United States Patent [19]

Augustine

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[54] **ELECTRIC PRESSING IRON**

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[73] Assignee: **Sunbeam Corporation,** Chicago, Ill.

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[52] **U.S. Cl.** **38/77.2**

[51] **Int. Cl.**[2] **D06F 75/06**

[58] **Field of Search** 38/77.2, 74, 77.8, 77.83, 38/88, 90, 94

[56] **References Cited**

UNITED STATES PATENTS

2,883,779	4/1959	Krause et al.	38/77.2
3,273,267	9/1966	Willman	38/77.2
3,298,118	1/1967	Vieceli	38/77.2

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[57] **ABSTRACT**

An electric steam iron having a water-level gauge located underneath the handle wherein a safety signal light is located next to the water-level gauge. The signal-light serves a dual purpose of indicating when the steam iron is plugged into a receptacle and also illuminating the water-level gauge to facilitate the reading of the water level within the iron.

5 Claims, 5 Drawing Figures

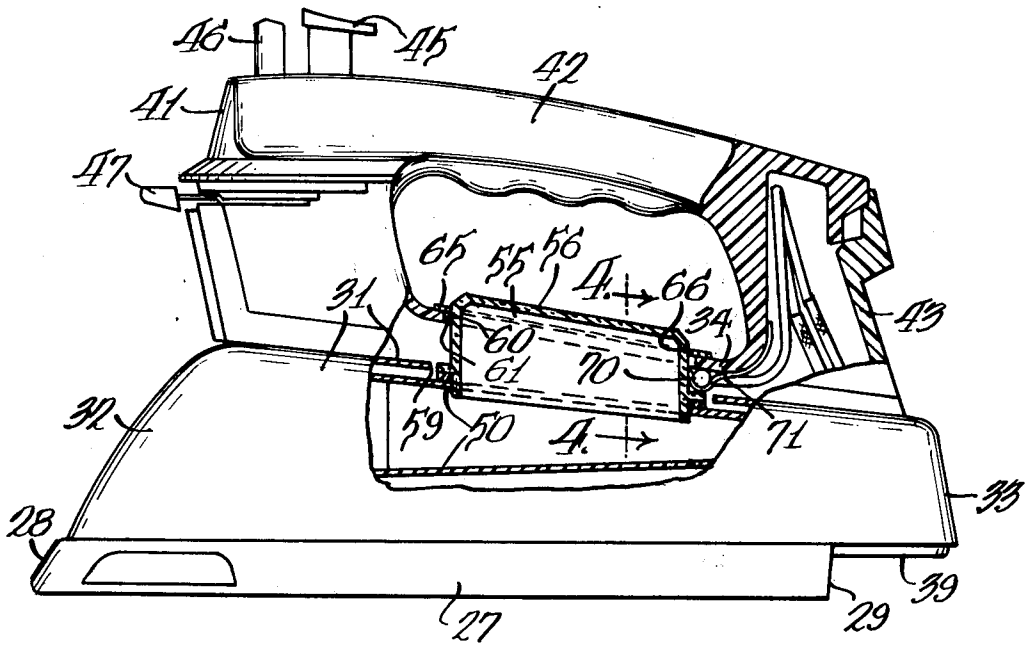


Fig. 1.

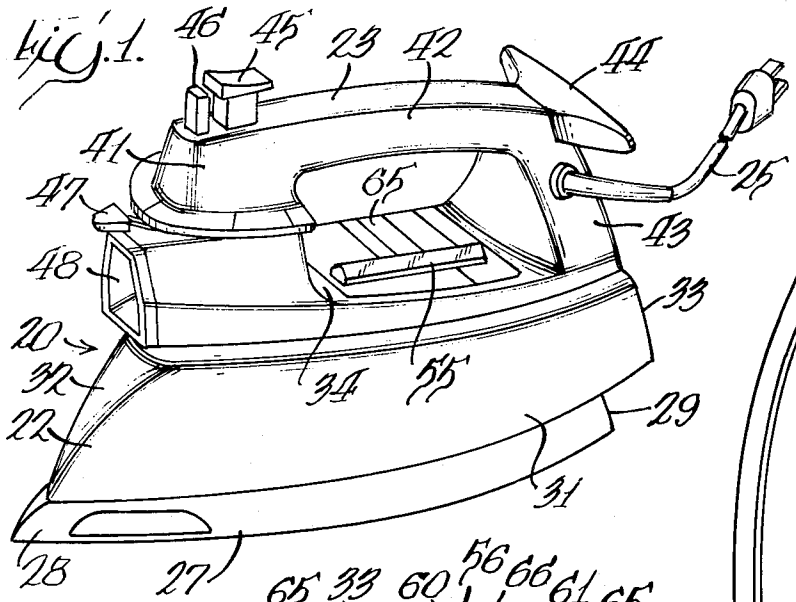


Fig. 2.

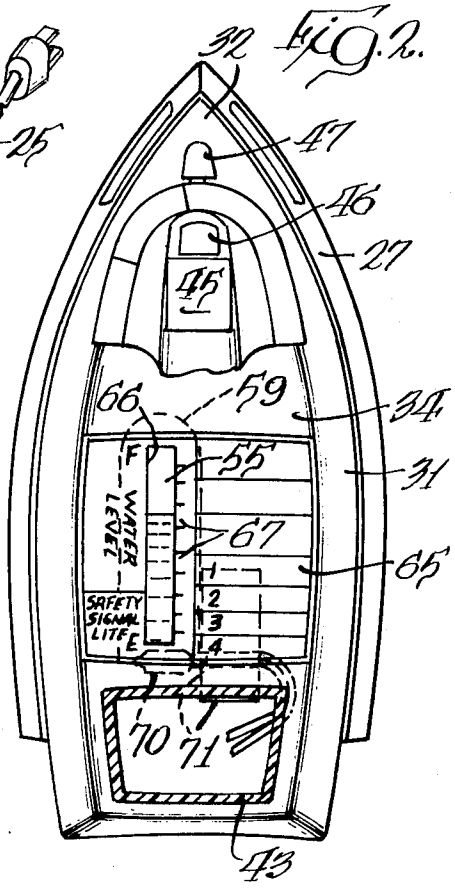


Fig. 4.

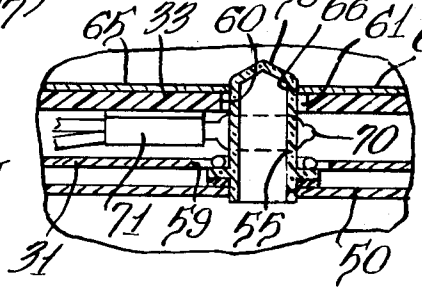


Fig. 3.

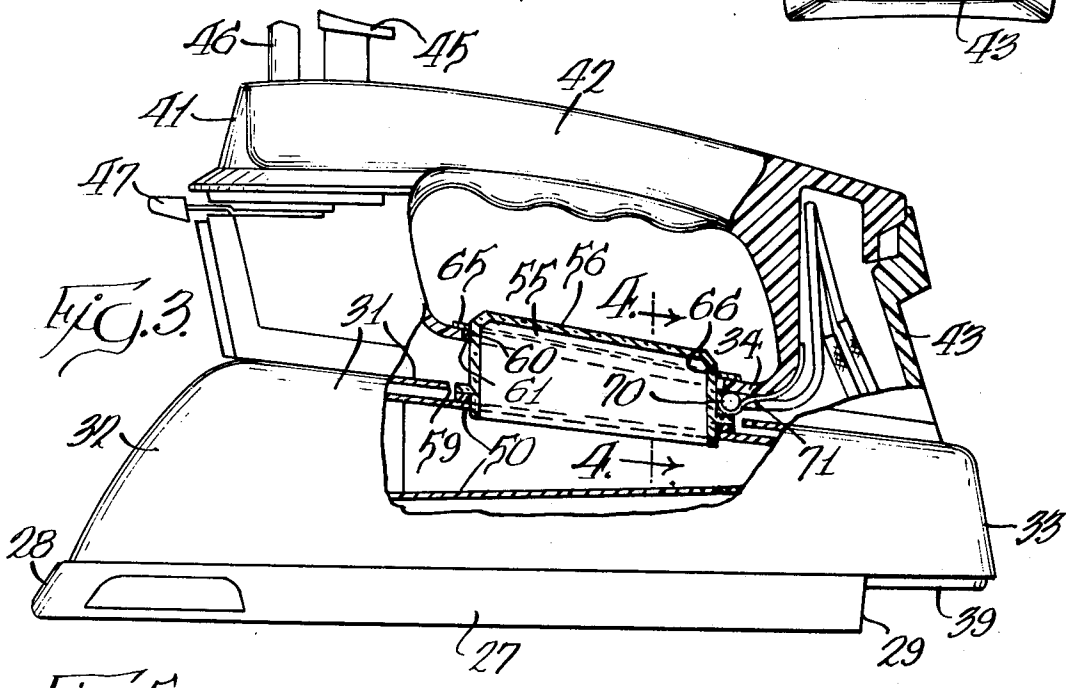
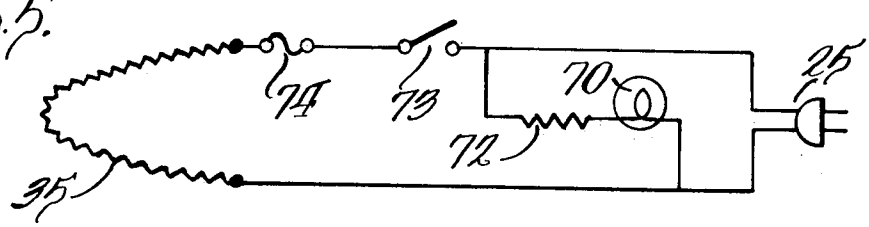


Fig. 5.



ELECTRIC PRESSING IRON

BACKGROUND OF THE INVENTION

This invention relates to steam irons and more particularly to improvements in water-level gauges for the water reservoir in steam irons as well as improvements in safety features within the iron.

According to a recent survey, over 99% of the electrical-wired homes in this country have an electric pressing iron, and it is evident that this appliance is considered to be a necessity for the efficient operation of a household. Though electric pressing irons are available with different visual stylings and various features such as a steam-producing system, spray mechanism, water-level gauge and the like, nearly all of the irons follow the standard construction providing first a base having an electric resistance element for heating a sole plate, the temperature of which is controlled by a thermostat. A plastic handle which is resistant to heat is secured to the base and has a hand-gripping portion for the user to grasp the iron while in use. To iron effectively, it is necessary for the sole plate to be heated to a relatively high temperature. Since a hot sole plate can cause considerable damage, irons are normally constructed with some provision for supporting the iron in an upended position wherein the sole plate is raised above the supporting surface which is normally an ironing board. When the ironing operation is completed the iron is normally stored in the upended position so that the hot sole plate cannot cause any damage while it is cooling.

In view of the heat produced by an electric pressing iron, there is an obvious potential safety hazard if the iron is inadvertently left plugged into a wall outlet after the completion of the ironing process. Even if the iron has an on-off switch controlling the heating mechanism, it is still quite possible that an iron could be knocked down and have this switch accidentally turned to the "on" position. In this regard it would be a distinct advantage to have some sort of safety mechanism, such as a safety signal light, which would draw attention to the user if the pressing iron is still plugged in. Such an arrangement is shown in the Cole U.S. Pat. No. **2,165,343.** It must be kept in mind, however, that such a safety feature should also be incorporated in the aesthetic design of the iron and although made noticeable, it must not stand out to such a degree to be obnoxious to the design.

Turning away from the subject of safety features, it should be noted that steam irons have been very popular because of their ability to function as either a dry or a steam iron with the actuation of a steam control. Normally, steam irons are provided with a water filling opening in the forward portion of the iron handle in order to afford access to the water storage tank or reservoir, positioned between the iron shell and sole plate. The water tank or reservoir is employed to store water for use in the steam-generating chamber and, in the case of spray irons, for the water spray system. When the steam spray iron is used, the water in the tank may be rapidly depleted due to the steaming and spraying operations. Consequently, it is advantageous to provide a means for conveniently determining the amount of water in the tank or providing a visual means disclosing when the tank is almost empty in order that the water supply in the tank will not be exhausted unexpectedly. Such a system is disclosed in the Vieceli U.S. Pat. No. **3,298,118,** which is assigned to the same assignee of the present invention. In the Vieceli Patent, there is located a translucent dome located beneath the handle of the steam iron, which will visually disclose the water level contained within the iron. With this dome, however, being located under the handle of the iron and in a typically darkened area, it is often difficult to quickly see the exact water level reading. Thus, it would be advantageous to provide some means for facilitating the reading of the water level contained within the dome.

With the present competition in the iron field, it is a necessity to keep the expense of any added features, such as the aforementioned safety features or features to facilitate the reading of the water level within a steam iron, to a minimum both from the stand-point of additional components and from the standpoint of assembly time. In this manner, it would obviously be a distinct advantage to incorporate one single addition to an iron which would serve a dual function. At the same time, any additional elements should be inexpensive and located in a position such that assembly would be easy.

SUMMARY OF THE INVENTION

The present invention relates to an electric steam iron having a translucent domed water-level gauge, such as disclosed in the Vieceli U.S. Pat. No. **3,298,118,** wherein a safety signal light is located next to this translucent dome. This safety signal light serves the dual function of facilitating the reading of the water level within the aforementioned dome as well as being a safety indication as to when a iron is plugged in.

Accordingly, it is an object of the present invention to provide an electric steam iron having a water level gauge which can easily be read.

Another object of the present invention is to provide an electric pressing iron having a safety feature wherein the user may easily determine when the iron is plugged in and power is being supplied thereto.

Still another object of the present invention is to provide a single improvement which would accomplish both of the aforementioned objects, that is, to facilitate the reading of the water-level gauge and to provide a safety feature to show when power is being supplied to the iron.

Still a further object of the present invention is to provide an improved iron having a dual purpose illuminating means which is low in cost and easily assembled.

Further objects and advantages of the present invention will become apparent as the following description proceeds, and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

BRIEF DESCRIPTION OF THE DRAWING

For a better understanding of the present invention, reference may be had to the accompanying drawing in which:

FIG. **1** is a perspective view of an electric pressing iron embodying the present invention;

FIG. **2** is an elevational view of the iron in the upended position with a portion of the handle assembly broken away in order to expose the water-level gauge and show the positioning of the safety signal light;

FIG. 3 is a fragmentary sectional view of the iron, further showing the arrangement of the water-level gauge and the safety signal light;

FIG. 4 is a fragmentary sectional view taken substantially along line 4—4 of FIG. 3;

FIG. 5 is an electrical schematic diagram showing the electrical relationship of the invention to the other elements of the circuit of the steam iron.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing wherein like reference characters designate corresponding parts throughout the several views, there is shown an electric pressing iron, designated generally by the reference numeral **20.** As viewed in FIG. **1,** the iron **20** includes a base **22** and a looped handle **23** secured to the base. For supplying electrical power to the iron **20,** an electric power cord **25** is attached to the handle **23.** Base **22** includes a sole plate **27** having a pointed forward end **28** and having a flat rear end **29** and an inverted cup-shaped cover shell **31,** with a pointed forward end **32** which is complimentary to the sole plate forward end **28** and the rear section or surface **33.** Located above the cover shell **31** and within the loop of the handle **23,** there is formed a saddle portion **34** which may be integrally molded with handle **23** or comprise a separate piece attached thereto. Although only shown schematically in FIG. **5,** the base **22** includes an electric resistance heater **35** for heating the sole plate **27.** The sole plate **27** may be fabricated from any suitable metal, such as aluminum, steel, or metallic laminate. However, it should be appreciated by those skilled in the art that the sole plate **27** is relatively heavy with regard to the overall weight of the iron. The shell **31** is fabricated from sheet metal and performs the function of covering the internal components attached to the sole plate and also spacing the handle **23** from the sole plate **27** in order to limit the amount of heat transferred to the handle from the sole plate.

The handle **23** has a forward portion **41,** an elongated longitudinally extending hand-gripping portion **42,** and a rear upright portion **43.** To increase the stability of the iron **20** when it is resting in its upended position, there is provided behind the rear upright portion **43** a stabilizing heel rest **44.** A more detailed description of the function and construction of this type of heel rest is disclosed in the Barnas, et al. U.S. Pat. No. **3,541,306,** which is assigned to the same assignee of the present invention.

The operation of the iron is regulated by controls disposed at the forward portion **41** of handle **23** as best shown in FIGS. **1** and **3.** These controls include a water spray button **45,** a steam control button **46,** and a pivotally-mounted thermostat control or setting knob **47.** In addition, the front handle portion **41** defines a water fill opening **48** which leads into a passageway forming an access into water tank **50.** It should be appreciated that the water contained in tank **50** is used for both the spray system, which has a discharge nozzle located within the water fill opening **48,** and for steam generation in the chamber located within the sole plate assembly **27.**

To provide a visual indication of the amount of water contained within tank **50,** there is provided a cup-shaped elongated dome **55.** The dome is translucent and, as shown in FIG. **3,** is employed in an inverted position so that the mouth of the cup-shaped dome is in engagement with a gasket (not shown) located on top of the tank **50.** So that the dome may conform with the saddle portion **33** beneath the iron handle **23** the dome has a top **56,** which is relatively flat and is inclined at the same angle as the saddle portion. To provide a pleasing appearance as well as to facilitate the viewing of the water level, the dome **55,** which is molded from a polycarbonate resin, has its inside surfaces frosted or made opaque by sandblasting. Inasmuch as the dome **55** extends considerably higher than the shell **31,** there is provided a clearance opening **59** in the shell above the tank opening to allow the dome **55** to extend therethrough. Since the exact location of dome **55** may vary due to an accumulation of tolerances throughout the iron, a relatively large opening or slot **60** is defined in the iron saddle portion **34** so that a portion of the dome **55** may extend therethrough as is evident from FIGS. **3** and **4.** A gap or space **61** then exists between the dome **55** and the edge of the slot **60.**

Bridging the gap **61** between the edge of the slot **60** and the portion of the dome **55** which extends therethrough is an escutcheon **65** having an opening **66** which is adjacent to the portion of the dome **55** which projects above the saddle surface **34.** The escutcheon is fabricated from aluminum foil and has printed thereon indicia **67** to indicate the amount of water in the reservoir **50** when the iron is in the upended position shown in FIG. **2.** In addition to the water level indicia **67,** the escutcheon **65** may bear printed matter indicating the preferred temperature setting for various materials.

The escutcheon is placed over the portion of the dome **55** which extends above saddle surface **34** after the tank **50** and handle **23** have been assembled and secured in their operating position. Thus, since the location of escutcheon **65** with respect to dome **55** may be easily controlled when it is assembled, being after the handle has been assembled to the shell and the dome positioned therein, there would be a minimum gap left between these two members, thus avoiding the tolerance buildup between the reservoir and the handle. In this manner, the location of the escutcheon **65** will vary slightly from iron to iron, depending on the position of the dome **55** with respect to opening **60** in the saddle portion of the iron. However, from the outward appearance of the iron, the user is unable to ascertain that the escutcheon is slightly to one side or the other, and the escutcheon substantially conceals the gap **61** between the dome **55** and the handle opening **60.** Therefore the problems associated with the accumulation of tolerances affecting the position of the dome **55** and the opening **60** have been overcome by the use of escutcheon **65.** The specific configuration of the water-level gauge and escutcheon is described in greater detail in the Vieceli U.S. Pat. No. **3,298,118,** which is assigned to the same assignee of the present application.

To facilitate reading the water level contained within the water-level gauge, there is provided a neon light **70** located immediately behind the dome **55** and between the saddle portion **34** and the water tank **50.** Furthermore, the opening **59** in the shell **31** is sufficiently large enough to allow additional room for the neon light if required. The neon light **70** is first secured to handle **23** for assembly purposes within the iron by a high-temperature adhesive tape **71.** By originally securing the light within the handle **23,** where the electrical con-

nections for the light and power cord are made, one can easily assemble the handle and light unit onto the iron by merely placing it over the shell in proper alignment. Once the handle has been assembled above the shell **31** the neon light will be fairly well confined and thus substantially secured in its proper position by the various iron components. With this manner of securing the neon light, it is obvious that the actual assembly process is quite easy and does not require any additional hardware or supporting brackets, thus taking little time and being quite inexpensive.

The neon light **70** has a reddish tinge which gives the dome **55** and the water contained therein, a reddish coloring. The illumination of the water and water dome **55,** especially with the aforementioned reddish tinge, make it considerably easier to view and read the level of the liquid water. That is, the neon light will first illuminate this otherwise shadowed and darkened area of the iron, making viewing thereof obviously easier for the user. In addition, the water level surface will be illuminated to a greater degree than the body of the water, thus giving a distinct indication of the amount of water contained within the dome **55.** This surface illumination is caused by the refraction and scattering of light rays at the water-air boundary surface. As the side walls of the dome **55** are fairly close together, there is formed a meniscus at the water surface due to the surface tension of the water. Thus, when light rays are propogated from the neon light **70,** through the length of the dome **55,** they will strike this meniscus at an oblique angle causing refraction and a scattering of the light rays. This in turn will cause an illumination of the water surface giving the user a distinct showing of the water level. It should be noted that even if the dome **55** was not narrow enough to cause a meniscus to be formed at the water surface, this same illuminating effect would be present due to light rays reflecting off of the sides of the dome, thus still striking the water surface at an oblique angle to cause refraction thereof. In addition, the aforementioned surface refraction is best provided with the light **70** located beneath the dome **55** as described above, however, placement of the light in other locations next to the dome would also accomplish a similar desired effect.

In previous steam irons, it has often been the practice to place a small float in the dome **55** to facilitate the reading of the water level. With this method, a metal bracket was also required to retain the float near the top of the dome so that the float was always in view. With the present invention, however, the float for facilitating reading the water-level is no longer required, thus eliminating the cost of the float and metal bracket and the assembly process associated therewith.

In addition to facilitating the reading of the water level within the water-level gauge, the neon light further serves as a safety feature in that it will alert the user when the electric pressing iron is plugged into a wall receptacle. As shown in the schematic drawing of FIG. **5,** the neon light **70** and a resistor **72** used for dropping the voltage across the light are in parallel with the power connection **25.** Thus, whenever the iron is plugged into a wall receptacle, the neon light **70** would be turned on. The illumination of the dome **55** caused by the refraction of light rays therein will then provide a clearly visible safety signal. The schematic of FIG. **5** also shows the remainder of the electrical connections including the heating element **35,** a fuse **74** and finally, thermostatic switch means **73** which controls the temperature of the sole plate **27** by regulating the energization of the heating element **35.**

It should be obvious from the above that the present invention incorporates two separate and desirable features, a safety signal light and a means to facilitate the reading of a water gauge, into one easily assembled and inexpensive improvement in our electric pressing iron. In addition, the location and color of the neon light being used is such that the light is quite noticeable when "on" and yet it also fits well with the aesthetic design of the iron.

Although the dome **55** has been described above as being translucent, it is contemplated that dome **55** could be transparent. Accordingly the term translucent as used in the claims is intended to include a completely transparent material as well as one which would only transmit light to a limited degree and be partially transparent.

While there has been shown and described a particular embodiment of the present invention, it will be apparent to those skilled in the art that various modifications may be made without departing from the invention in its broader aspects and it is therefore aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the present invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. An electric steam pressing iron comprising a sole plate provided with an electric heating element and a shell overlying said sole plate and secured thereto; a controlled thermostat electrically connected in series with said heating element, a water reservoir mounted within said shell and adapted to deliver water to a steam chamber in said sole plate; a handle secured to said shell and having a gripping portion and a saddle portion in spaced parallel relation; an elongated opening in said reservoir extending parallel to said gripping portion; and elongated translucent dome mounted in said opening and sealed to said tank; said shell and said saddle portion having slots aligned with said reservoir opening with said dome extending through said slots; a power cord for said iron supported on said handle and being connected to said heating element; a neon light bulb electrically connected to said cord in parallel with the series combination of said heating element and said thermostat; means securing said bulb to the underside of said saddle portion between said saddle portion and said reservoir; said bulb being positioned adjacent said dome to direct light therethrough to illuminate the water level when said iron is in the upended position.

2. The steam iron of claim **1** wherein said securing means comprises a strip of high-temperature adhesive tape; and said bulb being secured at one end of said elongated dome whereby light rays are directed lengthwise therethrough causing refraction at the water level surface.

3. A steam iron comprising a base assembly provided with a sole plate and an electric heating element contained therein; a switch electrically connected in series with said heating element; an elongated water tank secured to said assembly having an opening in the upper surface thereof; a cup-shaped shell attached to said assembly and covering said tank; said shell forming an opening overlying the opening in said tank; a handle on said shell having an annular edge which defines an

opening overlying said tank and shell openings; a cup-shaped dome for indicating the amount of water in said tank with an open end and a translucent top portion thereof; said open end attached to the opening in said tank and said top portion extending through the openings in said shell and said handle; a power cord for said iron supported on said handle; a light bulb electrically connected across said cord and in parallel with the series combination of said heating element and said switch so that the bulb is always illuminated when the cord is plugged into an electrical outlet and power is being supplied thereto; means securing said light bulb between said handle and said tank; and said bulb being positioned adjacent said dome to illuminate said dome and any water contained therein.

4. The steam iron of claim **3** wherein said means comprises a strip of high-temperature adhesive tape securing said bulb to the underside of said handle.

5. The steam iron of claim **4** wherein said bulb may project through the opening in said shell when said handle is secured on said shell.

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