Nov. 14, 1944. A. T. SMITH 2,362,591

PRESSING IRON

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Fig. 2.

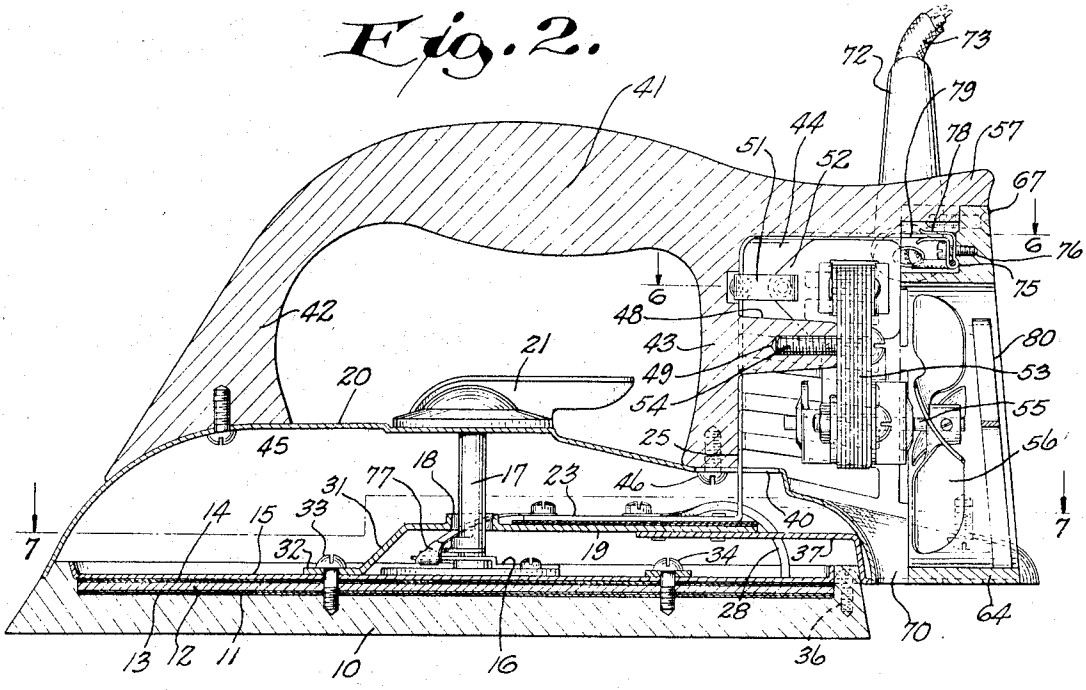
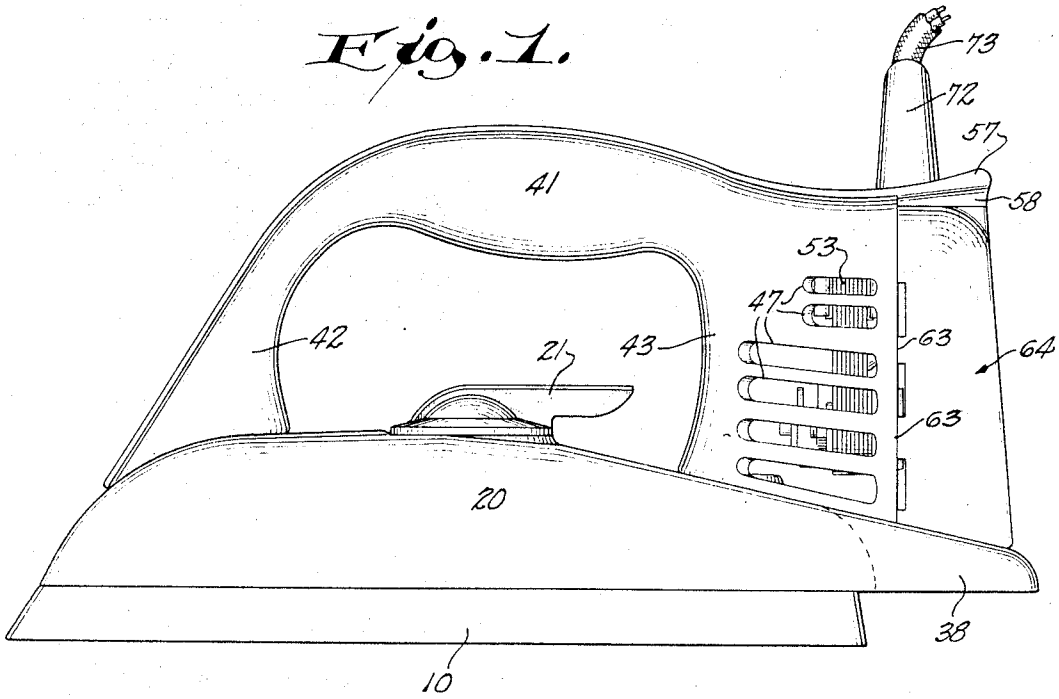


Fig. 1.



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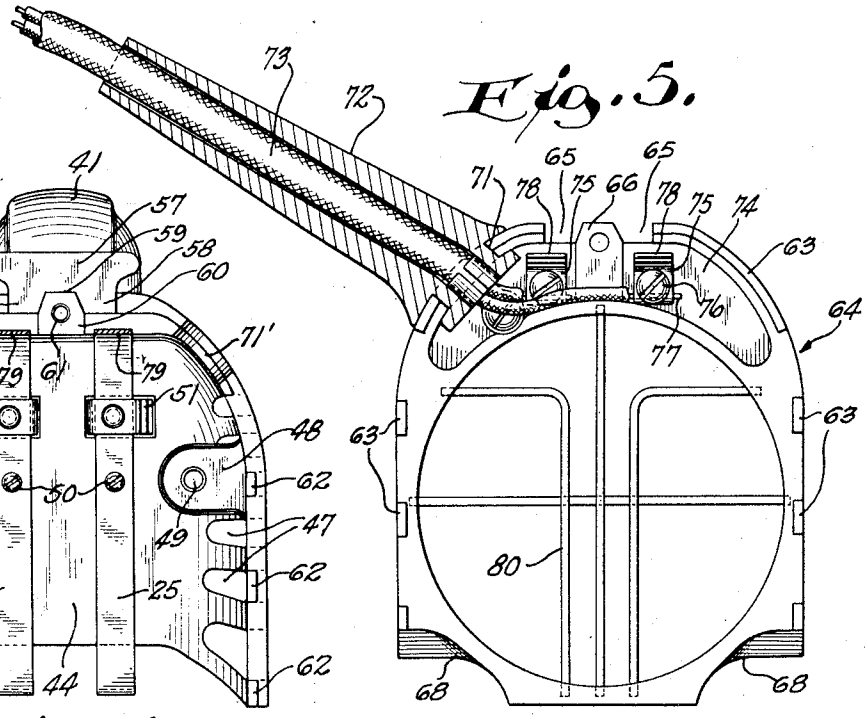


Fig. 5.

Fig. 4.

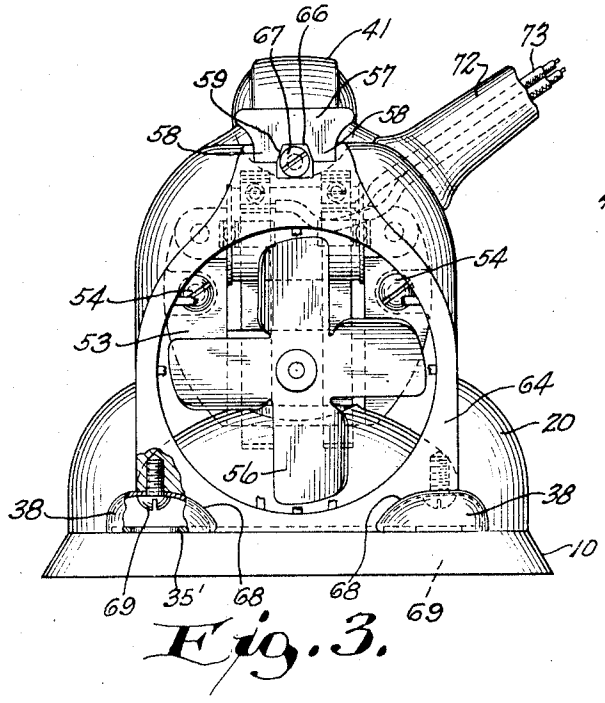


Fig. 3.

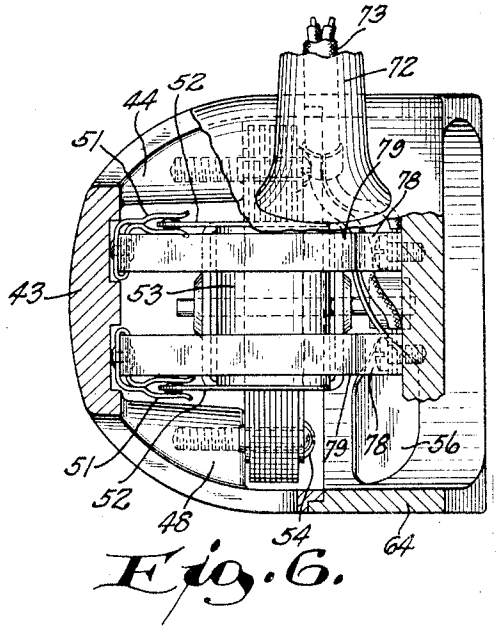


Fig. 6.

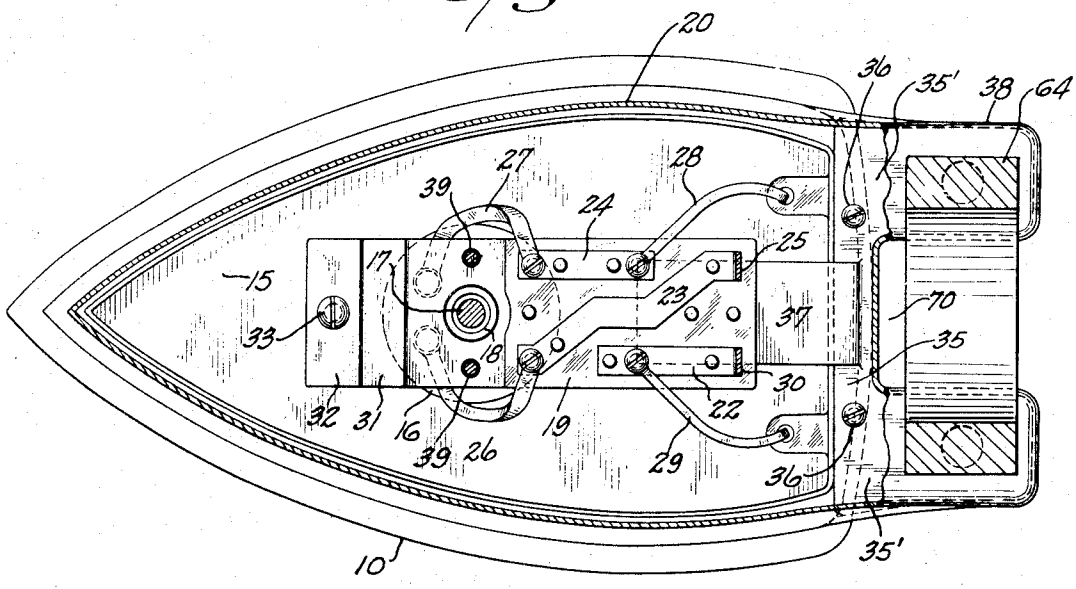
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PRESSING IRON

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Fig. 7.



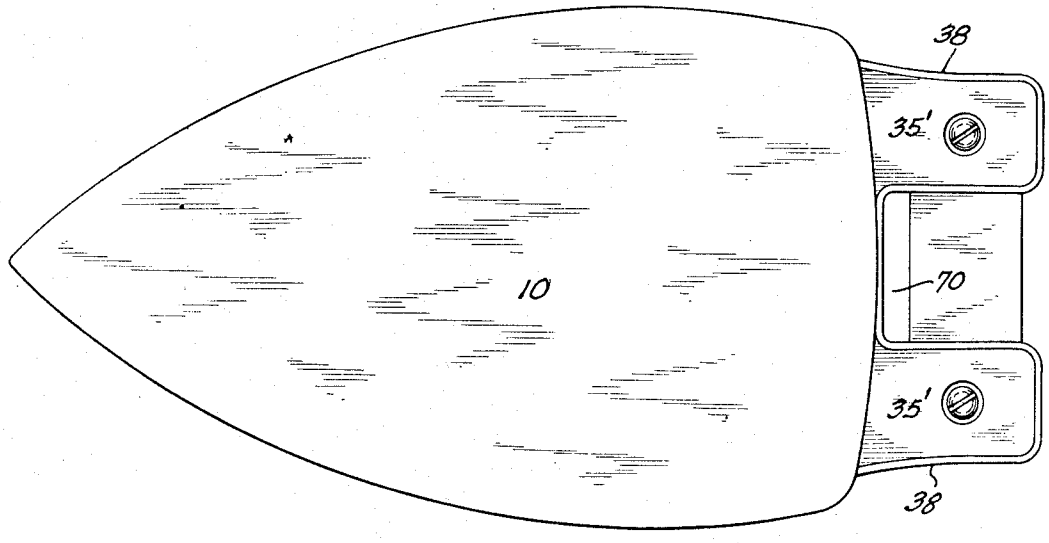


Fig. 8.

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UNITED STATES PATENT OFFICE

2,362,591

PRESSING IRON

Alva T. Smith, Milwaukee, Wis., assignor to The Sunlite Mfg. Company, Milwaukee, Wis., a corporation of Wisconsin

Application February 20, 1942, Serial No. 431,656

5 Claims. (Cl. 38—75)

This invention relates to improvements in pressing irons, and more particularly to irons of the fan-equipped type.

It has heretofore been proposed to use an electric fan in conjunction with a flatiron, principally for the purpose of cooling the air in the region of the user. The present invention relates to a construction wherein the fan not only accomplishes the above object but also serves to dry out the fabric over which the iron has passed.

Heretofore fan-equipped irons have been subject to a number of objections. In the first place the use of the motor and fan has resulted in a cumbersome appearance, and in the second place it has not been possible to remove the motor for cleaning or repair without disassembling a substantial portion of the iron and disconnecting lead wire screws from relatively inaccessible places.

It is a general object of the present invention to provide an iron of the class described wherein, in order not to render the iron bulky and unattractive, a small electric motor is utilized (said motor being generally termed a "flea power" motor), and wherein said motor and the associated fan are so arranged and housed as to obtain the maximum benefits from the air currents created thereby.

A further object of the invention is to provide an iron as above described wherein the fan is arranged to blow a stream of air rearwardly onto the fabric over which the iron has passed, the fan being rotatable in a tunnel-like housing portion which is so constructed and arranged as to minimize any inward suction effect at the rear of the iron. Such suction effect would oppose or interfere with the desired outward and rearward movement of air.

A further object of the invention is to provide a construction wherein the motor housing is formed with side and bottom air intake openings arranged to permit an unobstructed flow of air to the relatively small fan. This aids materially in obtaining maximum air movement in the desired rearward direction so as to effectively utilize all of the energy created by a small motor of minimum size and power.

A further object of the invention is to provide a construction as above described wherein steam and hot air from the rear and side of the sole plate are sucked into the fan and mixed with other dry air so that said other air is heated and so that moisture is removed from the steam. The mixture of relatively dry hot air is then blown rearwardly to effectively dry out fabric over which the iron has passed.

A further object of the invention is to provide a fan-equipped iron wherein the motor and fan are removable as a unit without the necessity of disturbing the screw clamp connections with the outlet wires.

A more specific object of the invention is to provide a construction as above described wherein the outlet cord is connected to screw terminals carried by a readily removable, tunnel-forming housing portion so as to be removable therewith. The tunnel portion in turn has contact members which are slidingly cooperable with prongs forming part of the electric circuit on the iron, and the motor is also disconnectible from said electric circuit by a rearward sliding movement.

Other objects of the invention are to provide a fan equipped iron which is easily manufactured, assembled, and serviced; which is so constructed that the handle may be readily replaced if broken; which has the motor windings as well as the contact terminals with the outlet cord removed from the zone of maximum heat; and which is neat and attractive in appearance.

With the above and other objects in view, the invention consists of the improved pressing iron and all its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings illustrating one complete embodiment of the preferred form of the invention, in which the same reference numerals designate the same parts in all of the views,

Fig. 1 is a side elevational view of the assembled iron;

Fig. 2 is a longitudinal vertical sectional view through the assembled iron;

Fig. 3 is a rear view of the assembled iron, the guard grill being omitted;

Fig. 4 is a view looking into the motor housing from the rear, with the motor and fan tunnel removed;

Fig. 5 is a view looking at the inner side of the fan tunnel portion, the outlet cord support being shown in longitudinal section;

Fig. 6 is a fragmentary sectional view taken approximately on the line 6—6 of Fig. 2;

Fig. 7 is a sectional view taken on line 7—7 of Fig. 2; and

Fig. 8 is a bottom view of the assembled iron.

Referring more particularly to the drawings,

the iron includes a metal sole plate 10 having a recess 11 in its upper side. Within the recess is a heating element 12 positioned between bottom sheets of mica 13 and top sheets of mica 14. A pressure plate 15 is superimposed on the top sheets of mica.

A thermostat unit 16 has a rotatable control rod 17 projecting upwardly therefrom through a hole 18 in a contact supporting plate 19. The upper end of the control rod 17 extends rotatably through the top of the shell 20 of the iron and is equipped with the usual control knob 21.

The contact supporting plate 19 supports electric contact strips 22, 23, and 24 (see Fig. 7). The contact strip 23 has an upwardly extending terminal end 25 which serves as a bus bar and carries electricity from an outside source to the strip 23. From the strip 23 the electrical circuit extends through a conductor 26, through the thermostat 16, through a conductor 27 leading from the other side of the thermostat, through contact strip 24, and through a conductor 28 leading to one side of the heating element. From the other side of the heating element the circuit extends through a conductor 29 to the contact strip 22. The contact strip 22 has an upwardly projecting terminal end 30, forming another bus bar, which connects with the outside source of current.

The front of the contact supporting plate 19 is angled downwardly as at 31 and formed with a flange 32 which is connected by a screw 33 with the sole plate 10. This screw also serves to hold the pressure plate and heating element in position, as does a second screw 34 positioned rearwardly of the first screw 33.

Referring to Fig. 7, a bifurcated plate 35 having spaced portions 35' is secured to the top of the sole plate at the rear thereof by screws 36, and the said plate projects rearwardly of the iron, as shown in Fig. 7. A tongue 37 extends upwardly and forwardly from the plate 35 and is secured beneath the plate 19 to support the rear end of the latter.

The rear of the shell of the iron has spaced hollow portions 38 which project rearwardly beyond the sole plate and which fit over the projecting portions 35' of the plate 35. The shell may be removably secured in position by the use of bolts extending through the top of the shell on each side of the thermostat control rod 17, and which have their lower ends cooperable with threaded openings 39 in the contact supporting plate 19. The shell is also formed with openings 40 through which the bus bars 25 and 30 extend, as shown in Fig. 2.

The iron handle 41 is preferably molded from a plastic material and formed with a front support 42 and with a rear support 43. The latter support is enlarged and hollowed out, as at 44, to provide a motor housing. The front handle support is secured in position by a screw 45, and the rear handle support by screws 46.

The sides of the hollowed out motor housing portion 43 are formed with air intake slots 47, and within the housing are two motor mounting bosses 48 having threaded openings 49.

Referring to Fig. 4, the upwardly extending bus bars 25 and 30 are secured by screws 50 to the forward wall of the motor housing, and said bus bars 25 and 30 are provided with rearwardly extending yielding contact members 51. These contact members 51 each comprise two yieldingly separable sections normally urged toward each other to form yielding sockets for slidably receiving terminal prongs 52 of the electric motor 53. Thus the electric motor may be electrically connected in the circuit with the bus bars 25 and 30 by merely pushing the motor inwardly into the motor housing to cause the motor prongs to engage with the yielding contact members 51. The motor is detachably connected within the chamber 44 by means of screws 54 which enter the threaded openings 49 of the motor mounting bosses 48.

The motor shaft 55 has an end which projects rearwardly and which carries the fan 56. The fan blades are pitched in a direction to propel air rearwardly of the iron.

Projecting rearwardly from the top of the motor housing 43 is a tongue 57 having its lower side formed with spaced, downwardly extending ribs 58 which define a recess 59 between the ribs. The inner end of the recess 59 leads to a boss 60 having a threaded opening 61 therein (see Fig. 4). As also shown in Fig. 4, the rear edges of the motor housing have spaced tongues 62, which are approximately half the thickness of the edges. These tongues fit inside of cooperating tongues 63 formed on the fan tunnel or rear housing portion 64 (see Fig. 5). The fan tunnel 64 has its top formed with spaced recesses 65 separated by an upwardly projecting apertured tongue 66. In assembly, when the fan tunnel 64 is placed in position on the rear of the motor housing, the tongues 62 of the motor housing slide within the tongues 63 of the fan tunnel, and the ribs 58 at the top of the motor housing slide into recesses 65 of the fan tunnel. At the same time the upwardly projecting tongue 66 of the fan tunnel slides within the groove or recess 59 between the ribs 58. A bolt 67 extending through the opening in the tongue 66 and threaded into the threaded opening 61 of the boss 60 secures the tunnel in position. The lower portion of the fan tunnel has corner recesses 68 to accommodate the shell projections 38 so that the bottom of the tunnel is supported on said shell projections and may be secured in this position by screws 69, as clearly indicated in Fig. 3. It is to be noted that the tunnel 64 is of less depth than the length of the shell projections 38 so that there is a bottom air intake openings 70 (see Figs. 2, 7, and 8) below the motor and communicating with the region adjacent the rear edge of the sole plate.

The tunnel 64 is formed with a half -circular opening 71 in its forward edge, and the edge of the motor housing is formed with a cooperating half-circular opening 71' which, when the fan tunnel is in position on the motor housing, cooperate to clampingly hold a cord protector 72 in position. The cord protector forms a sheath for the outlet cord 73, as shown in Fig. 5.

The upper portion of the forward side of the fan tunnel is recessed as at 74 to accommodate yielding terminals 75. These terminals are secured in position by screws 76 which simultaneously clamp the ends 77 of the outlet cord wires in electrical connection with the members 75. The members 75 have inwardly projecting portions 78, each comprising two yieldingly separable sections. The bus bars 25 and 30 at the front wall of the motor housing extend upwardly to the top of the housing and then at right angles as at 79. The ends of these right angularly extending portions 79 form prongs, as shown in Fig. 2, for slidable engagement between the yielding portions of the terminal members 75. Thus when the fan tunnel is in position the prongs of the

bus bars 29 and 30 carry electricity from the terminals 76 to the heating element. In addition, due to the engagement of the motor prongs 52 with the yielding clip members 51 on the bus bars, electricity is also furnished for the electric motor.

When it is desired to remove the motor for cleaning or repair, it is merely necessary to remove the bolts 67 and 69 holding the fan tunnel in position, remove the fan tunnel by rearward withdrawal, and then remove the motor by a rearward withdrawal. In removing the fan tunnel the outlet cord stays attached to the fan tunnel, as shown in Fig. 5, and it is therefore unnecessary to loosen the terminal screws 76 or otherwise interfere with the permanent electrical connections. Before removing the motor, the motor securing bolts 54 must of course be removed, but the motor is removed from the electrical circuit without further manipulation merely by pulling the motor prongs 52 out of the yielding clips 51. Thus the fan tunnel and outlet cord are removable as a unit and the motor and fan are removable as a separate unit with little difficulty and without any interference with the permanent electrical connections.

The rear end of the fan tunnel may be equipped with a guard 80. This guard may be formed of intersecting metal rods or strips having ends molded into the plastic material forming the fan tunnel, as is clearly shown in Fig. 5.

In the use of the iron, the fan tunnel 64 forms a shroud for the fan, as clearly shown in Figs. 2 and 3. This shroud has the effect of preventing undesired centrifugal currents from escaping from the fan and of preventing the tendency which fans have of sucking a certain amount of air inwardly toward the fan in a direction generally opposed to the main flow of air from the fan. Thus the fan is enabled to exert its entire energy in blowing a relatively strong stream of air, considering the size of the fan and motor, in a rearward direction to dry out fabric over which the iron has passed. In order for a fan to operate properly, of course, there must be means for admitting air thereto. If the wall of the motor housing 43 toward the front of the iron were open, then air drawn into the motor housing would have to pass around the motor before getting to the fan. With the present arrangement, however, intake air is furnished through the side openings 47 of the fan housing and through the bottom openings 78. The bottom opening particularly admits steam leaving the rear edge of the sole plate, and this steam laden air is mixed by the fan with other dry air so that moisture is evaporated from the steam heated air. At the same time the steam heated air raises the temperature of other air admitted to the fan, so that the fan blows a current of relatively dry heated air rearwardly of the iron to dry out fabric over which the iron has passed. In addition this action which sucks steam from around the sole plate and blows the same rearwardly prevents this steam and hot air from rising into the face of the user of the iron. Also, the action of the fan in sucking the steam out of the clothes, via the opening 70, prevents the steam from condensing onto the clothes and therefore hastens the drying action.

The structure may be utilized in connection with the type of electric iron illustrated or may be incorporated in a steaming iron.

Although only one form of the invention has been shown and described, it is obvious that various changes and modifications may be made without departing from the spirit of the invention, and all of such changes are contemplated as may come within the scope of the claims.

What I claim is:

1. In a sadiron having a sole plate and having a handle provided with a rear support, relatively rigid conductors for receiving electric current from an outside source secured to the rear support and extending downwardly adjacent said rear support toward the sole plate, prong receiving yielding clips electrically connected to said conductors and projecting therefrom, a motor, conductor prongs projecting from the motor and forming terminals from the electric circuit of the motor, a rear fan supported on said motor and driven by the motor in a direction to propel air rearwardly of the iron, said motor prongs being slidably engaged with said prong receiving clips of the conductors, and a rear fan cage having a part readily removably connected to the rear support of the handle and preventing removal of the motor when in place, said fan cage having a rear opening through which air from the fan is propelled.

2. In a sadiron having a sole plate and having a handle provided with a rear support, conductors extending downwardly adjacent said rear support toward the sole plate, said conductors having upper ends bent rearwardly and forming a first set of prongs, prong receiving yielding clips electrically connected to the downwardly extending portions of said conductors and projecting rearwardly therefrom, a motor, conductor prongs projecting forwardly from the motor and forming terminals of the electric circuit of the motor, a rear fan supported on said motor and driven thereby, said motor prongs being slidably engaged with said prong receiving clips of the conductors, a rear fan cage having a part readily removably connected to the rear support of the handle and preventing removal of the motor when in place, prong receiving yielding clips projecting inwardly from said removable part of the fan cage and slidably engaged with the prongs formed by the rearwardly bent ends of the conductors, and an outlet cord electrically connected to the prong receiving clips of the removable fan cage part.

3. In a sadiron having a handle provided with a rear support, said rear support including a fixed part integral with the handle and a readily removable rear part which are formed to provide housing means, conductors for receiving electric current from an outside source extending downwardly in said housing means toward the sole plate, friction contact members projecting rearwardly from said conductors, a motor within said housing means, a fan supported on and driven by said motor, and means for readily removably securing said motor in position including friction contact members projecting from the motor which are slidably engaged with the friction contact members of said conductors, said readily removable rear part of the rear handle support being formed with a rear end air outlet opening.

4. In a sadiron having a sole plate, a shell over said sole plate, a handle of non-heat conducting material having an integral rear supporting portion which extends downwardly and is secured to the top of the shell forwardly of the rear edge of the sole plate, said integral rear handle supporting portion forming the forward wall of a rear housing, conductors adjacent the rear side of said rear handle supporting portion and ex-

tending downwardly through the shell toward the sole plate, prong-receiving yielding clips electrically connected to said conductors and projecting rearwardly from the rear handle supporting portion, a motor, conductor prongs projecting forwardly from the motor and forming terminals of the electric circuit of the motor, said motor prongs being slidably engaged with said prong-receiving clips of the conductors by a movement exerted longitudinally of the iron, other means for removably connecting the motor to the rear handle supporting portion, and a rear cover for the housing removably secured to the rear handle supporting portion and conforming to the external contours thereof, said rear cover having an air opening therein, and said motor and fan fitting within the housing formed by the rear handle supporting portion and cover and being readily removable in a rearward direction when said cover is removed.

5. In a sadiron having a sole plate, a shell over said sole plate, a handle of non-heat conducting material having an integral rear supporting portion which extends downwardly and is secured to the top of the shell forwardly of the rear edge of the sole plate, said integral rear handle supporting portion forming the forward wall of a rear housing, relatively rigid flat conductor strips secured adjacent the rear side of said rear handle supporting portion and extending downwardly through the shell toward the sole plate, prong-receiving yielding clips electrically connected to said conductors and projecting rearwardly from the rear handle supporting portion, a motor, conductor prongs projecting forwardly from the motor and forming terminals of the electric circuit of the motor, said motor prongs being slidably engaged with said prong-receiving clips of the conductors by a movement exerted longitudinally of the iron, other means for removably connecting the motor to the rear handle supporting portion, and a rear cover for the housing removably secured to the rear handle supporting portion and conforming to the external contours thereof, said rear cover having an air opening therein, and said motor and fan fitting within the housing formed by the rear handle supporting portion and cover and being readily removable in a rearward direction when said cover is removed.

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