Nov. 6, 1956 A. C. HOECKER 2,769,258

STEAM IRONS

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Fig. 1.

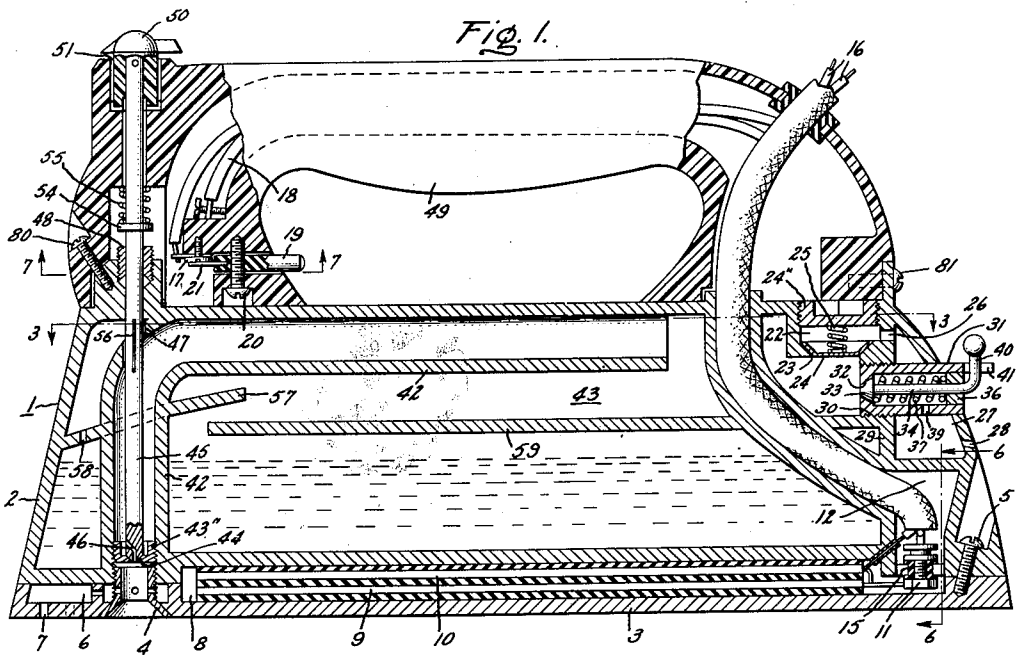


Fig. 3.

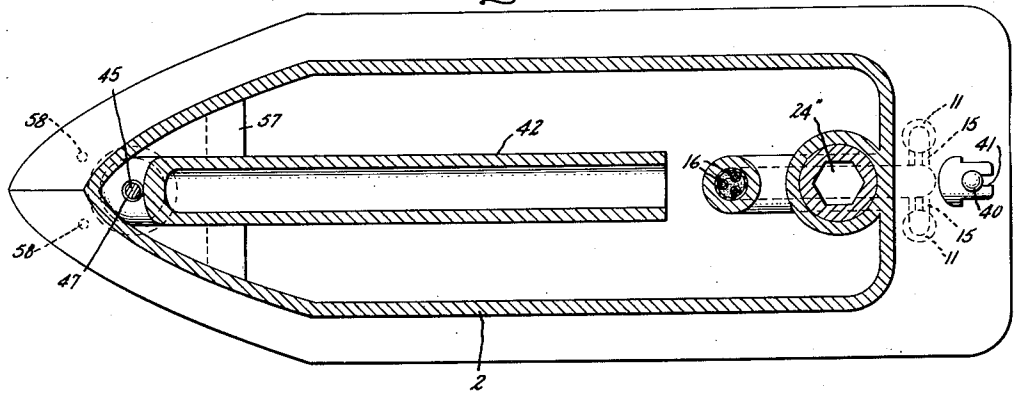
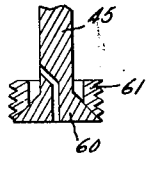


Fig. 2.



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Fig. 5.

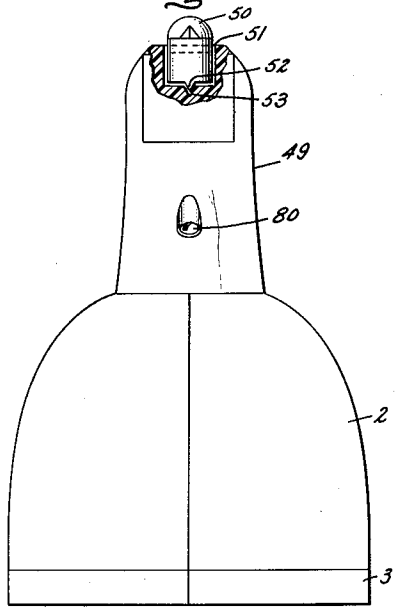


Fig. 6.

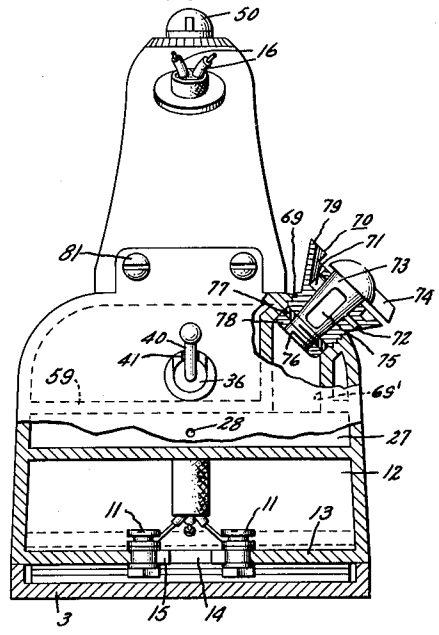


Fig. 7.

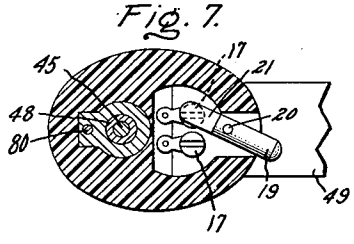
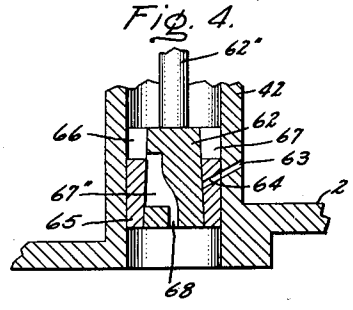


Fig. 4.



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United States Patent Office 2,769,258 Patented Nov. 6, 1956

2,769,258

STEAM IRONS

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Application August 31, 1949, Serial No. 113,386

4 Claims. (Cl. 38—77)

This invention relates to pressing irons and more specifically to pressing irons of the steaming and dampening type.

The primary object of this invention is to provide an iron with means whereby high or low pressure steam may be directed to the material ironed.

Another object of the invention is to provide an iron with a special valve for controlling the steam and water directed to the clothing ironed.

A still further object of the invention is to provide an iron with means for preventing water from entering the steam pipe when the iron is placed on end.

Another object of the invention is to provide an iron with improved means for preventing water from entering the steam pipe.

Other and further objects of the invention will appear in the specification and be specifically pointed out in the appended claims, reference being had to the accompanying drawings exemplifying the invention and in which:

Fig. 1 is a longitudinal medial sectional view of the iron.

Fig. 2 is an enlarged sectional view of a modified valve which can be substituted for a valve shown in Fig. 1.

Fig. 3 is a section taken on line 3—3 of Fig. 1.

Fig. 4 is an enlarged fragmentary sectional view of a valve for controlling steam and water and which can be substituted for the valve shown in Fig. 1.

Fig. 5 is a front view of the iron with the handle of the iron partly broken away to show detail.

Fig. 6 is a rear view of the iron with parts broken away on line 6—6 of Fig. 1.

Fig. 7 is a sectional view of the handle and electrical switch taken on line 7—7 of Fig. 1.

Referring by numerals to the accompanying drawings, 1 designates the iron generally. The iron includes a steam boiler 2 and sole plate or pressing surface 3, said sole plate being secured to the boiler 2 by a steam distributing head 4 and screw 5. The sole plate or pressing surface 3 is provided with a steam space 6 at the forward end thereof, and in said space and extending through said sole plate are openings or perforations 7 providing outlets to the under surface of the sole plate. Extending from the steam space 6 to the heel of the iron is a depressed portion 8 for the reception of a heating element 9 for heating the sole plate; and extending up in the boiler 2 and directly above the heating element 9 is a second heating element 10 for heating the water in the boiler 2. Both of said heating elements are connected to terminals 11, said terminals being located in a housing 12 formed at the rear of boiler 2. The lower wall 13 of said housing is provided with an opening 14 large enough for the introduction of the terminal heads into slots 15 in which the terminals are located (Fig. 6).

The terminals 11 are connected to electrical conductors 16. However, one of the terminals of the water heating element 10 is connected to one of the screws 17 of the electrical switch and connected to the other screw 17 is a conductor 18 which is connected to one of the conductors

16 so that when the switch is closed the circuit to the water heater 10 will be completed.

The switch handle 19 is pivoted to the handle on the iron by a bolt or screw 20. The handle 19 is constructed of rubber or other electrical insulating material, and molded in or otherwise secured to the handle 19 is a strip of metal 21 which bridges or spans the screws 17, completing the circuit to the water heating element. Thus it will be seen that if the operator of the iron desires utilizing the iron as a steam or dampening iron, it will only be necessary for the operator of the iron to move the switch handle 19 to the opposite position from that shown in Fig. 7, thereby closing the switch and causing the heating element 10 to heat the water in the boiler 2 producing steam in the boiler. At the same time, the heating element 9 for sole plate 3 is operating, it being understood of course that the conductors 16 are connected to a source of electrical current, and that water is in the boiler. If the operator of the iron desires utilizing the iron as a dry iron it is only necessary to move the switch handle 19 to the position shown in Fig. 7, cutting off the electrical current to the water heating element 10 thereby, preventing steam from being generated in the boiler 2 and providing a dry iron. It will also be observed that by cutting off the current to the water heating element 10, the heating element 10 will provide a heat insulator between the boiler 2 and sole plate heating element 9, preventing the boiler 2 from over heating.

The rear end of the boiler is provided with a chamber 22 having an opening 23 communicating with the boiler 2 and pressed and held in said opening is a safety disk 24 which is adapted to be forced out of the opening 23 if the steam in the boiler 2 should exceed a predetermined pressure. A plug 24″ is screw-threaded in the top of the chamber 22 for holding the spring 25 and disk in position and for sealing the top of the chamber 22. A steam exhaust outlet 26 extends through the wall of the chamber 22 through which the steam exhausts into an exhaust chamber 27 and to the atmosphere through the exhaust outlet 28. As a further protection of the boiler 2 the rear wall 29 of the boiler is provided with a screw-threaded opening 30 for the reception of a safety valve casing 31 and in the valve casing 31 is a tapered opening 32 which communicates with the boiler 2, and located in said opening 32 is a correspondingly tapered valve 33 having a valve stem 34 which extends through an opening in a plug 36, said plug being screw-threaded in the valve casing for holding the valve stem 34 in position and for holding a spring 37 which surrounds the valve stem 34 against the valve 33 for retaining the valve in seated position in the tapered opening 32. The valve casing 31 extends through the exhaust chamber 27, and extending through the wall of the casing 31 is an exhaust outlet 39 through which the steam exhausts into the steam chamber 27 and to the atmosphere through the exhaust outlet 28. The valve stem is provided with an angular part 40 which reciprocates in the slot 41 formed in a part of the valve casing 31. In order to test the operation of the safety valve and with steam in the boiler, the operator of the iron grasps the angular part 40 reciprocating the angular part 40 in the slot 41 thereby lifting the valve 33 off its seat causing the steam to discharge into the exhaust chamber 27 and to the atmosphere through the exhaust outlet 28, clearly indicating that the safety valve is in operative condition.

The forward end of the boiler 2 is provided with a large steam pipe 42, and said pipe extends from the front of the boiler toward the rear and directs the steam from the steam space 43 through the distributing head 4 and into the steam space 6 and through the perforations 7 in the sole plate 3 to the material to be ironed. Adjacent the lower end of the pipe 42 and screw-threaded in said pipe is a plug 43″, said plug being provided with a tapered

opening 44 for the reception of correspondingly tapered valve stem 45 and in the lower end of the valve stem is a minute opening 46, so as to provide an atomizing nozzle. The object of the larger opening 44 and the smaller opening 46, is to provide high and low pressure steam. Obviously with the tapered end of the valve stem 45 seated in the tapered opening 44, the steam pressure will increase in the boiler 2, and with water entering the steam pipe 42 (which will be described later) the high pressure steam will atomize the water passing through the minute opening 46; and with the valve stem retracted from the larger opening low pressure steam will be provided. It will be noted that there is a possibility of the small opening 46 being obstructed by scale or other material, in which case it will be necessary to insert a small wire in the opening to force the obstruction out of the opening and into the steam pipe 42 from which the obstruction can be discharged or blown through the tapered opening 44 by lifting or retracting the tapered end of the valve stem from the tapered opening 44.

The valve stem 45 extends through an opening 47 in the pipe 42 and through a stuffing box 48 up into the handle 49 and secured to the stem 45 is a knob 50 which turns and reciprocates in an opening 51 in said handle. The lower end of the knob 50 is provided with a cam 52 (Fig. 5) which cooperates with a cam 53 in the lower part of the opening 51 so as to reciprocate the valve stem 45 for opening and closing the opening 44 when the knob 50 is rotated. The valve stem 45 is further provided with a collar 54 and engaging said collar and the handle 49 is a spring 55 for holding the valve stem in closed position in the tapered opening 44. The opening 47 in the pipe 42 is slightly larger than the valve stem 45 so that when the toe of the iron is tilted downwardly, water will enter the steam pipe 42 and mix with the steam so as to saturate the steam for dampening the material being ironed. For removing any obstruction that may collect in the opening 47, the valve stem 45 is provided with a scraper or projection 56, which will automatically remove any obstruction in the opening 47 when the valve stem 45 is rotated and reciprocated.

In order to prevent the surging water from entering the opening 47 during the ironing movements of the iron, the iron is provided with a baffle 57, said baffle having openings 58 through which sufficient water will pass for saturating the steam passing through the pipe 42 when the toe of the iron is tilted downwardly. From the rear of the iron to the front of the iron is a second baffle 59 so as to provide a steam space 43 and so that water will not enter the steam pipe 42 during the ironing movements of the iron and when the iron is placed on its rear end.

Fig. 2 is a fragmentary view of a valve 60 and a plug 61 which may be substituted for the plug 43'' and tapered end of valve stem 45 as described in connection with Fig. 1.

Fig. 4 is a fragmentary view showing parts of a rotary valve which also may be substituted for the steam valve of Fig. 1. Adjacent the lower end, the pipe 42 is provided with a passage-way 63 which communicates with the water in the boiler 2 and a passage-way 64 in a brass bushing 65, which bushing is pressed into the pipe 42, so as to provide a bearing surface for the valve 62. The bushing 65 is further provided with two passage-ways 66 and 67 which communicate with the large passage-way 67'' and the minute discharge outlet 68 in the valve 62. Assuming now that the valve 62 and valve stem 62'' are connected to the knob 50 (shown by Fig. 1) and that the spring 55 is placed between the collar 54 and stuffing box 48 so as to draw the valve 62, which is tapered into the tapered part of the bushing 65, and that the cam 52 on the knob 50 has been removed so that the cam will not interfere with the rotation of the valve 62. In other words, the valve stem 45 and associated parts have been replaced by the valve 62 and its associated parts. If the operator of the iron desires utilizing the iron as a steam iron, it will only be necessary for the operator to turn the knob 50 to the position shown in Fig. 1, at which time the valve 62 should be in the position shown in Fig. 4 and with steam in the boiler the steam entering the pipe 42 will pass through the passage-way 66 into the valve passageway 67'' and discharge onto the material being ironed through the discharge outlet 68. A quarter turn to the right or left from the position shown in Fig. 4 will cause the passageway 67'' in the valve to pass the passage-way 66 in the bushing, shutting off the steam. A further quarter turn of the valve 62 will cause the passage-way 67'' and discharge outlet 68 to register with the passage-way 67 and the passage-ways 63 and 64 which communicate with the water in the boiler, thereby providing saturated steam to be directed to the material being ironed, for dampening the material.

Extending through the top wall of the boiler 2 and through the baffle 59 is an opening 69 (Fig. 6) and screw-threaded in said opening, for filling said boiler with water is a funnel 70 having a passage-way 71 which communicates with the boiler 2 for admitting water into the boiler. A steam outlet 72 is provided through which any steam that may be in the boiler will exhaust, preparatory to introducing water into the boiler. Rotatably mounted in said funnel is a valve 73 having a handle 74, and a passage-way 75 which extends through the center of the valve 73 and communicates wtih the boiler. The lower end 76 of the valve is screw-threaded and provided with a washer 77 and screw-threaded nut 78 for holding the valve in rotatable position in the funnel 70. During operation of the iron, the handle 74 should engage the stop 79 on the funnel, which is the normal or closed position of the valve. To operate the valve for introducing water into the boiler, the handle 74 is turned until the passage-way 75 in the valve 73 registers with the steam outlet 72 through which any steam that may be in the boiler 2 will exhaust downwardly and away from the top of the funnel, thereby preventing injury to the operator. After the steam is exhausted the handle 74 is turned until the passage-way 75 registers with the passage-way 71, so that water can now be introduced into the funnel 70 from which the water will flow through the passage-ways 71 and 75 and the opening 69' into the boiler. After the boiler is filled with water the handle 74 is turned back until the handle engages the stop 79 closing the valve and sealing the boiler.

The handle is secured to the iron by bolts or screws 80 and 81 as shown by Fig. 1.

Various other modifications may be made in this invention without departing from the true spirit and scope thereof, and therefor exact forms shown are to be taken as illustrative only, and not in a limiting sense.

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

1. A dampening iron comprising a pressing surface and a boiler for the reception of steam and water, said boiler having a steam space and a water space, a hollow member communicating with the steam space in said boiler and having its outlet directed towards the work being ironed, said outlet having a valve seat for the reception of a control valve, said valve having a minute opening of less diameter than said outlet, said opening extending longitudinally of the valve with its inlet above the valve seat and its outlet positioned within the valve opening, so that when the valve is seated in said valve seat the steam pressure in said boiler will be greater than when the valve is lifted off its seat, so that low pressure steam may be directed to the material being ironed when the valve is lifted off its seat for steaming the material being ironed, a water inlet communicating with said hollow member adapted to allow a predetermined amount of water into said hollow member to mix the water with the steam, to provide saturated steam in said hollow member, said water inlet extending above the water line in said boiler and up in said steam space so that

water will not enter said hollow member when the iron is on even keel as while ironing but water will enter said hollow member through said water inlet when the iron is lifted off the material being ironed and the toe of the iron turned downwardly for dampening the material being ironed, said valve to be seated when dampening the material and said minute opening in said valve being restricted to retain sufficient steam pressure in said boiler to atomize the saturated steam passing through said minute opening, when the valve is seated.

2. A pressing iron comprising a pressing surface and a steam boiler having a steam space and a water space, a hollow member having one end communicating with the steam space in said boiler and the other end having a steam outlet communicating with an opening in said pressing surface, said member extending from the front of the boiler towards the rear of the boiler and having a water inlet at the forward end and a steam inlet at the rear end, both of said inlets extending above the water space and up into said steam space, so that when the iron is on even keel, as while ironing only steam will be directed to the material being ironed for steaming the material and when the toe of the iron is tilted downwardly water will enter said member through said water inlet at the forward end and steam will enter said member through said steam inlet at the rear of said member for mixing the water with the steam in said member for dampening the material, a control valve having a stem extending through said water inlet, means on the portion of the stem passing through the inlet for removing any obstruction in said water inlet when said valve is manipulated, a valve part at the lower end of said stem and located in said steam outlet for opening and closing said steam outlet, said valve having a smaller opening than said steam outlet so that when said steam outlet is closed by said valve the steam will be forced through said smaller opening and thereby increase the steam pressure in said boiler and atomize the mixed steam and water passing through said small opening, when the iron is lifted off the material being ironed and the toe of the iron tilted downwardly for dampening the material being ironed, and means for heating said pressing surface and the water in said boiler to generate steam.

3. A pressing iron comprising a pressing surface and steam boiler, said boiler having a steam space and a water space, a conduit having one end communicating with said steam space in said boiler and the other end communicating with an opening in said pressing surface for conducting the steam to the material to be ironed, a water inlet formed in said conduit above the water space in said boiler so that water will enter said conduit when the toe of the iron is tilted downwardly for dampening the material being ironed, said conduit having a valve seat formed therein at its lower end, a valve stem having a correspondingly tapered end adapted to be seated in said valve seat, a minute discharge outlet formed in the tapered end of said valve stem with its inlet above the valve seat and its outlet positioned within the valve opening, so that when the valve stem is seated, the steam pressure in the boiler will be greater than when the valve stem is moved off its seat, so as to atomize the water passing through said minute discharge outlet and so the opening in the tapered end of the valve stem will act as an atomizer for the water entering said conduit when the toe of the iron is tilted downwardly for dampening the material being ironed, means cooperable with said valve stem for moving the valve stem on and off said valve seat, so that high and low pressure steam can be conducted to the material being ironed, and means for heating said pressing surface and for heating the water in said boiler to produce steam.

4. A pressing iron comprising a pressing surface and steam boiler said boiler having a steam space and a water space, a conduit having one end communicating with the steam space in said boiler and the other end communicating with an opening in said pressing surface for conducting the steam from said boiler to the material to be ironed, a water inlet communicating with said conduit at its lower end directly from the lower part of said boiler, so as to eliminate water pipes, a rotary valve mounted within the lower end of said conduit having a stem extending within said conduit and provided with means for rotating said valve, said valve having a passage-way communicating with said conduit and with a minute discharge outlet for conducting the steam to the material being ironed, when the valve is in one position, and when said valve is rotated so said passage-way and said minute discharge outlet are in registration with said water inlet at the lower end of of said conduit atomized steam and water will be conducted to the material being ironed for dampening the material, and means for heating said pressing surface and the water in said boiler to produce steam, said minute discharge outlet being restricted to retain sufficient steam pressure in said boiler to atomize the mixture of steam and water passing through said discharge outlet.

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