



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.12.2003 Bulletin 2003/51

(51) Int Cl.7: **A47B 77/10, D06F 81/06**

(21) Application number: **03380143.2**

(22) Date of filing: **12.06.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(71) Applicant: **FAGOR, S.Coop**
20500 Mondragon (Guipuzcoa) (ES)

(72) Inventors:
• **Arrieta Berecibar, Luis Javier**
20500 Mondragon (Gipuzkoa) (ES)
• **Albaizar Buisán, Alberto**
20500 Mondragon (Gipuzkoa) (ES)

(30) Priority: **14.06.2002 ES 200201373**

(54) **Ironing board for a clothes drying and dewrinkling cabinet**

(57) "Ironing board for a cabinet, mainly a cabinet for drying and dewrinkling clothes, said cabinet (1) comprising a main enclosure (2) for housing clothes and a door (3) to close said main enclosure (2), said ironing board (4) being placed on the inside of said door (3), and said ironing board (4) comprising a board (5) and a

leg (7) hingedly connected to the underside of said board (5). The ironing board also comprises a sliding body (9) attached to the inside of said door (3), the board (5) being hingedly connected to said sliding body (9), and pushing means for displacing said sliding body (9) upwards while said board (5) is being folded down."

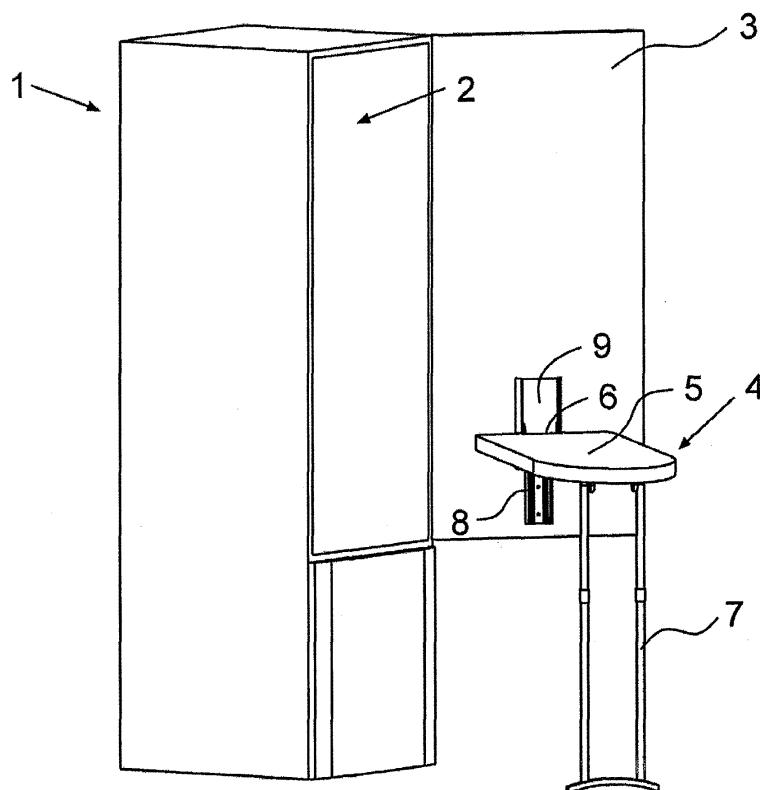


Fig.2

Description

TECHNICAL FIELD

[0001] The present invention relates to systems for ironing clothes and, more specifically, to folding ironing boards.

PRIOR ART

[0002] There are a large variety of ironing boards. US4995681 describes a folding ironing board that is put away in a cabinet specifically intended to store it.

[0003] US5329860 discloses an ironing board that can be installed on a door. The invention includes a vertical element with a hook hung from the frame of the door selected, a horizontal element connected to said vertical element, an ironing board hingedly connected to said horizontal element, and a leg hingedly connected to said board.

[0004] EP1159893A2 describes a cabinet for drying, dewrinkling and ironing clothes comprising a main enclosure for housing clothes, with access to said main enclosure through a front door, means for drying and dewrinkling said clothes in said enclosure and control means for controlling said means, and which also has an ironing board. This ironing board is foldable and is placed on the inside of the door.

DESCRIPTION OF THE INVENTION

[0005] The object of the invention is to provide a foldable ironing board for a cabinet, mainly for cabinets for drying and dewrinkling clothes, which improves some of the characteristics of prior art ironing boards.

[0006] According to a first aspect, the invention provides a foldable ironing board that is placed on the inside of the door of a cabinet and comprises a board, a leg hingedly connected to the underside of said board, a sliding body attached to the inside of said door, the board being hingedly connected to said sliding body, and pushing means for displacing said sliding body upwards while said board is being folded down.

[0007] The pushing means apply force upwards against the sliding body. When the board is folded away, its own weight and the sliding body overcome the force of said pushing means. As the user begins to fold the board down, the gravity center of the board is displaced from the end connected to the sliding body toward the other end, and the force of the pushing means overcomes the weight being carried and said pushing means displace the sliding body upward, so that said displacement is produced without any additional effort by the user. Because of this vertical displacement of the sliding body, said sliding body is placed in a higher position when the board is folded down than when folded away. When the user folds the board away, its own weight overcomes the force of the pushing means and said

board returns to its original position.

[0008] If the standard height at which ironing boards are placed in the working position is 0.90 m and a standard ironing board is 1.20 m long, without the upward displacement caused by the pushing means as the board is folded down, the cabinet door would have to be more than 2.10 m high in order to store said board folded away, otherwise the board would emerge above the top of the door, preventing it from being closed. With the ironing board of the invention, the cabinet door, and so the cabinet itself, do not have to be so high and the ironing board can even be adapted to cabinets of different heights.

[0009] The ironing board of the invention also comprises fixing means for fixing the sliding body at a predetermined height when said board is folded down. In this way, said fixing means will cause the sliding body to stop at said predetermined height when the board is folded down.

[0010] According to a second aspect, the invention provides a cabinet for drying and dewrinkling that includes the foldable ironing board described.

DESCRIPTION OF THE DRAWINGS

[0011]

FIG. 1 is a perspective view of a first embodiment of the invention with the ironing board folded away.

FIG. 2 is a perspective view of the embodiment of FIG. 1, with the ironing board folded down.

FIG. 3 is a profile view of the embodiment of FIG. 1 with the ironing board folded away.

FIG. 4 is a profile view of the embodiment of FIG. 1 with the ironing board in an intermediate position.

FIG. 5 is a profile view of the embodiment of FIG. 1 with the ironing board folded down.

FIG. 6 is a perspective view of the sliding body and the base of the embodiment of FIG. 1.

FIG. 7 is a cross section of the sliding body and the base of the embodiment of FIG. 1.

FIG. 8 is a profile section of the sliding body and the base of the embodiment of FIG. 1.

FIG. 9 is a front view, a profile section and a plan section of the sliding body and the base of a second embodiment.

FIG. 10 is a detailed view of the ironing board of the embodiment of FIG. 9 with the ironing board in an intermediate position.

DETAILED DISCLOSURE OF AN EMBODIMENT OF THE INVENTION

[0012] With reference to figures 1 and 2, the cabinet 1 comprises a main enclosure 2 for housing clothes, with access to said main enclosure 2 through a door 3, means (not shown in the figures) for drying and dewrinkling said clothes in said enclosure 2, and a foldable ironing board 4 placed on the inside of the door 3. Said ironing board 4 comprises a board 5, a leg 7 hingedly connected to the underside of said board 5, a sliding body 9 attached to the inside of said door 3, the board 5 being hingedly connected to said sliding body 9, and pushing means for displacing said sliding body 9 upwards while said board 5 is being folded down.

[0013] The upward displacement produced by the pushing means enables the sliding body 9 to be higher when the board 5 is folded down than when folded away. Figures 3, 4 and 5 show the movement of the sliding body 9 during the folding down process.

[0014] As shown in figure 4, when the user begins to fold the board 5 down, the force of the pushing means moves the sliding body 9 upwards, since the gravity center of the board 5 is displaced from the end 6 to the other end, so that the force of the pushing means overcomes the weight carried by said pushing means. The gravity center of the board 5 is displaced by the combined effect of the movement of the board 5 itself and the rotation of the leg 7.

[0015] When the user folds the board 5 away, the weight of said board 5 exceeds the force of the pushing means, so that the sliding body 9 moves downwards and is returned along with the board 5 to its original position. As shown in figure 5, if the sliding body 9 was not displaced vertically during folding down and folding away, the board 5 would, on being folded away on the door 3, protrude from the top of said door 3.

[0016] The ironing board 4 also comprises fixing means for fixing said sliding body 9 at a predetermined height when said board 5 is folded down. As the board 5 is folded down, said fixing means anchor the sliding body 9 at said predetermined height.

[0017] With reference now to figures 6, 7 and 8, the ironing board 4 also comprises a base 8 attached to the inside of the door 3, and the sliding body 9 is movably connected to said base 8. In this embodiment, the pushing means are located in said base 8 and comprise two springs 10. The ironing board 4 also comprises sliding bushings 16 between the base 8 and the sliding body 9. The sliding body 9 comprises two wings 17 housing a shaft, the board 5 being attached to said shaft and said board 5 rotating with respect to an axis 18.

[0018] In a first embodiment, the fixing means comprise a pin 11 housed in said sliding body 9 and means for pressing said pin 11 against base 8. Said base 8 has at least one hole 15 at a predetermined height, and said pin 11 is inserted in said hole 15 when the board 15 is folded down. The fixing means also include a knob 14

joined to pin 11. Before folding the board 5 away, the user must release the pin 11 from hole 15 by operating said knob 14 by hand.

[0019] The predetermined height to which the board 5 is adjusted when folded down can be adjusted. In this first embodiment, said height is adjusted by choosing one of a plurality of holes 15 set at different heights. To select a given height, the user only has to close all said holes 15 except the one for the height required. Obviously, the length of the leg 7 must also be adjustable to match the height selected by the user for the board 5.

[0020] In a second embodiment, shown in figures 9 and 10, the base 8 comprises a plurality of steps 19 and the fixing means comprise a positioner 20 placed in the sliding body 9. Said sliding body 9 comprises a support 9a and a cover 9b.

[0021] The positioner 20 comprises a prolongation 21 that extends towards said steps 19, and said fixing means further comprise means 22 for pressing the positioner 20 against the steps 19. In this embodiment, means 22 for pressing the positioner 20 comprise a torsion spring placed on a shaft 22a parallel to the axis 18 of the board 5.

[0022] The prolongation 21 of the positioner 20 presses against the corresponding step 19 when the board 5 is folded away. In the same way, when the board 5 is folded down, said prolongation 21 also presses against the corresponding step 19 at the selected height. In this way, each step 19 is a stop that prevents the board 5 from displacing downwards. The possible heights at which the board 5 can be fixed are determined by the steps 19.

[0023] The positioner 20 comprises at least one protuberance 23 that extends towards the axis 18 of the board 5, the end of the board 5 having a shape such that, while the board 5 is being folded down, said end of the board 5 presses against said protuberance 23, making the positioner 20 swing with respect to the shaft 22a, so that the prolongation 21 is disengaged from the steps 19. In this way, while the board 5 is being folded down, the prolongation 21 does not press against the steps 19 and allows the vertical displacement of the sliding body 9.

[0024] In this embodiment, the positioner 20 comprises two protuberances 23 and the end of the board 5 presses against said protuberances 23 by means of protuberances 30. Figure 10 shows one of the two protuberances 23 and one of the two protuberances 30.

[0025] The profile of the protuberances 30 is such that, when the board 5 is folded away and when it is folded down, said protuberances 30 do not contact the respective protuberances 23. However, the radius of said profile is greater in the zones of the protuberances 30 that face the respective protuberances 23 while the board 5 is being folded down, so pressing said protuberances 23 and disengaging the positioner 20.

[0026] The prolongation 21 of the positioner 20 can also be disengaged from the steps 19 manually pulling

from the lower end 24 of the positioner 20. In this way, the user can move the board 5 from a predetermined height to a different height.

[0027] The ironing board further comprises a height regulating element 25 that can be fixed at different heights in the sliding body 9, said sliding body 9 displacing, while the board 5 is being folded down, up to the height where said regulating element 25 contacts a stop 8a in the base 8.

[0028] The sliding body 9 comprises, in the cover 9b, a vertical slot 26 where the regulating element 25 is fixed at the selected height. Said regulating element 25 comprises a piece 25a having a threaded pin 25b that crosses said vertical slot 26, and a knob 25c twisted to said pin 25b, the piece 25a contacting the stop 8a while the board 5 is being folded down.

[0029] The user can fix the regulating element 25 at different heights by means of the knob 25c. Turning said knob 25c the regulating element 25 is slackened, said regulating element 25 being movable to the new selected height. Once the regulating element 25 is displaced to said height, the user must fix the regulating element 25 by means of the turning of the knob 25c.

[0030] The skilled in the art will find it clear that multiple variations may be made to the embodiments described, so leading to many other embodiments that would still remain within the scope of the invention.

Claims

1. An ironing board for a clothes drying and dewrinkling cabinet, said cabinet (1) comprising a main enclosure (2) for housing clothes and a door (3) closing said main enclosure (2), said ironing board (4) being placed on the inside of said door (3), and said ironing board (4) comprising a board (5) and a leg (7) hingedly connected to the underside of said board (5), **characterised in that** it further comprises a movable sliding body (9) on the inside of said door (3), the board (5) being hingedly connected to said sliding body (9), and pushing means for displacing said sliding body (9) upwards while said board (5) is being folded down.
2. An ironing board according to claim 1, further comprising a base (8) attached to the inside of the door (3), the sliding body (9) being movably connected to said base (8).
3. An ironing board according to claims 1 or 2, further comprising fixing means for fixing said sliding body (9) at a predetermined height when said board (5) is folded down.
4. An ironing board according to claim 3, wherein the fixing means comprise a pin (11) housed in said sliding body (9) and means (12, 13) for pressing said

pin (11) against the base (8), said base (8) having at least one hole (15) at a predetermined height, said pin (11) being inserted in said hole (15) when the board (5) is folded down.

5. An ironing board according to claim 4, wherein the fixing means also include a knob (14) joined to the pin (11), said pin (11) being released from hole (15) by hand operation of said knob (14).
6. An ironing board according to claims 3, 4 or 5, wherein the predetermined height at which the board (5) is fixed when folded down is adjustable.
7. An ironing board according to claim 3, wherein the base (8) comprises a plurality of steps (19), the fixing means comprise a positioner (20) placed in the sliding body (9), said positioner (20) comprising a prolongation (21) that extends towards said steps (19), and said fixing means further comprise means (22) for pressing said positioner (20) against the steps (19).
8. An ironing board according to claim 7, wherein the means (22) for pressing the positioner (20) comprise a torsion spring.
9. An ironing board according to claims 7 or 8, wherein the positioner (20) comprises at least one protuberance (23) that extends towards the axis (18) of the board (5), the end of the board (5) close to protuberance (23) having a shape such that, while the board (5) is being folded down, said end of the board (18) presses against said protuberance (23) making the positioner (20) swing so that prolongation (21) is disengaged from the steps (19).
10. An ironing board according to claim 9, wherein the end of the board (5) presses against the protuberance (23) of the positioner (20) by means of at least one protuberance (30).
11. An ironing board according to any of the claims 7 to 10, wherein the prolongation (21) of the positioner (20) can be disengaged from the steps (19) manually pulling from the lower end (24) of the positioner (20).
12. An ironing board according to any of the claims 7 to 11, further comprising a height regulating element (25) that can be fixed at different heights in the sliding body (9), said sliding body (9) displacing, while the board (5) is being folded down, up to the height where said regulating element (25) contacts a stop (8a) in the base (8).
13. An ironing board according to claim 12, wherein the sliding body (9) comprises a vertical slot (26) where

the regulating element (25) is fixed at the selected height, and said regulating element (25) comprises a piece (25a) having a threaded pin (25b) that crosses said vertical slot (26), and a knob (25c) twisted to said pin (25b), the piece (25a) contacting the stop (8a) while the board (5) is being folded down and the regulating element (25) being fixable at different heights by means of the knob (25c). 5

14. An ironing board according to any of the preceding claims, wherein the pushing means comprise at least a spring (10). 10

15. A cabinet for drying, dewrinkling and ironing clothes, comprising a main enclosure (2) for housing clothes and means for drying and dewrinkling said clothes in said enclosure (2), **characterised in that** it comprises an ironing board according to any of the preceding claims. 15

20

25

30

35

40

45

50

55

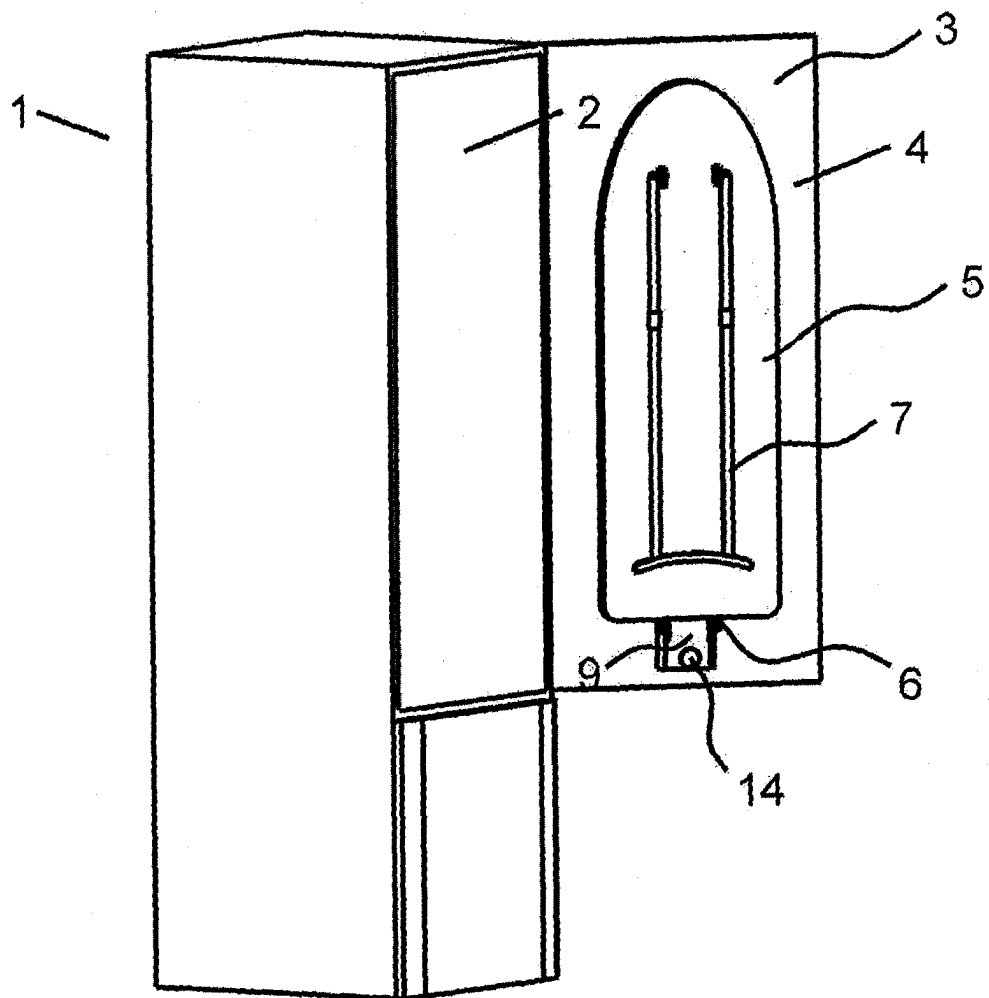


Fig.1

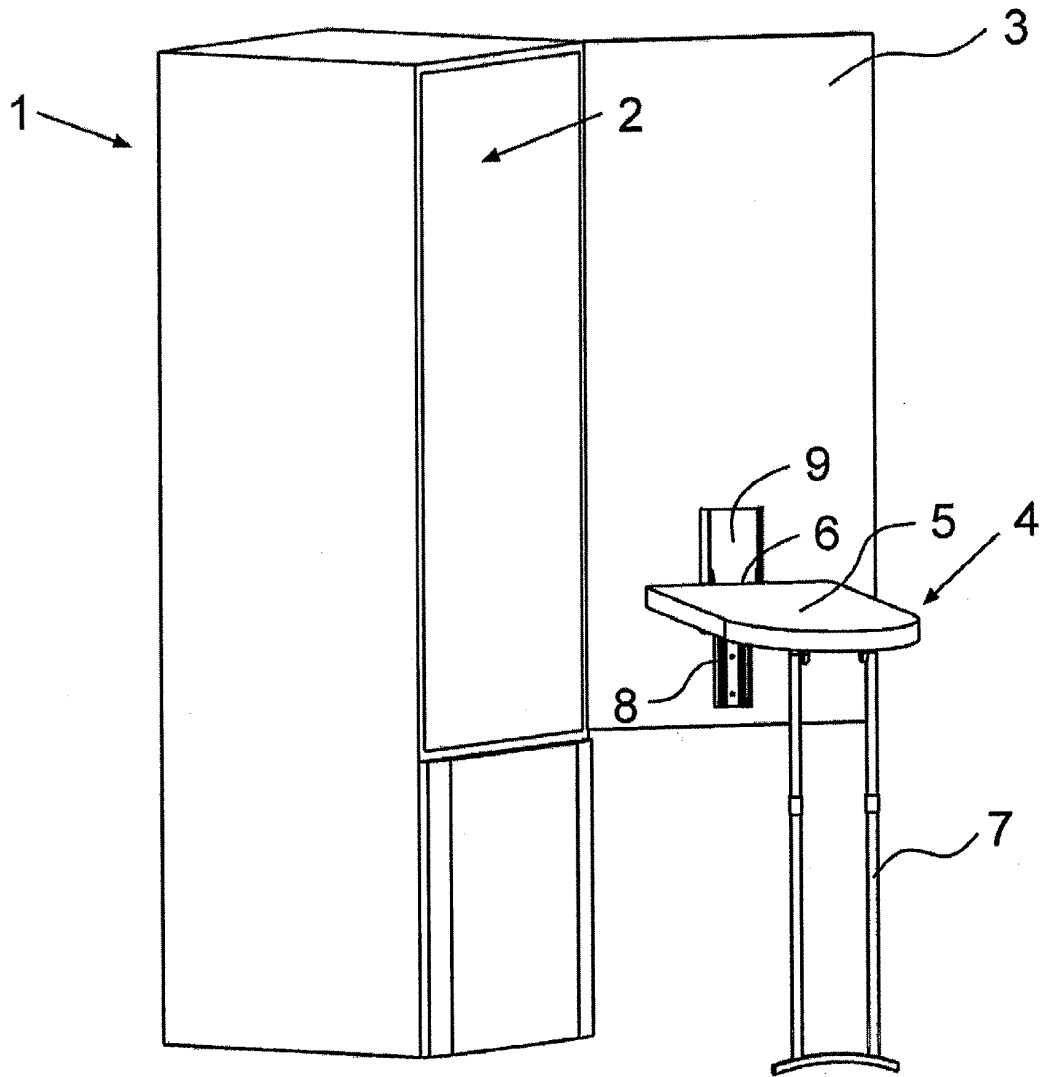


Fig.2

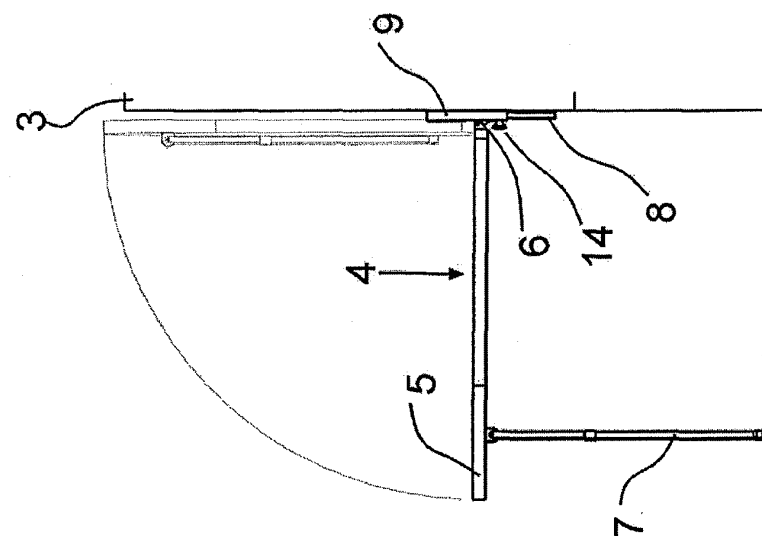


Fig.5

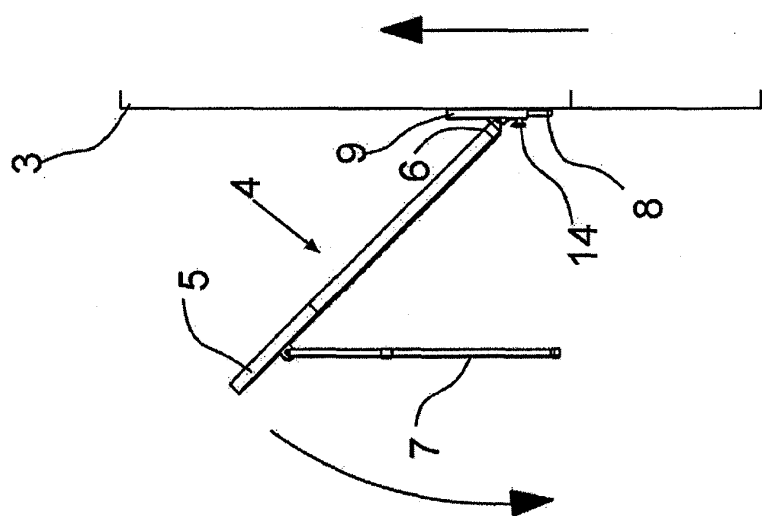


Fig.4

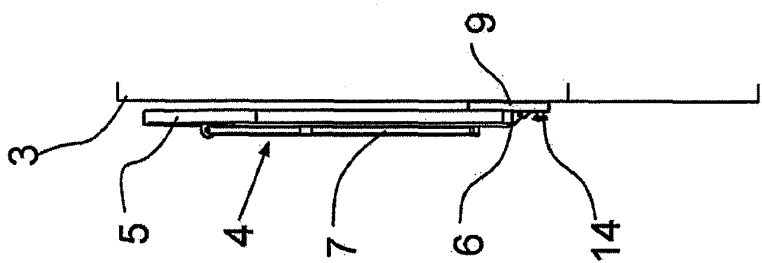


Fig.3

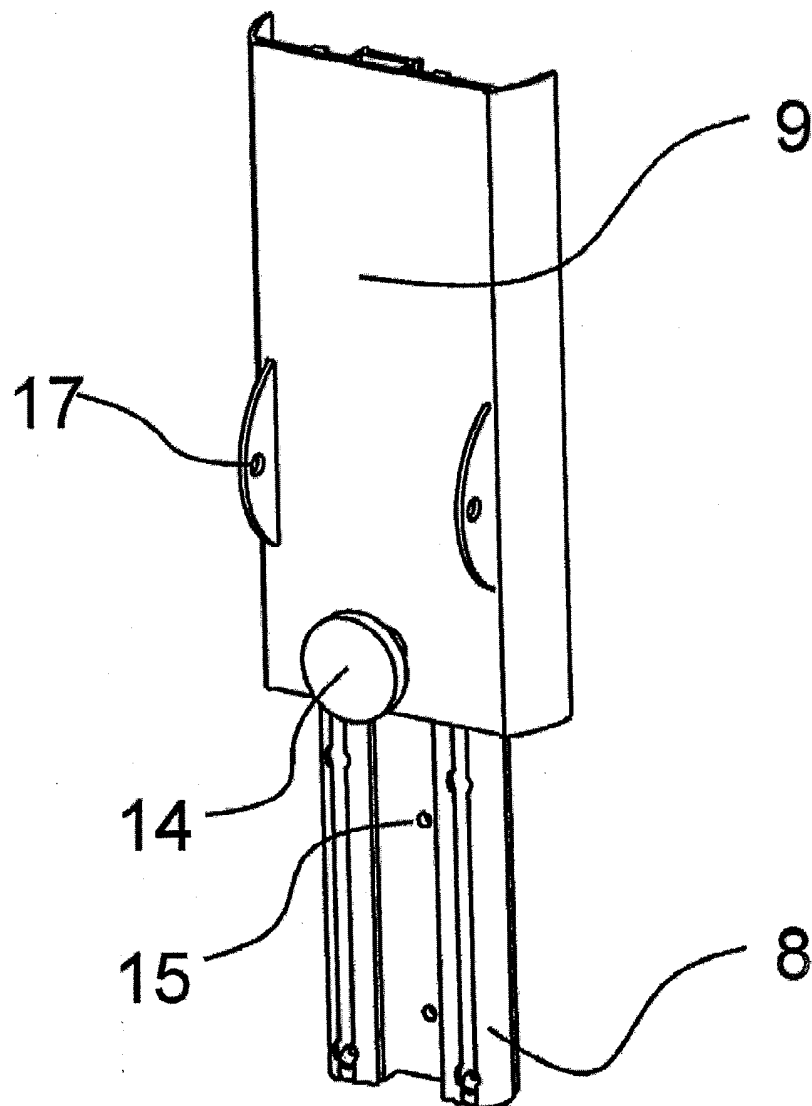


Fig.6

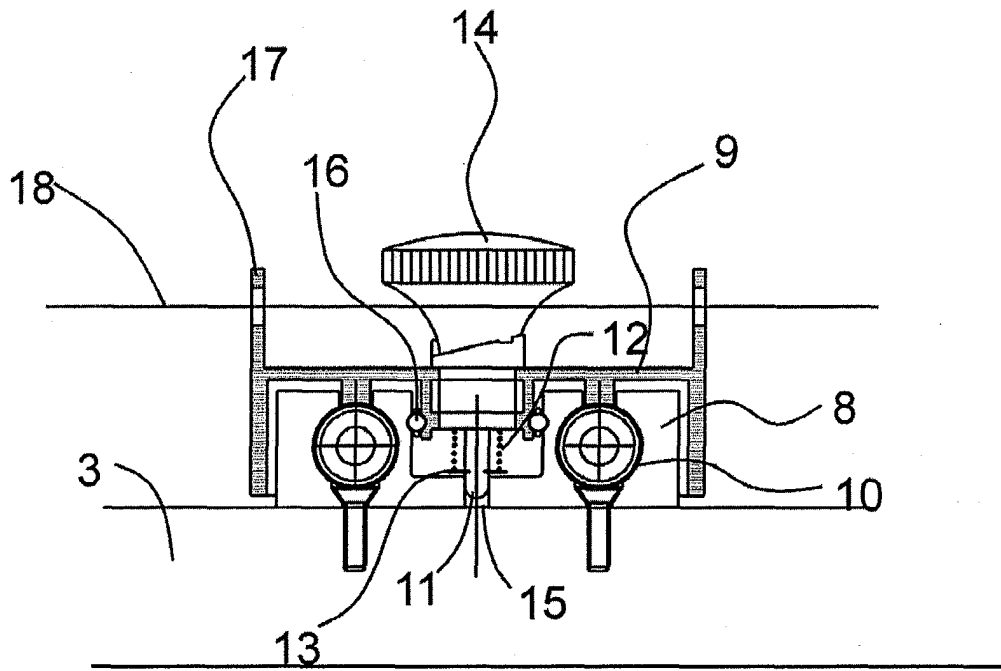


Fig.7

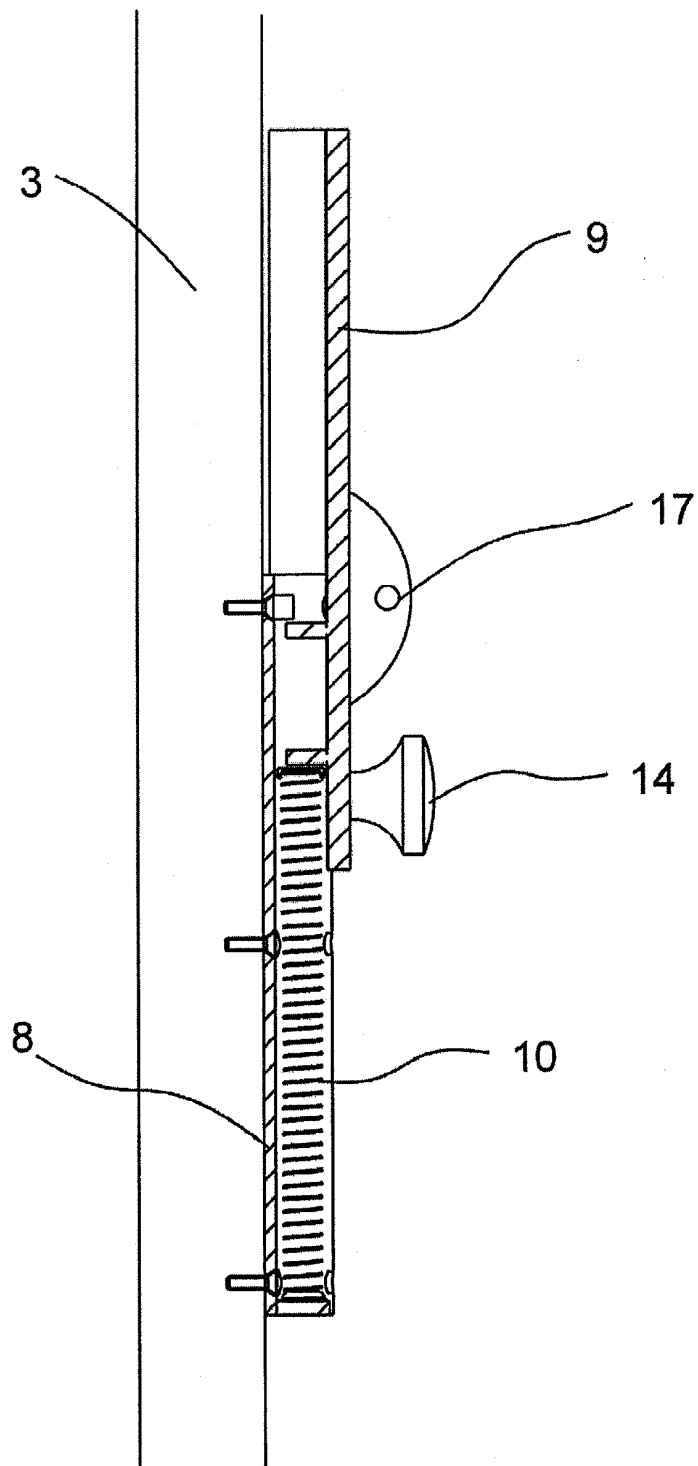


Fig.8

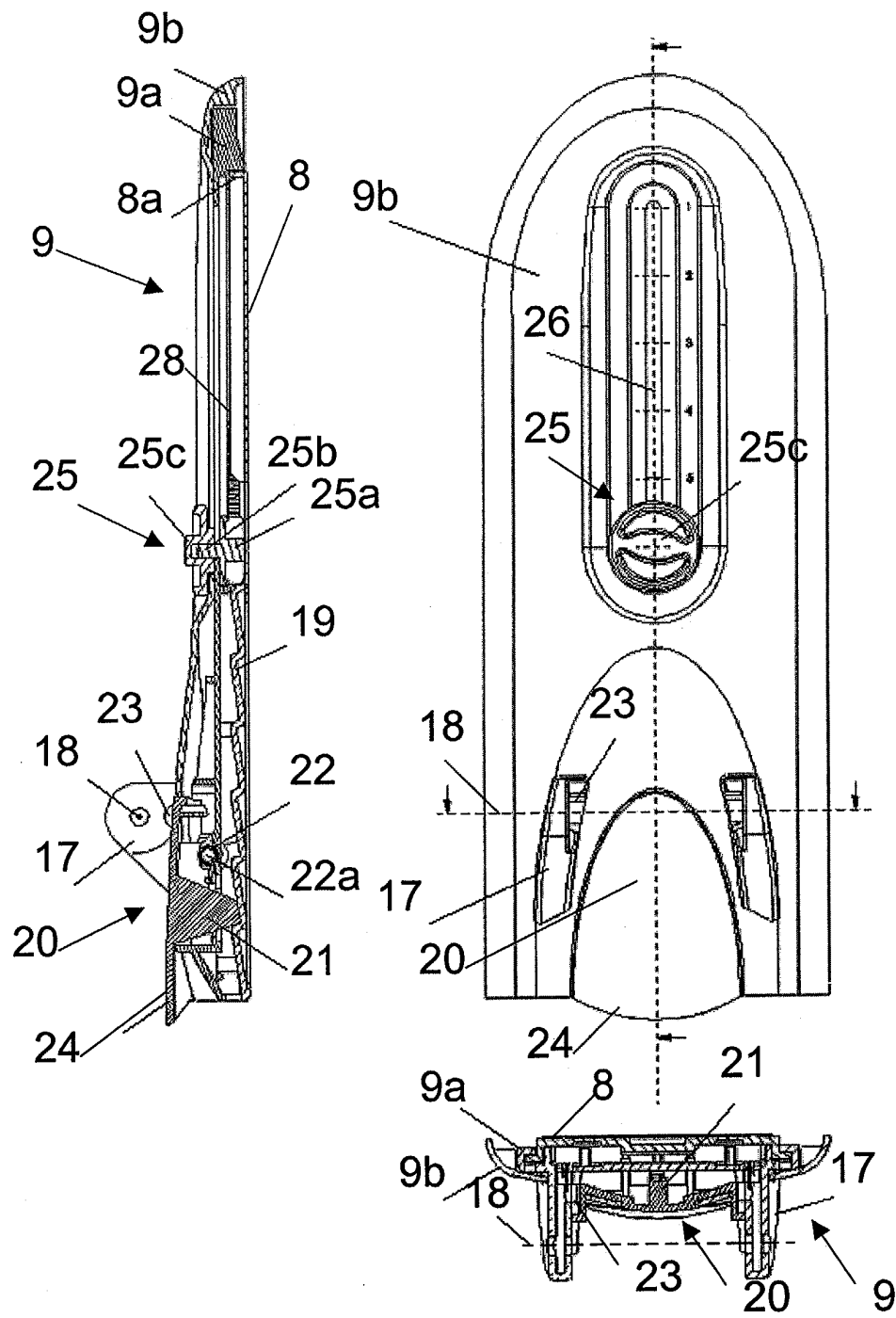


Fig. 9

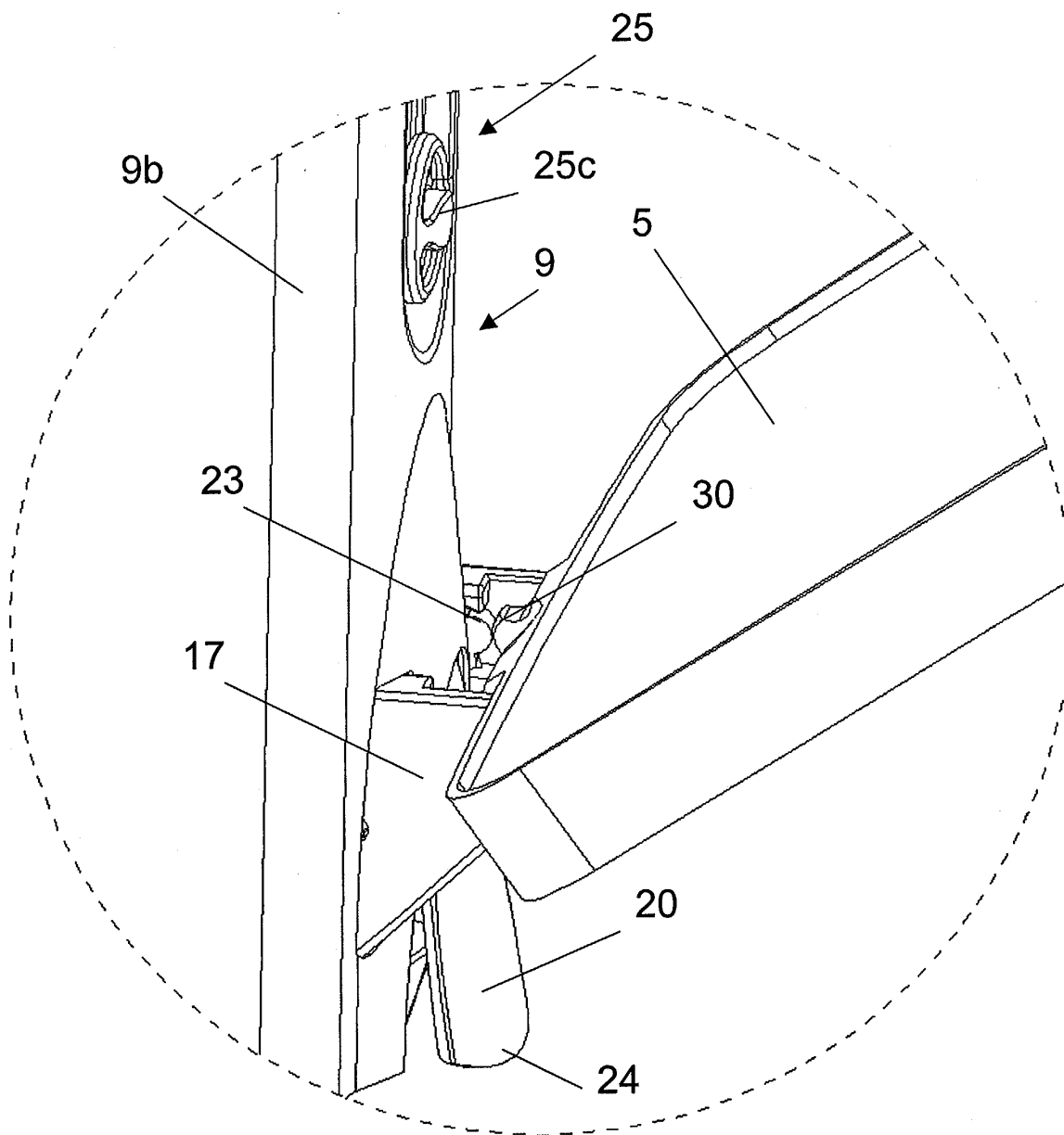


Fig. 10



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 38 0143

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 1 532 973 A (SOPHIA ADELSON) 7 April 1925 (1925-04-07) * the whole document *	1,14,15	A47B77/10 D06F81/06
X	FR 2 337 526 A (CRAMER ROBERT) 5 August 1977 (1977-08-05) * the whole document *	1,14,15	
A	US 1 765 343 A (SERN MADSEN) 17 June 1930 (1930-06-17) * the whole document *	1-15	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47B D06F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		21 October 2003	Ottesen, R
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 O : non-written disclosure P : intermediate document T : theory or principle underlying the invention 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			

EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 38 0143

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-10-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 1532973	A	07-04-1925	NONE	
FR 2337526	A	05-08-1977	FR 2337526 A1	05-08-1977
US 1765343	A	17-06-1930	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82