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Harroff

[11] **3,766,673**

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[54] **IRON HANDLE LATCH AND SWITCH ARRANGEMENT**

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[52] **U.S. Cl.** **38/90**

[51] **Int. Cl.** **D06f 75/34**

[58] **Field of Search** 38/90, 92, 77.4

[56] **References Cited**

UNITED STATES PATENTS

3,095,493	6/1963	Downing	38/90
3,229,392	1/1966	Camilleri	38/90
3,308,566	3/1967	Jepson et al.	38/90

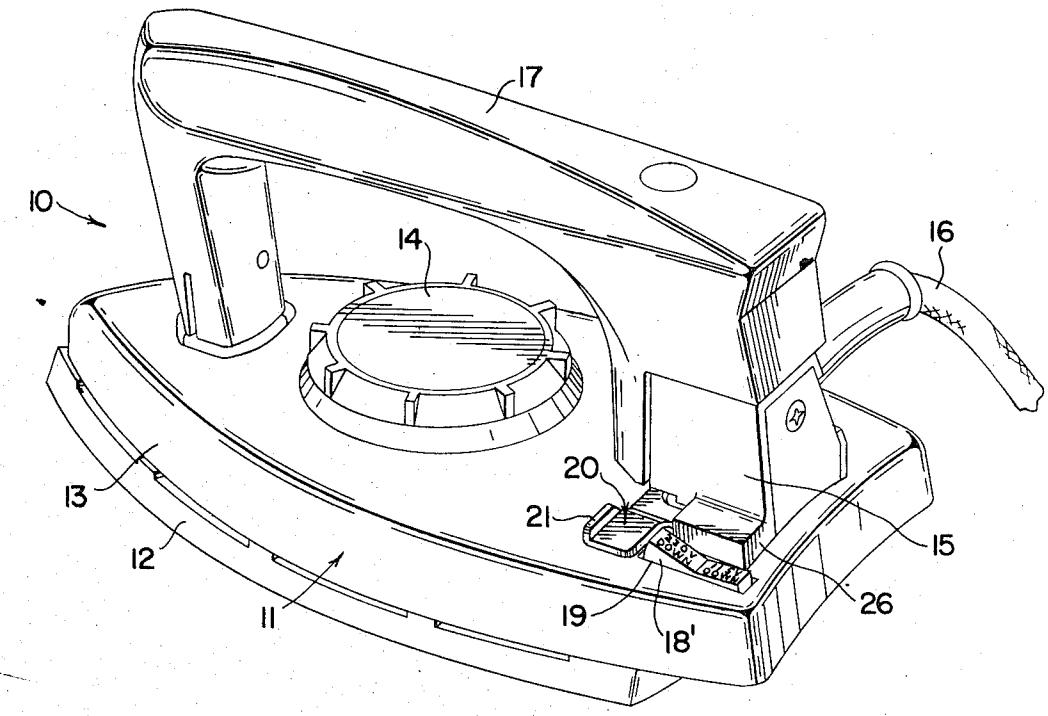
Primary Examiner—Patrick D. Lawson

Attorney—Alfred G. Gross et al.

[57] **ABSTRACT**

In the preferred form, a dual voltage collapsible handle travel iron wherein the iron is provided with a latch for releasing the handle so that the handle may be folded to a storage position, the iron also being provided with a dual voltage switch, the switch when in its low voltage position blocks movement of the handle latch from a latched position to an unlatched position.

3 Claims, 5 Drawing Figures



2 Sheets-Sheet 1

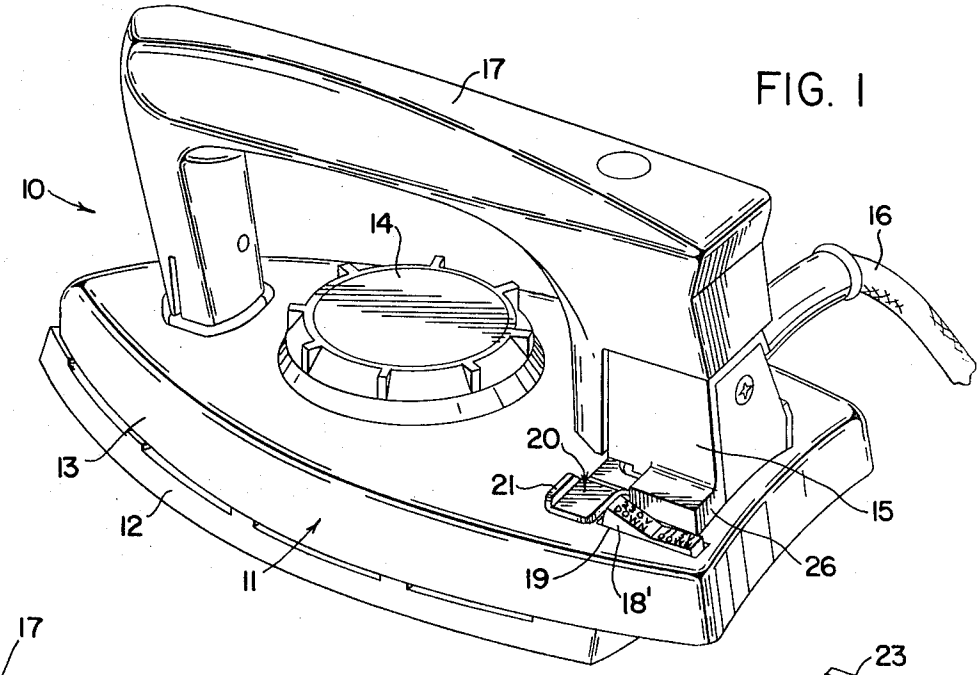


FIG. 1

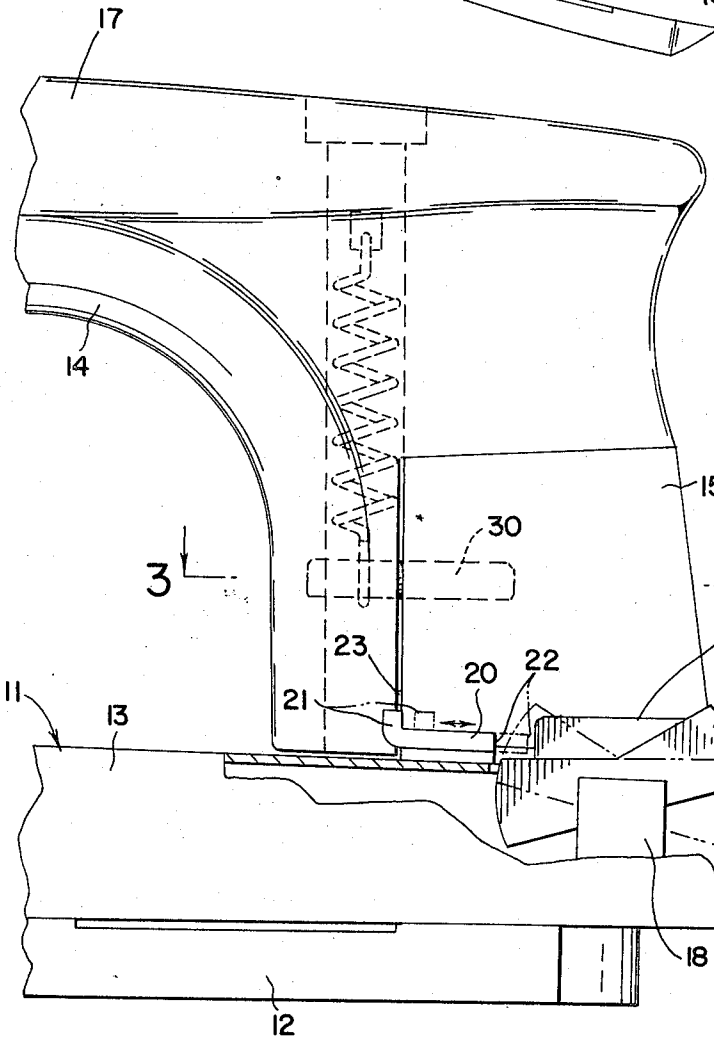


FIG. 2

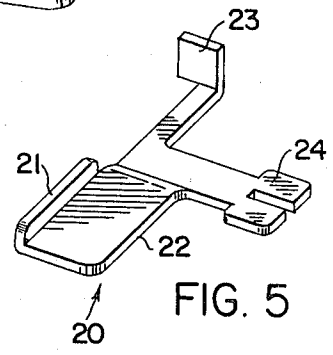


FIG. 5

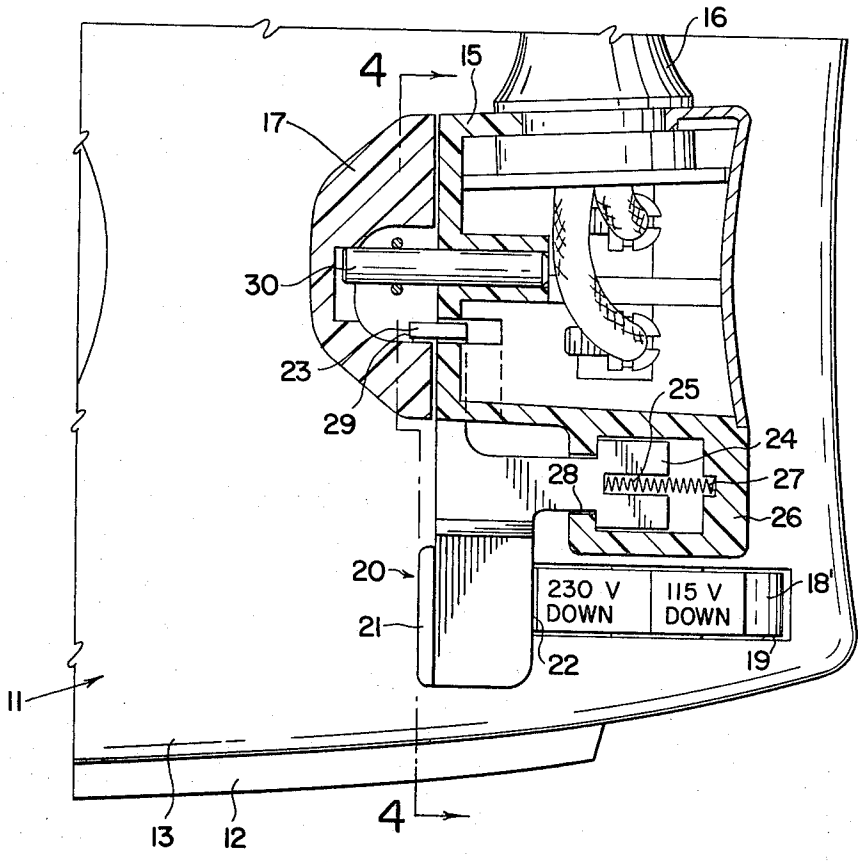

16
4
15
17
30
23
29
25
24
28
27
26
20
230 V DOWN
115 V DOWN
18'
21
22
19
11
13
12
4

FIG. 3

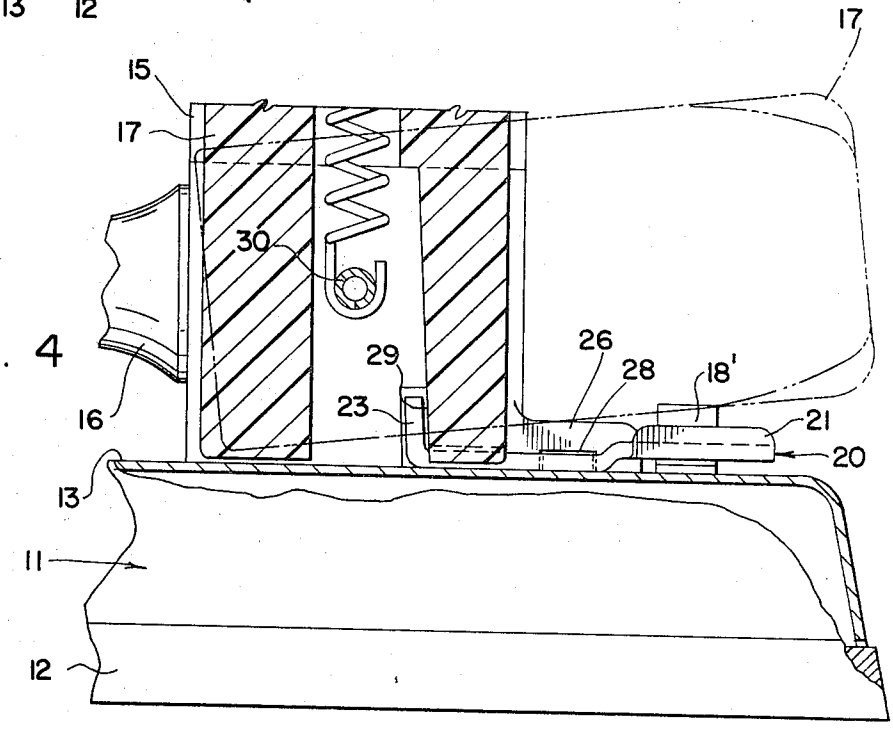

17
15
17
30
29
26
28
18'
23
21
20
16
13
11
12

FIG. 4

IRON HANDLE LATCH AND SWITCH ARRANGEMENT

BACKGROUND OF THE INVENTION

The present invention relates to a dual voltage electric iron which has a collapsible handle, a latch means for the collapsible handle and an interrelationship between the handle latch and the dual voltage switch so as to insure that the iron is in the high voltage position when the handle is moved to the collapsed position.

This feature is of particular advantage in the electric flat iron commonly referred to as a travel iron. The electric flat iron art has progressed to a point where specialized irons for specialized purposes have been developed. One of these specialized irons is commonly referred to as a travel iron which quite often has a collapsible handle.

In irons with collapsible handles it is common to provide a latch which will lock the iron handle in an operating position so as to prevent movement of the collapsible handle from the operating position to a storage or collapsed position during use of the iron. This latch member may be released so as to permit movement of the handle to the collapsed position when it is desired to pack the iron for travel or storage.

It is also common in travel irons to provide for dual voltage operation since if the iron is intended for use in various countries, different voltages such as 230 volts and 115 volts are often encountered. To provide for this dual voltage operation, two different electrical resistance circuits are utilized which are quite commonly selected by the use of a dual voltage switch. If the iron is set for low voltage operation, however, and is plugged into a high voltage power source, overheating of the iron can occur.

In order to minimize damage to the iron, it is desired to reduce the accidental plugging of the iron into a high voltage source when the iron is set for low voltage operation.

SUMMARY OF THE INVENTION

It is a primary object of the invention to provide an interrelationship between the latch of a collapsible handle of an iron and a dual voltage switch whereby the dual voltage switch is in the high voltage position when the handle is collapsed.

Thus, when the handle has been collapsed for storage or travel, the iron is set for high voltage operation and will not be damaged if plugged into either a high or a low voltage power source. If low voltage operation is desired, the operator must conscientiously move the voltage selector switch to low voltage operation.

The above and other objects and features of the invention will be more readily apparent from the following description when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a travel iron having a dual voltage switch and handle latch of the present invention;

FIG. 2 is an enlarged side view, partly in section, of the rear portion of the travel iron of FIG. 1;

FIG. 3 is a fragmentary, sectional view of the rear portion of the travel iron taken along lines 3—3 of FIG. 2;

FIG. 4 is a fragmentary, sectional view taken along lines 4—4 of FIG. 3, the handle being shown in the collapsed position by phantom lines; and

FIG. 5 is an enlarged, perspective view of the latch member removed from the travel iron.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring specifically to the drawings for detailed description of the invention, a travel iron **10** has a body portion **11** which includes a soleplate **12** and shell **13.** Mounted on the body **11** is a control dial **14** and a rear post **15** which includes a connector cord **16.**

A handle **17** is also provided, the front of the handle being mounted on the body **11** and the rear of the handle being mounted on the rear post **15.** The handle is mounted for pivotal movement from a vertical plane, hereinafter called the operative position, to the horizontal plane, hereinafter called the collapsed position. The handle when in the collapsed position provides the iron with a low profile for storage or travel.

This iron and handle are described in detail in U. S. Pat. No. 3,229,392 issued to Camilleri and now assigned to the same assignee as the instant application.

The travel iron is also provided with a dual voltage switch **18** which is located near the rear of the iron in close proximity to the rear post **15.** This switch **18** is utilized to manually select either highvoltage operation or low voltage operation of the iron, the switch operating member **18'** being of the rocker type in the preferred form.

To provide dual voltage operation, the iron is provided with two main resistances cast into the soleplate. For dual voltage operation these resistances could be operated each independently, or one resistance for low voltage operation and both resistances for high voltage operation, or with both resistances in parallel for low voltage operation and both resistances in series for high voltage operation. The electrical circuitry and constructions for any of these three resistance combinations for dual voltage operation are well known in the art.

In the preferred form of the invention a switch operating member or rocker **18'** is utilized to selectively engage contacts within the body of the iron to provide the electrical circuitry necessary for dual voltage operation. It is desired, as pointed out above, that when the handle is in the collapsed position, that the dual voltage switch **18** be in the high voltage position so as to prevent accidental connection of the iron to a high voltage source when the switch is in the low voltage operation position.

To provide for this relationship, the iron is provided with a latch member **20.** This latch member prevents collapsing of the handle during ironing and is also interrelated with the switch **18** so as to assure that the switch **18** is in high voltage position when the handle is collapsed. This could be done by a link inter-connecting the latch **20** with the switch **18** so as to assure that the switch **18** is in the high voltage position or moves to the high voltage position when the latch is released so as to permit collapsing of the handle.

In the preferred form, the latch **20** is located adjacent to, and generally in the same plane as, the switch rocker **18'** whereby movement of the latch **20** is blocked by the rocker **18'** if the switch **18** is not in the

high voltage position. Specific details of this relationship are taught in FIGS. 2 – 4.

The rocker portion 18' of the switch 18 extends through an opening 19 in the shell 13 so that the portion of the rocker 18' which is manually operated lies above the top plane of the shell. This rocker switch is manually operated by pressing down on either the rocker front portion marked "230 V." or the rocker rear portion marked "120 V.."

When the forward portion of the rocker 18' is pressed down, the switch 18 causes the internal electrical connections of the iron to be arranged so that the iron may be operated at 230 volts. This position is shown in solid lines in FIG. 2. It is noted that in this position the front portion of the rocker 18' lies below the horizontal plane in which the latch member 20 operates.

When the rear portion of the rocker 18' is pressed down, the internal electrical connections of the iron are arranged so that the iron may be operated at 120 volts. This rocker position is shown in phantom lines in FIG. 2. When the switch is in this position, the front portion of the rocker 18' extends through the horizontal plane in which the latch member 20 operates.

The latch member 20 of the preferred form is shown in detail in FIG. 5. This latch member has a manually engageable portion 21, a switch-engaging edge 22 and a handle latch portion 23 all formed from the cross piece portion of the generally T-shaped latch member 20. The end of the leg portion of the generally T-shaped latch member has a bifurcated portion 24. This bifurcated portion 24 entraps a coil spring 25, as shown in FIG. 3, so as to prevent movement of the spring 25 in a horizontal plane transverse to the direction of movement of the latch member 20.

The rear leg 15 on the side adjacent the switch 18 is provided with a box housing 26. The rear internal surface of the box housing 26 has a notch 27 to locate one end of the spring 25. The box housing 26 is of shallow depth so as to prevent movement of the spring 25 in a vertical plane. The front end of the box housing 26 has a flat rectangular opening 28 which accepts the leg portion of the latch member 20, this opening being smaller than the bifurcated portion 24. Thus, the bifurcated portion 24 and the spring 25 are entrapped within the box housing 26.

The spring 25, being under compression, biases the latch 20 forwardly until the bifurcated portion 24 engages the front internal surface of the box housing, so as to prevent further forward movement. This is the latched position of the latch member 20. In this latched position the latch portion 23 engages an internal edge 29 of the handle. The handle is designed to pivot around pin 30 which is mounted on the rear leg 15. When the handle is moved to the collapsed or storage position, shown in phantom lines in FIG. 4, the top portion of the handle is folded toward the edge of the iron which includes the latch member and switch. Thus, the bottom portion of the handle, being beneath the pin 30, must move away from the latch member 20 during folding of the handle.

Since the latch portion 23, when the latch member 20 is in the latched or forward position, engages the internal edge 29 of the handle below the horizontal plane of the pin 30, as shown in FIGS. 2 and 4, there can be no movement of the handle from the vertical plane or operation position to the collapsed position.

To collapse the handle 17, the latch member 20 is manually biased rearwardly against the spring 25 to an unlatched position shown in phantom lines in FIG. 2, thus moving the latch portion 23 rearwardly and away from the edge 29 so that there is no blocking of movement or folding of the handle. This is done by pressing on the manually engageable portion 21 causing rearward movement of the latch member 20 rearwardly in a horizontal plane.

If the switch 18 is in the low voltage position, which as described above means that the front portion of the switch rocker 18' extends through the horizontal plane of movement of the latch member 20, there will be an interference between the edge 22 of the latch member 20 and the switch rocker 18' preventing or blocking rearward motion of the match member 20. Therefore, the handle 17 cannot be unlatched and folded to the collapsed position. However, if the switch 18 is in the high voltage position, and thus as described above the forward portion of the switch rocker 18' is below the horizontal plane of movement of the latch member 20, manual pressure on the manually engageable portion 21 will cause the latch member 20 to move rearwardly to the unlatched position, thus allowing folding of the handle to the phantom line position of FIG. 4.

This assures that when the latch is moved to the unlatched position, so that the handle may be folded to the collapsed position for either packing or storage, the switch rocker 18' is in the front portion down or high voltage position. Thus, when the iron is plugged into a receptacle, the iron is in a high voltage electrical condition so that if the receptacle carries 230 volts there will be no damage to the iron. If the receptacle carries 110 volts, there also will be no damage to the iron even though the iron will operate below the desired temperature.

To obtain correct operation on low voltage, the user must manually, and thus intentionally, press down on the rear portion of the switch rocker 18' so as to obtain the proper internal connections for low voltage operation. This tends to prevent accidental operation on a high voltage source when the iron is in the low voltage electrical condition which could cause overheating or damage to the iron.

The above described embodiment teaches a preferred form of practicing the invention which requires that the dual voltage switch be in the high voltage position when the handle is folded or collapsed. However, modifications may be made to the illustrated embodiment without departing from the scope of the invention. Therefore, it is intended that the appended claims include all such modifications and alterations.

I claim:

1. An iron having a body, a collapsible handle mounted on said body, said handle having a normal operative position and a collapsed storage position, a latch having a latched position and an unlatched position, interengaging means carried in part by said latch and in part by said handle prohibiting movement of said handle from said normal operative position to said collapsed storage position when said latch is in said latched position, a voltage selector switch having a high voltage position and a low voltage position, and means carried in part by said voltage selector switch and in part by said latch having an interrelationship insuring that said voltage selector switch is in said high voltage position when said latch is in said unlatched position.

2. An iron having a body, a collapsible handle mounted on said body, said handle having a normal operative position and a collapsed storage position, a latch having a latched position and an unlatched position, interengaging means carried in part by said latch and in part by said handle prohibiting movement of said handle from said normal operative to said collapsed storage position when said latch is in said latched position, and a voltage selector switch having a high voltage position and a low voltage position, said voltage selector switch blocking movement of said latch from said latched position to said unlatched position when in said low voltage position.

3. An iron as claimed in claim 2 wherein said voltage

selector switch is of the type having a rocker operating member, said latch moving along a plane from said latched to said unlatched position, said rocker lying generally in the plane of movement of said latch, a portion of said rocker lying below the plane of movement of said latch member when said switch is in the high voltage position and extending through the plane of movement of said latch when said switch is in said low voltage position, whereby said portion of said rocker blocks movement of said latch from said latched position to said unlatched position when said switch is in said low voltage position.

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