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(54) **IRON**

BÜGELEISEN

FER A REPASSER

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(56) References cited:
EP-A- 0 713 937
DE-A1- 3 720 617
DE-A1- 4 107 236
DE-U1- 8 805 438
JP-A- 54 015 090

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Description

FIELD OF THE INVENTION

[0001] The present invention concerns an iron, of the electric or steam type, used for ironing garments or fabrics in general. To be more exact, the iron according to the present invention comprises an ironing plate made of a first material, and having the greater part of its lower surface covered by an ironing element made of a second material, different from the first, in order to render the ironing operations more simple and efficient.

BACKGROUND OF THE INVENTION

[0002] Irons are known, whether they be of the electric or steam type, used for ironing fabrics and provided with an ironing plate, normally made of a light metal material, such as aluminum or other, heated by means of an electric resistance, and with which the ironing of the creases in the fabric is done.

[0003] One requirement in this field is to provide the final user with an iron that slides on the fabric in an optimum manner, and that also allows to iron, without particular effort and with optimum results, hard and particularly creased fabrics.

[0004] To this end, it is known to associate, coplanar with the lower surface of the plate, one or more blades, or auxiliary plates, made of stainless steel, which improve the ironing plate's ability to slide on the fabric.

[0005] This solution, however, does not bring significant improvements with regard to the ironing of hard and particularly creased fabrics. Moreover, also because of the difference in heat conductivity of the two materials used, a veil of condensation forms over the whole lower surface of the ironing plate and, especially when the user starts ironing, generates a sticking effect which determines a reduction in the sliding of the iron on the fabric.

[0006] A solution is also known where an auxiliary blade made of carbon is associated with the ironing plate, in relief by some millimeters, and extends substantially over the whole lower surface of the plate.

[0007] This solution is mainly studied to confer on the ironing plate a greater resistance to scratches and abrasions, and does not bring any substantial advantage as far as the efficiency of the ironing is concerned.

Document DE-U-8805438 describes an iron according to the preamble of claim 1.

[0008] One purpose of the present invention is to achieve an iron that slides in optimum manner on the fabric to be ironed and that, at the same time, guarantees an effective and simple ironing also of hard and particularly creased fabrics.

[0009] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0010] The present invention is set forth and characterized in the main claim, while the dependent claims describe other characteristics of the invention or variants to the main inventive idea.

[0011] In accordance with said purpose, an iron according to the present invention comprises at least an ironing plate, made of a first heat-conductive material, for example aluminum, heated by heating means and having a lower surface lying on a first plane.

[0012] The greater part of the lower surface of the ironing plate is covered by an ironing element made of a second heat-conductive material, having good sliding characteristics, such as for example stainless steel.

[0013] According to a characteristic feature of the present invention, the ironing element comprises an ironing surface which lies on a second plane, substantially parallel to the first plane and protruding therefrom by a determinate value, so that the ironing plate has a step along the perimeter of the ironing element.

[0014] The step has a distance from the outer edge of the ironing plate that is sufficient to define an annular sector outside the ironing element. The annular sector allows to accumulate the possible condensation that forms due to the heating of the ironing plate and the ironing element.

[0015] In this way, the ironing surface of the ironing element directly contacts the fabric to be ironed without the risk that a veil of condensation can form between them. With this solution, the iron is able to slide more easily and is easier to handle.

[0016] In a preferential form of embodiment, the step is less than a millimeter high, while the distance thereof from the edge of the ironing plate varies from some millimeters to some tens of millimeters.

[0017] In this way, when a fabric has to be ironed, even a particularly hard and creased one, the iron according to the present invention achieves a first ironing of the creases with the segment of the ironing plate corresponding to the annular sector, and then a second, more intense ironing of the same creases, with the ironing element.

[0018] With this solution the effectiveness and quality of the ironing performed is increased, even when difficult fabrics are involved, or particularly complex or creased parts of the garments, since every crease is first preironed by the ironing plate, and then definitively ironed by the ironing element which, moreover, slides perfectly on the fabric due to the effect of the accumulation of condensation in the annular sector.

[0019] In another form of preferential embodiment of the present invention, the ironing element is attached to the ironing plate by the interposition of a layer of glue that is resistant to high temperatures, for example silicon based.

[0020] Advantageously, on the lower surface of the ironing plate a plurality of seatings are made in which to

dispose the glue and a perimeter segment of the ironing element, so as to consolidate even more the coupling of the two plates, limiting to the maximum the risks of any ungluing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] These and other characteristics of the present invention will become apparent from the following description of a preferential form of embodiment, given as a non-restrictive example with reference to the attached drawings wherein:

- fig. 1 is a side view of an iron according to the present invention;
- fig. 2 is a view from below, partly in section, of the iron in fig. 1;
- fig. 3 shows a section from III to III of fig. 1;
- fig. 4 shows a variant of the section in fig. 2.

DETAILED DESCRIPTION OF A PREFERENTIAL EMBODIMENT

[0022] With reference to the attached drawings, an iron 10 according to the present invention for ironing a fabric 28 comprises a main body 11 made of plastic material below which an ironing plate 12 made of aluminum is attached, in a substantially known manner.

[0023] The ironing plate 12 is substantially triangular in shape and is provided with a plane lower surface 15, facing towards the fabric 28 to be ironed and lying on a first plane "P1".

[0024] The ironing plate 12 also comprises, drowned therein, an electric resistance 14, of a substantially known type, able to heat the lower surface 15 during the ironing steps.

[0025] Moreover, the greater part of the lower surface 15 of the ironing plate 12 is covered by an ironing element 13 made of stainless steel and having a thickness varying from about 0.4 to about 0.8 millimeters.

[0026] To be more exact, the ironing element 13 is attached to the lower surface 15 in a substantially central zone of the latter, by means of a perimeter segment 25 thereof (fig. 3), in this case bent orthogonal upwards.

[0027] To be more exact, the ironing element 13 (figs. 1, 2 and 3) has an ironing surface 16 lying on a second plane "P2", parallel to the first plane "P1", and protruding from the lower surface 15 by a value of height "h" of less than a millimeter.

[0028] In this way, the ironing plate 12 and the ironing element 13 define a step 17 along the perimeter of the latter, with a height "h" advantageously comprised between about 0.2 and about 0.6 millimeters.

[0029] Moreover, the step 17 is separated from the outer edge of the ironing plate 12 by a distance "d" that varies from about 3 to about 30 millimeters.

[0030] Advantageously, the distance between the step 17 and the outer edge of the ironing plate 12 varies from about 4 to about 15 millimeters, in the front-lateral part, and from about 4 to about 25 millimeters in the rear part.

[0031] In this way, between the step 17 and the outer edge of the ironing plate 12 an annular sector 18 is defined, in which the possible condensation that forms due to the effect of the heating of the ironing plate 12 and the ironing element 13 accumulates. This accumulation of the condensation allows the ironing surface 16 to directly contact the fabric 28 to be ironed, without the interposition of any veil of condensation, and hence confers on the iron 10 great sliding ability.

[0032] Moreover, as a result of the distance between the outer edge of the ironing plate 12 and the step 17, during the ironing step, especially in the case of hard and particularly creased fabrics 28, the latter are subjected to a first preliminary ironing of the creases with the ironing plate 12 in correspondence with the annular sector 18, and a second definitive ironing of the creases with the ironing element 13.

[0033] Both the ironing plate 12 and the ironing element 13 provide a plurality of holes 29, open towards the fabric 28, to allow a selective delivery of steam during the ironing steps.

[0034] The ironing plate 12 and the ironing element 13 are attached to each other by interposing between the two a layer of silicon 19, resistant to high temperatures.

[0035] To be more exact, on the lower surface 15 of the ironing plate 12 a first seating 20 is provided in which to dispose the silicon 19, a second seating 21 in which to dispose the perimeter segment 25 of the ironing element 13, and a plurality of outlet pipes 22, in which the excess silicon 19 is deposited.

[0036] Moreover, the lower surface 15 comprises a supporting seating 26 recessed by some tenths of a millimeter with respect to its segment disposed in correspondence with the annular sector 18. The ironing element 13 is disposed in the supporting seating 26, so as to guarantee a correct positioning of said element 13 with respect to the ironing plate 12.

[0037] As shown in fig.3, between the first seating 20 and the second seating 21 a wall 23 is provided, the lower surface 23a of which defines with the ironing element 13 a slit 24, about 0.1-0.2 millimeters high, which allows the excess silicon 19 in the first seating 20 to pass inside the second seating 21.

[0038] In this way, the contact surface between the ironing element 13 and the silicon 19 is increased, and therefore a greater strength of the attachment of the ironing element 13 to the ironing plate 12 is guaranteed.

[0039] The first seating 20 advantageously has a branch 27 (fig. 2) which extends longitudinally inside the supporting seating 26. The branch 27 not only further increases the anchoring surface between the ironing element 13 and the silicon 19, it also limits to a minimum the possible oscillations that can occur between the ironing element 13 and the ironing plate 12.

[0040] It is clear that modifications and/or additions of parts may be made to the iron 10 as described heretofore,

without departing from the field and scope of the present invention.

[0041] For example, it comes within the field of the invention, according to the variant shown in fig. 4, to provide that the system to attach the ironing element 13 to the ironing plate 12 does not have the perimeter segment 25 bent orthogonal with respect to the ironing surface 16, but that said perimeter segment, in this case indicated by the reference number 125, is substantially parallel and offset upwards with respect to said ironing surface 16. It also comes within the field of the invention to provide that the first seating 20 has more than one branch 27.

[0042] It is also clear that, although the invention has been described with reference to specific examples, a person of skill in the art shall be able to achieve many other equivalent forms of iron, having the characteristics as set forth in the claims and therefore all coming within the field of protection defined thereby.

Claims

1. Iron comprising an ironing plate (12) associated with heating means (14), made of a first heat-conducting material and having a lower surface (15) lying on a first plane (P1), wherein the greater part of said lower surface (15) is covered by an ironing element (13) made of a second heat-conducting material, different from said first material, wherein said ironing element (13) has an ironing surface (16) lying on a second plane (P2) substantially parallel to said first plane (P1), and protruding by a determinate value (h) from said lower surface (15), so that said iron has a step (17) along a perimeter of said ironing element (13), **characterized in that** said step (17) has a distance (d) from the outer edge of said ironing plate (12) sufficient to define an annular sector (18) outside said ironing element (13) in which the possible condensation that forms during the heating of said ironing plate (12) and said ironing element (13) is able to accumulate.

2. Iron as in claim 1, **characterized in that** said step (17) has a height (h) of less than a millimeter.

3. Iron as in claim 1 or 2, **characterized in that** a segment of the lower surface of said ironing plate (12) in correspondence with said annular sector (18) is able to be used as an ironing surface.

4. Iron as in claim 1, **characterized in that** said distance (d) varies from some millimeters to some tens of millimeters .

5. Iron as in any claim hereinbefore, **characterized in that** said ironing element (13) is attached to said lower surface (15) by means of the interposition of a layer of glue (19) resistant to high temperatures.

6. Iron as in claim 5, **characterized in that** on said lower surface (15) at least a first seating (20) in which to dispose said glue (19), and a second seating (21) in which to dispose a perimeter segment (25) of said ironing element (13) are made, a wall (23) being provided between said first seating (20) and said second seating (21).

7. Iron as in claim 6, **characterized in that** said perimeter segment (25) is substantially orthogonal to said ironing surface (16) of said ironing element (13).

8. Iron as in claim 6, **characterized in that** said perimeter segment (25) is substantially parallel to said ironing surface (16) of said ironing element (13).

9. Iron as in any claim from 6 to 8, **characterized in that** said wall (23) defines a slit (24) between a lower surface (23a) thereof and said ironing element (13), in order to allow any excess glue (19) in said first seating (20) to pass to said second seating (21).

10. Iron as in any claim from 6 to 9, **characterized in that** on said lower surface (15) a plurality of outlet pipes (22) are made, in which said excess glue (19) in said first seating (20) is able to be deposited.

11. Iron as in any claim from 6 to 10, **characterized in that** said lower surface (15) comprises a supporting seating (26) in which said ironing element (13) is able to be disposed, so as to guarantee a correct reciprocal positioning of said ironing plate (12) and said ironing element (13).

12. Iron as in claim 11, **characterized in that** said first seating (20) comprises at least a branch (27) extending longitudinally inside said supporting seating (26).

Patentansprüche

1. Bügeleisen, umfassend eine mit Heizmitteln (14) verbundene Bügelplatte (12), gebildet aus einem ersten wärmeleitenden Material und mit einer unteren Oberfläche (15), die auf einer ersten Ebene (P1) liegt, wobei der größere Teil der unteren Oberfläche (15) von einem Bügelelement (13) bedeckt ist, das aus einem zweiten wärmeleitenden Material gebildet ist, das sich vom ersten Material unterscheidet, wobei das Bügelelement (13) eine Bügeloberfläche (16) aufweist, die auf einer zweiten Ebene (P2) liegt, die im Wesentlichen parallel zu der ersten Ebene (P1) ist, und die um einen bestimmten Wert (h) von der unteren Oberfläche (15) hervorsteht, so dass das Bügeleisen einen Schritt (17) entlang eines Randes des Bügelelements (13) aufweist, **dadurch gekennzeichnet, dass** der Schritt (17) eine Distanz (d) von der äußeren Kante der Bügelplatte (12) aufweist, der

ausreichend ist, um einen ringförmigen Sektor (18) außerhalb des Bügelelements (13) zu definieren, in dem sich das mögliche Kondensat, das sich während des Erwärmens der Bügelplatte (12) und des Bügelelements (13) bildet, ansammeln kann.

2. Bügeleisen nach Anspruch 1, **dadurch gekennzeichnet, dass** der Schritt (17) eine Höhe (h) von weniger als einem Millimeter aufweist.

3. Bügeleisen nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** ein Segment der unteren Oberfläche der Bügelplatte (12) in Verbindung mit dem ringförmigen Sektor (18) als eine Bügeloberfläche verwendet werden kann.

4. Bügeleisen nach Anspruch 1, **dadurch gekennzeichnet, dass** die Distanz (d) zwischen einigen Millimetern und einigen zehn Millimetern variiert.

5. Bügeleisen nach einem der vorherigen Ansprüche, **dadurch gekennzeichnet, dass** das Bügelelement (13) an die untere Oberfläche (15) mittels der Dazwischenlagerung einer gegenüber hohen Temperaturen beständigen Klebstoffschicht (19) befestigt ist.

6. Bügeleisen nach Anspruch 5, **dadurch gekennzeichnet, dass** auf der unteren Oberfläche (15) zumindest ein erster Sitz (20), in dem der Klebstoff (19) angeordnet wird, und ein zweiter Sitz (21), in dem ein Randsegment (25) des Bügelelements angeordnet wird, hergestellt sind, wobei eine Wand (23) zwischen dem ersten Sitz (20) und dem zweiten Sitz (21) bereitgestellt wird.

7. Bügeleisen nach Anspruch 6, **dadurch gekennzeichnet, dass** das Randsegment (25) im Wesentlichen rechtwinklig bezüglich der Bügeloberfläche (16) des Bügelelements (13) ist.

8. Bügeleisen nach Anspruch 6, **dadurch gekennzeichnet, dass** das Randsegment (25) im Wesentlichen parallel zur Bügeloberfläche (16) des Bügelelements (13) ist.

9. Bügeleisen nach einem der Ansprüche 6 bis 8, **dadurch gekennzeichnet, dass** die Wand (23) einen Schlitz (24) zwischen einer unteren Oberfläche (23a) davon und dem Bügelelement (13) definiert, um es überschüssigem Klebstoff (19) im ersten Sitz (20) zu erlauben, zu dem zweiten Sitz (21) zu passieren.

10. Bügeleisen nach einem der Ansprüche 6 bis 9, **dadurch gekennzeichnet, dass** auf der unteren Oberfläche (15) eine Mehrzahl von Ausgangsrohren (22) gebildet ist, in denen der überschüssige Klebstoff (19) im ersten Sitz (20) abgelagert werden kann.

11. Bügeleisen nach einem der Ansprüche 6 bis 10, **dadurch gekennzeichnet, dass** die untere Oberfläche (15) einen tragenden Sitz (26) umfasst, in dem das Bügelelement (13) angeordnet werden kann, um eine korrekte gegenseitige Positionierung der Bügelplatte (12) und des Bügelelements (13) zu garantieren.

12. Bügeleisen nach Anspruch 11, **dadurch gekennzeichnet, dass** der erste Sitz (20) zumindest einen Zweig (27) umfasst, der sich längs innerhalb des tragenden Sitzes (26) erstreckt.

Revendications

1. Fer à repasser comprenant une plaque de repassage (12) associée à des moyens de chauffage (14), réalisée en un premier matériau thermoconducteur, et comportant une surface inférieure (15) s'étendant dans un premier plan (P1), dans lequel la majeure partie de ladite surface inférieure (15) est recouverte d'un élément de repassage (13) réalisé en un deuxième matériau thermoconducteur, différent dudit premier matériau thermoconducteur, dans lequel ledit élément de repassage (13) comporte une surface de repassage (16) s'étendant dans un deuxième plan (P2) sensiblement parallèle audit premier plan (P1), et faisant saillie d'une valeur (h) déterminée de ladite surface inférieure (15), de sorte que ledit fer à repasser comporte une partie étagée (17) le long d'un périmètre dudit élément de repassage (13), **caractérisé en ce que** ladite partie étagée (17) est à une distance (d) du bord extérieur de ladite plaque de repassage (12) suffisante pour définir un secteur annulaire (18) à l'extérieur dudit élément de repassage (13) dans lequel la condensation possible qui se forme pendant le chauffage de ladite plaque de repassage (12) et dudit élément de repassage (13) est capable de s'accumuler.

2. Fer à repasser selon la revendication 1, **caractérisé en ce que** ladite partie étagée (17) a une hauteur (h) inférieure à un millimètre.

3. Fer à repasser selon la revendication 1 ou 2, **caractérisé en ce qu'**un segment de la surface inférieure de ladite plaque de repassage (12) en correspondance avec ledit secteur annulaire (18) peut être utilisé en tant que surface de repassage.

4. Fer à repasser selon la revendication 1, **caractérisé en ce que** ladite distance (d) varie de quelques millimètres à quelques dizaines de millimètres.

5. Fer à repasser selon l'une quelconque des revendications précédentes, **caractérisé en ce que** ledit élément de repassage (13) est fixé à ladite surface

inférieure (15) par l'interposition d'une couche de colle (19) résistant à des températures élevées.

6. Fer à repasser selon la revendication 5, **caractérisé en ce que**, sur ladite surface inférieure (15), sont réalisés au moins un premier emplacement (20) dans lequel disposer ladite colle (19), et un deuxième emplacement (21) dans lequel disposer un segment de périmètre (25) dudit élément de repassage (13), une paroi (23) étant prévue entre ledit premier emplacement (20) et ledit deuxième emplacement (21).

7. Fer à repasser selon la revendication 6, **caractérisé en ce que** ledit segment de périmètre (25) est sensiblement orthogonal à ladite surface de repassage (16) dudit élément de repassage (13).

8. Fer à repasser selon la revendication 6, **caractérisé en ce que** ledit segment de périmètre (25) est sensiblement parallèle à ladite surface de repassage (16) dudit élément de repassage (13).

9. Fer à repasser selon l'une quelconque des revendications 6 à 8, **caractérisé en ce que** ladite paroi (23) définit une fente (24) entre une surface inférieure (23a) de celle-ci et ledit élément de repassage (13), afin de permettre à toute colle (19) excédentaire dans ledit premier emplacement (20) de passer vers ledit deuxième emplacement (21).

10. Fer à repasser selon l'une quelconque des revendications 6 à 9, **caractérisé en ce que**, sur ladite surface inférieure (15), sont réalisés une pluralité de tuyaux de sortie (22), dans lesquels ladite colle (19) excédentaire dans ledit premier emplacement (20) peut être évacuée.

11. Fer à repasser selon l'une quelconque des revendications 6 à 10, **caractérisé en ce que** ladite surface inférieure (15) comprend un emplacement de support (26) dans lequel ledit élément de repassage (13) peut être disposé, de manière à garantir un positionnement réciproque correct de ladite plaque de repassage (12) et dudit élément de repassage (13).

12. Fer à repasser selon la revendication 11, **caractérisé en ce que** ledit premier emplacement (20) comprend au moins une branche (27) s'étendant longitudinalement à l'intérieur dudit emplacement de support (26).

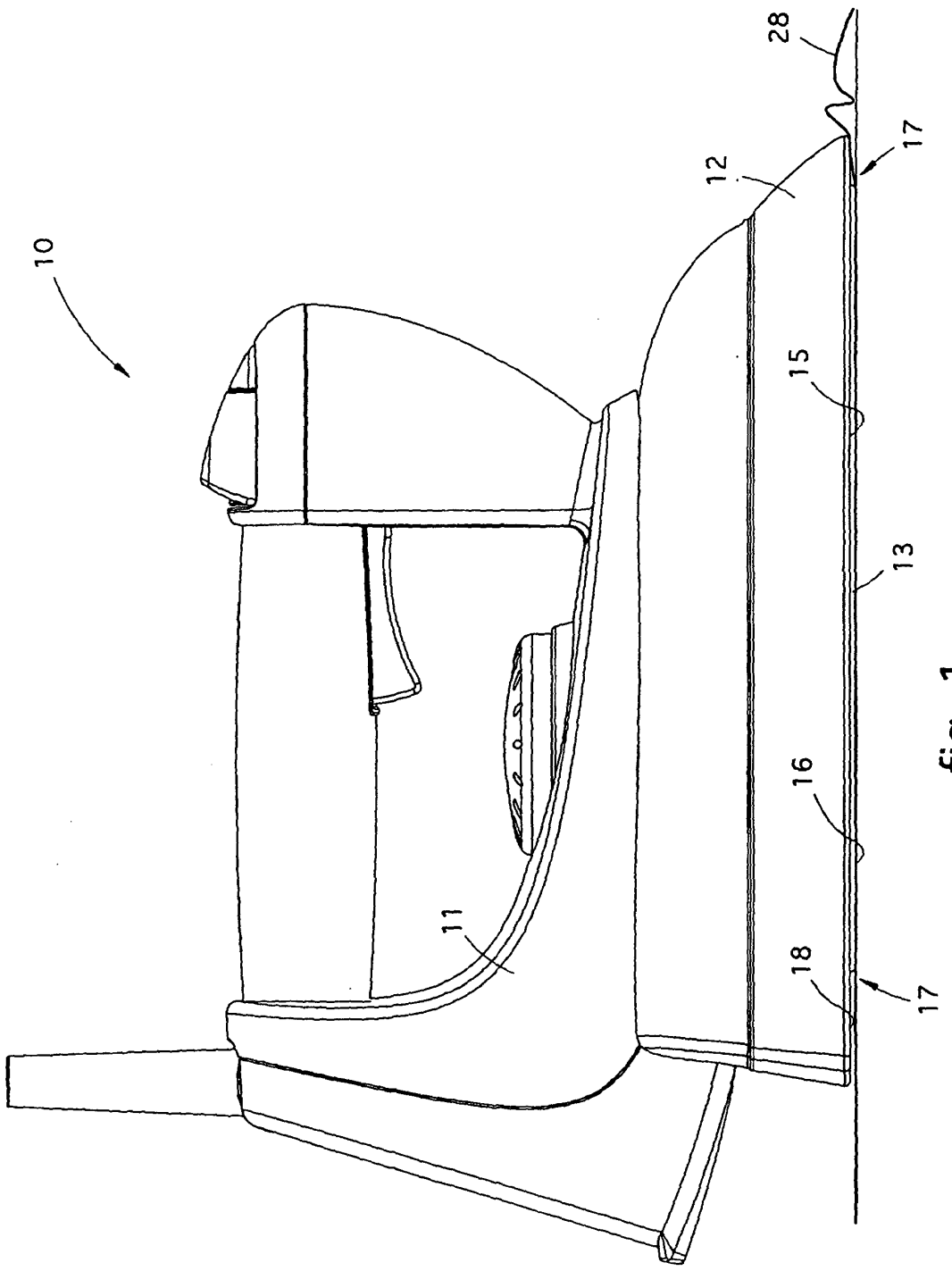

fig. 1

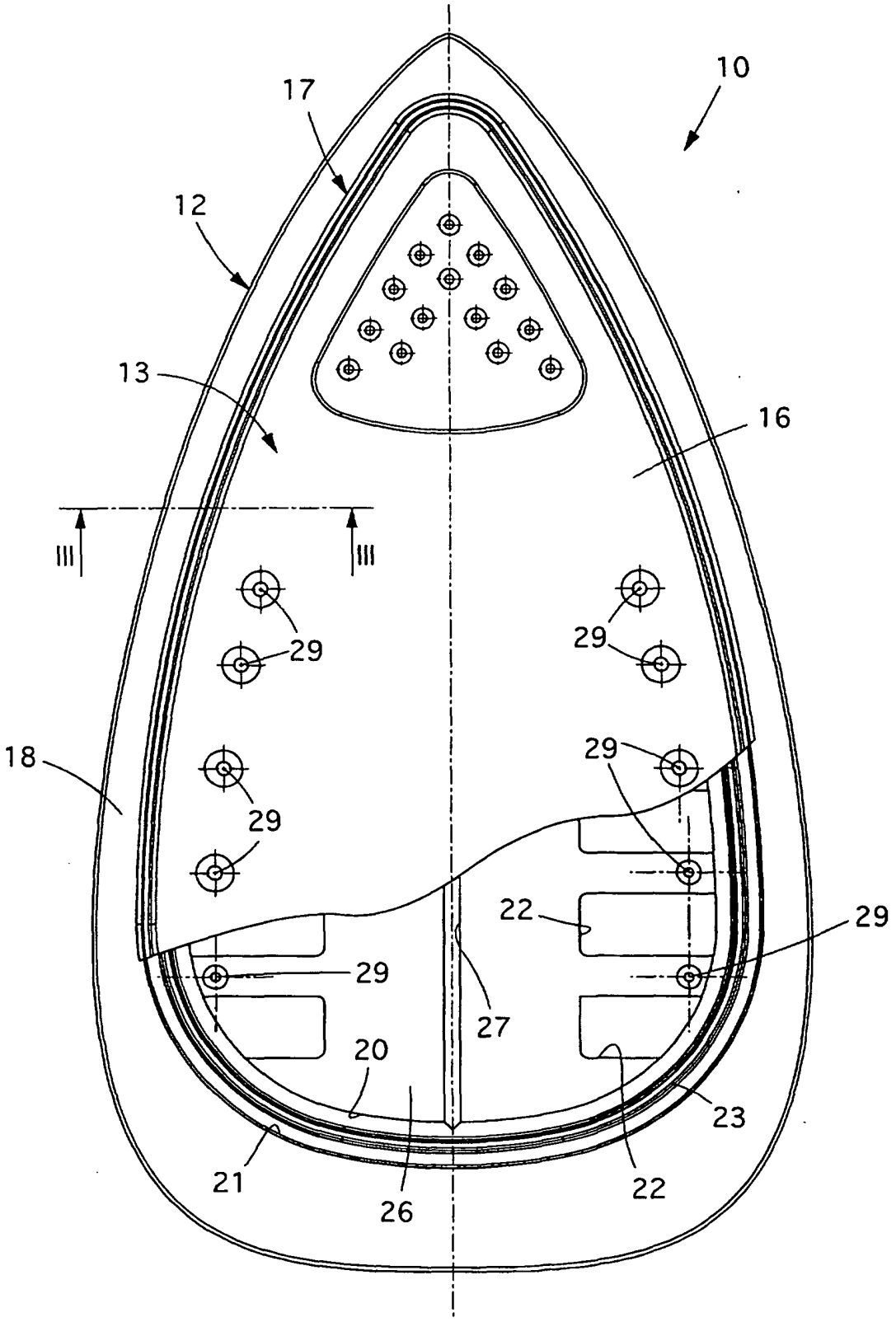

fig. 2

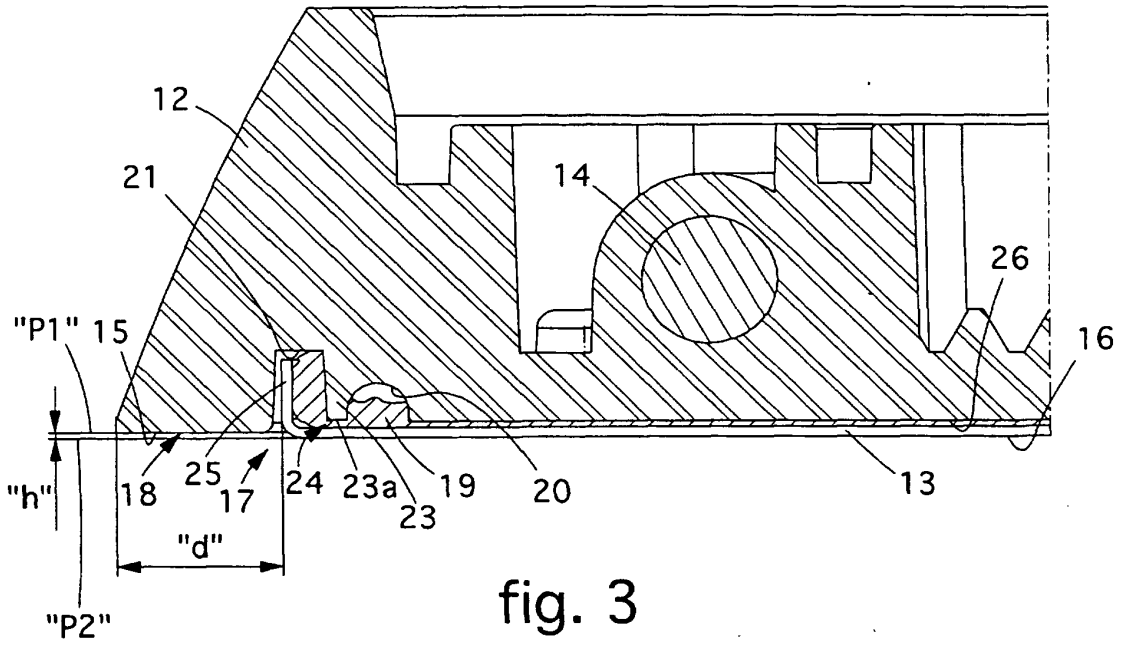
12
21
14
26
16
"P1"
15
"h"
18
25
17
24
23a
23
19
20
13
"d"
"P2"

fig. 3

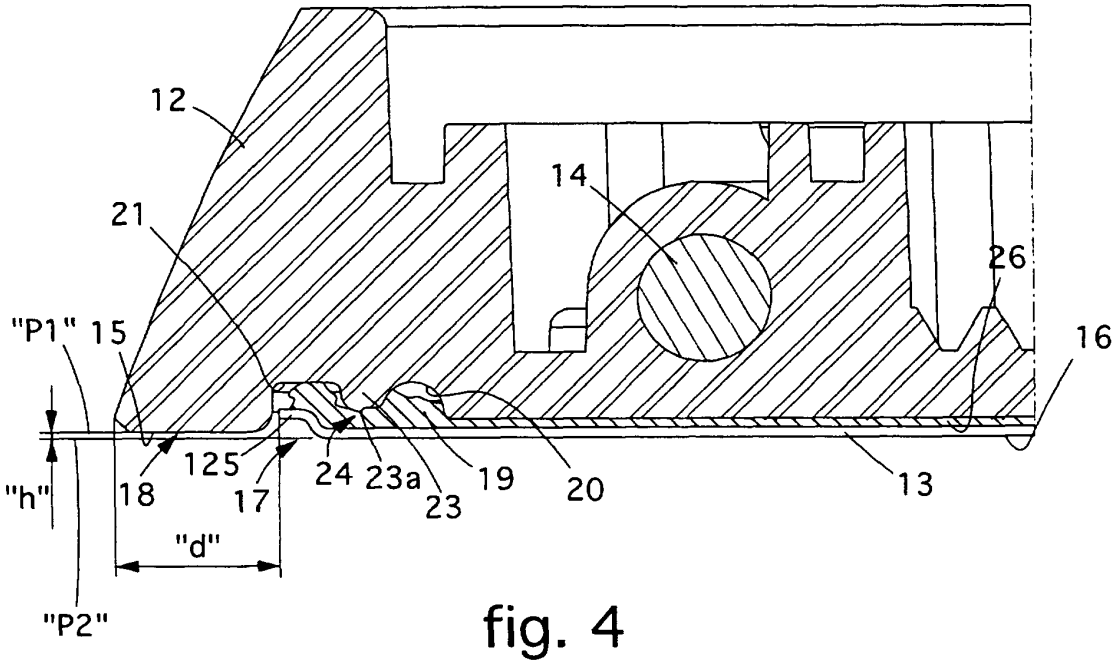
12
14
21
26
16
"P1"
15
125
"h"
18
17
24
23a
23
19
20
13
"d"
"P2"

fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 8805438 U **[0007]**