against the lower face of the base member 10. The outer surface of the plate 13 thus forms a smooth surface for the face of the flat-iron and, being of non-magnetic material, does not interfere with the action of the electromagnet.

Referring now to Fig. 3, there is shown an ironing-board having magnetic properties adapted to be used in connection with the flat-iron. The ironing-board preferably comprises a base 17 of wood or the like, the upper surface of which is covered by a member 18 formed of woven steel between the meshes of which is inserted powdered steel. The steel member 18 is surmounted by an outer covering of fabric 19. The ironing-board thus provided furnishes the desired flexible surface for ironing and has the magnetic properties desirable for coacting with the electromagnet of the iron. The electromagnet comprising the pole 10^a and coils 12 being energized will attract the magnetic material of the ironing-board and thereby cause the flat-iron to exert pressure upon the material to be pressed which is interposed between the non-magnetic face plate 13 and the fabric covering 19.

Above the iron base member 10 is positioned an electric heating element, for example formed of coiled resistance wires 20 as shown and adapted upon being energized to heat the iron base 10 for pressing. Above the heating coils 20 rests a plate 21 of some suitable refractory material. Supported upon the plate 21 is a carbon pile 22 held between an abutment 23 at one end thereof and a pair of abutments 24 at the other end, the abutments 23 and 24 being preferably formed integral with the refractory plate 21. A binding post 25 passing through the abutment 23 is connected with the stationary end member 22^a of the carbon pile 22. The movable end member 22^b of the carbon pile is provided with a similar binding post 26 passing between the pair of abutments 24. The carbon pile 22, the heating coil 20 and the magnet coil 12 are connected in series as shown in Fig. 4, passages 27 and 28 being provided through the refractory plate 21 and the iron base 10, respectively to accommodate the connecting conductors, and a pair of terminal posts 29 being provided therefor.

An upper casing or cover member 30 rests upon three upwardly projecting lugs 31, 32 and 33 formed on the base member 10 and is

secured thereto by means of screws 34. Between the upper edge of the side walls 14 of the bottom casing and the overlapping edges of the cover member 30 is preferably inserted an asbestos member 35 adapted to prevent excessive conduction of heat from the lower casing member to the upper casing member 30. Secured beneath the head of the screw 34 threaded into the lug 31 is one end of a handle member 36, the other end of which projects downwardly through an opening 37 in the casing member 30. The handle member 36 is provided with a grip 36[a] of wood or the like adapted to be gripped for manipulation of the flat-iron. The end of the handle member 36 passing through the opening 37 is pivotally connected to one end of a lever 38 which is pivoted upon a lug 39 depending from the casing member 30, the lever 38 being connected at its other end with the movable end member 22[b] of the carbon pile 22. It will be seen that a downward movement of the handle member 36 through the opening 37 acting through the lever 38 will compress the carbon pile 22 and, conversely, an upward movement of the handle member 36 will release pressure from the carbon pile. The handle member 36 is preferably formed of a metal strip having resilient properties. Thus, a downward pressure upon the grip 36[a] forcing the handle member 36 downwardly through the opening 37 thus compressing the carbon pile 22 and reducing the resistance thereof will cause an increase of current through the heating coil 20 increasing the heating effect thereof, and through the magnet coil 12 increasing the strength of the electromagnet and correspondingly increasing the pressure upon the material being ironed. Thus, by movement of the handle member 36 the current through the heating coil and also the strength of the electromagnet may be controlled.

Referring to Fig. 1, projecting from the handle member 36 a short distance above the opening 37 in the casing 30 is a lug 40 which is adapted to coact with the latch member 41. Interposed between the surface of the casing member 30 and the lug 40 is a coiled spring 42 urging the handle member 36 in an upward direction. The latch member 41 is shaped to engage the lug 40 in such manner that normally it will hold the handle member 36 down against the action of the spring 42. When the latch member 41 and the lug 40 are thus engaged in normal position the handle member 36 is preferably held in such position that the carbon pile 22 is compressed to such an extent that the current flowing therethrough is a little less than the maximum current obtainable. Thus, when it is desired to heat the flat-iron up while it is standing idle, this may be accomplished by engaging the latch 41 with the lug 40 in normal position as shown in Fig. 1 and as above described.

The latch 41 is shaped to bear against the surface of the casing member 30 as at 41[a], and its end portion 41[b] remote from the lug 40 extends upwardly in spaced relation to the casing 30. Passing through this spaced portion 41[b] is a pin 43 mounted on the casing 30, and inserted between the extreme end of the portion 41[b] and the casing 30 is a member 44. This member 44 is of a metal alloy or other suitable material which will fuse at a predetermined temperature which is slightly lower than the lowest temperature which would be harmful to the carbon pile 22 or to the other conductors within the shell of the flat-iron. Thus it will be seen that when the handle member 36 is locked in normal position by the latch 41 and current is flowing through the flat-iron as above described, if the temperature inside the shell of the iron, and hence that of the member 30, rises to such a degree as would be harmful, the member 44 being fused thereby, the latch 41 will be free to rock upwardly about its bearing point 41[a]; the lug 40 is thereby released and the handle member 36 is forced upwardly by the action of the spring 42 thus reducing the compression upon the carbon pile 22, increasing the resistance thereof and reducing the current. The flat-iron may thus be heated up when not being used for ironing, and at the same time it is protected from danger of overheating.

The latch 41 is formed preferably of a flat metal spring member of sufficient rigidity to hold the handle 36 down against the action of the spring 42, as above described, but of sufficient flexibility so as not to interfere with the movement up and down of the handle 36 held by the grip 36[a]. If desired, the latch 41 may be turned about the pin 43 as a pivot and swung out of the way of the lug 40 so as not to interfere with the movement up and down of the handle member 36. Thus, as the flat-iron is manipulated by means of the hand grip 36[a] the flow of current through the heating coil and through the magnet coil is controlled by movement of the handle member 36 up or down through the opening 37 in the casing member 30. The electromagnet attracting the steel member 18 of the ironing-board as above described causes pressure to be applied to the material being ironed, and by a slight movement of the handle member 36 compressing or releasing the carbon pile 22 this pressure upon the material being pressed may be increased or decreased at will. It will be seen that as the flat-iron is lifted by means of the handle 36 for removal of the iron from engagement with the material being ironed, the strength of the electromagnet is automatically decreased to permit such removal with ease. Furthermore, as the flat-iron is alternately moved back and forth along the material being ironed in the usual manner the natural downward pressure upon the handle in mov-

ing the iron in one direction, and the natural lift upon the handle in moving the iron in the opposite direction, will automatically compress and release the carbon pile 22 and thus automatically cause a variation in the strength of the magnet.

It may here be noted that the term "reduce" is used in a broad sense in the following claims to comprehend an actual cutting-off or reduction to zero.

As various possible embodiments may be made of this invention and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth or indicated in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. In construction for flat-irons, in combination, an electromagnetic element tending to attract an ironing-board of magnetic material, means adapted to lead current thereto, resilient means tending to reduce the power of said electromagnetic element, and means opposing the action of said resilient means as the iron is pressed against the work.

2. In construction for flat-irons, in combination, an electromagnetic device tending to attract an ironing-board of magnetic material, a casing, means adapted to lead current to said electromagnetic device, and means within said casing and controlled from a hand on the handle of said iron and independent of said electromagnetic device adapted to vary the power of said device.

3. In construction for flat-irons, in combination, a casing, a handle therefor, a coil within said casing, means adapted to lead current to said coil, and means controlled by pressure upon said handle adapted to vary said current.

4. In construction for flat-irons, in combination, a shell, a handle therefor, a coil within said shell, means adapted to lead current to said coil, a variable resistance controlling the flow of said current, and means controlled from said handle adapted to effect said variable resistance.

5. In construction for flat-irons, in combination, a shell, a coil therein, means adapted to lead current to said coil, a carbon pile interposed in said current-leading means, and means for controlling said carbon pile to vary said current therethrough.

6. In construction for flat-irons, in combination, a casing, a movable handle member thereon, a coil within said casing, means adapted to lead current to said coil, a variable resistance controlling the flow of said current, and means controlled by movement of said handle adapted to effect said variable resistance.

7. In construction for flat-irons, in combination, a casing, a coil therein, means adapted to lead current to said coil, a variable resistance controlling the flow of said current, a movable handle member upon said casing, means controlled by movement of said handle adapted to effect said variable resistance, and means adapted to lock said handle in predetermined position.

8. In construction for flat-irons, in combination, a casing, a coil therein, means adapted to lead current to said coil, a variable resistance controlling the flow of said current, a movable handle member upon said casing, means controlled by movement of said handle adapted to effect said variable resistance, means adapted to lock said handle in predetermined position, and means adapted to release said lock at a predetermined temperature of said casing.

9. In construction for flat-irons, in combination, a shell, a handle therefor, a heating element within said shell, means adapted to lead current to said heating element, and means controlled by pressure upon said handle adapted to vary said current at will.

10. In construction for flat-irons, in combination, a casing, a movable handle member thereon, a heating element within said casing, means adapted to lead current to said heating element, a variable resistance controlling the flow of said current, and means actuated by movement of said handle adapted to effect said variable resistance.

11. In construction for flat-irons, in combination, a casing, a heating element therein, means adapted to lead current to said heating element, a variable resistance controlling the flow of said current, means controlling said variable resistance, means adapted to lock said controlling means in predetermined position, and means adapted to release said lock at a predetermined temperature of said casing.

12. In construction for flat-irons, in combination, a shell, a heating element therein, means adapted to lead current to said heating element, a variable resistance adapted to control the flow of said current, means for controlling said variable resistance, a spring urging said controlling means to increase said resistance, means adapted to lock said controlling means in predetermined position against the action of said spring, and means adapted to release said lock at a predetermined temperature of said shell.

13. In construction for flat-irons, in combination, a casing, a movable handle therefor, an electromagnet within said casing, means for leading current to the coils of said electromagnet, a variable resistance adapted to control the flow of said current, and means actuated by movement of said handle adapted to effect said variable resistance.

14. In construction for flat-irons, in combination, a shell, an electromagnet therein, means adapted to lead current to the coils of

said magnet, a carbon pile interposed in said current-leading means, a handle member for said shell movable in a downward direction with respect thereto, and means interposed between said handle member and said carbon pile adapted upon a downward movement of the former to compress the latter.

15. In construction for flat-irons, in combination, a shell, an electromagnet therein, means adapted to lead current to the coils of said magnet, a carbon pile interposed in said current-leading means, a handle member for said shell movable in a downward direction with respect thereto, means interposed between said handle member and said carbon pile adapted upon a downward movement of the former to compress the latter, and means urging said handle member in an upward direction.

16. In construction for flat-irons, in combination, a shell, a heating element therein, an electromagnet therein, means adapted to lead current consecutively through said heating element and the coils of said electromagnet, and means adapted to vary said current at will.

17. In construction for flat-irons, in combination, a casing, a heating element therein, means adapted to lead current to said heating element, a carbon pile within said casing interposed in said current-leading means adapted to control the flow of said current, and a member of refractory material interposed between said heating element and said carbon pile.

18. In construction for flat-irons, in combination, a casing, a heating element therein adjacent the lower portion thereof, a member of refractory material positioned above said heating element, means adapted to lead current to said heating element, and a carbon pile mounted upon said refractory member remote from said heating element adapted to control the flow of said current.

19. In construction for flat-irons, in combination, a casing comprising a lower portion and an upper portion removable therefrom, said upper portion forming a chamber within the iron, means within said casing adapted to heat said lower portion thereof, and non-heat conductive means interposed between said chamber and the lower portion of said casing.

20. In construction for flat-irons, in combination, an electric heating element mounted to heat the iron, means adapted to lead electric current therethrough, a member brought into action in the normal use of the iron, and means controlled by said member and controlling said current and adapted automatically to cut down said current as the normal use of said iron ceases whereby the heating of said iron is made somewhat proportionate to its use.

21. In construction for flat-irons, in combination, a shell, an electromagnet therein, a handle for manipulating said shell, means adapted to lead current to said magnet, a member adjacent said handle adapted to be moved automatically as the iron is lifted, and means adapted to cut down said current as said member is moved.

22. In construction for flat-irons, in combination, a shell, an electromagnet therein, a pressure-actuated member mounted upon the iron and adapted to be pressed as the iron is pressed downwardly, and means controlled in accordance with the pressure on said member adapted correspondingly to increase the power of said electromagnet.

In testimony whereof, I have signed my name to this specification this 24th day of February, 1923.

ROBERT S. BLAIR.