

Nov. 5, 1957

W. G. SECK ET AL

2,811,793

FILL OPENING CLOSURE FOR STEAM IRON

Filed Oct. 6, 1954

4 Sheets-Sheet 1

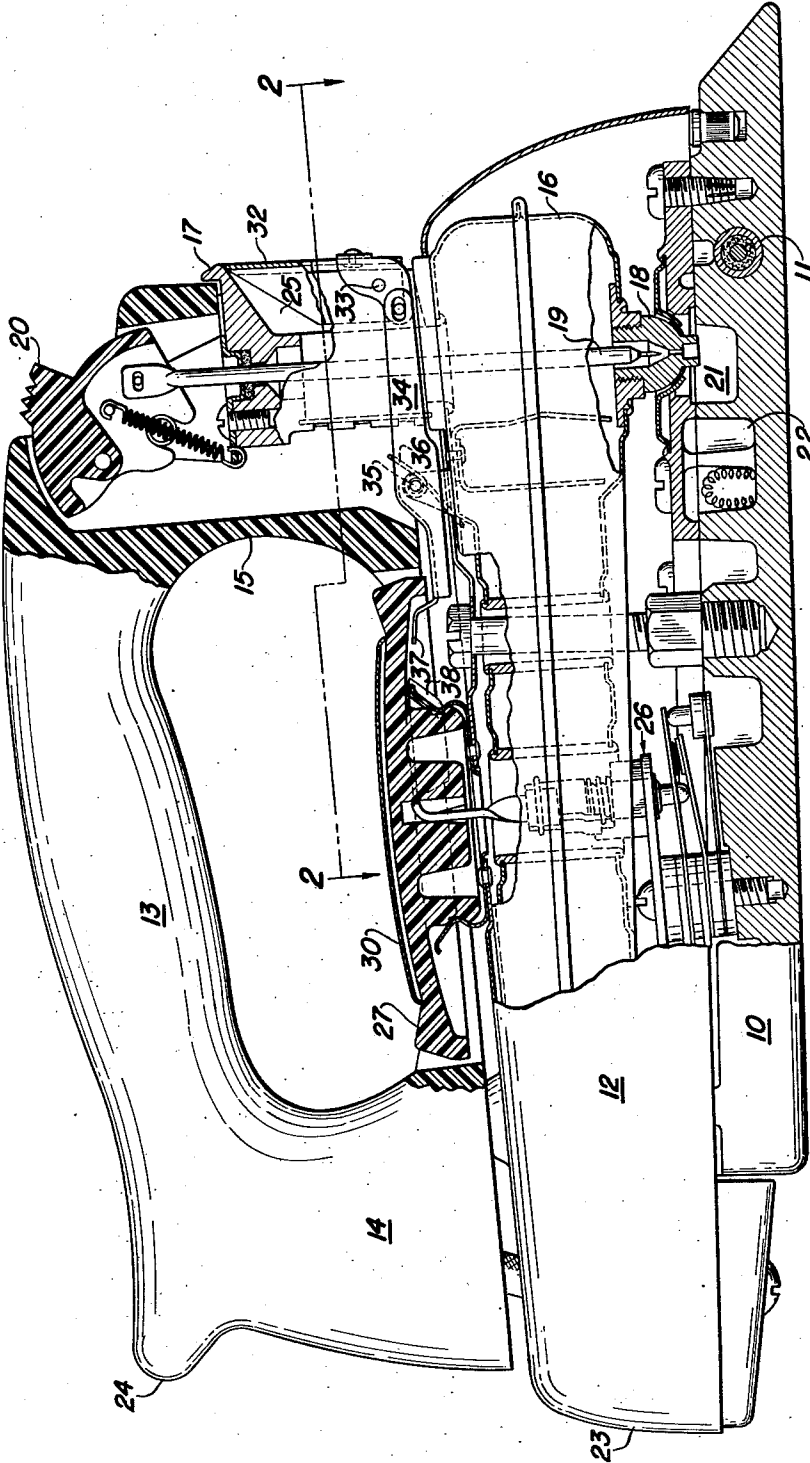


Fig. 1

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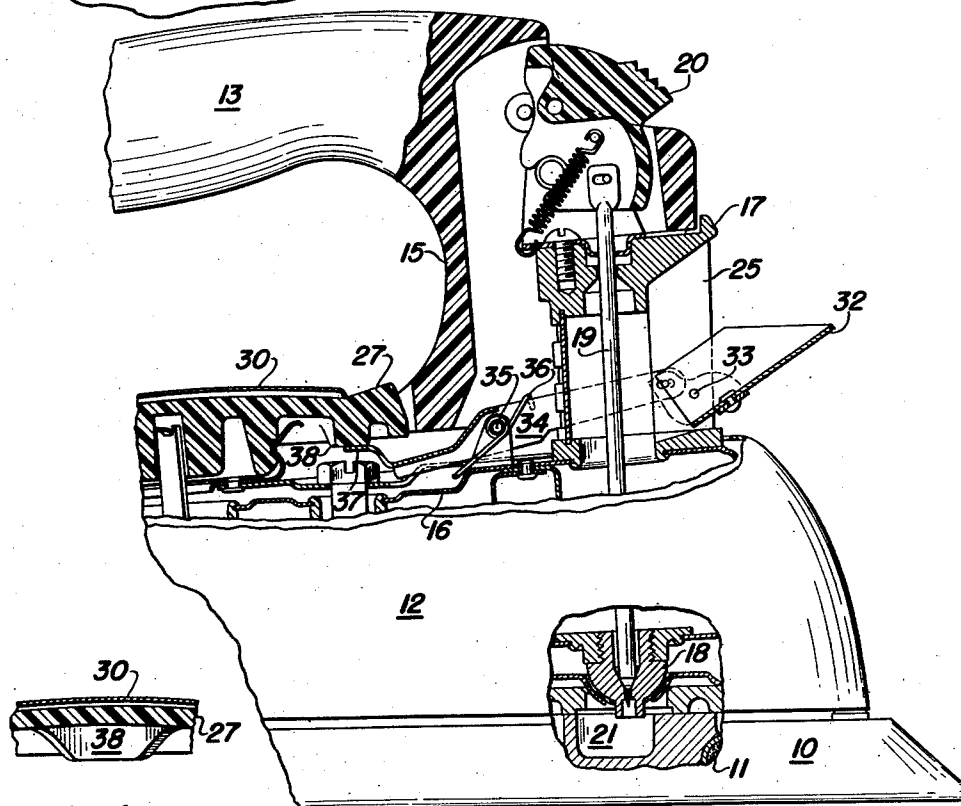
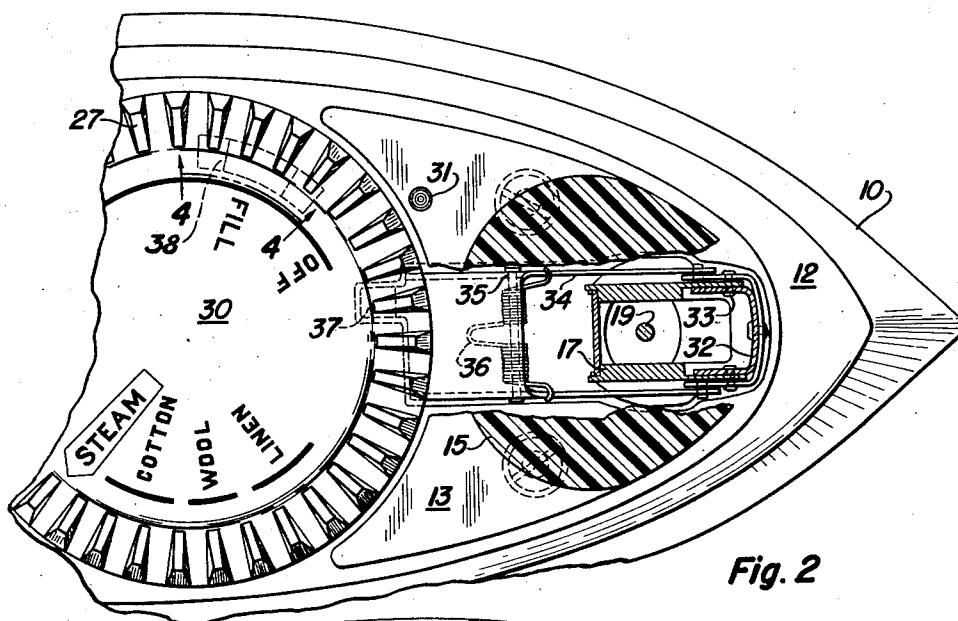


Fig. 4

Fig. 3

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4 Sheets-Sheet 3

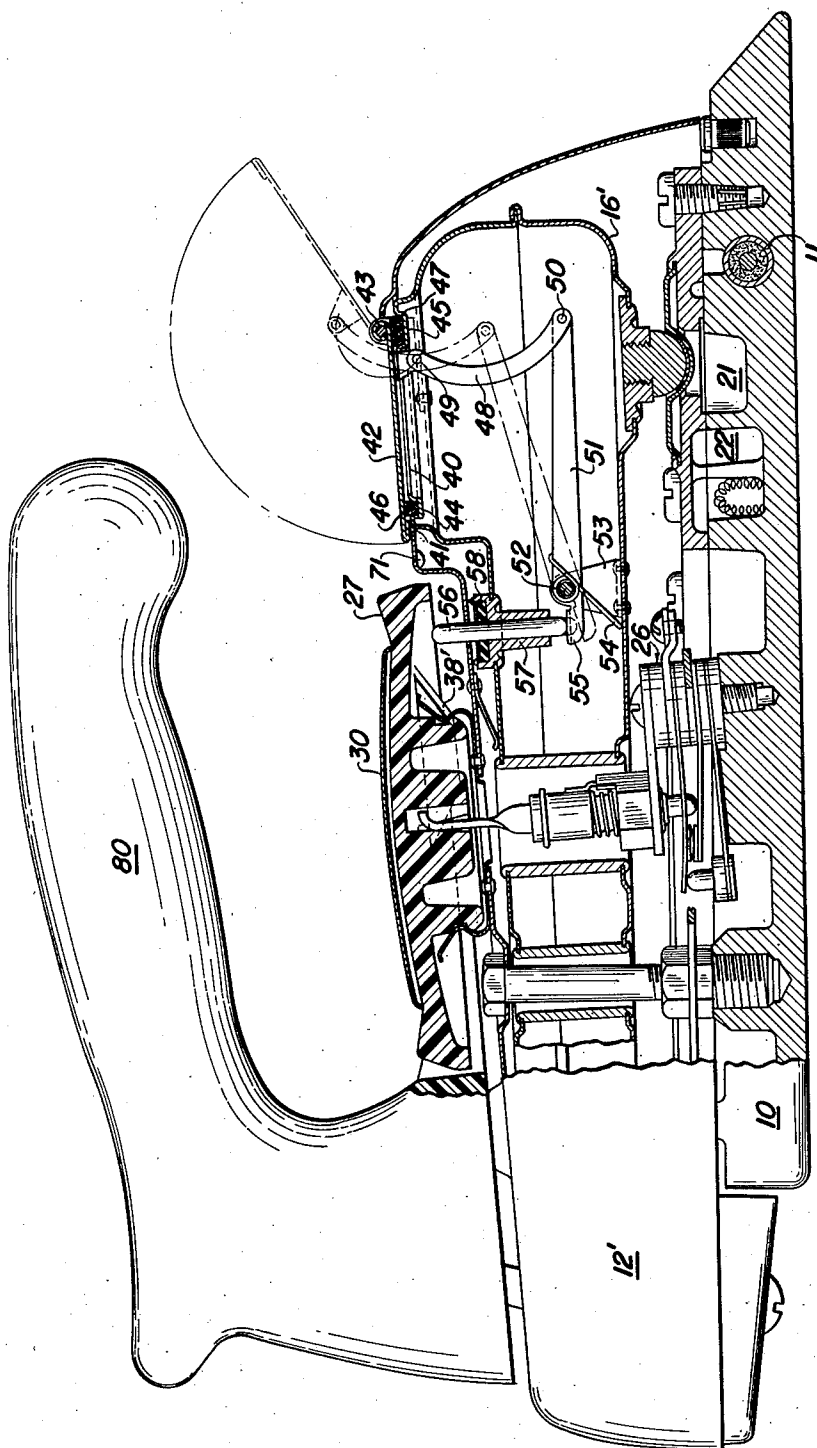


Fig. 5

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4 Sheets-Sheet 4

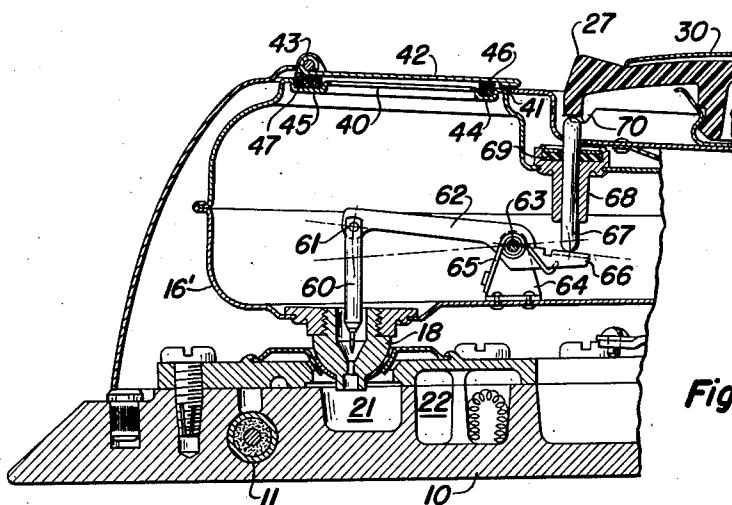
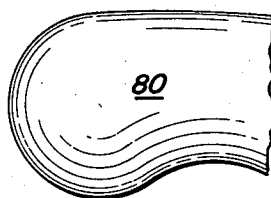


Fig. 6

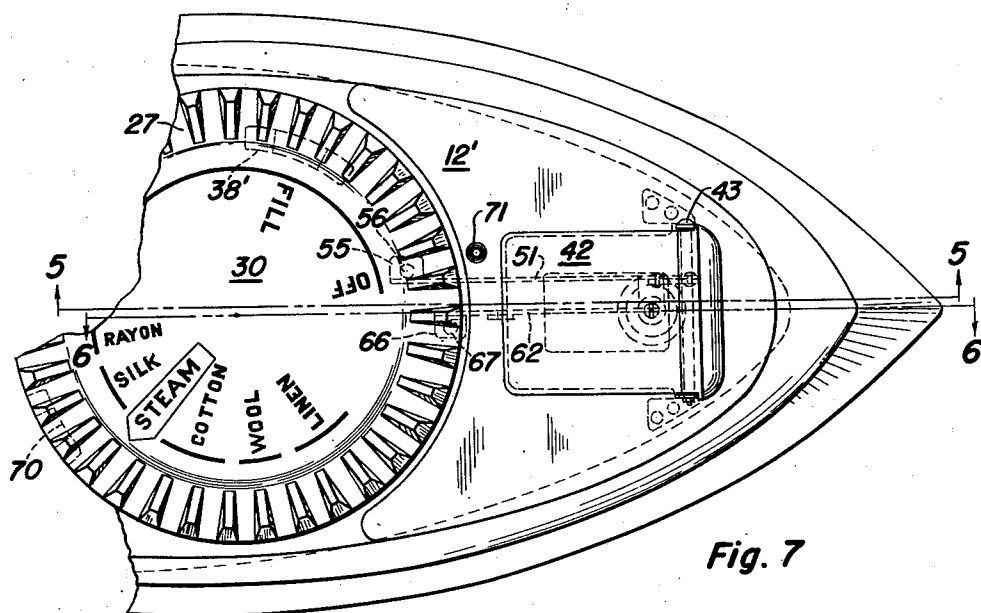


Fig. 7

1

2,811,793

FILL OPENING CLOSURE FOR STEAM IRON

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6 Claims. (Cl. 38—77)

This invention relates to electric irons and more particularly to an electric iron which may be readily converted for use as a dry iron or for use as a steam iron.

Specifically, according to the present invention, the iron is provided with a reservoir, a fill opening therefor and a closure for the fill opening which is operated from the control dial for the thermostat. The control dial is provided with a "fill" setting, an "off" setting, a "steam" setting and various settings for the dry ironing of various fabrics. The closure for the fill opening is closed for all settings of the dial except the "fill" setting at which setting the dial is operative to open the fill opening closure.

According to one modification of the present invention the reservoir is adapted to be filled with the iron resting on its heel support and the valve for controlling the flow of water from the reservoir is actuated independently of the dial setting.

According to a second modification of the present invention the reservoir is adapted to be filled with the iron resting on its soleplate and the valve for controlling the flow of water from the reservoir is closed by the actuation of the dial to its "fill" setting.

Other objects and advantages of the present invention will become apparent as the description proceeds when taken in connection with the accompanying drawings in which:

Fig. 1 is a side view of an iron partly in section and showing one modification of the present invention applied thereto.

Fig. 2 is a segmental view of the iron of Fig. 1, partly in section and taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view of the front part of the iron of Fig. 1 showing the position of the parts with the fill opening closure in open position.

Fig. 4 is a detailed view of the cam on the dial which actuates the fill opening closure.

Fig. 5 is a side view of an iron partly in section showing a second modification of the invention applied thereto and taken on line 5—5 of Fig. 7 looking in the direction of the arrows.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 7 looking in the direction of the arrows, and

Fig. 7 is a partial top view of the iron of Fig. 5.

Description of Figs. 1 to 4, inclusive

Referring to Figs. 1 to 4, inclusive of the drawings, the numeral 10 represents the soleplate of the iron which may be of cast aluminum having a heating element 11 of well known type cast therein.

The soleplate 10 is surmounted by a cover shell 12, to which is attached a handle 13 having a rear leg 14 and a hollow front leg 15.

Housed within the cover shell 12 is a reservoir 16 adapted to be filled thru a fill tube 17 extending upwardly into the hollow front leg 15. Water from the reservoir is discharged therefrom thru an opening in the valve body 18, the opening being opened or closed by a valve stem

2

19, extending upwardly thru the reservoir 16, the fill tube 17 and the hollow front leg 15 to the top of the handle, where it is actuated by a manually actuatable member 20.

Water from the reservoir 16 drips into a flash boiler 21 and flows thru steam passages 22 to steam emitting openings (not shown) extending thru the face of the soleplate 10.

The rear 23 of the cover shell 12 and a protuberance 24 on the rear of the handle 13 form supports whereby the iron may be supported on its heel with the opening 25 in the fill tube 17 facing upwardly to facilitate filling of the reservoir.

The temperature of the soleplate 10 is controlled by thermostat 26, the temperature setting of which may be controlled by a control dial 27.

The parts so far described are constructed and assembled in a manner more fully explained in the patent to Vance, 2,668,378 dated February 9, 1954 and need not be further described herein.

The iron thus far described may be readily converted from steam ironing to dry ironing by operating the actuator 20 to close the opening in the valve body 18 and by turning the dial 27 to the proper temperature setting for the fabric to be ironed even though the reservoir 16 still contains water.

When the iron is being used as a steam iron, or as a dry iron when water remains in the reservoir 16, it is desirable that the fill tube opening 25 be closed to prevent water from splashing out onto the fabric as the iron is manipulated during ironing operations.

According to the present invention that is automatically accomplished when the control dial 27 is moved to its "steam" setting or to any one of its dry settings.

The dial 27 is provided with an indicia plate 30 on top of which is marked indicia to indicate the various settings of the dial.

As shown in Fig. 2 the plate 30 is marked with "fill," "off" and "steam" settings and a portion of the settings for dry ironing, the remainder being on the opposite side of the "steam" setting from those shown, it having been found that the proper steam setting lies between the upper and lower settings for dry ironing. The various settings marked on the plate 30 are correlated to a reference point 31 on the base of the front handle leg 15.

As in the patent to Vance, above referred to, a stop is provided on the control shaft of the thermostat so as to limit rotation of the dial 27 to less than 360°. The stop is provided so that the "off" setting of the dial cannot be rotated clockwise past the reference point 31.

A closure plate 32 is pivoted at 33 to the fill tube 17 so as to close the opening 25 when in the position shown in Fig. 1. The closure 32 is adapted to be actuated by a lever 34 connected to the closure plate 32 by a pin-and-slot connection as shown in Fig. 1. The lever 34 is pivoted at 35 to a bracket mounted on the cover shell 12 and is spring biased by a spring 36 so as to normally hold the cover 32 in closed position as shown in Fig. 1. The lever 34 is provided with an upwardly extending end 37 which cooperates with a cam 38 (Fig. 4) on the under side of dial 27 at the "fill" setting in a manner which will presently appear.

Operation of Figs. 1 to 4, inclusive

If the reservoir 16 is empty and it is desired to use the iron for steam ironing, the dial 27 is turned to the "fill" setting whereby the cam 38 will engage the end 37 of lever 34, pivot it counterclockwise against the bias of spring 36 and in turn pivot the closure plate 32 clockwise to open position as shown in Fig. 3.

The iron may then be placed on its heel and water poured into the opening 25 whereby it will flow into the

reservoir 16 thru the fill tube 17. The dial 27 may be then turned to the "steam" setting and the cam 38 will ride off the end 37 of lever 34 and permit the spring 36 to pivot the lever clockwise and move plate 32 to closed position, as shown in Fig. 1, whereby the iron may be returned to its soleplate and used in the usual manner without any danger of water splashing thru the opening 25 onto the fabric being ironed.

If the iron is to be used as a dry iron, the dial 27 is merely turned to the proper dry setting, it being noted that the closure plate 32 will remain closed and will also remain closed when the dial 27 is moved to its "off" setting, the plate 32 being opened only when the dial 27 is moved to its "fill" setting which is beyond the "off" setting.

If it is desired to empty the reservoir 16 in order that the iron may be stored, the dial 27 is moved to its "fill" setting and the water merely poured thru the opening 25. The residual heat in the soleplate will evaporate any water remaining in the boiler and the steam passages.

Description of Figs. 5 to 7, inclusive

The soleplate, thermostat and dial of the second modification is substantially the same as that of the first and where the parts are the same they have been given the same reference numerals. The rear ends of the cover shell 12' and the reservoir 16' are constructed and assembled to the soleplate 10 in the same manner as in the first modification, while they have been modified at their front ends as will presently appear.

At its front end, the reservoir 16' is provided with a fill opening 40 beneath an opening 41 in the cover shell 12' thru which the reservoir 16' may be filled with water with the iron resting on its soleplate. A closure plate 42 is pivoted to the cover shell 12' at 43 in front of the opening 41. The metal of the reservoir 16' is depressed at 44 and 45 to receive a U-shaped gasket 46 and a wider transversely extending gasket 47 which cooperate with the closure plate 42 to seal the opening 40 against leakage.

A link 48 is pivoted at its upper end at 49 to the closure plate 42, the pivot point 49 lying rearwardly of the pivot point 43 for the closure plate 42. At its lower end the link is pivoted at 50 to a lever 51, which is pivoted at 52 to a bracket 53 secured to the bottom of a reservoir 16'. The lever 51 is spring biased clockwise by a spring 54 and has an extended portion 55 to the rear of the pivot point 52.

A pin 56 is reciprocally mounted in a member 57 mounted on the top wall of the reservoir 16', its lower end cooperating with the end 55 of lever 51 while its upper end cooperates with a cam 38' on the under side of dial 27 in a manner which will presently appear. A seal 58 is provided about the pin 56 to prevent leakage of water from the reservoir 16'.

The opening in the valve body 18 is adapted to be opened and closed by valve stem 60 pivoted at its upper end at 61 to a lever 62 which in turn is pivoted at 63 to a bracket 64 secured to the bottom of the reservoir 16'. The lever 62 is biased by a spring 65 in a counterclockwise direction so as to normally hold the valve stem 60 in a position to close the opening in the valve body 18. The lever 62 is provided with an extension 66 beyond its pivot point 63 which cooperates with a pin 67 reciprocally mounted in a member 68 suitably secured to the top wall of the reservoir 16', as shown in Fig. 6, a seal 69 being provided to prevent leakage from the reservoir. The upper end of the pin 67 cooperates with the cam 70 on the under side of the dial 27 in a manner which will presently appear.

The indicia carrying plate 30 and the indicia thereon, as shown in Fig. 7, is substantially the same as in the first modification, the indicia being correlated with a reference point 71 formed on the cover shell 12' adjacent to dial 27. It is to be noted that the cam 70 is positioned adjacent the steam setting so as to engage the upper end of

pin 67 and open the water valve only when the dial is at its "steam" setting. The cam 38' is positioned to engage the upper end of pin 56 and open the closure 42 when the dial is set at its "fill" setting. However, the cam 38' is not wide enough to engage the pin 67 when the dial is at its "fill" setting thus assuring that the water valve will be closed when the reservoir is being filled. Additionally, the arrangement is such that the water valve is closed at all dial settings except for the "steam" setting.

A handle 80, of the cantilever type, is secured to the rear end of the cover shell 12' in a suitable manner, as shown in Fig. 5.

Operation of Figs. 5 to 7, inclusive

If the reservoir 16' is empty and it is desired to use the iron as a steam iron, the iron is placed on its soleplate and the dial 27 turned to its "fill" position. The cam 38' on the under side of the dial 27 will engage the top of pin 56, force it downwardly and thus move the lever 51 in a counterclockwise direction against the bias spring 54. That will cause the link 48 to be moved upwardly and pivot the closure plate 42 to open position, as shown in dotted lines in Fig. 5. At the same time, the cam 70 will ride off of the top of pin 67 and permit the spring 65 to move the lever 62 counterclockwise and move the stem 60 downwardly to close the opening in the valve body 18 thus assuring that the water valve is closed when the closure plate 42 is open.

Water is then poured into the reservoir 16' thru the openings 40 and 41 after which the dial 27 is returned to its "steam" setting. During such movement, the cam 38' will ride off of the upper end of pin 56, permitting the spring 54 to move the lever 51 clockwise and move the closure plate 42 to its closed position, as shown in full lines in Fig. 5.

As the dial approaches its "steam" setting, the cam 70 will engage the top end of pin 67, depress it, move the lever 62 clockwise and raise the valve stem 60 from the opening in the valve body 18, thus converting the iron for use in steam ironing.

For dry ironing the dial is moved to the proper dry setting. During such movement the cam 70 will ride off of the top of pin 67 and the water valve will be closed as previously described.

It is to be noted that in the second modification, as well as in the first, the dial must be moved away from all active ironing settings before the reservoir can be filled. Also, according to the second modification the water valve must be closed before the reservoir can be filled.

While we have shown and described but two modifications of our invention, it is to be understood that those modifications are to be taken as illustrative only and not in a limiting sense. We do not wish to be limited to the specific structure shown and described, but wish to include all equivalent variations thereof except as limited to the scope of the claims.

We claim:

1. A steam iron comprising, a soleplate, heating means for said soleplate, a thermostatic control for said heating means, a control dial for regulating the setting of said thermostatic control, a water reservoir positioned over said soleplate, a fill opening for said reservoir, a movably mounted closure plate for said fill opening and actuating means responsive to movement of said control dial for opening and closing said closure plate.

2. A steam iron according to claim 1 in which said control dial has a "fill" setting and in which said actuating means is operative to open said closure plate when said dial is moved to its "fill" setting and is operative to close said closure plate when said dial is moved away from its "fill" setting.

3. A steam iron according to claim 2 including valve means for controlling the flow of water from said reser-

5

voir and means responsive to movement of said control dial to its "fill" setting for closing said valve means.

4. A steam iron according to claim 2 including valve means for controlling the flow of water from said reservoir, said control dial having a "steam" setting, actuating means responsive to movement of said dial to its "steam" setting for opening said valve means and being responsive to movement of said dial to its "fill" setting for moving said valve to its closed position.

5. A steam iron comprising, a soleplate, a heater for said soleplate, a thermostat for controlling the temperature of said heater, a water reservoir above said soleplate, a cover shell enclosing said reservoir, a control dial rotatably mounted on said cover shell and connected to said thermostat to adjust the same for different temperature settings, a fill opening for said reservoir, a movably mounted closure plate for said opening, actuating means for said closure plate normally biased to hold said closure plate in closed position, said dial having indicia thereon including a plurality of operative set-

6

tings, an "off" setting, and a "fill" setting and cam means carried by said dial at its "fill" setting for cooperating with said actuating means to open said closure plate when said dial is moved to its "fill" setting and inoperative to open said closure plate when said dial is moved to other settings.

6. A steam iron according to claim 5 including valve means for controlling the flow of water from said reservoir, linkage means for normally holding said valve means in closed position, one of said operative settings being a "steam" setting and means at said "steam" setting coacting with said linkage means to open said valve means when said dial is moved to its "steam" setting and being inoperative to hold said valve means open at other settings including the "fill" setting.

References Cited in the file of this patent

UNITED STATES PATENTS

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