Sept. 24, 1940. J. J. GOUGH 2,215,959

ELECTRIC IRON

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FIG. 1.

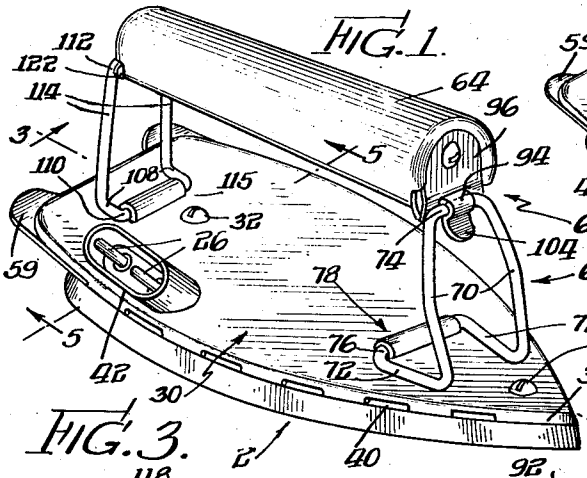


FIG. 2.

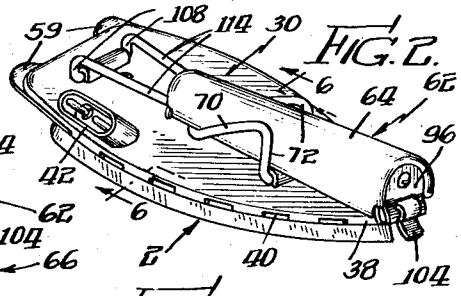


FIG. 3.

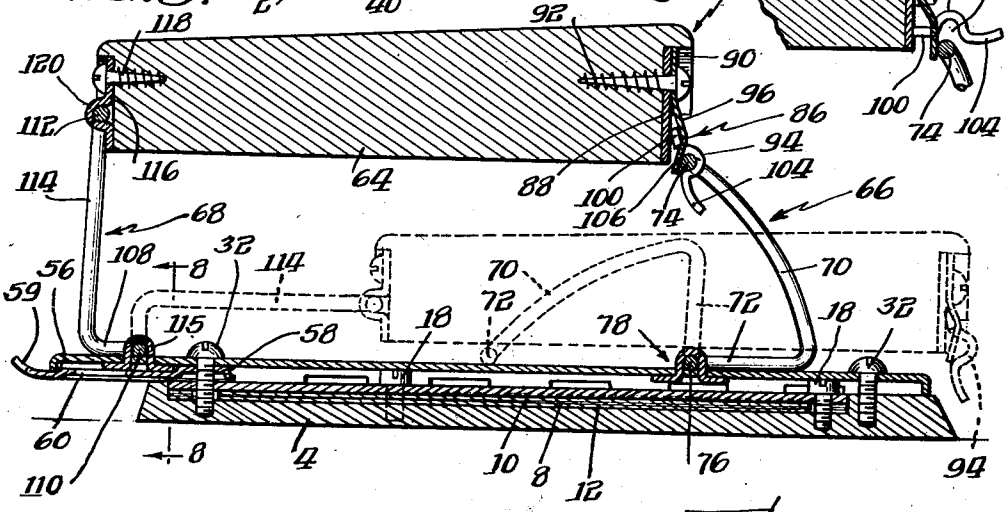


FIG. 4.

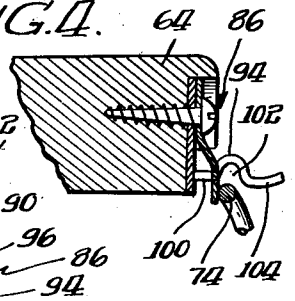


FIG. 5.

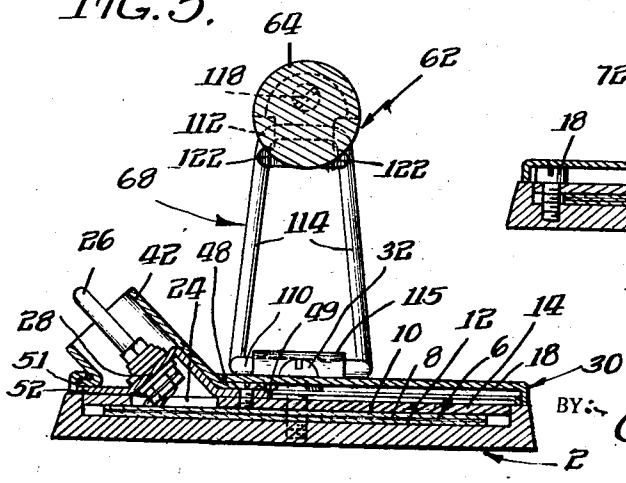
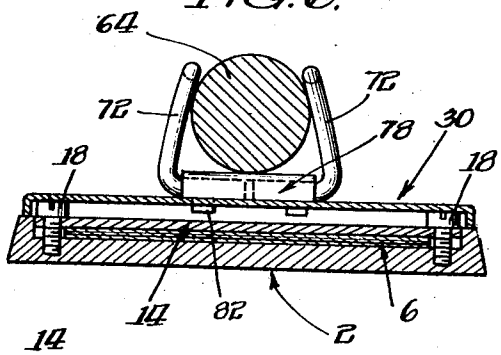


FIG. 6.



INVENTOR.
James J. Gough
BY: Cox & Moore
ATTORNEYS.

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FIG. 7.

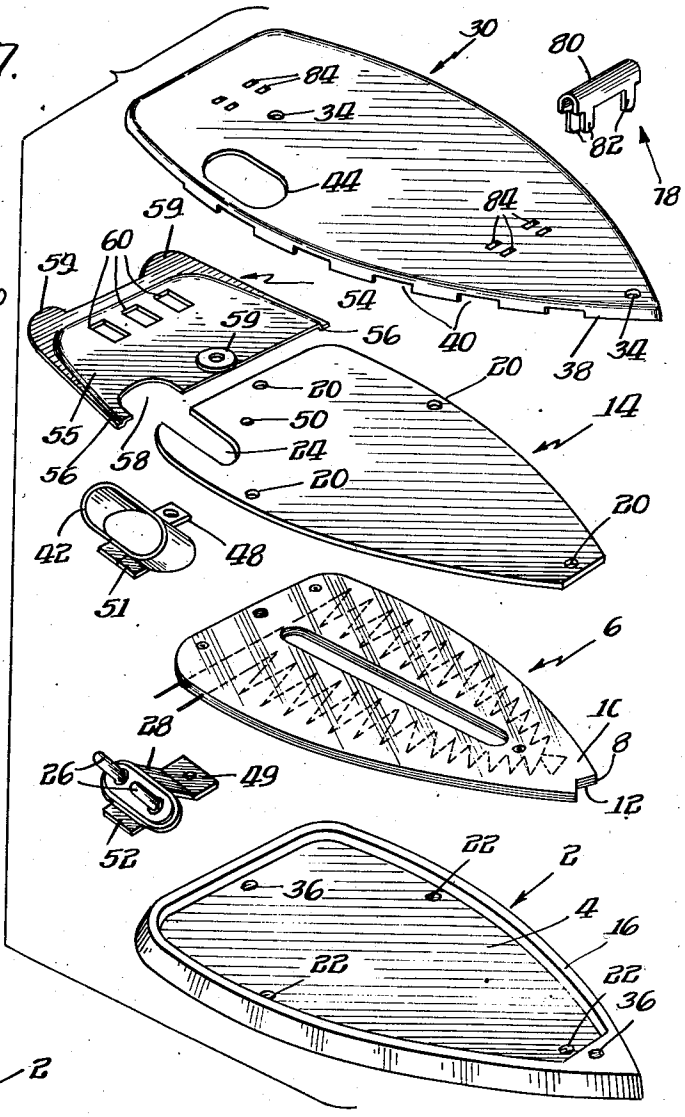


FIG. 9.

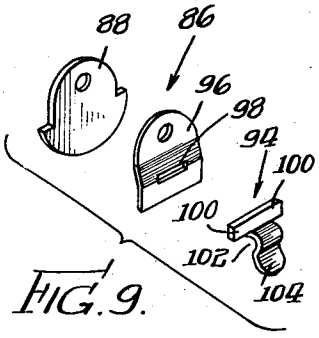


FIG. 10.

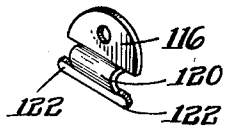


FIG. 11.

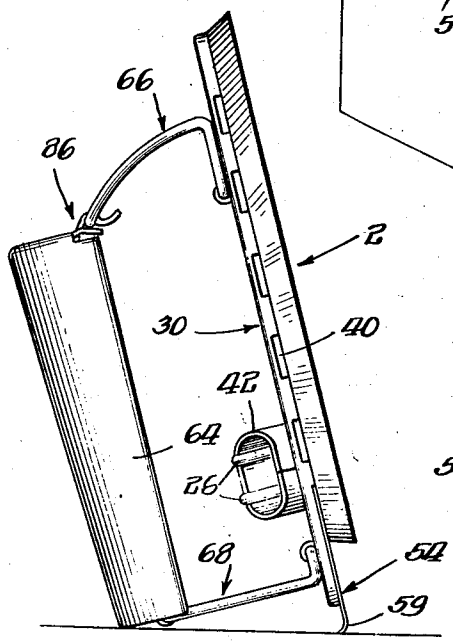
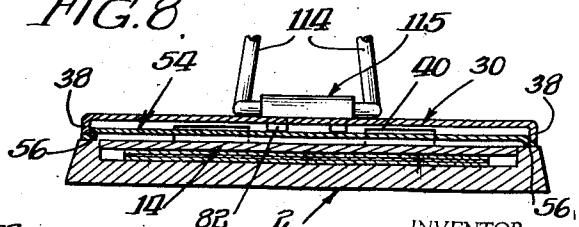


FIG. 8.



INVENTOR.
James J. Gough
BY: Cox & Moore
ATTORNEYS.

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UNITED STATES PATENT OFFICE

2,215,959

ELECTRIC IRON

James J. Gough, Chicago, Ill., assignor to Chicago Electric Manufacturing Company, Chicago, Ill., a corporation of Illinois

Application October 31, 1938, Serial No. 237,910

13 Claims. (Cl. 38—90)

This invention relates to an electric iron and particularly to an electric iron of the folding type.

It is an object of this invention to provide a sturdy though inexpensive electric iron which may readily be folded and when folded occupy a minimum of space.

Another object of the invention is to provide an electric iron of which the handle may be moved longitudinally of the iron into a collapsed position in close fitting superposed relation to the base of the iron and to provide means for effectively securing or locking the handle in its extended position and in the collapsed position whereby to prevent inadvertent collapsing of the handle from its extended position and to protect the handle against vibration and fracturing when in collapsed position.

Applicant's invention further contemplates the provision of a relatively very thin iron having simple but effective means for preventing the heating of the relatively thin cover plate by the heating element interposed between this cover plate and the sole plate.

Other and further objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawings, wherein:

Fig. 1 represents a perspective view of an electric iron embodying the invention, the handle being shown in extended position.

Fig. 2 is a view similar to Fig. 1 but showing the handle in collapsed position.

Fig. 3 is an enlarged vertical section taken substantially along the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary view in section through the handle, illustrating the manner in which the handle may be unlocked for movement to the collapsed position of Fig. 2.

Fig. 5 is a vertical section taken along the line 5—5 of Fig. 1.

Fig. 6 is a vertical section taken along the line 6—6 of Fig. 2.

Fig. 7 is a view in exploded perspective of the elements constituting the base of the iron.

Fig. 8 is a fragmentary vertical section taken substantially along the line 8—8 of Fig. 3.

Fig. 9 is a view in exploded perspective of the handle latching means.

Fig. 10 is a perspective view of a handle attaching element.

Fig. 11 is a view in elevation showing the iron supported in vertical rest position.

Various structures have been devised for collapsibly supporting the handle of an electric iron but these have not been entirely satisfactory because of their complexity and consequent expense, their bulkiness, even when the handle was collapsed, and their susceptibility to rattling and fracturing of the handle and its mounting means when the handle was in collapsed position.

Prior devices of this type, in which the bulkiness of the iron was reduced by reducing the vertical dimensions of the cover plate or shell, were further unsatisfactory because the shell of reduced size became heated to such a high temperature that after use a relatively long time had to be allowed for cooling of the shell before the handle could be collapsed.

An electric iron constructed in accordance with applicant's invention avoids these defects and insufficiencies of the prior devices and provides an electric iron of the folding type which, when the handle is in collapsed position, occupies a minimum amount of space; the danger of vibration and fracturing of the handle is reduced to a minimum and means are provided for maintaining the shell or cover plate at a sufficiently low temperature so that the handle may be moved to collapsed position immediately after use.

As shown in the drawings, an electric iron constructed in accordance with applicant's invention embodies a sole plate 2 having a cut out portion forming a channel 4 (Fig. 7) for receiving the heating element 6 which may be of any convenient conventional structure, but preferably comprises the usual resistance coil wound on an insulating plate 8 which is interposed between upper and lower insulating plates 10 and 12. The heating element 6 is clamped in position in the channel 4 by a relatively thin metal plate 14 also received in the channel 4, the plate 14 being of a shape similar to the sole plate 2 and mounted within the upstanding rim or flange 16 of the latter. The plate 14 is secured to the sole plate by cap screws 18 (Figs. 3 and 6) passing through openings 20 (Fig. 7) in the plate 14 and received in threaded openings 22 in the sole plate.

At a rear corner of the plate 14 a portion 24 is cut to form a slot for receiving the usual plug receiving terminals 26 which are insulatingly mounted on a resilient strap 28 and connected to the opposite ends of the resistance coil of the heating element 6.

A cover plate or shell 30, preferably of sheet metal, is detachably fastened to the sole plate as by screws 32 (Figs. 1, 3 and 5) passing through holes 34 (Fig. 7) in the cover plate 30 and re-

ceived in threaded openings 36 of the sole plate. The cover plate 30 is preferably of a shape similar to that of the sole plate 2 but is longer than the sole plate so as to project rearwardly beyond the heel of the sole plate and is provided with a depending rim or flange 38 adapted to engage the rim or flange 16 of the sole plate. In order to permit circulation of air between the cover plate or shell 30 and the heated clamping and sole plates 14 and 2, respectively, the depending rim or flange 38 is provided with a plurality of spaced notches, grooves or openings 40, and it will be evident that, by reason of a circulation of air through the openings 40, overheating of the cover plate or shell will be prevented.

A terminal housing 42, preferably of sheet metal, is received within an opening 44 in the cover plate or shell 30 and is secured, with the strap 28, to the clamping plate 14 as by a cap screw 46 passing through apertured lugs 48 and 49 of the terminal housing and strap 28, respectively, and received within a threaded opening 50 in the clamping plate. The horizontal, outwardly projecting lugs 51 and 52 formed on the housing 42 and the strap 28 are clamped between the cover plate or shell 30 and the clamping plate 14, as shown in Fig. 5.

The depending rim or flange 38 of the cover plate or shell 30 is partially cut away at the rear portion thereof to permit a rest member 54 to be interposed between the rear portion of the cover plate and the clamping plate 14. The rest member 54 rests upon the rim 16 of the sole plate and is provided with an upwardly pressed or offset portion 55 forming an upstanding shoulder or ridge 56 to engage the flange 38 and lock the rest member to the shell to hold the rest member against relative movement. This rest member extends rearwardly beyond the rear edge of the cover plate or shell and is provided at its rear edge with spaced projecting lugs 57 which are preferably bent upwardly to lie so as properly to engage the flat supporting surface when the iron is in vertical position, as shown in Fig. 11.

A forward edge of the rest member is notched as at 58 to snugly receive the rear edge of the terminal housing 42 to offer further support for the housing when the iron is in vertical position and in turn to utilize this housing in supporting the iron in vertical position. The rest member is also provided at its forward edges with a struck-up boss 59 engaging the cover plate to support the latter and apertured to receive the rear screw 32 by which the cover plate is secured to the sole plate so as to provide an additional spaced point of supporting engagement between the rest member and the sole plate. Openings 60 in the portion of the rest member lying beneath the rearwardly projecting heel portion of the cover plate or shell and the rear edge of the sole plate further facilitate the circulation of air between the cover plate or shell and the clamping and sole plates and with the air circulating openings 40 in the rim of the cover plate insure the maintenance of the cover plate or shell at a sufficiently low temperature for satisfactory use and to permit folding of the handle into close juxtaposition with the cover plate or shell without the danger of marring the handle or burning the fingers of the user.

The handle means 62 comprises the usual handle 64 of heat insulating material and front and rear handle supporting members 66 and 68. The front supporting member 66 preferably comprises a wire or rod of resilient material bent to provide spaced legs 70, integrally connecting spaced feet 72, with an upper, horizontally extending handle engaging portion 74, the spaced feet 72 being integrally joined by a lower, horizontally extending pivot portion 76. As shown in Fig. 6, the feet 72 converge from the pivot portion 76 so as snugly to receive the handle when in collapsed position and resiliently latch the handle in that position.

A clip 78, having a substantially semicylindrical body portion 80 (Fig. 7) receiving the pivot portion 76 of the member 66 and depending lugs 82, pivotally secures the supporting member 66 to the upper flat surface of the cover plate or shell 30, the lugs 82 passing through slits 84 and bent over into attaching engagement with the undersurface of the cover plate (Fig. 3).

The handle supporting member 66 is detachably locked to the front end of the handle 64 by the locking or latching means 86. This locking means comprises a plate 88 (Fig. 7) secured to the handle in the end groove 90 (Fig. 3) as by a screw 92. A latching clip 94 (Fig. 7) is pivotally mounted on a resilient plate or strip 96 secured to the handle by the screw 92 and overlying the plate 88 (Figs. 3 and 4). The clip 94 passes through a slot 98 (Fig. 7) in the spring plate 96, by the edges of which it is pivotally associated with said plate, and between the plate 96 and the plate 88 the clip is provided with laterally extending lugs 100 substantially rectangular in cross section, as shown in Figs. 3 and 4, so that the clip will be retained in its latching position by the spring plate 96, as shown in Fig. 3 and also will be retained in its non-latching or released position, as shown in Fig. 4.

The clip 94, exteriorily of the spring strip 96, is shaped to provide a groove 102 (Figs. 4 and 7) and a finger or operating portion 104, the groove 102 receiving the handle engaging portion 74 of the handle supporting member 66. The lower edge portion 106 of the spring strip 96 extends over the groove 102 when the clip 94 is in latching position and bears against the portion 74 of the member 66 to retain it in the groove 102 (Fig. 3). It will be evident that by engaging the finger 104 of the latch clip 94 the same will be raised from the position shown in Fig. 3 to the position shown in Fig. 4, thereby to release the handle supporting member 66 from the handle.

The rear handle supporting member 68 preferably comprises a wire or rod bent to provide spaced feet 108 (Figs. 1 and 2) integrally connected at their lower ends by a horizontally extending pivot portion 110 and integrally connected to a horizontally extending attaching portion 112 by spaced legs 114 (Figs. 1 to 4). A clip 115 similar in all respects to the clip 78 pivotally fastens the member 68 to the flat upper surface of the cover plate or shell 30. The member 68 is pivotally fastened to the handle 64 by a plate 116 secured to the handle as by a screw 118 and having a struck out portion 120 forming an inwardly facing groove for pivotally receiving the horizontally extending portion 112 of the member 68.

At its lower edge the plate 116 is provided with laterally extending lugs 122 adapted to engage the legs 108 of the supporting member 68 at points spaced sufficiently from the center of the portion 112 when the handle is in extended position so as to limit the movement of the handle relative to the supporting member 68 when brought to the position shown in Fig. 3.

It will be evident that upon movement of the latching clip 94 from the locking position of Fig. 3 to the releasing position of Fig. 4, the forward

handle supporting member 66 may be pivoted in a counterclockwise direction from the full line position of Fig. 3 to the dotted line position of said figure, or the full line position of Figs. 2 and 6, in which position the horizontally extending portion 72 of this member 66 rests upon the upper surface of the cover plate or shell 30 and thereupon the handle 64 may be moved in a forward direction longitudinally of the iron to a collapsed position in close fitting relation to the base of the iron, as shown by the full lines of Figs. 2 and 6 and the dotted lines of Fig. 3.

In moving to this position the handle 64 will be forced between the spaced resilient legs 70 and feet 72 of the front supporting member 66, as shown in Fig. 6, and resiliently held by this member against vibration when in collapsed position and resiliently latched in this collapsed position. The position which the handle occupies in relation to the base when collapsed and the latching of the handle in this position protect the handle against the dangers of fracturing during transportation or storage.

It should be noted that the feet 72 and 108 of the front and rear handle supporting members 66 and 68, respectively, extend in opposite directions along the cover plate when the handle is in extended, operating position as shown in Figs. 1 and 3 and therefore absolutely prevent movement of the handle relative to the base so long as the front supporting member is latched to the handle.

It will be seen from the foregoing description that applicant has provided a sturdy and inexpensive, relatively very thin, collapsible iron wherein means are provided for preventing overheating of the cover plate; wherein the handle is movable longitudinally of the iron into a collapsed position in close fitting superposed relation to the base; and wherein means are provided for effectively locking the handle in its extended position.

It is thought that the invention and numerous of its attendant advantages will be understood from the foregoing description and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form herein described being a preferred embodiment for the purpose of illustrating the invention.

Claims to the base structure are included in a divisional application, Serial No. 312,319, filed January 4, 1940.

The invention is hereby claimed as follows:

1. In a sad iron, a heated base, a handle, spaced supporting members shiftably mounted on the base for movement longitudinally relative to the base between an extended position and a collapsed position, means for restricting movement of the members in a direction away from collapsed position when the extended position is reached, and means including a releasable latch for securing said handle to said members whereby said handle is releasably retained in extended position by said supporting members.

2. In an electric iron, a heated base, a handle, a pair of supporting members spaced longitudinally of the base, said supporting members being shiftably mounted on the base for movement in opposite directions from an extended position to a collapsed position, interengaging abutment means between the members and the base for restricting movement of the members in a direction away from collapsed position when the extended position is reached, means for shiftably securing said handle to one of said members for movement therewith into extended and collapsed positions relative to the base, and means for releasably latching said handle to the second of said members when said member is in extended position whereby said handle is releasably retained in extended position by said supporting members.

3. In an electric iron, a heated base, a handle, a pair of supporting members spaced longitudinally of the base, said supporting members being pivotally mounted on the base for movement in opposite directions longitudinally of the base from a substantially vertical extended position to a substantially horizontal collapsed position, means for restricting movement of the members in a direction away from collapsed position when the extended position is reached, means for pivotally securing said handle to one of said members for movement therewith and relative thereto from extended position into a collapsed position in close juxtaposition to the base, and means for releasably latching said handle to the second of said members when said second member is in extended position whereby said handle is releasably retained in extended position by said supporting members.

4. In an electric iron, an electrically heated base, a handle, a pair of spaced supporting members collapsibly mounted on the base, means for securing said handle to one of said members for movement therewith into extended and collapsed positions relative to the base, and means for releasably latching said handle to the second of said members when said second member is in extended position whereby said handle is releasably retained in extended position by said supporting members, one of said supporting members having means to retain the handle when in collapsed position and releasably to hold said handle in said position.

5. In an electric iron, a heated base, a handle, spaced supporting members shiftably mounted on the base for movement in opposite directions from an extended position to a collapsed position, said supporting members having base portions extending oppositely and adapted to engage the base when in said extended position to hold said supporting members in extended position, means for securing said handle to one of said members for movement therewith into extended and collapsed positions relative to the base, and means for releasably latching said handle to the second of said members when said second member is in extended position whereby said handle is releasably retained in extended position by said supporting members.

6. In an electric iron, a heated base, a handle, a pair of supporting members spaced longitudinally of the base, said supporting members being pivotally mounted on the base for movement in opposite directions longitudinally of the base from a substantially vertical extended position to a substantially horizontal collapsed position, means for pivotally securing said handle to one of said members for movement therewith and relative thereto from extended position to a collapsed position in close juxtaposition to the base, and means for releasably latching said handle to the second of said members when said second member is in extended position whereby said handle is releasably retained in extended position by said supporting members, said support-

ing members comprising wire-like rods having feet extending oppositely and adapted to engage the base when in said extended position to support and hold the members in extended position.

7. In an electric iron, a heated base, a handle, spaced supporting members shiftably mounted on the base for movement in opposite directions from an extended position to a collapsed position, said supporting members having base portions extending oppositely and adapted to engage the base when in said extended position to hold said supporting members in extended position, means for securing said handle to one of said members for movement therewith into extended and collapsed positions relative to the base, and means for releasably latching said handle to the second of said members when said second member is in extended position whereby said handle is releasably retained in extended position by said supporting members, the base portion of one of said supporting members having spaced resilient portions to receive and resiliently to hold the handle in collapsed position.

8. In an electric iron, an electrically heated base, a handle, a pair of supporting members spaced longitudinally of the base and collapsibly mounted on said base for movement between collapsed and extended positions, means for restricting movement of the members in a direction away from collapsed position when the extended position is reached, means for securing said handle to one of said members for movement therewith into extended and collapsed positions relative to the base, means for releasably latching said handle to the second of said members when said second member is in extended position whereby said handle is releasably retained in extended position by said supporting members, said second supporting member having an upper, substantially horizontal latch engaging portion for engagement by said latching means, and said latching means comprising a manually operable latching finger and a latch plate carried by said handle to receive therebetween the upper horizontal portion of said second supporting member.

9. In an electric iron, a heated base, a handle, a pair of supporting members spaced longitudinally of the base, said supporting members comprising rods each having angulated portions forming a foot adapted to engage the base and legs adapted to extend upwardly from the base when in extended position, the feet of the spaced supporting members extending in opposite directions when the supporting members are in extended position to determine said position, means pivotally securing the feet of said members to the base for movement longitudinally of the base from an extended position to a collapsed position in juxtaposition to the base, means for pivotally securing the handle to the leg of one of said members for movement with said member into extended and collapsed positions relative to the base, and means for releasably latching said handle to the leg of the second supporting member when said member is in extended position whereby said handle is releasably retained in extended position by said supporting members.

10. In an electric iron, an electrically heated sole plate, a thin, flat surfaced cover plate secured to said sole plate, a handle, a pair of supporting members spaced longitudinally of the base, said supporting members each comprising a rod bent to provide a substantially horizontal mounting portion, spaced feet extending laterally from the mounting portion, spaced legs extending laterally from the feet and a handle attaching portion joining said spaced legs, means for pivotally securing the mounting portions of said members to the flat surface of said cover plate with the feet of said member extending oppositely and engaging the base when said members are in extended position to prevent further pivotal movement of said members away from collapsed position, said supporting members being pivotal in opposite directions from their extended position to collapsed positions in juxtaposition to the flat surface of the cover plate, means pivotally securing one end of the handle to the handle attaching portion of one of said members, and means for releasably latching the other end of said handle to the handle attaching portion of the other of said supporting members when said other member is in extended position whereby said handle is releasably retained in extended position by said supporting members, said handle when in collapsed position being received between the spaced feet of one of said members and releasably held therein by said spaced feet.

11. In an electric iron, a heated base, a handle, a handle supporting member collapsibly mounted on the base for movement of the handle longitudinally of the base from an extended position spaced above the base to a collapsed position in close juxtaposition to the base, and releasable means for retaining the handle in extended position during use.

12. In a sad iron, a heated base, a handle, a pair of handle supporting bails arranged and adapted to swing in opposite directions toward or away from the base between collapsed and extended positions, abutment means to limit the swing of the bails in directions away from the collapsed position when the extended position is reached, and means including releasable resilient clasp means securing the handle to the bails whereby the bails releasably retain the handle in extended position.

13. In a sad iron, a heated base, a handle, a pair of handle supporting bails pivotally mounted on the base for movement in opposite directions toward or away from the base between collapsed and extended positions, means to limit the pivotal movements of the bails in directions away from the collapsed position when the extended position is reached, a pivotal connection between one end of the handle and one bail, and releasable resilient clasp means securing the other end of the handle to the second of said bails.

JAMES J. GOUGH.