Sept. 24, 1940. J. J. GOUGH 2,215,960

ELECTRIC IRON

Filed Dec. 3, 1939

FIG. 1.

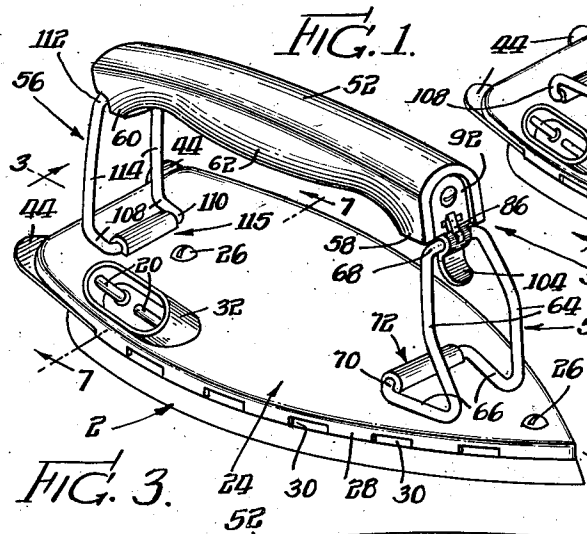


FIG. 2.

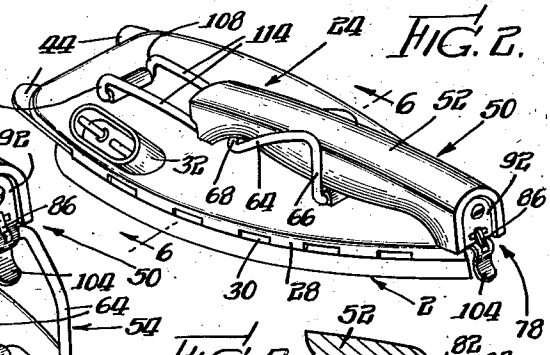


FIG. 3.



FIG. 4.

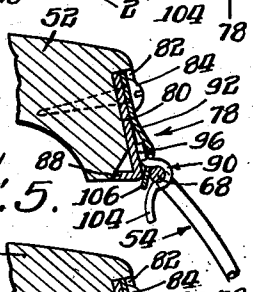


FIG. 5.

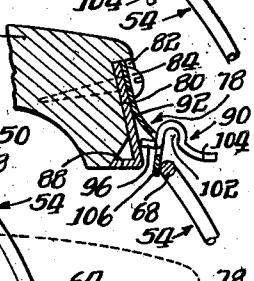


FIG. 6.

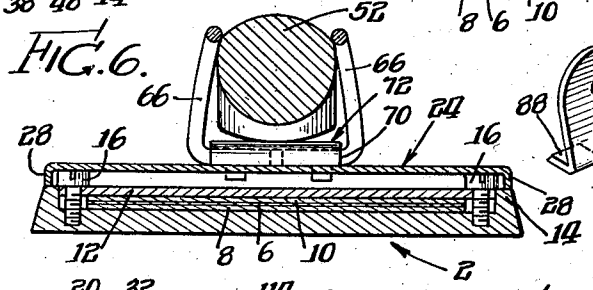


FIG. 8.

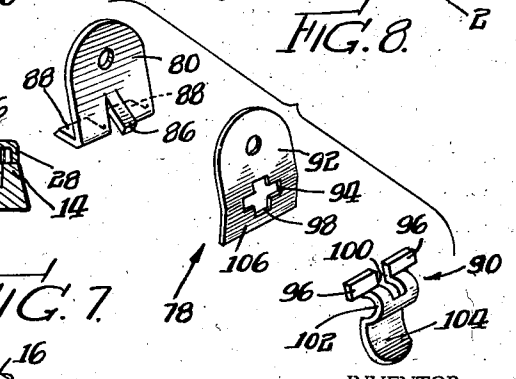
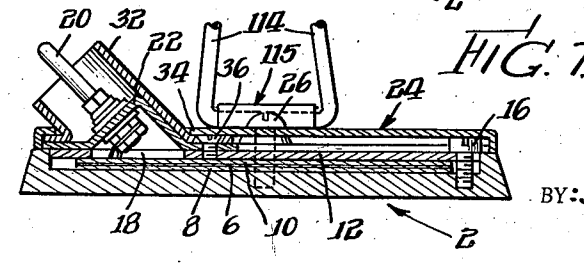


FIG. 7.



INVENTOR.

James J. Gough

BY: Cox & Moore

ATTORNEYS.

Patented Sept. 24, 1940 2,215,960

UNITED STATES PATENT OFFICE

2,215,960

ELECTRIC IRON

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

Application December 3, 1938, Serial No. 243,709

11 Claims. (Cl. 38—90)

This invention relates to an electric iron and particularly to an electric iron of the folding type and constitutes an improvement over the folding iron shown in applicant's co-pending application, Serial No. 237,910, filed October 31, 1938.

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 upon 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.

Another object of the invention is to provide an electric iron having a collapsible handle and to provide means for latching the handle, in its extended position, to a handle supporting, collapsible member so that the handle will be positively held against movement or lost motion relative to the said member and securely locked against inadvertent release during use of the iron.

Other and further objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawing, 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 is locked to the forward handle supporting member when in extended position.

Fig. 5 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. 6 is a vertical section taken along the line 6—6 of Fig. 2.

Fig. 7 is a vertical section taken along the line 7—7 of Fig. 1.

Fig. 8 is a view in exploded perspective of the handle latching means.

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, their susceptibility to rattling and fracturing of the handle and its mounting means when the handle was in collapsed position and their tendency, particularly after a relatively short period of use, to collapse during normal use.

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 which are effective throughout the entire life of the iron in positively holding the handle in extended position whereby to prevent inadvertent collapsing of the handle during normal use of the iron.

As shown in the drawing, 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 which may be of any convenient conventional structure, but preferably comprises the usual resistance coil wound on an insulating plate 6 which is interposed between upper and lower insulating plates 8 and 10. The heating element is clamped in position in the channel 4 by a relatively thin metal plate 12 also received in the channel 4, the plate 12 being of a shape similar to the sole plate 2 and mounted within the upstanding rim or flange 14 of the latter. The plate 12 is secured to the sole plate by cap screws 16 (Figs. 3 and 6) passing through suitable openings in the plate 12 and received in alined threaded openings in the sole plate.

At a rear corner of the plate 12 a portion is cut to form a slot 18 for receiving the usual plug receiving terminals 20 which are insulatingly mounted on a resilient strap 22 and connected to the opposite ends of the resistance coil of the heating element.

A cover plate or shell 24, preferably of sheet metal, is detachably fastened to the sole plate as by screws 26 (Figs. 1, 3 and 7) passing through suitable holes in the cover plate 24 and received in alined threaded openings of the sole plate. The cover plate 24 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 28 adapted to engage the rim or flange 14 of the sole plate. In order to

permit circulation of air betwen the cover plate or shell 24 and the heated clamping and sole plates 12 and 2, respectively, the depending rim or flange 28 is provided with a plurality of spaced notches, grooves or openings 30, and it will be evident that, by reason of a circulation of air through the openings 30, overheating of the cover plate or shell will be prevented.

A terminal housing 32, preferably of sheet metal, is received within an opening 34 in the cover plate or shell 24 and is secured, with the strap 22, to the clamping plate 12 as by a screw 36 passing through apertured lugs of the terminal housing and strap 22, respectively, and received within a threaded opening in the clamping plate. These horizontal, outwardly projecting lugs formed on the housing 32 and the strap 22 are clamped between the cover plate or shell 24 and the clamping plate 12, as shown in Fig. 7.

The depending rim or flange 28 of the cover plate or shell 24 is partially cut away at the rear portion thereof to permit a rest member 38 to be interposed between the rear portion of the cover plate and the clamping plate 12. The rest member 38 rests upon the rim 14 of the sole plate and is provided with an upwardly pressed or offset portion 40 forming an upstanding shoulder or ridge 42 to engage the flange 28 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 44 which are preferably bent upwardly so as properly to engage the flat supporting surface when the iron is in vertical position.

A forward edge of the rest member is notched to snugly receive the rear edge of the terminal housing 32 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 46 engaging the cover plate to support the latter and apertured to receive the rear screw 26 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 48 (only one of which is shown in Fig. 3) 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 30 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 upon the cover plate or shell without the danger of marring the handle or burning the fingers of the user.

The handle means 50 comprises the handle 52 of heat insulating material and front and rear handle supporting members 54 and 56. The handle 52 is shaped to provide spaced depending foot portions 58 and 60 adapted to contact the flat surface of the cover plate or shell when in collapsed position and to provide a hand-grip portion 62. The front supporting member 54 preferably comprises a wire or rod of resilient material bent to provide spaced legs 64, integrally connecting spaced feet 66, with an upper, horizontally extending handle engaging portion 68, the spaced feet 66 being integrally joined by a lower, horizontally extending pivot portion 70. As shown in Fig. 6, the feet 66 converge from the pivot portion 70 so as snugly to receive the handle when in collapsed position and resiliently latch the handle in that position, and the handle engaging portion 68 is received between the spaced foot portions 58 and 60 of the handle beneath an upwardly curved section of the hand-grip portion 62 so that the handle rests flatly upon the cover plate or shell and extends longitudinally thereof as shown in Figs. 2 and 3.

A clip 72, having a substantially semicylindrical body portion 74 (Fig. 3) receiving the pivot portion 70 of the member 54 and depending lugs 76, pivotally secures the supporting member 54 to the upper flat surface of the cover plate or shell 24, the lugs 76 passing through slits in the cover plate and bent over into attaching engagement with the undersurface of the cover plate (Fig. 3).

The handle supporting member 54 is detachably locked to the front end of the handle 52 by the locking or latching means 78. This locking means comprises a plate 80 (Fig. 8) secured to the handle in the end groove 82 (Figs. 4 and 5) as by a screw 84. The plate 80 is provided with a struck-out, forwardly projecting latch retaining or locking finger 86 and an inwardly bent lower flange or flanges 88 providing a non-chipping edge against which the latch operates. A latching clip 90 (Fig. 8) is pivotally mounted on a resilient plate or strip 92 secured to the handle by the screw 84 and overlying the plate 80 (Figs. 3, 4 and 5). The clip 90 passes through a slot 94 (Fig. 8) in the spring plate 92, by the edges of which it is pivotally associated with said plate, and between the plate 92 and the plate 80 the clip is provided with laterally extending lugs 96 substantially rectangular in cross section, as shown in Figs. 4, 5 and 8, so that the clip will be retained in its latching position by the spring plate 92, as shown in Fig. 4, and also will be retained in its non-latching or released position, as shown in Fig. 5. The spring plate 92 is provided with a vertical slot 98 through which the latch retaining or locking finger 86 projects and the clip 90 is also slotted as at 100 to permit the finger to pass therethrough and engage the attaching portion 68 of the forward handle supporting member 54. This finger 86 therefore will positively prevent inadvertent release of the latch by a downward or rearward thrust on the handle.

The clip 90, exteriorly of the spring strip 96, is shaped to provide a groove 102 (Figs. 5 and 8) and a finger or operating portion 104, the groove 102 receiving the handle engaging portion 68 of the handle supporting member 54. The lower edge portion 106 of the spring strip 92 extends over the groove 102 when the clip 90 is in latching position and bears against the portion 68 of the member 54 resiliently to retain it in the groove 102 and positively prevent inadvertent release of the latch by a forward or upward thrust or pull on the handle (Figs. 3 and 4). It will be evident that by engaging the finger 104 of the latch clip 90 the same will be raised from the position shown in Figs. 3 and 4 to the position shown in Fig. 5, thereby to release the handle supporting member 54 from the handle.

The rear handle supporting member 56 preferably comprises a wire or rod bent to provide spaced feet 108 (Figs. 1, 2 and 3) integrally connected at their lower ends by a horizontally extending pivot portion 110 and integrally con-

nected to a horizontally extending attaching portion 112 by spaced legs 114 (Figs. 1 to 3). A clip 115 similar in all respects to the clip 72 pivotally fastens the member 56 to the flat upper surface of the cover plate or shell 24. The member 56 is pivotally fastened to the handle 52 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 56.

It will be evident that upon movement of the latching clip 90 from the locking position of Figs. 3 and 4 to the releasing position of Fig. 5, the forward handle supporting member 54 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 68 of this member 54 rests upon the upper surface of the cover plate or shell 54 and thereupon the handle 52 may be moved in a forward direction longitudinally of the iron to a collapsed position upon 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 52 will be forced between the spaced resilient legs 64 and feet 66 of the front supporting member 54, 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 66 and 108 of the front and rear handle supporting members 54 and 56, 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 upon 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.

The invention is hereby claimed as follows:

1. In a sad iron, a heated base, a handle, supporting members spaced longitudinally of the base and mounted on said base for swinging movement in opposite directions toward or away from the base between extended and collapsed positions, means for preventing swinging of the supporting members in a direction away from the base when the extended position is reached, means for securing said handle to said members, said securing means including a releasable latch between said handle and one of said members whereby said handle is releasably retained in extended position by one of said supporting members, and means interlocking the handle to the said one supporting member to transmit handle forces to the said one supporting member independently of the latch whereby to prevent inadvertent release of the latch.

2. In a sad iron, a heated base, a handle, a pair of supporting members spaced longitudinally of the base, said supporting members being mounted on the base for swinging movement in opposite directions longitudinally of the base toward and away from the base between extended and collapsed positions, means for preventing swinging of the supporting 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, means for interlocking said handle and 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 interlocking means including a manually releasable latch, and means preventing relative movement between said supporting member and handle in a direction to effect release of the latch.

3. In a sad iron, a heated base, a handle, a pair of spaced supporting members mounted on the base for swinging movement in opposite directions toward and away from the base between extended and collapsed positions, means to limit the swing of said 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, one of said supporting members having means to receive the handle when in collapsed position and releasably to hold said handle in said position, and means for transmitting handle forces to said second supporting member independently of the latching means.

4. In a sad 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 respectively in said opposite directions and adapted to engage the base 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, 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 member, said latching means including a resiliently pressed latch connecting the handle to the second of said supporting members, and means preventing relative movement between said second supporting member and handle in a direction to effect release of the latch.

5. In a sad iron, a heated base, a handle, a pair of supporting members spaced longitudinally of

the base and mounted on said base for movement in opposite directions toward or away from the base, means for securing said handle to one of said members for movement therewith into extended and collased positions relative to the base, means carried by the handle 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 formed to receive therebetween the latch engaging portion of the second supporting member and a finger adapted to engage the said latch engaging portion of said second supporting member thereby to prevent inadvertent relative movement of the latching finger and latch plate in a direction to release inadvertently the second supporting member from the handle.

6. In a sad iron, a heated base, a handle, a pair of handle supports spaced longitudinally of the base, said supports being mounted on the base for swinging movement in opposite directions toward or away from the base and from or to an extended position to or from a collapsed position, means for shiftably securing said handle to one of said supports for movement therewith and relative thereto into an extended position and into a collapsed position in juxtaposition to the base, means for releasably latching the handle to the other of said members when said other member is in extended position, means limiting the swing of the supports in a direction away from collapsed position when the extended position is reached, whereby said handle when latched to said other support is releasably retained in extended position by said supports, and means preventing relative movement between said other supporting member and handle in a direction to effect release of the latch.

7. In a sad iron, a heated base, a handle, a pair of spaced supporting members mounted on the base for swinging movement in opposite directions between collapsed or extended positions, means to limit the swing of said 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, one of said supporting members having resilient clasp means to receive the handle when in collapsed position and releasably to hold said handle in said position, and means preventing relative movement between said second supporting member and handle in a direction to effect release of the latch.

8. 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, abutment means to limit the swing of the bails in directions away from the base to positions where the free ends of the bails are spaced apart substantially the length of the handle, a pivotal connection between one end of the handle and one bail, releasable resilient clasp means securing the other end of the handle to the second of said bails and an interlocking member between the handle and the second of said bails to transmit handle forces to the second bail independently of the resilient clasp means.

9. In a sad iron, a heated base, a handle, a pair of handle supports arranged and adapted to swing in opposite directions toward or away from the base, means to limit the swing of the supports in directions away from the base to positions where the free ends of the support are spaced apart substantially the length of the handle, means for securing said handle to one of said supports for movement therewith toward and from the base, means for interlocking the handle with the second of said supports, said interlocking means including a resilient latch holding the handle to said second support against the weight of the iron, and means transmitting downward and horizontal handle forces to said second support independently of the latch whereby to prevent inadvertent release of the latch during use of the iron.

10. In a sad 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, said releasable means including resilient clasp means and means for transmitting handle forces independently of the resilient clasp means.

11. 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 extended and collapsed positions, abutment means to limit the swing of the bails in a direction away from collapsed position when in the extended position where the free ends of the bails are spaced apart substantially the length of the handle, a pivotal connection between one end of the handle and one bail, and means interlocking the other end of the handle to the second of said bails, said interlocking means including an abutment plate arranged and adapted to transmit all downward and horizontal handle forces to the cooperating bail, and a resilient latch to retain the bail to the plate against the weight of the iron when lifted.

JAMES J. GOUGH.