This invention relates to pressing irons and more particularly to a folding or collapsible steam iron.

It has heretofore been proposed to provide an iron having a plurality of ports in the sole plate and having channels communicating with these ports and with a reservoir in which the water to be delivered to the iron is stored. The water is vaporized by the heat of the sole plate and delivered from these ports in the form of steam.

While steam irons have proved very satisfactory for household use, the types heretofore manufactured and sold have been too bulky for use as a traveling iron. Many persons carry an iron in a suit case or other luggage to enable them to press garments in hotel rooms and similar places while traveling.

In the present invention I provide a steam iron in which the water reservoir is arranged in the handle for compactness and in which the handle is detachable from the sole plate to permit the iron to be packed in a smaller space than would otherwise be possible.

The reservoir in the handle is provided with a suitable filling opening and this opening has a vent to permit discharge of air when water is placed in the reservoir. The vent is designed to control the quantity of water in the reservoir and to prevent the reservoir from being filled beyond a certain level. The water capacity is such that when the iron is on end, as is customary when not in use, the maximum amount of water that the reservoir can hold will not permit any water to flow through the outlet opening to the sole plate. This prevents the water from being accidentally discharged from the iron when the iron is not in use.

The accompanying drawings I have shown one embodiment of the invention. In this showing:

Fig. 1 is a plan view of the iron with the handle and sole plate connected to each other;

Fig. 2 is a vertical, sectional view;

Fig. 3 is a side elevation of the iron standing on end, parts being shown in section;

Fig. 4 is a detailed, sectional view on line 4—4 of Fig. 2, and

Fig. 5 is a transverse, sectional view of the sole plate.

Referring to the drawings, the reference numeral 1 designates generally the sole plate of the iron and 2 the handle. The handle may be formed of any suitable material, preferably a molded plastic which consists of two complementary sections 3 and 4 (see Fig. 1) secured to each other by bolts 5 or other suitable fastening means.

The handle sections are molded with hollow interiors which coast to form a space serving as a reservoir 6. The reservoir 6 may be lined with sheet metal or a suitable plastic. It extends throughout most of the interior of the gripping portion 7 of the handle and the front leg 8. This forms what may be termed the lower body portion 9 of the reservoir and an outlet portion 10. The rear leg 11 of the handle is recessed to receive the lead wires by means of which the heating element is connected to a convenience outlet for heating current.

As stated, the handle is detachably mounted on the sole plate and the sole plate is provided with lugs or posts 12 and 13 adjacent the front and rear which are received in suitable recesses in the bottoms of the legs 8 and 11 to properly position the handle. On the inside of each leg (see Fig. 4) I provide a cut-out portion or recess 14, the lower surface of which is inclined as at 15. The sole plate is also provided with pins or supports 16 for the reception of rotatable fastening members 17 which are adapted to cooperate with the recesses 14 to secure the handle to the sole plate. As shown, the lower sides 18 of the locking portions of these fastening members are inclined similarly to the incline 15 of the bottom of the recess so that when the locking member is received in the recess, a cam action is exerted. The handle may be detached from the sole plate by rotating the locking members substantially 90° to cause the locking members to ride out of the recesses.

An opening 19 is arranged in the top of the handle in alignment with the front leg and this opening receives a plug 20 which is rotatably mounted therein and extends above the handle in the form of a disc having a knurled edge 21 to facilitate rotation. Extending through this plug is an open tubular member 22 having a series of ports 23 communicating with the reservoir. In the portion of the reservoir within the front leg substantially at the juncture of the main reservoir 9 and the outlet section 10, I arrange a plate 22' having a central opening 23'. Any suitable valve which may be controlled by the rotating plug 20 and the sleeve 22 is provided for closing the opening 23' to control the flow of water to the sole plate. In the form shown, a gate valve or disc 24 is pivotally mounted on the plate 22 as at 25. This valve is provided with an engaging member 26 at its free end, which is received over the edge of a cam member 27 mounted on the lower end of the tube or sleeve 22.

Any construction of sole plate having channels and discharge ports may be employed in an iron of this type. For the purpose of operative illustration, I have shown a sole plate of the type disclosed and claimed in my prior Patent No. 2,384,839, granted April 4, 1946.

In the construction shown in that patent, which is directed to a domestic iron, I provide a valve at the bottom of the reservoir where the water is delivered into the sole plate and thereby provide for regulation of the amount of water fed to the sole plate. In a simplified construction, such as herein illustrated, the use of such a regulating valve is not feasible. I therefore provide a plug 28 which may be in the form of a disc having an opening 29 which is otherwise mounted in a circular opening in the sole plate and having a central opening 29 of restricted area through which the water is delivered to the sole plate. Immediately beneath the plug 28, the sole plate is provided with a steam generating chamber 30 and this chamber may communicate with one or more channels 31 extending longitudinally of the iron, which in turn communicate with channels 32 adjacent each side of the iron.

These channels may be provided with suitable ports 33 extending through the bottom of the sole plate to deliver steam to the pressing surface.

The iron is provided with a suitable heating element 34 which may be of the type shown in my prior patent above referred to, and in intimate heat exchange relation with the sole plate or may be of any other suitable type. The heat supplied to the heating element is controlled by a thermostat arranged in a recess in the sole plate (not shown) and adjusted by a regulating handle 35 connected to the thermostat and arranged on the top of the sole plate. Current is supplied to the heating element through lead wires 36 which extend from the rear leg of the handle 11 and are provided with a suitable plug (not shown) for connection to a suitable wiring connection. The wires 36 extend into a transverse recess 37 in the rear leg and then downwardly into a recess 38 where they are connected to suitable terminals 39. From these terminals, lead wires 40 extend outwardly to clips 51 in the bottom of leg 11. These clips receive contact members 52 carried by the sole plate when the iron is assembled.

Contact members 51 are connected to the thermostat and the heating element by suitable connections (not shown).

In Fig. 3 of the drawings I have illustrated the iron standing on end resting on the back edge of the sole plate and an extension 41 formed at the top of the leg.
For simplicity in this type of iron, the valve 24 is placed as shown, leaving a space beneath it, that is, the outlet section 10 of the reservoir, in which a quantity of water may be present at the time the user stops ironing. If means were not provided to prevent it, this space might be such that the quantity of water would be sufficient to flow out of the opening in the plug 28 to the sole plate even when the iron is in the position in Fig. 3. To avoid this, the vent openings 23 in the tubular member 22 are so placed that the reservoir cannot be completely filled with water. The reservoir is shown filled to capacity in Fig. 2 of the drawings, providing an air space 44 above the water in the reservoir when the iron is in normal position. When the iron is in use and the reservoir contains some water, the valve 24 is open. Placing the iron in the position shown in Fig. 3 of the drawings prevents flow of water to the sole plate. As shown, the rear side 45 of the extension of the reservoir slopes toward the gripping portion 7 of the handle so that when the iron is arranged in the position shown in Fig. 3, the water will tend to flow into the reservoir and fill the space 44, the air moving to the front of the extension 10 and filling the space 46 therein as indicated in Fig. 3 of the drawings. By properly designing the vents to provide the right capacity for the air space 44, the water contained in the outlet section 10 of the reservoir, when the iron is in the position shown in Fig. 3, can be such that its level will be below the opening 29 through which it is fed to the sole plate.

I claim:

1. In a steam iron, a sole plate and a handle, the handle comprising a gripping portion, a front leg and a rear leg, a reservoir arranged in the gripping portion of the handle, an outlet section of the reservoir in the front leg and communicating with the sole plate, a valve in the outlet section, the top of the handle having an opening communicating with the reservoir, a plug rotatably mounted in the opening, and a tubular member carried by the plug and operatively connected to the valve, the tubular member having openings therein forming air vents and arranged beneath the top of the reservoir to provide an air space at the top of the reservoir and control the water capacity of the reservoir whereby when the iron is placed on end the quantity of water in the outlet section of the reservoir is insufficient to permit discharge of water to the sole plate.

2. A steam iron comprising a sole plate and a handle, the handle being hollow providing a reservoir within the handle, the reservoir having an outlet section arranged adjacent the sole plate and separated from the main body of the reservoir, a valve controlling the flow of water from the main body of the reservoir to the outlet section, a control member for the valve, the control member extending to the exterior of the handle, said control member including a hollow tubular member through which the reservoir is filled, the tubular member having openings therein forming air vents and arranged beneath the top of the reservoir to control the water capacity of the reservoir, and a member between the outlet section of the reservoir and the sole plate having an outlet opening of restricted size to control the flow of water to the sole plate.

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