May 26, 1942. G. T. FIELDING 2,284,411

PRESSING IRON

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Fig. 1.

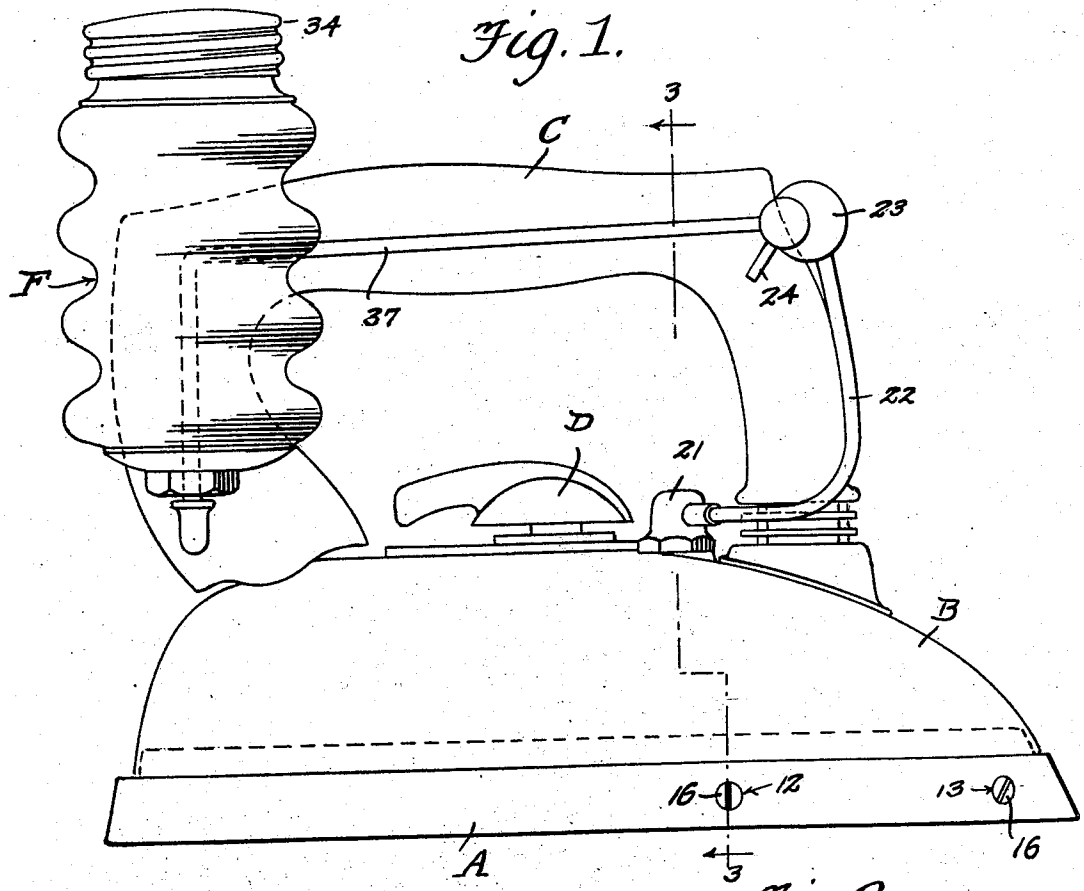
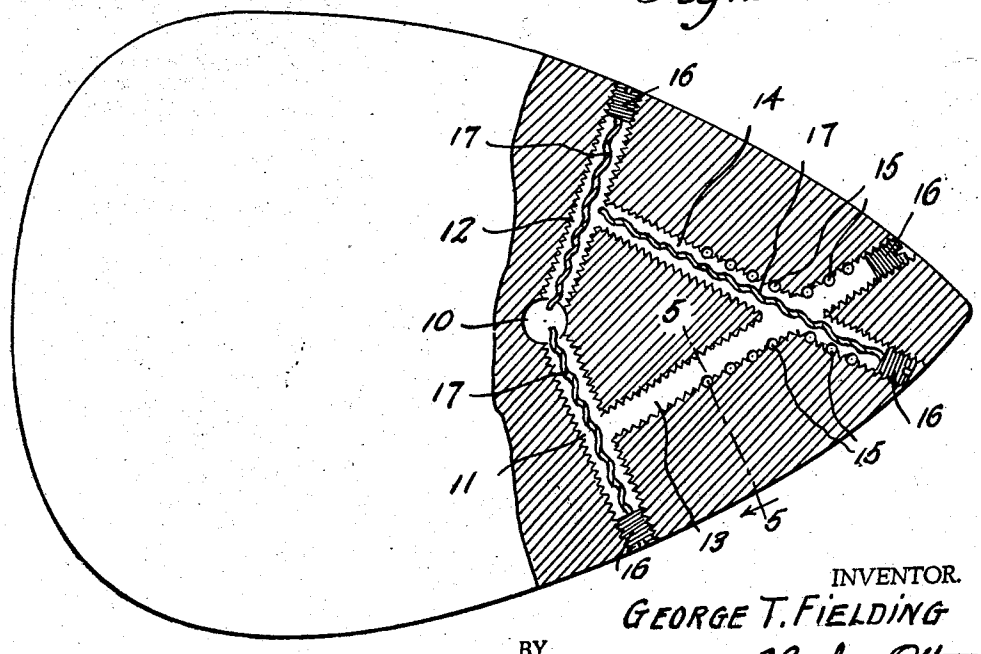


Fig. 2.



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Fig. 3.

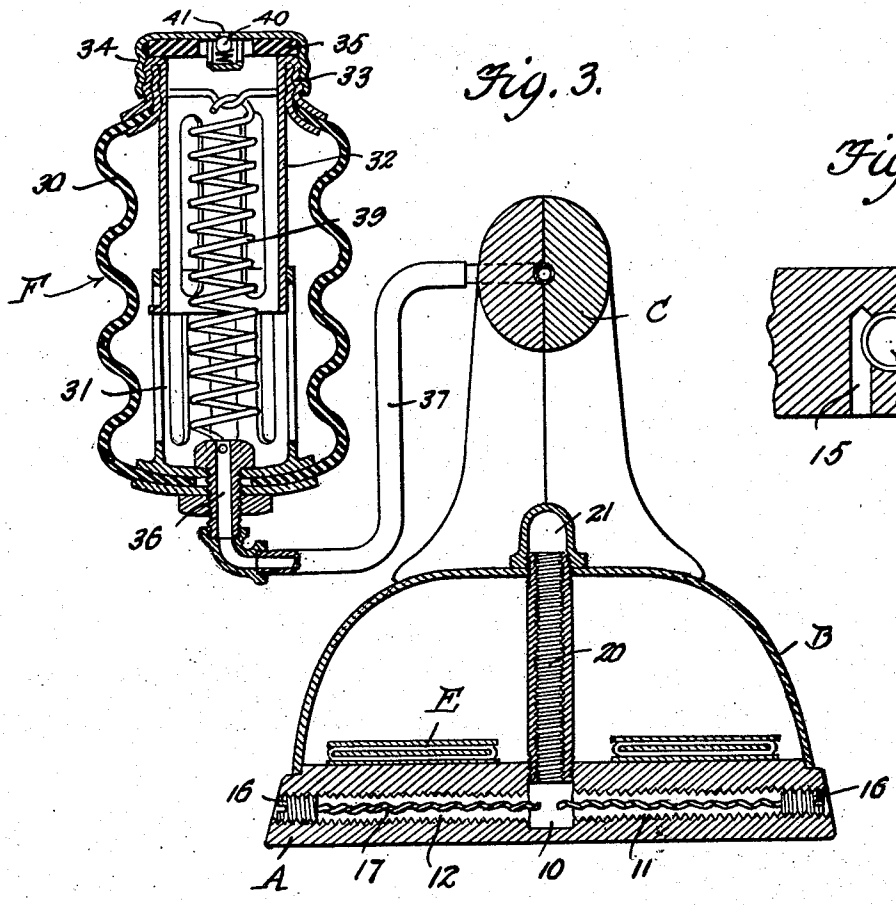
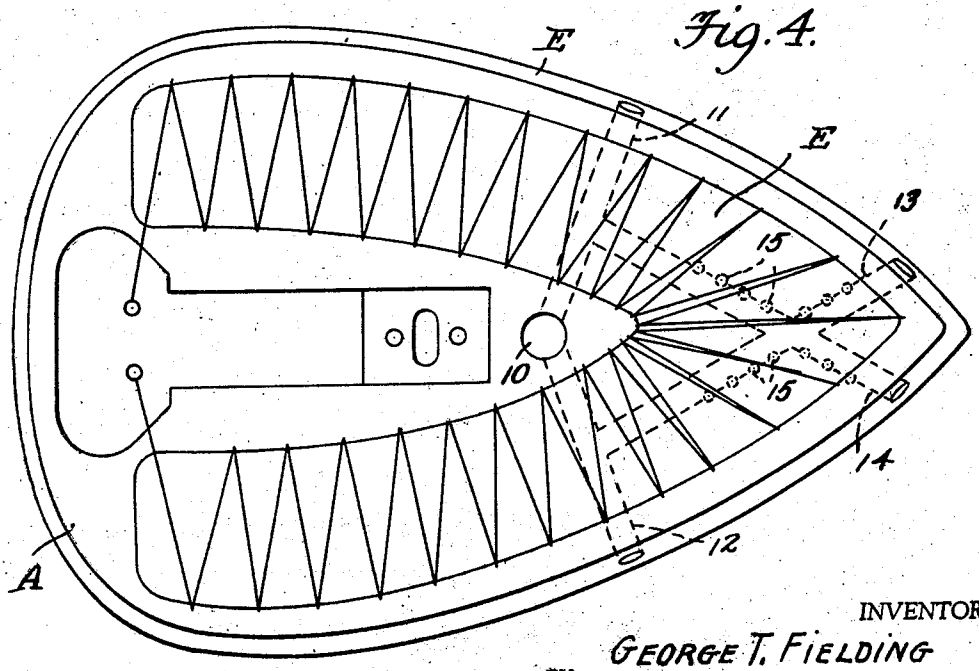


Fig. 5.

Fig. 4.



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UNITED STATES PATENT OFFICE

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PRESSING IRON

George T. Fielding, Stamford, Conn.

Application July 30, 1940, Serial No. 348,497

3 Claims. (Cl. 38—77)

This invention relates to pressing irons, especially those of the electrically heated type, and refers more particularly to a pressing iron which is so constructed and arranged as to provide means for steaming or wetting the material coincident with the pressing of the same by the iron.

The invention broadly comprehends a pressing iron having means for directing steam, water vapor or water therethrough for the emission of the same from the bottom face of the iron and which iron is of such a character that the heat received from the heating element is rapidly conducted throughout the area of the sole plate for maintaining the same in a constantly heated condition and thus preventing chilling thereof while constantly insuring a flow of steam, water vapor or heated water.

More particularly the invention resides in a pressing iron of the character set forth wherein the sole plate is constructed of a material possessing a relatively high degree of heat conductivity and which is so constructed as to provide therein means for receiving water supplied thereto and for continuously and rapidly converting the same into steam while conveying and discharging said steam by the vaporizing pressure through outlets in the pressing face of the sole plate.

The invention is further directed to a steam generating sole plate for pressing irons which is formed with a water receiving recess opening through the upper surface thereof with horizontally disposed laterally directed bores communicating with said recess and longitudinally extending bores communicating respectively with said lateral bores and having outlet openings leading therefrom through the bottom face of the sole plate.

As a further feature the steam generating sole plate has the bores opening at the outermost ends through the marginal edge of the sole plate with a removable plug engaging the outer end of each bore to facilitate periodic cleansing of the bores to remove any possible deposits which might tend to clog the same.

The invention further resides in the provision of helical elements of lesser cross sectional diameter than the bores which are adapted to extend longitudinally thereof to augment the spinning of the water drops against the walls of the bores to insure a rapid vaporization and conversion of the same into steam and which helical elements may be optionally employed or dispensed with where the feeding of hot water is desired to wet the fabric being pressed by the iron.

The invention further embodies an improved pressure fed water supply carried directly by the iron with manually controlled valve means for supplying the water to the receiving chamber to regulate the volume supplied thereto so as to optionally discharge from the outlets in the pressing face, dry steam, wet steam or hot water.

With the above enumerated and other objects in view, the invention is set forth in greater detail in the following specification and illustrated in the accompanying drawings in which:

Fig. 1 is a side view of a pressing iron constructed in accordance with the invention.

Fig. 2 is a bottom plan view thereof with the forepart of the sole plate broken away and shown in section to disclose the underlying structure.

Fig. 3 is a vertical transverse sectional view taken approximately on the line 3—3 of Fig. 1, the reservoir being also shown in section.

Fig. 4 is a plan view of the sole plate removed from the iron and illustrating the relative position of the bores with reference to the heating element of the iron.

Fig. 5 is an enlarged fragmentary vertical sectional view illustrating the construction of one of the bores and outlet openings.

Referring to the drawings by characters of reference, A designates generally the sole plate of an electric iron, B the shell or body portion, C the handle and D the thermostat control for regulating the heat of the iron. The top surface of the sole plate A has mounted thereon the usual electric resistance heating element E and in the present instance the sole plate A is preferably stamped from rolled copper which possesses a high degree of heat conductivity which, assuming silver to be unity, is approximately 98%.

The sole plate is formed adjacent its forward end and transversely medially thereof with a water receiving recess or chamber 10 opening through the upper surface thereof and is provided with horizontally disposed laterally directed bores 11 and 12 which communicate with said recess and respectively open through the opposite sides of the marginal edge of the sole plate with said bores 11 and 12 inclined slightly forward.

The sole plate is also formed with horizontally disposed longitudinally extending bores 13 and 14 which are preferably arranged in intersecting relation, the bore 13 communicating at one end with the bore 11 medially of its length and with the opposite end of said bore 13 opening through

the marginal edge of the sole plate closely adjacent the point thereof. The bore 14 communicates at one end with the lateral bore 12 intermediate its length and extends forwardly therefrom and opens at its opposite end through the marginal edge of the sole plate adjacent the forward point thereof. As shown, the lateral bores 11 and 12 for the major portion of their lengths are directly beneath the heating element E, while the longitudinally extending bores 13 and 14 throughout their lengths are disposed directly under the heating element.

The sole plate 12 is provided with a plurality of outlet openings 15 which open through the lower pressing surface and extend upwardly into intersecting relation with the longitudinal bores adjacent the side edges thereof in order to establish communication with the bores at a point elevated above the lower edges. This functions to retard free gravitational flow of water drops from the longitudinal bores through the outlet openings and makes for a more thorough vaporization and breaking up of the water drops into smaller particles for emission of vaporized steam. As illustrated, the lateral bores 11 and 12 as well as the longitudinal bores 13 and 14 are preferably threaded throughout to increase the heating and vaporizing surfaces of the bores with which the water drops engage.

The outer end of each of the bores is closed by a removable plug 16 which is threadedly engaged within the outer end thereof so that upon removal of the plugs free access may be had to insert a reamer or other cleansing implement for periodically freeing the walls of the bores of deposits which might clog the same and prevent proper functioning of the iron.

In order to further augment the spinning, spiraling or whirling actions of the water particles against the heated walls of the bores to effact more rapid vaporization thereof and the conversion of the same into steam, helical or twisted elements 17 are provided which are of a lesser cross sectional diameter than that of the bores and as illustrated, said elements are preferably carried by the plugs for removal and insertion together therewith. The elements 17 may be optionally used and are particularly desirable where a more rapid and thorough vaporization is required.

Water is supplied to the recess or chamber 10 by means of an internally threaded pipe 20 which is threadedly engaged in the upper end thereof and extends upwardly through the shell or body B of the iron for connection with a coupling 21 located above the shell and communicating with a tubing 22 connected with a valve 23 manually controlled by a manipulating element 24.

Water may be supplied to the valve 23 from any suitable source, but as herein illustrated, a reservoir designated generally by the reference character F is shown. The reservoir F consists of a fluted cylindrical body 30 of a resilient or elastic material, such as rubber or rubberized fabric, which has sealed and secured to its lower end a rigid foraminated tube 31 arranged internally thereof and extending upwardly from the lower end. A similar foraminated rigid tube 32 is secured in sealed relation to the upper end of the body and extends downwardly therefrom and is telescopically fitted within the lower tube section. The upper end of the tube 32 is formed with an externally threaded neck 33 for receiving a closure cap 34 provided with an internal gasket 35 to seal the upper end of the reservoir against leakage and to permit, when removed, the filling of the reservoir with water. The lower end of the body has extending therethrough an outlet pipe 36 which is connected and communicates with a feed tube 37 extending laterally into and longitudinally of the handle C where it establishes communication with the valve 23. The reservoir is thereby connected with and supported by the iron.

In order to insure a positive feed of the water under pressure to the valve 23, a coiled contractile spring 39 is connected at its opposite ends respectively to the tube section 31 adjacent its lower end and the tube section 32 adjacent its upper end, the spring functioning to clasp the body F vertically or longitudinally. After the water supply has been optionally fed under pressure to the valve and iron, the pressure may be increased without refilling by providing a check valve 40 in the cap which opens by exerting an upward pull on the reservoir cap to admit air and expand the spring 39. When the filling spring is released, the check valve seals the vent opening 41 and the air trap above the water level will provide an additional pressure to feed the remaining water to the control valve 23.

From the foregoing it will be apparent that the iron may be used without water in its ordinary capacity as a pressing iron. It is also apparent that by manipulating the element 24 to fully open the valve 23, the volume of water feed may be increased to its maximum so as to rapidly supply water to the recess or chamber 10 and thence through the bores 11, 12, 13 and 14 to the outlet openings 15 thereby supplying raw heated water to the material being pressed where it is desired to wet the same. By cutting down the volume of water supplied to the sole plate, the degree of wetness is reduced and the vaporization of the water supplied is increased so as to emit from the outlets 15 dry steam where it is desirable. If the water is fed in drops to the chamber 10 at its spaced intervals, the drops will be shattered and forced by the shattering along the bores 11 and 12 and lengthwise of the longitudinal bores 13 and 14 which, together with the helical elements 17 and internally threaded walls of the bore, will be caused to spin or whirl to subdivide the water drops into finely divided particles which, due to the force of the shattering, generates steam and steam pressure which is eventually emitted through the outlet openings 15 from the pressing surface adjacent the forepart of the iron. Due to the fact that the sole plate is constructed of rolled copper having a high degree of conductivity, the chilling effect of the water is counter-acted by the rapidity with which the heat is conducted from the heating element E and a highly vaporized dry steam is insured when desired which avoids any possibility of spots of water being emitted with the steam, and the iron becoming chilled.

Furthermore, the pressing surface of the sole plate being of copper provides rapid transmission of heat to the fabric without the reflective action incident to the usual chrome surface plated iron and which latter has been found to be less efficient for removing wrinkles when employing steam.

What is claimed is:

1. In a pressing iron, a steam generating sole plate constructed of a material possessing a relatively high degree of heat conductivity and formed with a water receiving recess opening

through the upper surface thereof, said sole plate having horizontally disposed laterally directed bores communicating with said recess, and longitudinally extending bores communicating respectively with said lateral bores and having outlets leading therefrom and opening through the bottom face of the sole plate, said bores being threaded throughout and each opening at the outermost end thereof through the marginal edge of the sole plate.

2. In a pressing iron, a steam generating sole plate constructed of a material possessing a relatively high degree of heat conductivity and formed with a water receiving recess opening through the upper surface thereof, said sole plate having horizontally disposed laterally directed bores communicating with said recess, and longitudinally extending bores communicating respectively with said lateral bores and having outlets leading therefrom and opening through the bottom face of the sole plate, said bores being threaded throughout and each opening at the outermost end thereof through the marginal edge of the sole plate, a removable plug threadedly engaging within the outer end of each bore, and a helical element of lesser diameter than said bores and carried by certain of said plugs for extending axially thereof.

3. In an electric pressing iron, an electrical resistance heating element, a sole plate of solid high density copper with which the heating element intimately contacts for direct transmission of the heat therefrom to the sole plate, said sole plate having longitudinally threaded ducts located wholly within the confines thereof and having outlets communicating with the ducts, depending therefrom and opening through the forepart of the lower pressing surface of the sole plate, said ducts adapted to receive water for conversion of the same into steam and the emission of said steam from said outlets, the said ducts being located directly beneath and in close proximity to the electrical resistance heating element.

GEORGE T. FIELDING.