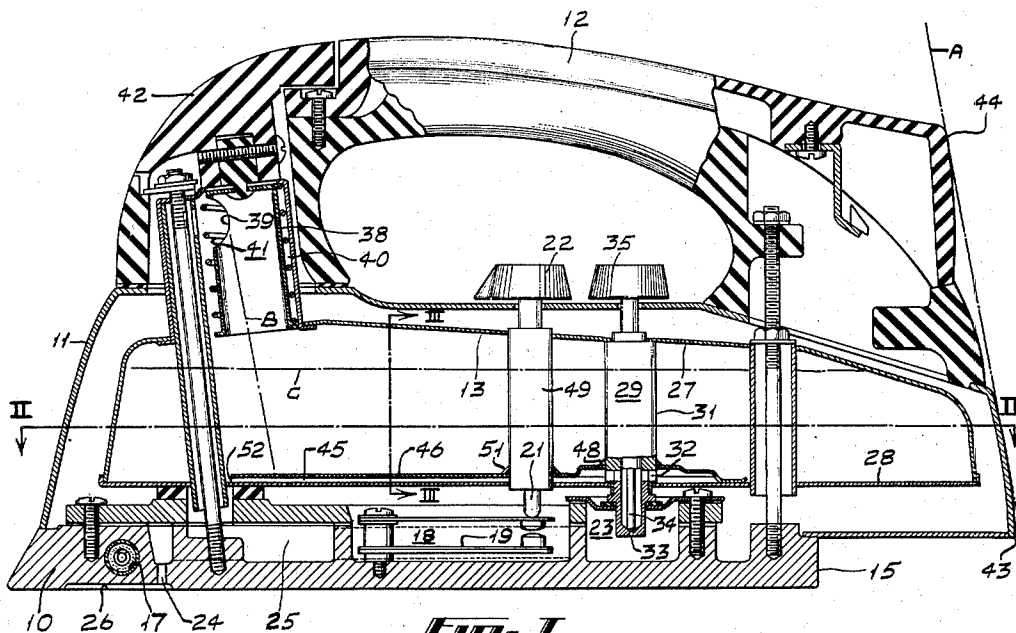
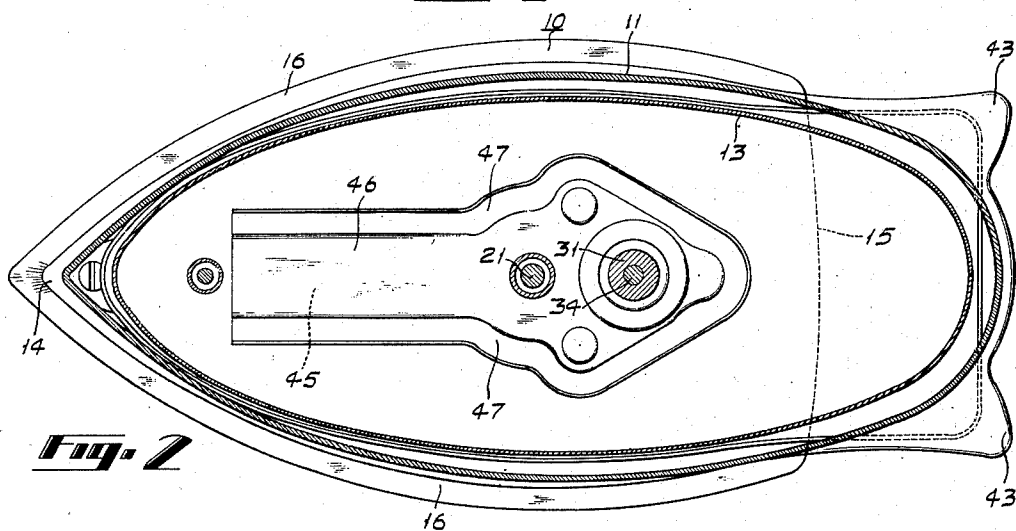
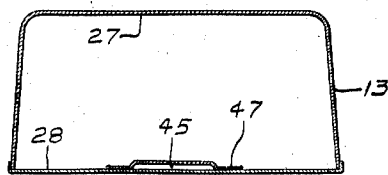


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FLASH TYPE STEAM IRON
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2,520,360



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2,520,360

FLASH TYPE STEAM IRON

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My invention relates to pressing irons of the type having provision for steaming the material being pressed and it has for an object to provide an improved iron of this kind.

A further object of the invention is to automatically terminate the steaming operation when an iron of the type set forth is disposed in up-ended position.

This invention relates particularly to the type of steam iron generally known as a "flash type" iron, wherein liquid admitted to a heated vaporizing chamber in the iron is rapidly vaporized and then delivered through one or more orifices in the soleplate to the material being pressed. Such irons include, generally, a heated soleplate, a reservoir for liquid superimposed upon the soleplate, a vaporizing chamber formed within the soleplate, a valve controlling the flow of liquid from the reservoir to the vaporizing chamber and a heel rest for supporting the iron in up-ended position during inactive periods. During inactive periods, it is desirable that the vaporizing of liquid be terminated for obvious reasons and, heretofore, it has been proposed to dispose the valve and the vaporizing chamber adjacent the front or toe end of the iron so that they are elevated with respect to the level of liquid in the reservoir when the iron is up-ended. Accordingly, the delivery of liquid through the valve to the vaporizing chamber is terminated and vaporization is stopped when the iron is up-ended.

In accordance with my invention, I provide an improved steam iron wherein the vaporizing chamber is spaced rearwardly from the toe and is heated by the heel portion of the soleplate. I have found that the soleplate may be more desirably heated when the vaporizing chamber is disposed remote from the toe, regardless of the amount of liquid being vaporized. This region of the soleplate is, however, at a lower elevation than the level of liquid in the reservoir when the iron is up-ended. In order to preclude the delivery of liquid from the reservoir, I provide a conduit within the iron structure having its discharge end communicating with the vaporizing chamber and its inlet end disposed in a region of the reservoir which is elevated with respect to the level of liquid in the reservoir when the iron is up-ended. A valve controlling flow of liquid to the vaporizing chamber during operation of the iron is suitably disposed in the conduit.

A further object of this invention is, therefore, to terminate the delivery of liquid from the reservoir to the vaporizing chamber of a steam iron when the latter is up-ended, said steam iron

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having its vaporizing chamber disposed in a region of the soleplate remote from the toe thereof and at an elevation lower than the level of the liquid in the reservoir when the iron is up-ended.

The foregoing and other objects are effected by my invention as will be apparent from the following description and claims taken in connection with the accompanying drawing, forming a part of this application in which:

Fig. 1 is a vertical sectional view taken longitudinally through a steam iron constructed and arranged in accordance with my invention; and

Figs. 2 and 3 are, respectively, sectional views taken along the lines II—II and III—III of Fig. 1.

Reference will now be had to the drawing, wherein I have shown my invention applied to a steam iron including, generally, a base or soleplate 10, a casing 11 supported thereon, a handle 12 for the manipulation of the iron and a reservoir 13 for water or other liquid to be vaporized and disposed within the casing 11. As shown in Fig. 2, the soleplate 10 has a pointed toe 14 at one end and a heel 15 at its opposite end, the sides 16 of the soleplate being curved. The soleplate 10 is heated, preferably, by a cast-in electric heating element 17 of suitable size and shape to impart heat to all portions of the soleplate 10. As the construction and operation of heating elements of the type shown at 17 are so well understood in the art, no further description of the same is deemed necessary and a showing of the element 17 in Fig. 2 has been omitted for the sake of clearness.

The soleplate 10 is provided with a well 18 for housing a thermostat 19 of suitable construction and operative to control energization of the heating element 17 in accordance with the temperature of the soleplate. Adjustment of the thermostat 19 is effected by an adjusting screw 21 actuated by a handle 22. Adjacent the rear end or heel 15 of the soleplate 10 is a water vaporization chamber 23 which communicates with steam discharge nozzles 24 by means of a passage 25 formed in the soleplate 10. As shown by the dotted lines in Fig. 1, the passage 25 extends forwardly from the chamber 23 around the thermostat well 18 and terminates in the toe of the soleplate 10. The orifices 24 extend downwardly from the passage 25 and terminate, preferably, in a shallow recess 26 formed in the ironing surface of the soleplate 10.

The water reservoir 13 includes upper and lower wall members 27 and 28, respectively, and a water discharge valve generally indicated at 29. The latter includes a casing 31 which is brazed or

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otherwise secured to the upper and lower wall members 27 and 28, which casing 31 includes inlet ports 32 and a discharge port 33. The amount of water discharged through the discharge port 33 is controlled by a needle valve member 34 movable within the casing 31 and adjusted by a handle 35.

The means for admitting liquid to the reservoir 13 preferably includes an open-end, generally cylindrical thimble 38 having a filling opening 39 formed in the side thereof, the open end of the thimble 38 communicating with the reservoir at all times. The thimble 38 is movable in a cove 40 formed in the top wall 27 of the reservoir 13 and is biased to the position shown in the drawing by a spring 41. A plug 42 is fixed to the thimble 38 and defines a handle for moving the thimble outwardly within the cove 40 to expose the inlet opening 39. Preferably, the plug 42 is shaped to conform to the contour of the handle 12 as shown. In filling the iron, the iron is moved to up-ended position with the toe 14 uppermost and is disposed on a heel rest 43 formed on the rear of the casing 11. In the up-ended position of the iron, it is supported by the heel rest portions shown at 43 (see Fig. 2) and by a rear portion 44 of the handle 12, resting on a supporting surface represented by the broken line A. With the iron in this position, the thimble 38 is withdrawn from the cove 40 and liquid is poured through the inlet opening 39 until the liquid shows at the opening 39 or overflows the edges of the opening 39. When the iron is properly filled, the level of the water is indicated by the broken line B in Fig. 1. When subsequently tilted to its horizontal or operating position, the level of the water in the reservoir is indicated by the broken line C. Of course, when the plug 42 is released the spring 41 returns the thimble 38 to the position shown in the drawing.

In accordance with my invention, a passage 45 is provided for conveying liquid from the reservoir 13 to the inlet ports 32 of the valve 29, which passage 45 is, preferably, defined by a plate 46, a portion of which is spaced above the bottom wall 28. The edge portions of the plate, shown at 47, are brazed or otherwise secured to the bottom wall 28. The plate is also brazed to the casing 31 of the valve 29, as shown at 48, and to a tube 49 enclosing the thermostat adjusting screw 21, as shown at 51, to provide fluidtight connections. The inlet of the passage 45, indicated at 52, is disposed in a region of the reservoir adjacent its bottom wall 28, which region is elevated with respect to the liquid level B when the iron is up-ended. During ironing periods, liquid from the reservoir enters the passage 45 and flows through the ports 32 and 33 of the valve 29 to the vaporizing chamber 23. As the liquid contacts the heated walls of the chamber 23, it is rapidly vaporized and the steam passes through the passage 25 to the nozzles 24 and the fabrics being pressed. Entrance of liquid to the passage 45 is terminated when the operator disposes the iron in up-ended position upon the heel rests 43 and handle portion 44. Steaming is terminated after the small amount of liquid contained in the passage 45 is vaporized in the vaporizing chamber 23. When the iron is again tilted to its operating position, flow of liquid to the passage 45 for delivery to the vaporizing chamber is initiated.

I have found that, by disposing the vaporizing chamber remote from the toe 14 of the soleplate, the temperature of the point or toe 14 of the soleplate 10 may be maintained at the desired value regardless of the amount of steaming neces-

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sary for the particular fabric being treated and, therefore, the amount of liquid being vaporized. In prior structures, known to me and having a vaporizing chamber remote from the toe of the soleplate, steaming continues when the iron is up-ended, as the vaporizing chamber is at an elevation lower than the level of liquid in the reservoir in the up-ended position of the iron.

From the foregoing description, it will be apparent that I have provided an improved steam iron having its vaporizing chamber remote from the point of the iron in order to prevent excessive cooling of the front end of the iron and wherein steaming is terminated in the up-ended position of the iron. The conduit structure for conveying liquid from the reservoir to the vaporizing chamber which I have disclosed is shown by way of example and it is to be understood that other forms of conduit constructions may be employed without departing from the spirit of the invention.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What I claim is:

1. In a steam iron, the combination of a soleplate, means for heating the soleplate, a reservoir for liquid superimposed on the soleplate, a rest arranged adjacent one end of the soleplate for supporting the iron in up-ended position, means defining a vapor-generating chamber in heat transfer relation with the heating means, said vapor-generating chamber being disposed at an elevation lower than the highest level of liquid in the reservoir when the iron is up-ended, a conduit disposed within the reservoir for conveying liquid from the reservoir, said conduit having an inlet end communicating with a region of the reservoir which is lowermost when the iron is in ironing position and which region is elevated with respect to the highest level of the liquid in the reservoir when the iron is up-ended and said conduit extending rearwardly of the reservoir from said region to adjacent the vapor-generating chamber and a valve connecting a portion of the conduit remote from the inlet end thereof and said vapor-generating chamber.

2. In a steam iron, the combination of a soleplate, means for heating the soleplate, a reservoir for liquid superimposed on the soleplate, a rest arranged adjacent one end of the soleplate for supporting the iron in up-ended position, means defining a vapor-generating chamber in heat transfer relation with the heating means, a valve controlling the passage of liquid from the reservoir to said vapor-generating chamber and including a liquid inlet port, said port being disposed at an elevation lower than the highest level of the liquid in the reservoir when the iron is up-ended and a conduit arranged within the reservoir for conveying liquid from the reservoir to said valve inlet port, said conduit having its inlet end remote from the valve inlet port and disposed in a region of the reservoir that is elevated with respect to the highest level of the liquid in the reservoir when the iron is up-ended.

3. In a steam iron, the combination of a soleplate, means for heating the soleplate, a rest arranged at one end of the soleplate for supporting the iron in up-ended position, a reservoir for liquid having a bottom wall superimposed upon said soleplate, means defining a vapor-generating chamber within said soleplate, a partition secured

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within said reservoir and spaced from said bottom wall for defining a relatively narrow conduit for conveying liquid from the reservoir, said conduit having its inlet end disposed in a region of the reservoir which is elevated with respect to the level of liquid in the reservoir when the iron is up-ended, a valve structure having an inlet port communicating with a portion of said conduit disposed at an elevation lower than said inlet end of the conduit when the iron is up-ended, said valve structure having an outlet port communicating with the vapor-generating chamber, and means effective in the up-ended position of the iron for admitting liquid to the reservoir.

4. In a steam iron, the combination of a soleplate having a pointed toe and a heel, means for heating the soleplate, means defining a liquid-vaporizing chamber within the soleplate adjacent the heel thereof, a reservoir for liquid superimposed upon the soleplate, valve means controlling the flow of liquid from the reservoir to the vaporizing chamber and including an outlet port communicating with the vaporizing chamber and an inlet port, means for supporting the iron in up-ended position so that the soleplate is arranged

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in a generally vertical plane with its toe uppermost, said inlet port of the valve being disposed below the highest level of the liquid in the reservoir when the iron is in its up-ended position, means defining a conduit within the reservoir for conveying liquid from the reservoir to said inlet port of the valve, said conduit having its inlet end communicating with a region of the reservoir which is lowermost in the pressing position of the iron and which is elevated with respect to the level of liquid in the reservoir when the iron is up-ended, and means for admitting liquid to the reservoir.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,962,940	Schaefer	June 12, 1934
2,237,381	Wallace	Apr. 8, 1941
2,387,281	Morton	Oct. 23, 1945
2,425,598	Clum	Aug. 12, 1947