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(54) **Command device for the delivery of steam in an iron**

Steuerungsvorrichtung der Dampfzufuhr in einem Bügeleisen

Dispositif de commande de la vapeur dans un fer à repasser.

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(73) Proprietor: **DE' LONGHI S.p.A.**
31100 Treviso (IT)

(72) Inventors:
- **Antonel, Alessandro**
  30029 Santo Stino Di Livenza (VE) (IT)
- **Rigo, Flavio**
  33170 Pordenone (IT)

(74) Representative: **Petraz, Gilberto Luigi**
GLP S.r.l.
Piazzale Cavedalis 6/2
33100 Udine (IT)

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- **PATENT ABSTRACTS OF JAPAN vol. 2000, no. 18, 5 June 2001 (2001-06-05) & JP 01 146598 A (MATSUSHITA ELECTRIC IND CO LTD), 8 June 1989 (1989-06-08)**

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Description

FIELD OF THE INVENTION

[0001] The present invention concerns a command device for delivering steam in an iron. To be more exact the command device according to the present invention is arranged in correspondence with the handle of the iron and is in a position easily accessible for the user, in order to actuate the iron without detaching the hand from the handle and with the hand in any position whatsoever.

BACKGROUND OF THE INVENTION

[0002] A command device, as described in document EP-A-1 043 441, is known to deliver steam in an iron, which comprises a button arranged on the handle to selectively activate an electric switch located inside the handle and suitable to command the delivery of the steam from the plate of the iron.

[0003] Normally, during the operation to iron a garment for example, the user activates the delivery of the steam numerous times in order to make said operation more effective and to facilitate it, particularly in points which are difficult to reach or resistant to ironing. For this reason the button is positioned so as to be easily reachable by the user without taking his hand from the handle and without inducing torsions or efforts.

[0004] A button is known, arranged in the front part of the handle, at the upper part or laterally with respect to the latter, but this button has the disadvantage that it can be actuated only with respect to a specific direction, parallel to the axis of actuation, so that when driven it constrains the orientation that the hand, gripping the handle, must assume in order to act on the button.

[0005] A command device is also known for the selective delivery of steam, having a single button that can be arranged in advance in a position chosen from two alternative positions, so as to be used both by right-handed and also by left-handed users.

[0006] One disadvantage of this command device is that it cannot be activated when the button is in an intermediate position between said two alternative positions, so that, once positioned, it once again has the disadvantages of traditional buttons.

[0007] A command device is also known having two or more buttons, which therefore allow a corresponding different number of directions of actuation and hence a greater ease of drive even when the hand is in different positions.

[0008] One disadvantage of this known command device is that the number of buttons corresponds to an equal number of electric switches, which makes the electric circuit more complicated and subject to breakdowns; it also makes the mechanical assembly and maintenance more complex.

[0009] One purpose of the present invention is to achieve a command device for the delivery of steam in an iron which can be actuated by a user simply and easily and from several different directions; that is, with a wider range of positions of the hand gripping the handle, and which at the same time uses a single electric switch associated with the button.

[0010] Another purpose of the present invention is to obtain the possibility that the steam command can be driven both by left handed users and also by right handed users, with an equal number of ranges of position of the hand for actuation.

[0011] 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

[0012] 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.

[0013] In accordance with the above purposes, a command device according to the present invention is used to deliver steam in an iron. The latter comprises a handle normally arranged on a median plane that passes through the iron longitudinally, and a circuit to deliver the steam.

[0014] The command device comprises an electric switch arranged in the handle, associated with the circuit to deliver the steam, and actuation means arranged on the front part of the handle to be selectively activated with the hand gripping the handle, which are connected to the electric switch in order to activate the delivery of the steam.

[0015] According to a characteristic of the present invention, the actuation means are shaped so as to at least partly surround the front part of the handle and are able to be actuated both frontally and laterally and from above with respect to the handle in order to cause the electric switch to be actuated.

[0016] In this way, the command device according to the present invention can be driven simply and easily and offers a plurality of actuation directions corresponding to a range of positions of the hand gripping the handle, with the farther advantage that it uses only one electric switch.

[0017] Moreover, the command device can be driven irrespectively by both left handed and right handed users.

[0018] According to another characteristic of the present invention, constraint means are provided to constrain the actuation means to the iron, more particularly, to its handle, and clamping means to keep at least part of the actuation means selectively and temporarily thrust against the electric switch.

[0019] The actuation means have a first inactive position in which the electric switch is not actuated and therefore there is no delivery of steam; a second activation position, to activate the delivery of steam; and a third position to keep the steam delivery active, without the

user needing to keep the actuation means pressed.

[0020] The second actuation position is reached by means of driving the actuation means, effected by the user and determined by the constraint means; this drive takes at least part of the actuation means into contact with the electric switch in order to start the steam delivery.

[0021] By means of another drive of the actuation means by the user, the clamping means are activated so as to keep and clamp the actuation means against the electric switch. This position is maintained until, with a suitable drive, the user de-activates the clamping means and thus allows the actuation means to return to the first inactive position.

[0022] According to a variant of the present invention, the actuation means comprise a first actuation element connected to the electric switch and a second actuation element associated with the first actuation element, and able to cooperate with the latter in order to actuate the electric switch.

[0023] Advantageously the second actuation element has a high extension according to at least one axis, advantageously along the handle, so as to further facilitate the activation of the steam delivery, which can occur for example by means of pressure with the palm of the hand.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] 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 front view of an iron having a command device according to the present invention for the delivery of steam;
- fig. 2 is a lateral view, partly in section along the line from II to II of the command device in fig. 1 in a first operating position;
- fig. 3 is an enlarged detail of the command device in fig. 1, in a second operating position;
- fig. 4 is an enlarged detail of the command device in fig. 1, in a third operating position;
- fig. 5 is a section from V to V of fig. 2;
- fig. 6 is a section from VI to VI of fig. 2;
- fig. 7 is a section from VII to VII of fig. 2.

DETAILED DESCRIPTION OF A PREFERENTIAL FORM OF EMBODIMENT

[0025] With reference to fig. 1, a command device 10 according to the present invention is applied for the delivery of steam and is arranged in the front part of an iron 11.

[0026] The iron 11 (fig. 2) comprises a handle 13 arranged on a median plane which passes through the iron 11 longitudinally, a metal ironing plate 14, heated by means of electric resistances, an electric cable 19 to feed the various devices inside the iron 11, and a circuit to deliver the steam 12.

[0027] The circuit to deliver the steam 12, of known type, comprises as schematized in fig. 2, a boiler 35 where the water is heated, for example by means of an electric resistance, and a plurality of through holes 36, only partly shown here, arranged on the ironing plate 14, from which the steam selectively emerges.

[0028] The circuit to deliver the steam 12 also comprises an electrically commanded valve, or electrovalve 37, which is connected upstream with the boiler 35 and downstream, by means of a plurality of pipes 38, only partly shown, with the through holes 36. The electrovalve 37 can be selectively opened to obtain the delivery of the steam.

[0029] The command device 10 comprises an electric switch 15 of a known type, arranged inside the handle 13, having a mushroom-shaped actuator 16 and connected to the electrovalve 37 of the circuit to deliver the steam 12.

[0030] By actuating the command device 10, the user causes the electrovalve 37 to be activated and hence the delivery of the steam on the ironing plate through the through holes 36.

[0031] The command device 10 also comprises a first button 17 and a second button 18, made of synthetic material, or any material suitable for the purpose.

[0032] The first button 17 is located on the front part of the handle 13, is arranged on the median plane and is connected to the electric switch 15 to activate the delivery of the steam.

[0033] The second button 18 is associated with the first button 17 and comprises two fins 26 (fig. 1), lateral and opposite, shaped so as to at least partly surround the first button 17 and the front part of the handle 13.

[0034] The second button 18 also comprises a lower zone 27, elongated in shape, which extends into the front zone of the iron 11.

[0035] The first button 17 (figs. 3, 4, 5 and 6) has a knurled outer zone 20 and two walls 21 arranged inside the handle 13, opposite each other and parallel to the median plane. An intermediate wall 22 is arranged between the two walls 21, parallel to them and able to contact the underlying actuator 16 of the electric switch 15.

[0036] Each wall 21 comprises an attachment element 24 (figs. 5 and 6), cylindrical in shape, made in a single piece and able to be hinged in a respective seating 25 made inside each fin 26 of the second button 18.

[0037] In this way, the first button 17 can rotate with respect to the seatings 25, parallel to the median plane and according to the direction of the upper arrow shown in fig. 2.

[0038] The lower zone 27 of the second button 18 (fig. 7) comprises two arms 32 made in a single piece and inserted inside the handle 13. Each of the two arms 32 has a cylindrical seating 34 parallel to the median plane. In the two cylindrical seatings 34 a tubular element 33 is inserted which is attached to the handle 13 and on which

the two arms 32 are free to rotate.

[0039] In this way, the second button 18 can also rotate with respect to the tubular element 33 parallel to the median plane and according to the direction of the lower arrow shown in fig. 2.

[0040] With reference to fig. 2, the first button 17 and the second button 18 are in a first inactive position in which the intermediate wall 22 does not contact the actuator 16 of the electric switch 15 and therefore no steam is delivered.

[0041] With reference to fig. 3, the first button 17 and/or the second button 18 are in a second actuation position in which the intermediate wall 22 contacts the actuator 16 of the electric switch 15 driving the delivery of the steam.

[0042] The second actuation position is reached if the user directly actuates the first button 17 or the second button 18 in any one direction of the directions indicated by the arrows in fig. 1, or any direction comprised among those illustrated.

[0043] If pressure is exerted on the first button 17, it rotates parallel to the median plane carrying the intermediate wall 22 into contact with the actuator 16.

[0044] The fins 26 of the second button 18 protrude with respect to the handle 13, so that any direction of actuation on the fins 26 possesses a component parallel to the median plane and orthogonal to the external surface of the second button 18.

[0045] In this way, the second button 18 can be actuated from any direction comprised between those shown in fig. 1.

[0046] With reference to fig. 4, the first button 17 is in a third position to keep delivery active, to reach which the first button 17 is rotated by the user so that a step 29 of the first button 17 is clamped in a mating clamping seating 30 made in the handle 13.

[0047] In the third position, the intermediate wall 22 of the first button 17 remains thrust against the actuator 16 until the user rotates the first button 17 in the opposite direction, so as to detach and distance the step 29 from the clamping seating 30.

[0048] Thanks to the extensive actuable surface that the first 17 and the second button 18 have of the command device 10 according to the present invention, the user is considerably facilitated in all the ironing operations that provide the delivery of steam to the garment to be ironed.

[0049] It is clear that modifications and/or additions of parts may be made to the command device 10 as described heretofore, without departing from the field and scope of the present invention.

[0050] It comes within the field of protection of the present invention to provide that the second button 18 actuates the electric switch 15 directly.

[0051] It is also provided that the command device 10 does not have the first button 17 and comprises a button shaped so as to surround the front part of the handle 13 and having a similar shape to that of the second button 18, which actuates the electric switch 15 directly.

[0052] The command device 10 can also be used in irons having the boiler to heat the water arranged outside the iron.

[0053] It is also provided that the command device 10 can comprise more than two buttons, each of which is able to actuate the electric switch 15 directly or indirectly.

[0054] It is also clear that, although the present invention has been described with reference to some specific examples, a person of skill in the art shall certainly be able to achieve many other equivalent forms of command device for the delivery of steam in an iron, having the characteristics as set forth in the claims and hence all coming within the field of protection defined thereby.

Claims

1. Command device for the delivery of steam in an iron (11) having a handle (13) normally arranged on a median plane that passes longitudinally through said iron (11), and a delivery circuit of the steam (12), wherein said command device comprises an electric switch (15) arranged in said handle (13), associated with said delivery circuit of the steam (12), and actuation means (17, 18) arranged in correspondence with the front part of said handle (13) and connected to said electric switch (15) in order to activate the delivery of the steam, **characterized in that** said actuation means (17, 18) is shaped so as to at least partly surround said front part of said handle (13) and is able to be actuated both frontally and laterally, and also from above with respect to said handle (13) in order to cause the actuation of said electric switch (15).

2. Command device as in claim 1, **characterized in that** constraint means (21, 24, 25, 32, 33, 34) is provided to constrain said actuation means (17, 18) to said iron (11).

3. Command device as in claim 1 or 2, **characterized in that** clamping means (29, 30) is provided to keep at least part of said actuation means (17, 18) selectively and temporarily thrust against said electric switch (15).

4. Command device as in claim 3, **characterized in that** said actuation means (17, 18) includes (i) a first inactive position, in which said electric switch (15) is not actuated, (ii) a second actuation position, determined by said constraint means (21, 24, 25, 32, 33, 34), in which at least part of said actuation means (17, 18) contacts said electric switch (15) in order to activate the delivery of steam, and (iii) a third position to keep the delivery of steam active, in which by means of said clamping means (29, 30), at least a part of said actuation means (17, 18) is kept in con-

tact against said electric switch (15).

5. Command device as in any claim hereinbefore, **characterized in that** said actuation means comprises a first actuation element (17) connected mechanically to said electric switch (15), and a second actuation element (18) associated with said first actuation element (17) and able to cooperate with said first actuation element (17) in order to actuate the electric switch (15).

6. Command device as in claims 2 and 5, **characterized in that** the constraint means associated with said first actuation element (17) comprises at least two walls (21), each of which has an attachment element (24) able to be hinged in a respective seating (25) made inside said second actuation element (18).

7. Command device as in claims 2 and 5, **characterized in that** the constraint means associated with said second actuation element (18) comprises at least two arms (32) and at least a tubular element (33) attached to said handle (13), each of said arms (32) having a respective seating (34) in which said tubular element (33) is inserted.

8. Command device as in claim 5, 6 or 7, **characterized in that** said second actuation element (18) comprises two lateral and opposite fins (26) shaped so as to at least partly surround said first actuation element (17) and the front part of said handle (13).

9. Command device as in claim 8, **characterized in that** said fins (26) protrude with respect to said handle (13).

10. Command device as in claims 3 and 5, **characterized in that** said clamping means (29, 30) is associated with said first actuation element (17).

11. Command device as in any claim hereinbefore, **characterized in that** it is electrically connected to valve means (37) which connects one or more pipes to deliver steam (38) to through holes (36) present on an ironing plate (14) of said iron (11).

Patentansprüche

1. Steuervorrichtung zur Abgabe von Dampf bei einem Bügeleisen (11), das einen Griff (13), der in einer in Längsrichtung durch das Bügeleisen (11) verlaufenden Mittelebene senkrecht angeordnet ist, und eine Abgabeschaltung für den Dampf (12) aufweist, wobei die Steuervorrichtung einen in dem Griff (13) angeordneten und der Abgabeschaltung für den Dampf (12) zugeordneten elektrischen Schalter (15) sowie eine Betätigungseinrichtung (17, 18) aufweist, die entsprechend dem Vorderteil des Griffs (13) angeordnet und mit dem elektrischen Schalter (15) verbunden ist, um die Abgabe von Dampf zu aktivieren, **dadurch gekennzeichnet, dass** die Betätigungseinrichtung (17, 18) so gestaltet ist, dass sie den Vorderteil des Griffs (13) mindestens teilweise umgibt, und sich sowohl von vorne als auch seitlich sowie bezüglich des Griffs (13) von oben betätigen lässt, um den elektrischen Schalter (15) zu aktivieren.

2. Steuervorrichtung nach Anspruch 1, **gekennzeichnet durch** Rastmittel (21, 24, 25, 32, 33, 34) zum Verrasten der Betätigungseinrichtung (17, 18) mit dem Bügeleisen (11).

3. Steuervorrichtung nach Anspruch 1 oder 2, **gekennzeichnet durch** eine Klemmeinrichtung (29, 30), die mindestens einen Teil der Betätigungseinrichtung (17, 18) selektiv und vorübergehend gegen den elektrischen Schalter (15) gedrückt hält.

4. Steuervorrichtung nach Anspruch 3, **dadurch gekennzeichnet, dass** die Betätigungseinrichtung (17, 18) eine erste inaktive Stellung (i) aufweist, in der der elektrische Schalter (15) nicht betätigt ist, eine zweite, von den Rastmitteln (21, 24, 25, 32, 33, 34) bestimmte Betätigungsstellung (ii), in der mindestens ein Teil der Betätigungseinrichtung (17, 18) den elektrischen Schalter (15) berührt, um die Abgabe von Dampf zu aktivieren, und eine dritte Stellung (iii), die die Abgabe von Dampf aktiv hält, wobei mittels der Klemmeinrichtung (29, 30) mindestens ein Teil der Betätigungseinrichtung (17, 18) in Berührung mit dem elektrischen Schalter (15) gehalten wird.

5. Steuervorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Betätigungseinrichtung ein erstes Betätigungselement (17), das mit dem elektrischen Schalter (15) mechanisch verbunden ist, und ein zweites Betätigungselement (18) aufweist, das dem ersten Betätigungselement (17) zugeordnet ist und mit diesem zusammenarbeitet, um den elektrischen Schalter (15) zu betätigen.

6. Steuervorrichtung nach Anspruch 2 und 5, **dadurch gekennzeichnet, dass** zu den dem ersten Betätigungselement (17) zugeordneten Rastmitteln mindestens zwei Wände (21) mit jeweils einem Verriegelungselement (24) gehören, das in einem jeweiligen, in dem zweiten Betätigungselement (18) ausgebildeten Sitz (25) hinein schwenkbar ist.

7. Steuervorrichtung nach Anspruch 2 und 5, **dadurch gekennzeichnet, dass** zu den dem zweiten Betäti-

gungselement (18) zugeordneten Rastmitteln mindestens zwei Arme (32) und mindestens ein an dem Griff (13) angebrachtes Rohrelement (33) gehören, wobei die Arme (32) jeweils einen Sitz (34) aufweisen, in den das Rohrelement (33) eingreift.

8. Steuervorrichtung nach einem der Ansprüche 5 bis 7, **dadurch gekennzeichnet, dass** das zweite Betätigungselement (18) zwei seitliche und entgegengesetzte Rippen (26) aufweist, die so gestaltet sind, dass sie das erste Betätigungselement (17) und den Vorderteil des Griffs (13) mindestens teilweise umgeben.

9. Steuervorrichtung nach Anspruch 8, **dadurch gekennzeichnet, dass** die Rippen (26) aus dem Griff (13) herausragen.

10. Steuervorrichtung nach Anspruch 3 und 5, **dadurch gekennzeichnet, dass** die Klemmeinrichtung (29, 30) dem ersten Betätigungselement (17) zugeordnet ist.

11. Steuervorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie mit einer Ventileinrichtung (37) elektrisch verbunden ist, die ein oder mehrere Rohre verbindet, um Dampf (38) durch in der Arbeitsplatte (14) des Bügeleisens (11) vorhandene Löcher (36) abzugeben.

Revendications

1. Dispositif de commande de la fourniture de vapeur dans un fer à repasser (11) qui comprend une poignée (13) généralement placée sur un plan médian qui passe longitudinalement à travers ledit fer à repasser (11), et un circuit de fourniture de vapeur (12), dans lequel ledit dispositif de commande comprend un commutateur électrique (15) placé dans ladite poignée (13), associé audit circuit de fourniture de vapeur (12), et des moyens d'actionnement (17, 18) qui sont agencés de façon à correspondre à la partie avant de ladite poignée (13) et qui sont connectés audit commutateur électrique (15) de façon à activer la fourniture de la vapeur, **caractérisé en ce que** lesdits moyens d'actionnement (17, 18) sont réalisés sous une forme telle qu'ils entourent au moins partiellement ladite partie avant de ladite poignée (13) et qu'ils sont aptes à être actionnés à la fois frontalement et latéralement, est également depuis le dessus par rapport à ladite poignée (13) de façon à commander l'actionnement dudit commutateur électrique (15).

2. Dispositif de commande selon la revendication 1, **caractérisé en ce que** des moyens de contrainte (21, 24, 25, 32, 33, 34) sont prévus afin de contraindre lesdits moyens d'actionnement (17, 18) sur ledit fer à repasser (11).

3. Dispositif de commande selon la revendication 1 ou 2, **caractérisé en ce que** des moyens de blocage (29, 30) sont prévus afin de maintenir au moins une partie desdits moyens d'actionnement (17, 18) de façon sélective et temporaire en poussée contre ledit commutateur électrique (15).

4. Dispositif de commande selon la revendication 3, **caractérisé en ce que** lesdits moyens d'actionnement (17, 18) comprennent (i) une première position inactive dans laquelle ledit commutateur électrique (15) n'est pas actionné, (ii) une deuxième position d'actionnement déterminée par lesdits moyens de contrainte (21, 24, 25, 32, 33, 34) dans laquelle au moins une partie desdits moyens d'actionnement (17, 18) est en contact avec ledit commutateur électrique (15) de façon à activer la fourniture de vapeur, et (iii) une troisième position qui sert à maintenir la fourniture de vapeur active dans laquelle, par le biais desdits moyens de blocage (29, 30), au moins une partie desdits moyens d'actionnement (17, 18) est maintenue en contact contre ledit commutateur électrique (15).

5. Dispositif de commande selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens d'actionnement comprennent un premier élément d'actionnement (17) qui est connecté mécaniquement audit commutateur électrique (15), et un second élément d'actionnement (18) qui est associé audit premier élément d'actionnement (17) et qui est apte à collaborer avec ledit premier élément d'actionnement (17) dans le but d'actionner le commutateur électrique (15).

6. Dispositif de commande selon les revendications 2 et 5, **caractérisé en ce que** les moyens de contrainte qui sont associés audit premier élément d'actionnement (17) comprennent au moins deux parois (21) qui possèdent chacune un élément de fixation (24) qui est apte à être monté de façon articulée dans un siège respectif (25) réalisé à l'intérieur dudit second élément d'actionnement (18).

7. Dispositif de commande selon les revendications 2 et 5, **caractérisé en ce que** les moyens de contrainte qui sont associés audit second élément d'actionnement (18) comprennent au moins deux tiges (32) et au moins un élément tubulaire (33) qui est fixé à ladite poignée (13), chacune des tiges (32) possédant un siège respectif (34) dans lequel est inséré ledit élément tubulaire (33).

8. Dispositif de commande selon la revendication 5, 6 ou 7, **caractérisé en ce que** ledit second élément

d'actionnement (18) comprend deux ailettes latérales et opposées (26) qui sont réalisées sous une forme telle qu'elles entourent au moins ledit premier élément d'actionnement (17) et la partie avant de ladite poignée (13).

9. Dispositif de commande selon la revendication 8, **caractérisé en ce que** lesdites ailettes (26) se projettent en saillie par rapport à ladite poignée (13).

10. Dispositif de commande selon les revendications 3 et 5, **caractérisé en ce que** lesdits moyens de blocage (29, 30) sont associés au dit premier élément d'actionnement (17).

11. Dispositif de commande selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il est connecté électriquement à des moyens formant valve (37) qui connectent un ou plusieurs tuyaux pour fournir de la vapeur (38) à des trous de passage (36) présents sur une plaque de repassage (14) dudit fer à repasser (11).

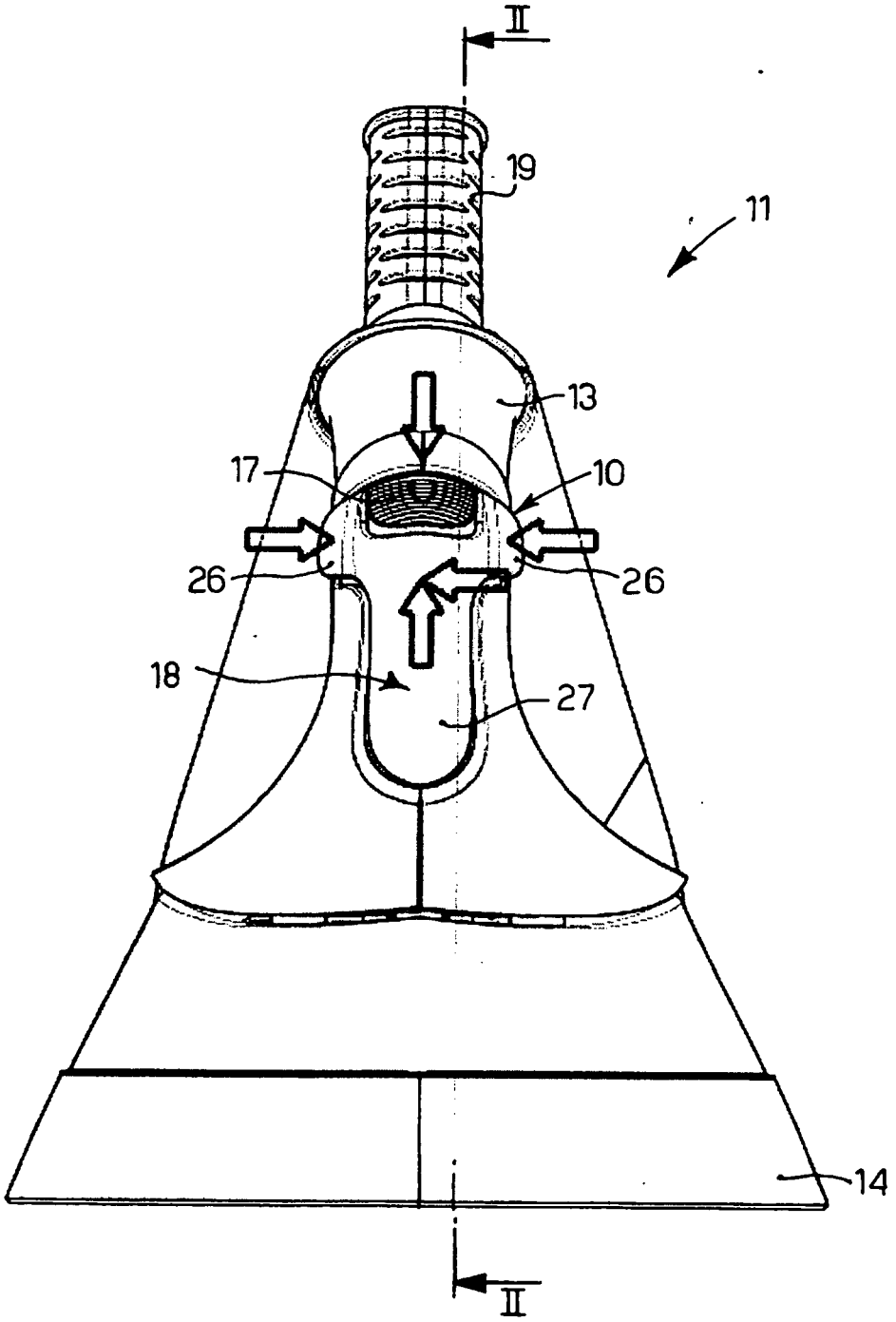

fig.1

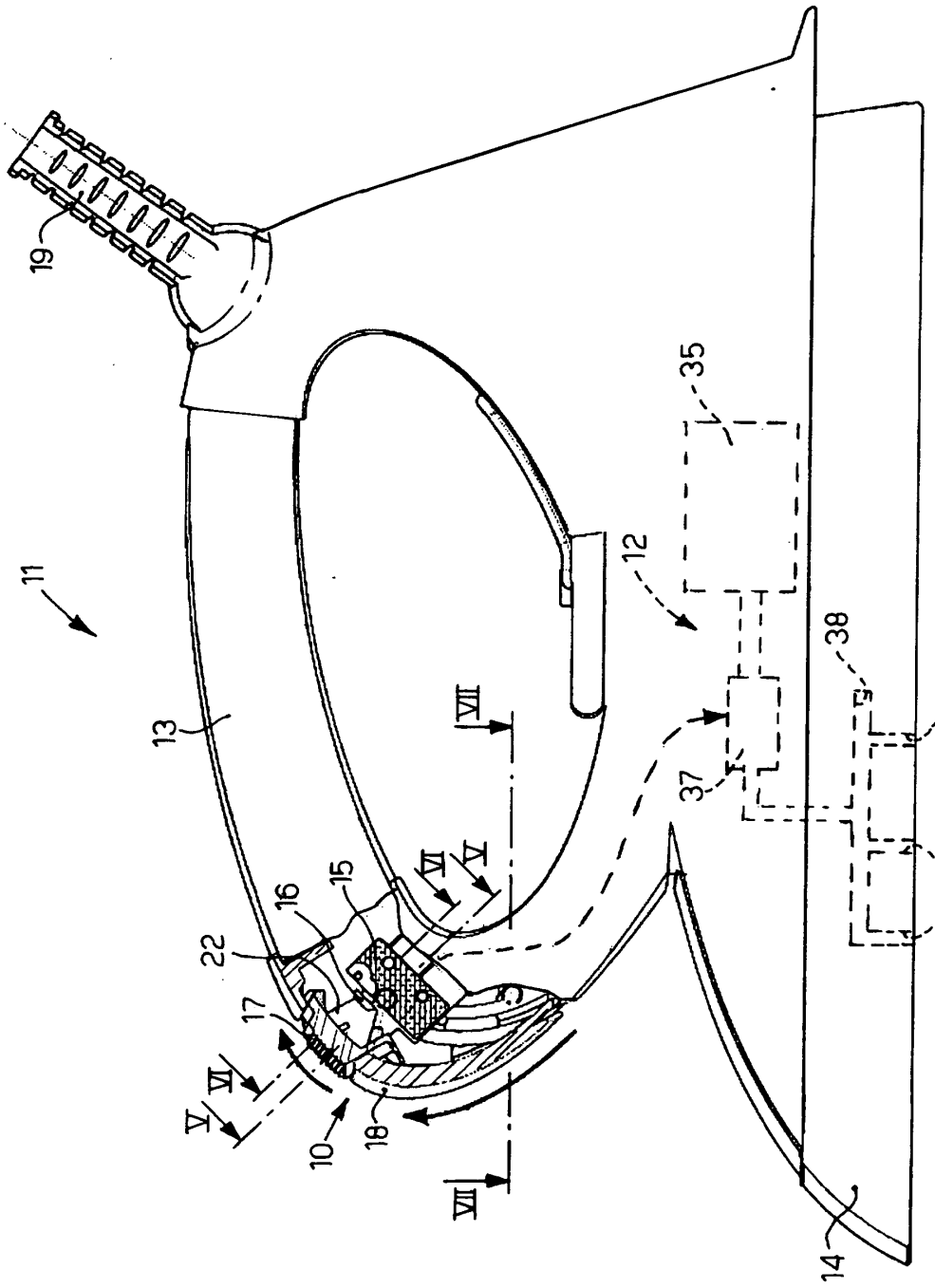

fig. 2

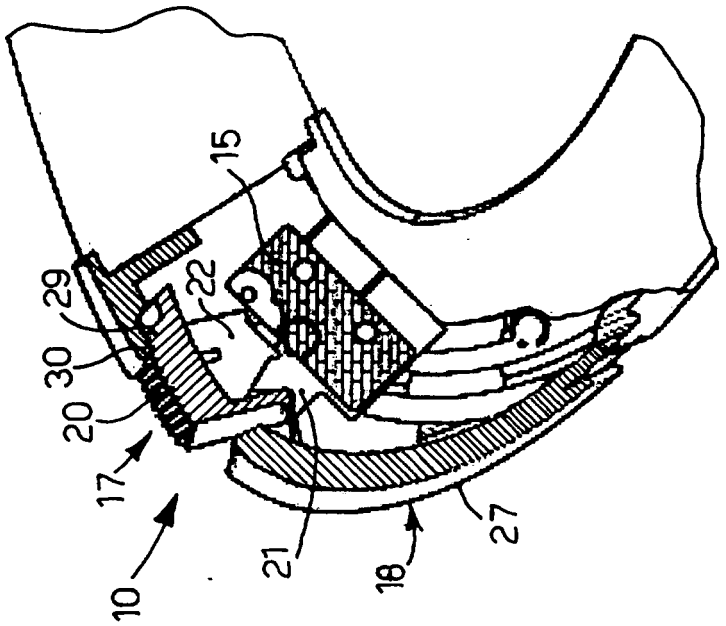

fig. 4

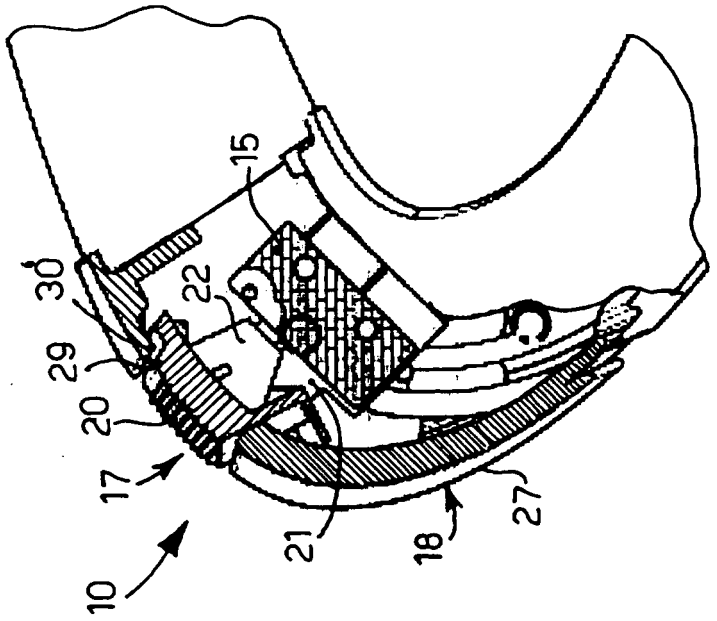

fig. 3

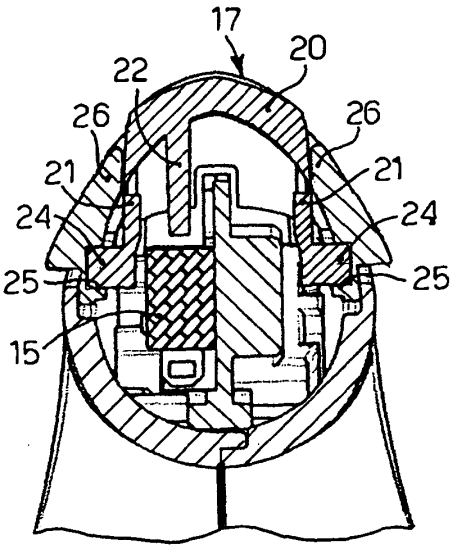

fig.5

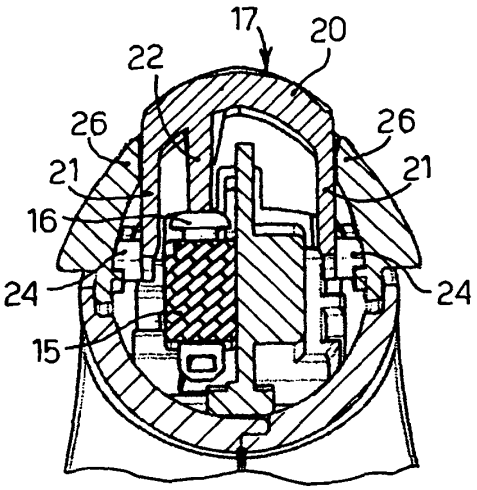

fig.6

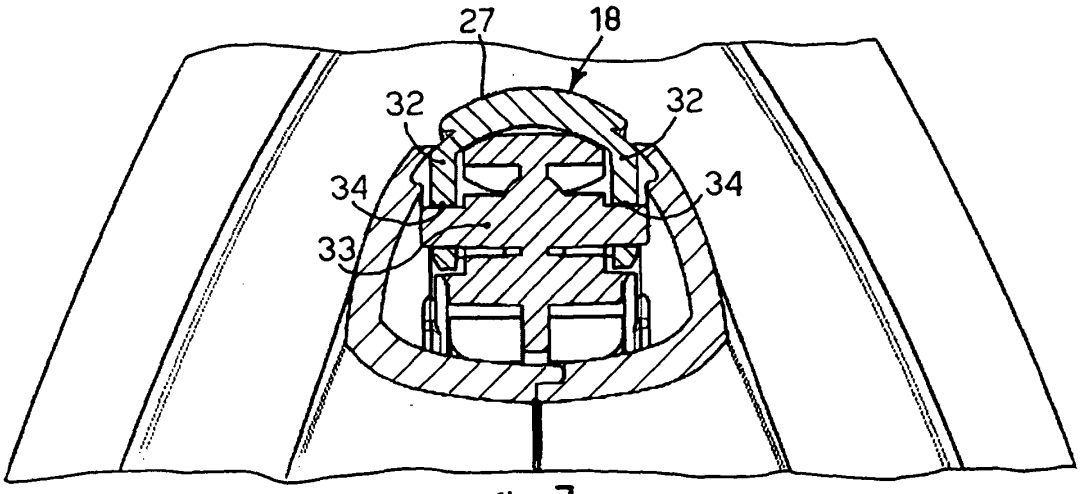

fig.7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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