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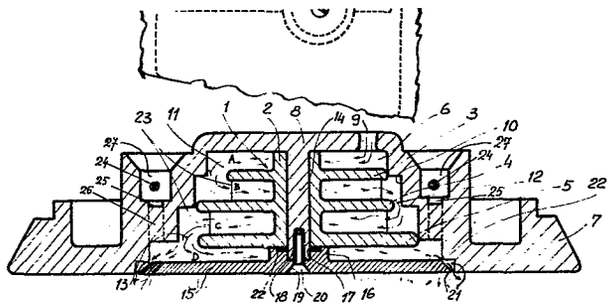
(54) Withdrawable quick steaming device for electric steam vapor irons of the dripping type.

(57) The steaming device according to the present invention comprises a finned body (1), the fins (3, 4, 5) thereof are spaced in the height direction in such a way as to provide gaps (B, C) for the passage of water and steam. The gaps (B, C) communicate with one another at alternatively opposite points (11, 12, 13) of the fins (3, 4, 5) in such a way as to define a labyrinth path for water and steam. The finned body (1) is effective to be inserted into a mating shape housing (6) as formed in the lower or bottom surface of the ironing plate (7) in such a way that the fins (3, 4, 5) form with the walls of the housing (6) tight seals. Fixing means (14) are further provided for fixing the finned body in its housing (6), as well as a plate member (15) for closing the housing (6) of such a size as to leave between the edges thereof and those of the housing (6) a slot (21) for the outflow of the steam generated in the finned body (1) which is heated by conduction by the heat generated by the conventional ironing plate heating resistance elements (24). These latter are housed in a groove (27) thereunder there is formed, all along the lenght thereof, a channel (25) receiving the steam generating water flow, and communicating with the steaming device housing (6) in such a way as to cause the superheated steam to exit the delivery slots (21).



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TITLE

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The present invention relates to a steaming device for electric steam vapor irons, and, more specifically, a steaming device for electric steam vapor irons of the dripping type effective to provide a quick evaporating of the water passing therethrough and to be easily withdrawn from the iron.

As it is known the presently commercially available electric steam vapor irons are provided with water vaporizing devices built in the ironing plate and communicating with the outside through holes or ports as formed in the ironing plate itself.

The main drawback of these known water vaporizing devices is that, as water continues to evaporate therein, limestone deposits form on the walls and portions of said devices which, in addition to reducing the volume of the generated steam, cause wear to the vaporizing device material and obstruct the device itself.

Since the vaporizing device is built in the ironing plate, this drawback may be alleviated only by disassemblying the iron and washing the ironing plate with suitable cleaning solutions and

then by assemblying again the iron. These operations owing to the complexity of the modern irons can be carried out only by specialized personnel, thereby they are rather expensive, in addition to requiring a lot of time.

Accordingly the task of the present invention is to eliminate the thereinabove mentioned drawbacks by providing a steaming device for electric steam vapor irons, of the dripping type, which is effective to carry out an instantaneous evaporation of the water drops dripping therein and which can be easily withdrawn or removed from the ironing plate even in the case in which great limestone deposits are present, in such a way as to allow for the user to clean the vaporizing device, without requiring the intervention of specialized personnel.

According to one aspect of the present invention the thereinabove mentioned task is achieved by a withdrawable steaming device for electric steam vapor irons of the dripping type, characterized in that it comprises a finned body, the fins thereof are spaced in the height direction

in such a way as to provide gaps for the passage of water and steam, said gaps communicating with one another at alternatively opposite points of said fins in such a way as to define a labyrinth path for the water and steam, said finned body being effective to be inserted into a mating shape seat or housing, as formed in the lower surface of the iron plate in such a way that said fins form with the walls of said housing tight seals, fixing means for fixing said finned body in said housing and a plate member for closing said housing of such a size as to leave between the edges thereof and those of said housing a slot for the outflow of the steam generated in said finned body by the known ironing plate heating resistance elements.

Preferably the communication of the gaps at alternatively opposite points or regions is obtained by longitudinally or transversely staggering the fins in such a way that said fins are effective to form, as they are located in said housing, openings or ports for the passage therethrough of water and steam and defined by an edge of each said fin and said housing wall.

Advantageously the finned body is formed by

a hollow tubular central portion and by ribs coupling to one another the water vaporizing fins.

Preferably the means for fixing the finned body in its housing consist of a pin rigid with the housing upper wall, the pin being provided for being engaged in the hollow tubular portion of the finned body and being provided at the bottom thereof with a threaded hole for engaging a coupling screw.

Advantageously the bottom closure plate member is provided with a circular ridge including a hollow effective to receive the bottom portion of the fixing pin and a through hole thereby, by screwing on a screw in the through hole of the plate member, the finned body and bottom closure plate member are simultaneously fixed to one another.

Further advantageously the edges of the bottom closure plate member are provided with a beveled portion effective to cooperate with the side wall of the finned body housing in such a way as to form the steam outlet slot.

Preferably the finned body housing is provided with a stepped side wall effective to

improve the sealing with the fin edges.

Advantageously a channel is provided formed in the resistance element housing groove and communicating with the steaming device housing through spaced holes, the channel being effective to receive the steam generating water flow.

Further characteristics and advantages of the invention will become more apparent from the following detailed description of an embodiment thereof, being illustrated in the accompanying drawing, where:

fig.1 is a schematic cross-section view illustrating the steaming device according to the present invention; and

fig.2 is a bottom plan view of the lower closure plate member for closing the steaming device housing.

With reference to the drawing, the steaming device according to the present invention comprises a finned body 1, consisting of a hollow tubular portion 2 therefrom perpendicularly extend fins 3,4,5 spaced from one another in the height direction along said hollow tubular portion 2.

The fins 3,4,5 define therebetween gaps or interspaces B,C provided for allowing for the passage of water and steam.

The finned body 1 is inserted in a seat or housing 6,formed in the ironing plate 7,which has a top wall 8 provided with a hole 9 for dripping water and a side stepped wall 10.

The fins 3,4 and 5 rest in a sealed way on the respective step all along the periphery thereof,with the exception of a side,which side is alternatively provided at opposite points or regions in such a way as to form openings or ports for the passage of water and steam and communicating to one another the gaps B and C at the points 11,12 and 13 thereby providing a labyrinth type of path,indicated in the drawing by the direction arrows.

The top wall 8 of the housing is provided with a central pin 14,downwardly directed,which can be inserted into the hollow 2 for supporting the finned body 1 in place.The hollow 2 upwardly extends beyond the top fin 3 thereby,as the finned body is inserted on the pin 14 and the top surface of the tubular portion abuts on the top wall 8 of the housing 6,a further gap A is formed.

At the bottom the housing 6 is closed by a closure bottom plate member 15, provided with a cylindrical ridge 16 having a central hollow 17 effective to receive the lower end of the pin 14, which has a threaded hole 18. The bottom closure plate 15 is provided with a through hole 19, coaxially extending with respect to the ridge 16 and provided for receiving a screw 20 to be screwed in the threaded hole 18 of the pin 14. This screw 20 is therefore effective to affix the finned body 1 and the plate member 15, with the interposition of a gasket 22, to the ironing plate 7 of the steam iron. More specifically the closure plate member 15 is of such a size that, as it is fixed to the ironing plate 7, a peripheric slot 21 is defined between the edges thereof, which are suitably beveled, and the edges of the housing 6. This slot 21 is provided for allowing for the generated steam to exit the steaming device.

The cylindrical ridge 16 forms with the finned body 1 a further gap or interspace D. The fins 3, 4, 5 are suitably coupled to one another, for stiffening purposes, by ribs 23 also acting to define the path between the gaps B and C.

The thus described vaporizing or steaming device is heated to a temperature suitable for providing a quick vaporizing of the water droplets, by conduction of the heat generated by the conventional heating resistance elements which heats the ironing plate 7, the heat being transmitted through the pin 14 to the tubular portion 2, the ribs 23 and also owing to the contact of the fins 3,4 and 5 with the side wall 10 of the housing 6.

As it will be apparent, the finned body 1 is located in the seat or housing 6 of the ironing plate 7 between the dripping hole 9 and the bottom closure plate member 15.

The water drops, by flowing from the dripping hole 9, contact the first fin 3 which, being heated, causes the vaporizing process to begin, the formed steam buiding up in the gap A.

Then the drops move downwardly together with the steam, through the opening 11, and come into contact with the underlying fin 4, thereby they are further vaporized and produce steam in the gap B; then they move downwardly, through the opening 12, and contact the underlying fin 5, where they are definitely vaporized in such a way as to generate steam in the gap C which steam, through the opening

13, arrives at the gap D and exits through the slot 21.

According to a further feature of the present invention, at the bottom of the groove 27 therein the heating resistance element 24 is housed, there is formed a channel 25 extending all along the lenght of said groove and being effective to receive the water flow pumped by the conventional pump (not shown) provided for producing the steam, and which is operated any time a suitable push-button (not shown) is pressed. The water, by operation of the pump, distributes all along the channel 25 and, by contacting the bottom portion of the heating resistance element 24, istantaneously vaporizes and, passing through the holes or ports 26, enters the gap D of the housing 6 of the steaming device 1 and exits through the slots 21.

From the above disclosure it will be apparent that a quick evaporation steaming device for electric steam vapor irons has been realized which may be easily removed from the ironing plate 7 by simply screwing off the screw 20 and then assembled again by simply screwing on said screw 20. It should also be noted that the steaming device according to

the invention is a practically monolithic body, which can be easily handled and cleaned also by not specialized personnel. Furthermore the fact of having increased to a maximum degree the heating surface provides an absolute guarantee of a full and quick vaporizing of the water drops passing through the steaming device.

While the present invention has been thereinabove described with reference to the embodiment thereof illustrated in the accompanying drawing, it should be noted that it is not limited to the disclosed embodiment, being susceptible to all variations and modifications falling within the scope thereof.

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C L A I M S

1- A withdrawable steaming device for electric steam vapor irons of the dripping type, characterized in that it comprises a finned body, the fins thereof are spaced in the height direction in such a way as to provide gaps for the passage of water and steam, said gaps communicating with one another at alternatively opposite points of said fins in such a way as to define a labyrinth path for the water and steam, said finned body being effective to be inserted into a mating shape seat or housing, as formed in the lower surface of the iron plate in such a way that said fins form with the walls of said housing tight seals, fixing means for fixing said finned body in said housing and a plate member for closing said housing of such a size as to leave between the edges thereof and those of said housing a slot for the outflow of the steam generated in said finned body by the known ironing plate heating resistance elements.

2- A steaming device according to claim 1, characterized in that the communication of said gaps at alternatively opposite points or regions is obtained by longitudinally or transversely staggering said fins

in such a way that said fins are effective to form, as they are located in said housing, openings or ports for the passage therethrough of water and steam and defined by an edge of each said fin and said housing wall.

3- A steaming device according to claims 1 and 2, characterized in that said finned body is formed by a hollow tubular central portion and by ribs coupling to one another the water vaporizing fins.

4- A steaming device according to claim 1, characterized in that said means for fixing said finned body in said housing consist of a pin rigid with said housing upper wall, said pin being provided for being engaged in said hollow tubular portion of said finned body and being provided at the bottom thereof with a theraded hole for engaging a coupling screw.

5- A steaming device according to claim 1, characterized in that said bottom closure plate member is provided with a circular ridge including a hollow effective to receive the bottom portion of the fixing pin and a through hole, thereby, by screwing on a screw in said through hole of said plate, the finned body and bottom closure plate member are simultaneosly fixed to one another.

6- A steaming device according to claim 5, characterized in that the edges of said bottom closure plate member are provided with a beveled portion effective to cooperate with the side wall of the finned body housing in such a way as to form said steam outlet slot.

7- A steaming device according to claim 1, characterized in that said finned body housing is provided with a stepped side wall effective to improve the sealing with said fin edges and facilitate the withdrawal of said steaming device.

8- A steaming device according to claim 1, characterized in that a channel is provided formed in the resistance element housing groove and communicating with said steaming device housing through spaced holes, said channel being effective to receive the steam generating water flow.

Fig. 2

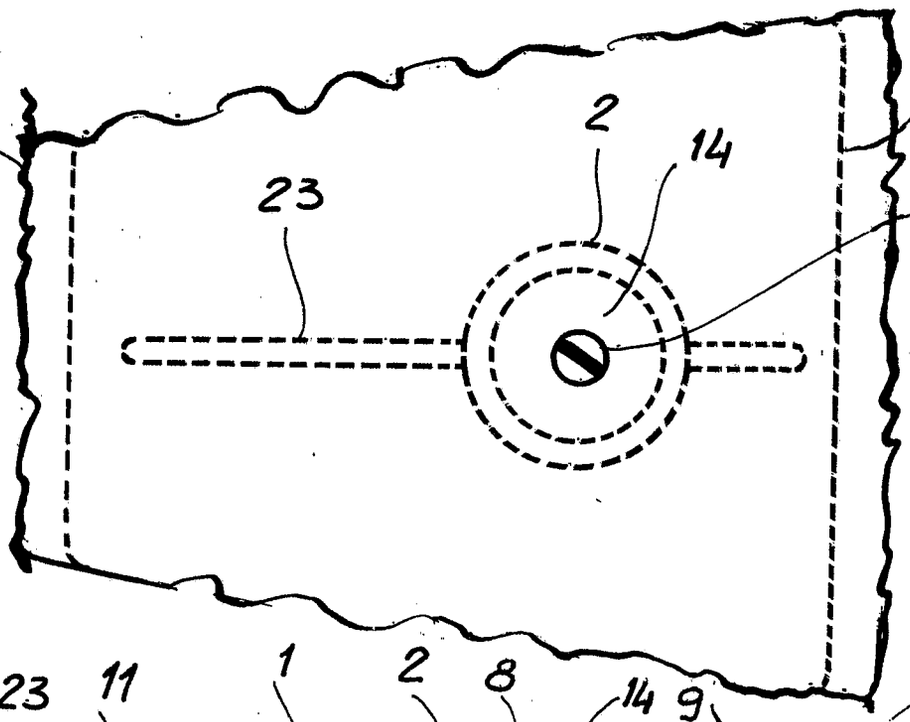

Fig. 2

Fig. 1

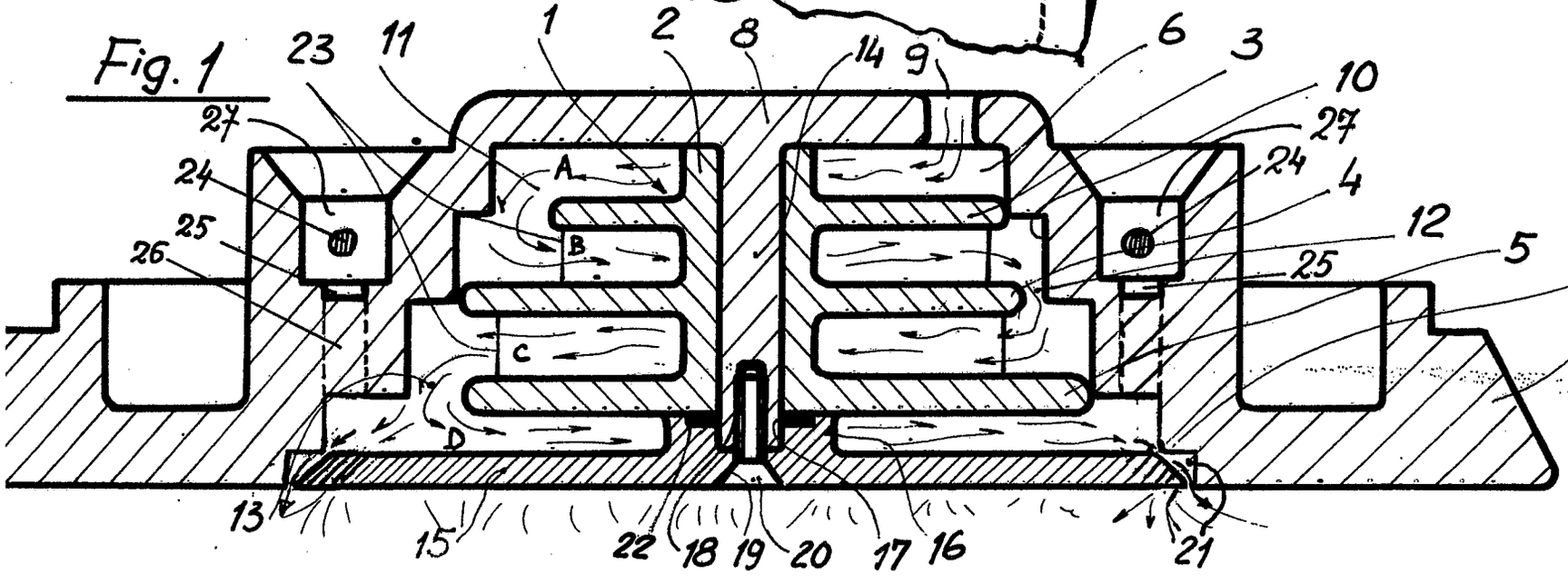

Fig. 1

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EUROPEAN SEARCH REPORT

0055229
Application number

EP 81 83 0246

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	GB - A - 831 574 (THOMSON HOUSTON) * Claims 1-3; figures *	1
A	GB - A - 1 380 415 (BRITISH DOMESTIC APPLIANCE) * Pages 3, lines 1-45 *	1
A	DE - B - 1 140 542 (ROWENTA) * Claims *	1
A	DE - B - 2 654 781 (ROWENTA) * Column 2, lines 43-65 * & GB - A - 1 587 869	1
A	CH - A - 395 011 (ROBOT)	
A	US - A - 1 674 092 (BREWER)	
A	US - A - 2 803 073 (RAIHLE)	
A	US - A - 2 863 590 (GIESSE)	

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

D 06 F 75/18

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

D 06 F
F 22 B
A 47 J

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
Y: particularly relevant if combined with another document of the same category
A: technological background
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E: earlier patent document, but published on, or after the filing date
D: document cited in the application
L: document cited for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	05-03-1982	D'HULSTER

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