EUROPEAN PATENT SPECIFICATION

Date of publication and mention of the grant of the patent: 09.04.1997 Bulletin 1997/15

Application number: 93830016.7

Date of filing: 21.01.1993

Steam iron with extractable water container
Bügeleisen mit abnehmbarem Wasserbehälter
Fer à repasser avec réservoir d’eau amovible

Designated Contracting States:
BE CH DE ES FR GB LI SE

Priority: 21.01.1992 IT FI920013

Date of publication of application: 28.07.1993 Bulletin 1993/30

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Description

Steam irons with a water measuring device for filling the reservoir are known, along with steam irons which have a completely removable front section incorporating pumps, valves, plugs and various devices. Both solutions are costly, complicated and easily damaged.

Document EP-A-0 402 256 discloses a steam iron comprising a plate, heating means for said plate, said plate and said means cooperating to form a vaporization chamber, a seating extending from the rear end of the iron and a container designed to be inserted into and extracted from said seating.

Steam irons also require the use of distilled water to prevent the formation of lime in the plate.

The present invention relates to a steam iron which is extremely simple and very low-cost and which ensures greater safety, since filling and emptying of the steam iron are performed away from the electrical parts; greater reliability, owing to its extreme simplicity and the direct application to the evaporation chamber without the need for valves, ducts or the like, thus reducing the possibility of failure or breakage; considerably lower production costs.

The steam iron according to the invention is of the type disclosed in EP-A-0 402 256 and it is characterized in that it further comprises a tank for the water to be supplied to said vaporization chamber, with a calibrated passage adjustable by means of a shaped stem, said tank being partially bounded by a wall, said wall being the end wall of the seating and being provided with a communication hole; said container is provided with a tubular filling mouth designed to penetrate into said hole so as to establish communication between said tank and said container; and it further comprises an obturator inside said tank biased elastically so as to close off said hole and capable of being moved away from said hole by the tubular mouth upon insertion of the container into said seating.

Other characteristic features of the invention are defined by the secondary claims.

The invention will be understood better with reference to the description and accompanying drawing which shows a non-limiting embodiment of the invention itself. In this drawing:

Fig. 1 shows the iron with the container inserted, in longitudinal section;
Fig. 2 shows a view and partial section along II-II of Fig. 1, in very schematic form;
Figs. 3 and 4 show two cross-sections along III-III and IV-IV of Fig. 1;
Figs. 5 and 6 show a side view and partial section of the steam iron without container, and the container isolated and in partial section.

In the drawing, 1 denotes the plate of the iron, which is heated by means of a resistor 3 extending in the approximate shape of a horse shoe and incorporated in the shoulder 1A which partially surrounds the vaporization chamber 5. The plate 1 is fixed, by means of brackets 7, to an overlying casing 9 which is suitably shaped.

On top of this casing 9 there is further located a shell 11 which is combined with the casing and is shaped so as to form, among other things, the handle 11A of the iron. 13 denotes a seal between the casing 9 and the shell 11.

In the rear part of the iron, the casing 9 and the shell 11 define a seating 15 open at the rear and extending parallel to the plate 1; the seating 15 is defined by an end wall 17 provided with a hole 17A. The casing 9 and the shell 11 define a tank 19, which is partially bounded by said wall 17. Inside the tank 19 a bracket 21 forms a sliding seat for an obturator 23 which is biased by a spring 25 so as to close the opening 17A of the wall 17 bounding the tank 19.

A container 27 forming a measuring device for replenishing the iron with water may be slidably inserted into the seating 15. This container 27 is shaped so as to occupy the seating 15 and has a tubular mouth 27A capable of penetrating through the hole 17A when the container 27 is inserted fully into the seating 15. The tubular mouth 27A may receive a cartridge 29 forming a filter for demineralizing the water which can be delivered from the container 27 into the tank 19. The tubular mouth 27A has - on its externally protruding edge - recesses 27B capable of ensuring communication between the container 27 and the tank 19 when this container 27 has been inserted and, via the mouth 27A, lifts the obturator 23 against the action of the spring 26. An annular seal 30 surrounds the protruding part of the tubular mouth 27A so as to rest against the wall 17 when the container 27 is inserted.

When the container 27 is extracted, the obturator 23 is able to rest against the wall 17 so as to close the hole 17A, biased by the spring 26. When completely inserted, the container is held in position by an elastic tooth 31, which may be depressed manually in the direction of the arrow 311 in order to extract the container. The container 27 has a part 27C shaped so as to accommodate the dimensions of a thermostat 33 arranged on one side of the iron and adjustable by means of displacement of an operating member 33A along a slit 9T in the casing 9. The thermostat 33 controls the temperature of the plate 1 and the power supply of the resistor 3.

In the bottom of the tank 19 there is formed a calibrated passage 35 inside which the position of a shaped stem 37 can be axially adjusted, said stem being integral with an operating member 39 projecting from a slit 11V in the shell 11, so as to regulate the movement of water under gravity from the tank 19 to the vaporization chamber 5 heated by the resistor 3.

Inside the shell, alongside the regulating member 39, there are formed two cylinders 41 and 43 for two small pumps, the pistons of which are biased by springs for lifting and sucking and by pushbuttons for lowering...
and delivery of quantities of water drawn from the tank 19. The drawing shows the piston 45 of the cylinder 41, the spring 47 and the pushbutton 49 which can be operated in the direction of the arrow 44 against the action of the spring 47, so as to force water into a duct 51 which leads into the vaporization chamber 5, when a quantity of steam is required greater than that generated by the water flowing through the orifice 35 controlled by the stem 37; the water is supplied to the pump 41, 45 by a suction duct 53 which extends down to the bottom of the tank 19. The elements of the other piston pump which are visible are: the cylinder 43, the suction duct 55 similar to the duct 53, the pushbutton 57 which is operated in the direction 57, and the delivery duct 59 for an external nozzle 61 which can be directed forwards and downwards so as to be able to project water onto the garment to be ironed, where this is required in addition to delivery of the steam supplied by the water flowing from the orifice 35 or from the duct 51.

63 denotes the electrical power supply obtained by means of a "flying cable" in accordance with well-known arrangements.

When the reservoir 27 is extracted (Figs. 5 and 6) the hole 17A in the wall 17 is closed by the obturator 23 which is pressed by the spring 25, so that any water present in the tank 19 is unable to flow out from the hole 17A. The extracted reservoir (Fig. 6) can be easily filled with water by placing it in the vertical position and removing the cartridge 29 from the tubular mouth 27A with the aid of a lug 29C on the cartridge itself. After reintroducing the cartridge 29 (if this cartridge is required for correction of the water), the container 27 is reinserted into the seating 15 with automatic lowering of the tooth 31 until the latter clicks into the notch 27E for retaining the container itself inside the seating 15, when this condition is reached, the container 27 with its edge forming the recesses 27B passes beyond the hole 17A and pushes the obturator 23 against the action of the spring 25, lifting it from the wall 17 so as to reestablish communication between the container 27 and the tank 19.

The steam from the vaporization chamber 5 is emitted below the plate 1 via a series of holes 1F distributed in an arrangement which is conventional per se, the holes being suitably shaped for the requirements of ironing.

Claims

1. An iron comprising a plate (1), heating means (3) for said plate (1), said plate and said means cooperating to form a vaporization chamber (5), a seating (15) extending from the rear end of the iron, a container (27) designed to be inserted into and extracted from said seating (15); characterized in that:
   - it further comprises a tank (19) for the water to be supplied to said vaporization chamber, with a calibrated passage (35) adjustable by means of a shaped stem (37), said tank being partially bounded by a wall (17), said wall being the end wall (17) of the seating (15) and being provided with a communication hole (17A);
   - said container (27) is provided with a tubular filling mouth (27A) designed to penetrate into said hole (17A) so as to establish communication between said tank (19) and said container (27); and
   - it further comprises an obturator (23) inside said tank (19) biased elastically so as to close off said hole (17A) and capable of being moved away from said hole by the tubular mouth (27A) upon insertion of the container (27) into said seating (15).

2. The iron as claimed in claim 1, comprising a seal (30) around said tubular mouth (27A) of the container (27) designed to cooperate with said end wall (17) around said hole (17A).

3. The iron as claimed in claim 1, wherein said tubular mouth (27A) forms a seat for an extractable cartridge (29) which contains demineralizing and filtering material.

4. The iron as claimed in claim 1 or 2 or 3, comprising an elastic tooth (31) which is designed to retain the said container in the seating and can be released manually for extraction from said seating.

5. The iron as claimed in claim 1, comprising a casing (9) engaged with the plate (1) and a shell (11) combined with said casing; said casing and said shell in combination forming the tank (19) and the seating (15) for the container.

6. The iron as claimed in claim 5, wherein said shell forms the cylinders (41, 43) of small pumps operated via pushbuttons (49, 57) so as to deliver, respectively, additional water to the vaporization chamber (5) and water to be sprayed in front of the iron via a nozzle.

7. The iron as claimed in claim 5, wherein said seating (15) and said container (27) extend below the handle (11A) formed by said shell, and parallel to the plate (1).

Patentansprüche

1. Bügeleisen mit einer Platte (1), einer Heizeinrichtung (3) für die Platte (1), wobei die Platte und die Einrichtung zur Bildung einer Verdampfungskammer (5) zusammenwirken, einem sich vorn hinteren
Ende des Bügeleisens erstreckenden Sitz (15) und einem Behälter (27), der in den Sitz (15) einsetzbar und aus ihm herausnehmbar ist; dadurch gekennzeichnet, daß:

- es ferner einen Tank (19) für das der Verdampfungskammer zuzuführende Wasser aufweist, mit einem kalibrierten Durchlaß (35), der mittels eines profilierten Schaftes (37) einstellbar ist, wobei der Tank teilweise von einer Wand (17) begrenzt ist, die die Endwand (17) des Sitzes (15) ist und mit einem Verbindungsloch (17A) versehen ist;
- der Behälter (27) mit einer rohrförmigen Füllöffnung (27A) versehen ist, die in das Loch (17A) hineinragt und so eine Verbindung zwischen dem Tank (19) und dem Behälter (27) herstellt; und
- es ferner ein Verschlußglied (23) innerhalb des Tanks (19) aufweist, das derart federbelastet ist, daß es das Loch (17A) verschließt und beim Einsetzen des Behälters (27) in den Sitz (15) durch die rohrförmige Mündung (27A) von dem Loch wegbewegbar ist.

2. Bügeleisen nach Anspruch 1, mit einer Dichtung (30) um die rohrförmige Mündung (25a) des Behälters (27), die mit der Endwand (17) um das Loch (17a) herum zusammenwirkt.

3. Bügeleisen nach Anspruch 1, bei dem die rohrförmige Mündung (27A) einen Sitz für eine herausnehmbare Patronen (29) bildet, die Entmineralisierungs- und Filtermaterial enthält.

4. Bügeleisen nach Anspruch 1, 2 oder 3, mit einem elastischen Zahn (31), der den Behälter in dem Sitz zurückhält und für die Herausnahme aus dem Sitz von Hand freigebar ist.

5. Eisen nach Anspruch 1, mit einem auf der Platte (1) aufsitzenden Gehäuse (9) und einer mit dem Gehäuse kombinierten Schale (11), wobei das Gehäuse und die Schale zusammen den Tank (19) und den Sitz (15) für den Behälter bilden.

6. Bügeleisen nach Anspruch 5, wobei die Schale die Zylinder (41, 43) von kleinen Pumpen bildet, die über Druckknöpfe (59, 57) betätigbar sind, um zusätzliches Wasser zur Verdampfungskammer (5) bzw. Wasser, das vor dem Bügeleisen mittels einer Düse zu versprühen, zuzuführen.

7. Bügeleisen nach Anspruch 5, bei dem der Sitz (15) und der Behälter (27) sich unterhalb des von der Schale gebildeten Griffs 11a und parallel zur Platte (1) erstrecken.

Revidierungen

1. Fer à repasser comportant une semelle (1), un moyen de chauffage (3) pour ladite semelle (1), ladite semelle et ledit moyen coopérant pour former une chambre de vaporisation (5), un logement (15) s'étendant depuis l'extrémité arrière du fer, un récipient conçu pour être introduit dans ledit logement (15) et enlevé de ce dernier ; caractérisé en ce que :

il comporte en outre un réservoir (19) pour l'eau à fournir à ladite chambre de vaporisation, avec un passage calibré (35) réglable à l'aide d'une tige profilée (37), ledit réservoir étant partiellement délimité par une paroi (17), ladite paroi étant la paroi d'extrémité (17) du logement (15) et étant pourvue d'un trou de communication (17A) ;

ledit récipient (27) est pourvu d'une embouchure tubulaire de remplissage (27A) conçue pour pénétrer dans ledit trou (17A) de façon à établir une communication entre ledit réservoir (19) et ledit récipient (27) ; et

il comporte en outre un obturateur (23) à l'intérieur dudit réservoir (19) sollicité de manière élastique de façon à obérer ledit trou (17A) et apte à être écarté dudit trou par l'embouchure tubulaire (27A) au moment de l'introduction du récipient (27) dans ledit logement (15).

2. Fer à repasser selon la revendication 1, comportant un joint d'étanchéité (30) autour de ladite embouchure tubulaire (27A) du récipient (27) conçu pour coopérer avec ladite paroi d'extrémité (17) autour dudit trou (17A).

3. Fer à repasser selon la revendication 1, dans lequel ladite embouchure tubulaire (27A) constitue un support pour une cartouche amovible (29) qui contient un agent de déminéralisation et de filtration.

4. Fer à repasser selon la revendication 1 ou 2 ou 3, comportant une dent élastique (31) qui est conçue pour retenir ledit récipient dans le logement et qui peut être neutralisée manuellement pour sortir celui-ci dudit logement.

5. Fer à repasser selon la revendication 1, comportant un boîtier (9) placé contre la semelle (1) et un capot (11) combiné avec ledit boîtier ; ledit boîtier et ledit capot formant en combinaison le réservoir (19) et le support (15) pour le récipient.

6. Fer à repasser selon la revendication 5, dans lequel
ledit capot forme les cylindres (41, 43) de petites pompes actionnées à l'aide de boutons-poussoirs (49, 57) afin de fournir, respectivement, un complément d'eau à la chambre de vaporisation (5) et de l'eau à pulvériser à l'avant du fer à repasser via une buse.

7. Fer à repasser selon la revendication 5, dans lequel le dit logement (15) et le dit récipient (27) s'étendent sous la poignée (11A) formée par le dit capot, et parallèlement à la semelle (1).