Sept. 4, 1956 R. J. ZERVECK ET AL 2,761,228

COMBINATION DRY AND STEAM FLATIRONS

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Fig. 1.

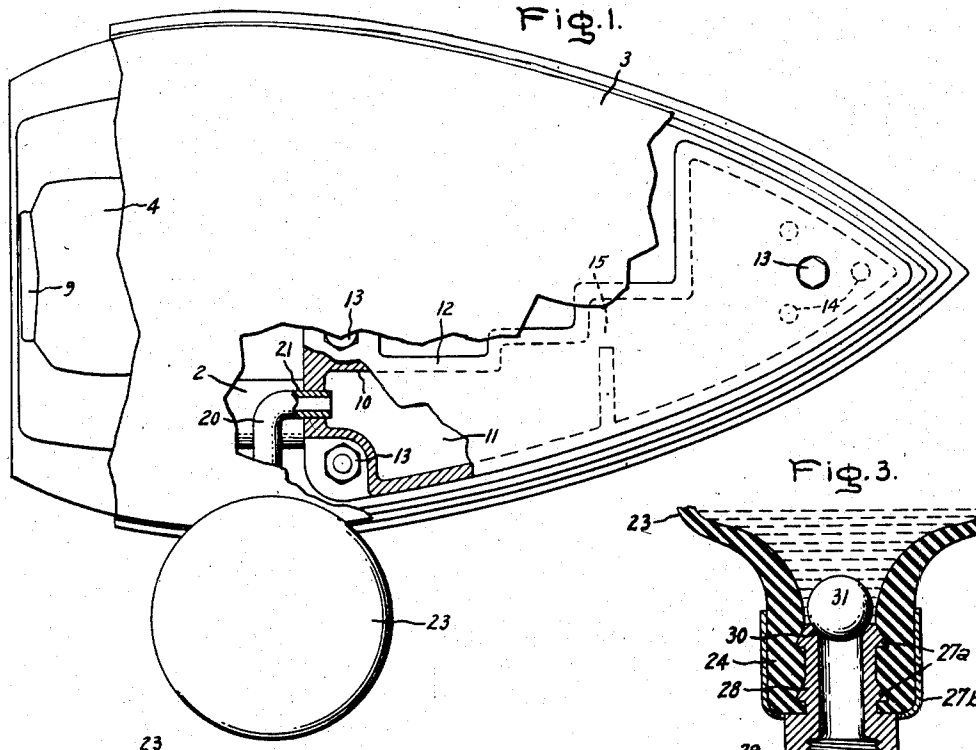


Fig. 3.

Fig. 2.

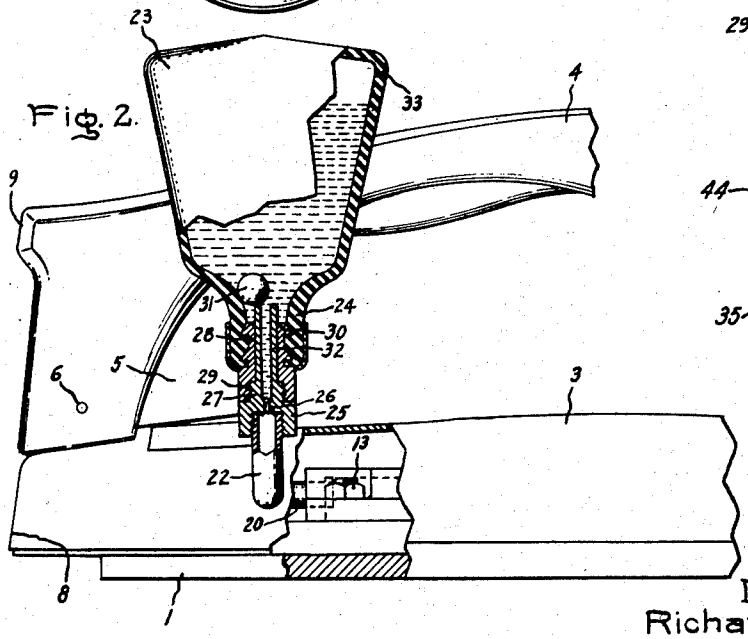
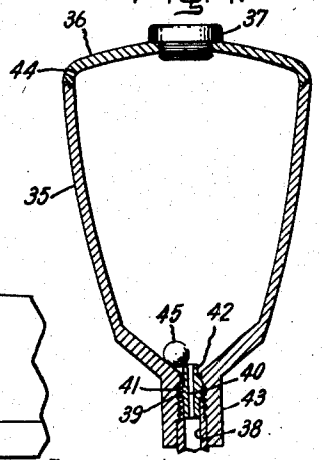


Fig. 4.



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COMBINATION DRY AND STEAM FLATIRONS

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2 Claims. (Cl. 38—77)

The present invention relates to electric flatirons of the type which are so constructed that they may be used either as a dry flatiron or as a steam flatiron. It is especially well adapted for use in small flatirons such as the so-termed "travel" flatirons although it is not limited necessarily to flatirons of this particular type.

The object of the invention is to provide an improved electric flatiron which may be used as a dry flatiron and in combination therewith simple and inexpensive means for supplying water to it whereby it may be used as a steam flatiron.

According to one embodiment of the invention, a flatiron is provided with a steam chamber in which steam is generated for steam ironing and water is supplied to the steam chamber through a water pipe to the outer end of which a water reservoir is detachably connected. In one form of the invention the water reservoir comprises a flexible self-supporting bulb. The flow path from the bulb to the steam chamber includes walls which define a water metering orifice. The water pipe is positioned at one side of the iron and sufficiently forwardly of the rear end thereof that the presence of the water reservoir does not interfere with the placing of the iron on its heel rest in the normal manner when not in use. Preferably the outlet from the bulb is normally closed by a suitable valve, such as a ball valve, which is displaced when the bulb is connected to the water pipe. Also, the bulb may be provided with an air vent at its end remote from the coupling which air vent is so located that when the bulb is attached to the flatiron it faces toward the front end of the flatiron whereby water will not leak out to it when the flatiron is upended on its heel rest. According to another embodiment of the invention, the bulb, instead of being formed of flexible material, is formed from non-flexible material such as a suitable metal.

In the drawing, Fig. 1 is a top plan view, partly broken away, of a flatiron embodying the invention.

Fig. 2 is a side elevation, partly in section, of the structure shown in Fig. 1.

Fig. 3 is a detail sectional view, on a larger scale than that of Figs. 1 and 2, of a part of the water holding bulb.

Fig. 4 is a sectional view of a modification.

Referring to the drawing, **1** indicates the flatiron soleplate which may be heated by a suitable resistance unit embedded therein in the well-known manner. The outline of the heating unit is indicated at **2**. Attached to the soleplate by suitable means (not shown) is a cover **3**, the soleplate and cover together forming the body of the flatiron. Attached to the cover at the heel or rear end of the flatiron is handle **4**. The handle, in the case of a "travel" flatiron, may to advantage be pivoted on the cover whereby when the flatiron is to be packed the handle may be folded down against the top surface of the cover. Such structures are known and since a specific handle pivoting arrangement forms no part of the present invention one has been indicated only generally. In Fig. 2, **5** indicates a bracket fixed on cover **3** on which the handle is pivoted as indicated at **6**. On bracket **5** is a

suitable spring latch (not shown) for holding the handle in its up or ironing position, and which may be pressed inwardly to release the handle to permit of the handle being folded down against the top wall of cover **3**. The pivoted handle and latch arrangement indicated is that disclosed in the application of Alfred G. Swenson, Serial No. 369,840 filed July 23, 1953, now Patent No. 2,727,322, and assigned to the same assignee as is the instant application. At its rear end cover **3** projects beyond the rear edge of the soleplate as is indicated at **8**, such projection in cooperation with a projection **9** at the rear upper end of handle **4** forming a heel rest upon which the flatiron may be upended.

In the body of the flatiron midway between its ends are walls **10** which define a steam chamber **11** to which water is supplied when the flatiron is to be used for steam ironing. Steam chamber **11** is closed by a cover plate **12** fastened in place by studs, two of which are shown at **13**. In soleplate **1** at its forward end are ports **14** through which steam is discharged against the surface being ironed, the ports at their inner ends being connected by a suitable passage **15** to steam chamber **11**.

The present invention has to do particularly with means for supplying water to steam chamber **11**.

Connected to steam chamber **11** is a water supply member or pipe **20**, the inner end of which is fixed in an end wall of chamber **11** as shown particularly at **21** in Fig. 1. Pipe **20** projects out through the top wall of cover **3** at one side of handle **4** and has an upwardly facing end **22**. For supplying water to pipe **20** there is provided a self-sustained bulb **23** of suitable flexible material such as rubber, having a neck **24** which is adapted to be detachably connected to pipe end **22**, the connection including walls which form a metering orifice for regulating the flow of water from the bulb through pipe **20** to the steam chamber. In the present instance the detachable coupling and orifice structure comprises a cap **25** threaded over pipe end **22** provided with a metering orifice **26**. On cap **25** is a threaded nipple **27**. Fixed in bulb neck **24** by suitable means, such as the interengaging teeth **27a**, is a sleeve **28** having a threaded outer end **29** which may be screwed over nipple **27**. A ferrule **27b** clamps bulb neck **24** to sleeve **28** and prevents bulb **23** from rotating on sleeve **28**. The inner end of sleeve **28** is shaped to define a valve seat **30** against which a ball valve member **31** is adapted to seat, as shown in Fig. 3. On nipple **27** and forming an extension thereof is a tubular post **32** which when sleeve **28** is connected to nipple **27** extends through sleeve **28** and engages ball valve member **31** to unseat it and hold it unseated as shown in Fig. 2.

Bulb **23** preferably is tapered or pear-shaped, being largest at the outer end remote from neck **24** and at its upper and what may be termed its forward edge it is provided with a small air vent **33** for the ingress and egress of air. Pipe end **22** is so located that when the bulb is connected to it, the bulb is spaced a sufficient distance from the side of handle **4** so as not to interfere with the hand of the user, and sufficiently far from the rear end of the flatiron so as not to interfere with the flatiron being upended on rear projections **8** and **9**. Thus, as shown in Fig. 2, the bulb **23** is entirely forward of a line extending through the heel rest projections **8** and **9**, so that the flatiron may be upended on its heel rest in the normal manner.

It is important when the bulb is attached to the flatiron that vent **33** be facing toward the front of the flatiron so that when the flatiron is upended on projections **8** and **9** water will not leak through the vent. To this end the threaded connection between sleeve **28** and nipple **27** is so formed that when the end of the sleeve comes against the shoulder surrounding nipple **27** the vent will be facing forward. In other words, the shoulder sur-

rounding nipple 27 forms a stop for the connection to insure always the correct location of vent 33 when the bulb is connected to the water tube.

Preferably a flatiron embodying the invention will be provided with an adjustable thermostat for regulating automatically the temperature of the soleplate. The thermostat and its control means has not been illustrated as such parts form no part of the present invention. However, a flatiron embodying the invention could to advantage embody also a thermostat and a control means such as that disclosed and claimed in the application of Swenson and Finlayson, Serial No. 369,841 filed July 23, 1953, now Patent No. 2,723,336 and assigned to the same assignee as the instant application.

When the flatiron is to be used for steam ironing, bulb 23 (detached from the flatiron body) is squeezed to collapse it, the neck of the bulb inserted in water, and pressure on the bulb then released to permit it to expand to its normal shape. In expanding water will be drawn into the bulb. It may be filled in this manner to the desired extent. When filled the ball valve prevents flow of water out through the neck of the bulb when held approximately vertical. Sleeve 28 is then screwed down over nipple 27 to attach the bulb to the flatiron body as shown in Fig. 2. When attached, post 32 unseats ball valve 31 to permit flow of water from the bulb to the steam chamber. At this time, as pointed out above, air vent 33 faces forward toward the front of the flatiron so that when the flatiron is upended on its heel rest water will not leak out through the vent.

The flatiron may be used for dry ironing with the bulb detached from it; or with the bulb attached providing there is no water in the bulb.

In Fig. 4 is shown a modification of the invention wherein the bulb 35 which forms the water reservoir instead of being formed from flexible material is formed from non-flexible material such as a suitable metal, the top wall 36 of the bulb being provided with a filling opening closed by a removable plug 37. In this figure, 38 indicates the outer end of the water supply pipe (corresponding to pipe end 22 of Figs. 1 to 3). In its outer end is fixed a nipple 39 having a metering orifice 40, an inwardly tapered shoulder 41, and a projecting end 42 which corresponds in function to tubular post 32 of Figs. 1 to 3. The lower end of bulb 35 is in the form of a sleeve or neck 43 threaded in its interior to adapt it to screw down over pipe end 38. The neck is shaped to provide a tapered surface which seats on tapered shoulder 41 when the bulb is screwed onto the pipe end, the engaging surfaces serving to form a seal to prevent leakage of water and also a stop to insure that air vent 44, corresponding to air vent 33 of Figs. 1 to 3, faces toward the front of the flatiron when the bulb is screwed down onto the pipe end. At its inner end sleeve 43 is shaped to provide a valve seat against which a ball valve 45 seats to seal the passage through sleeve 43 when it is not screwed onto pipe end 38. The ball valve is unseated as shown in Fig. 4 when the bulb is screwed down onto pipe end 38. The water reservoir of Fig. 4 is used for steam ironing in the same way as is bulb 23, the only significant difference being that it is filled through the filling opening in its top wall; and it can, if desired, be filled without removing it from pipe end 38. Since the reservoir of Fig. 4 is fillable through the opening in its top wall, the bulb may, if desired, be permanently attached to the pipe end 38. Also if the bulb in the form of invention shown in Figs. 1–3 were provided with a filling opening similar to that in Fig. 4, the bulb could be permanently attached, if desired, to the pipe 20.

When the invention is embodied in a travel flatiron as shown in the drawing, the travel flatiron may be compacted for packing by folding the handle down onto the top wall of the flatiron body and placing the detached bulb alongside the handle.

By the invention, simple, compact means is provided for supplying water to a steam flatiron which is easy to use, which can be manufactured at low cost, and which does not interfere with use of the flatiron as a dry iron.

What we claim as new and desire to secure by Lettters Patent of the United States is:

1. In an electric flatiron, a soleplate, a cover fastened over the soleplate, a handle carried by the cover, the rear end of the handle and the rear end of the cover being shaped to provide points of support which form a heel rest upon which the flatiron may be upended, walls which define a steam chamber within the flatiron, a water supply member having its inner end connected to the steam chamber and its outer end positioned at the surface of said cover at one side of the handle and forward of the rear end of the cover, a water reservoir, detachable coupling means connecting the reservoir to the outer end of the said member, said coupling means having walls which define a metering orifice in the flow path for water from the reservoir to the steam chamber, the outer end of said member being spaced from the rear end of the cover a distance such that the reservoir does not extend beyond the end points which form the heel rest, said reservoir having side and top walls defining a top edge, an air vent formed through said top edge and toward the front end of the flatiron, whereby water will not leak through the vent when the flatiron is upended on its heel rest, and said detachable coupling means including stop means which serve to position the reservoir with respect to the flatiron with the air vent directed toward the front end of the flatiron when the reservoir is connected to the outer end of said member.

2. In an electric flatiron having a soleplate and a cover, walls which define a steam chamber within the flatiron and ports in the soleplate to which steam is supplied from the steam chamber, means for supplying water to the steam chamber comprising a water supply member having its inner end connected to the steam chamber and its outer end extending through said cover and positioned at the surface of said cover, a flexible and self-supporting water reservoir adapted to be filled by manual collapse and release thereof, detachable coupling means connecting the reservoir to the outer end of said water pipe, said coupling having walls which define a metering orifice in the flow path for water from the reservoir to the steam chamber, a ball and seat forming a valve in the reservoir controlling flow of water from said reservoir, and means forming a part of said coupling for unseating said ball of said valve when the reservoir is connected to said member.

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