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(72) Inventor: **Mascheroni, Luigi**  
**22060 Figino Serenza**  
**Como (IT)**

(74) Representative: **Cicogna, Franco**  
**Ufficio Internazionale Brevetti**  
**Dott.Prof. Franco Cicogna**  
**Via Visconti di Modrone, 14/A**  
**20122 Milano (IT)**

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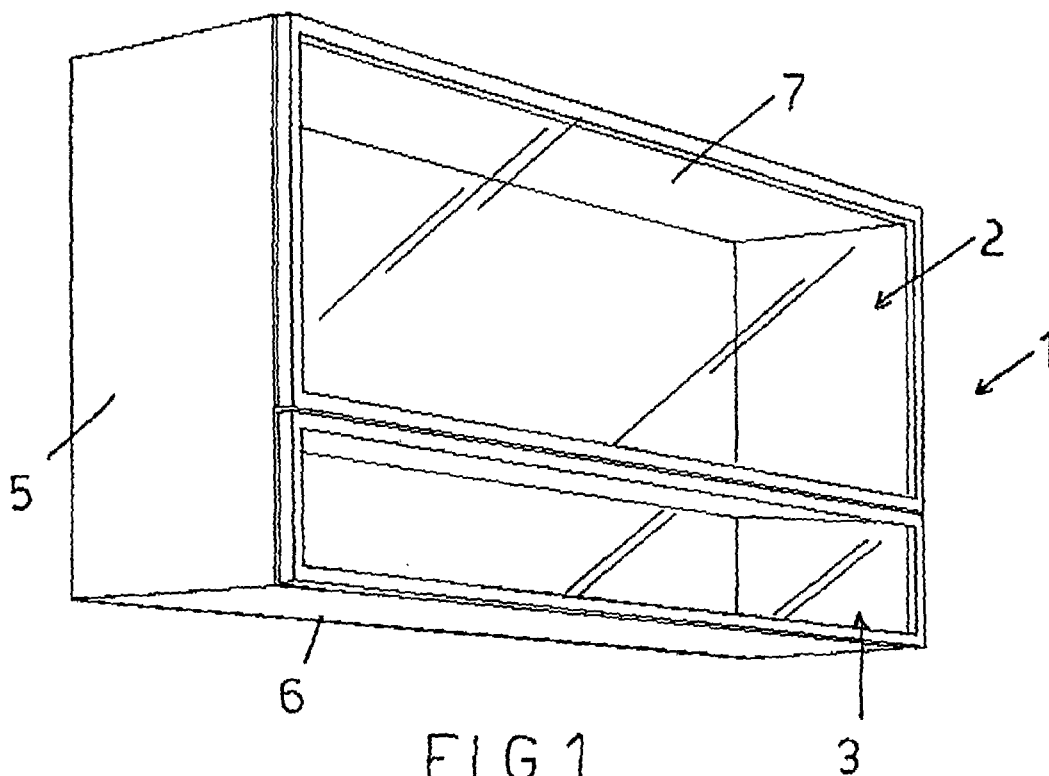
(71) Applicant: **DECOMA DESIGN S.r.l.**  
**22060 Figino Serenza CO (IT)**

(54) **Opening and closing device for suspended cabinets and the like**

(57) An opening and closing device for suspended cabinets and the like comprises at least a tilting wing (2), cooperating with a slidable wing (3) to close an opening formed in a cabinet or the like.

The tilting wing and slidable wing are pivoted to one

another by a pivoting mechanism, thereby to a translatory movement of the sliding wing will correspond a swinging or tilting movement of the tilting wing, to define at least a closed position and at least an open position of the wings.



## Description

### BACKGROUND OF THE INVENTION

[0001] The present invention relates to an opening and closing device, in particular for suspended cabinets and the like.

[0002] Suspended cabinets, which are mainly used for kitchen furniture arrangement, but also in other rooms in which it is desired to have a free under region, for example for providing a working surface, are already known.

[0003] Said suspended cabinets can comprise either laterally hinged wings or tilting wings.

[0004] Tilting wings, as is known, provide the advantage that they do not obstruct the front part of the suspended cabinet, as the tilting wings are opened. However, they are also affected by some drawbacks.

[0005] Actually, a main drawback, for a user of small height, is the difficulty of opening and closing the tilting wing of the cabinet.

[0006] A further drawback, for users of a comparatively high height, is that the wing may impact against the head of the user as the tilting wing is brought to its closing position.

### SUMMARY OF THE INVENTION

[0007] Accordingly, the aim of the present invention is to provide an opening and closing device, for suspended cabinets and the like, which solves the above mentioned problems or drawbacks of the prior art.

[0008] Within the scope of the above mentioned aim, a main object of the invention is to provide such an opening and closing device which can be operated in a very simple manner.

[0009] Another object of the present invention is to provide such an opening and closing device which can be easily associated with existing suspended cabinet constructions.

[0010] Another object of the present invention is to provide such an opening and closing device which have a small size, so as not to negatively affect the holding capability of the cabinet.

[0011] Yet another object of the present invention is to provide such an opening and closing device which has very good aesthetic properties and, in particular, affording the possibility of concealing to view its mechanical parts, while providing aesthetically patterned opening wings.

[0012] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an opening and closing device, for suspended cabinets and the like, characterized in that said device comprises at least a tilting wing, cooperating with a slidable wing to close an opening of said cabinet.

[0013] The tilting wing and slidable wing are pivoted to one another by a pivoting mechanism, thereby, to a

translatory movement of the slidable wing will correspond a tilting or swinging movement of the tilting wing, to define at least a closed position and at least an open position of said wings.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative, but not limitative, example in the accompanying drawings, where:

Figure 1 is a perspective view of a suspended cabinet including the opening and closing device according to the invention, being shown in a closed position thereof;

Figure 2 is a view similar to figure 1, but showing the suspended cabinet including the subject opening and closing device, in an open position thereof;

Figure 3 is a cross-sectional elevation view illustrating the opening and closing device according to the present invention, in a closed position thereof;

Figure 4 is a view similar to figure 3, but showing the subject device during its opening operation;

Figure 5 shows the subject device in its fully opened position and ready to be reclosed again;

Figure 6 is a partially exploded perspective view showing the pivoting mechanism for the wings of the device according to the present invention;

Figure 7 is a further cross-sectional elevation view showing that same opening and closing device, as adjusted for a less height of the furniture piece;

Figure 8 is a view similar to figure 7, but showing the subject opening and closing device adjusted for a middle height of the furniture piece; and

Figure 9 is a view similar to figure 8, but showing the subject opening and closing device, as adjusted for a larger height of the furniture piece.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] With reference to the number references of the above mentioned figures, the opening and closing device, according to the invention, which has been generally indicated by the reference number 1, comprises a tilting or swinging wing 2, cooperating with a slidable wing 3 for closing a front opening 4 of a suspended cabinet, including two sidewalls 5, a bottom panel 6, a top panel 7 and a bottom proper 24.

[0016] More specifically, the tilting or swinging wing 2 and slidable wing 3 are pivoted to one another by a pivoting or hinging mechanism, generally indicated by the reference number 8, which is applied either to one or both said sidewalls 5.

[0017] The pivoting device 8 operates so that, as the

slidable wing 3 is raised and lowered, also the tilting wing 2 will be respectively raised and lowered.

[0018] Said pivoting mechanism 8 substantially comprises a vertical bracket 9, having a top end portion thereof hinged to a hinge 13, supporting said tilting wing 2, and having its bottom end portion coupled to a supporting bracket 14 for said slidable wing 3.

[0019] The swinging or tilting wing 2, in addition to being supported by the articulated assembly 13, is also pivoted to the furniture construction, through a top hinge 18, which is preferably fixed inside the top panel 7.

[0020] The vertical bracket 9 can slide along a guide 10 included in a box-like body 11 which can be associated with the sidewall 5 and including a protective cover element 12.

[0021] The vertical bracket 9 has an adjustable length, thereby to allow the articulation mechanism to be easily fitted to furniture pieces of different heights.

[0022] To that end, the vertical bracket comprises a top portion 15 and a bottom portion 16, each of which includes a perforated portion, so as to adjust the overall length of the bracket 9, by arranging at a different spacing the perforated portions onto one another and by fixing them by bolts, rivets or the like, engaged through holes 17 as suitably formed through said two portions.

[0023] The opening and closing device comprises moreover dampening means, adapted to operate as end of stroke dampening elements, both for the opening and for the closing movements of the wings.

[0024] More specifically, said dampening means comprises a first piston dampening device 19 and a second piston dampening device 20, which are assembled in opposition to one another on a supporting block 21 coupled to the body 11 of the device in parallel to a guide 10 at a middle position, thereby they are respectively and alternatively engaged by the top portion 15 and supporting bracket 14.

[0025] Figure 5 shows a fully opened position of the device, and also clearly shows the operation of the first dampening device 19.

[0026] Figure 3 shows the fully closed position of the device, and shows moreover the operation of the second dampening device 20.

[0027] To reduce the force necessary for operating the device, the articulation 13 comprises a return spring 22 which is so calibrated as to operate against the weight of the swinging or tilting wing 2.

[0028] To allow an easy gripping and for properly operating the slidable wing 3, a handle or other suitable gripping member 23 is moreover provided.

[0029] The opening and closing device according to the present invention operates in a very simple manner.

[0030] In fact, it is sufficient to downward pull the slidable wing 3 to open said slidable wing and causing the tilting wing 2 to be raised, without any effort by the user, owing to the provision of the spring 22.

[0031] The first dampening device 19 will smoothly interrupt the opening stroke or displacement of the device.

[0032] For closing the device, it is sufficient to raise the slidable wing, thereby causing the tilting wing to be automatically lowered.

[0033] The second dampening device will prevent any closure impact from occurring.

[0034] It has been found that the invention fully achieves the intended aim and objects.

[0035] In fact, the invention provides an opening and closing device allowing to easily open a suspended cabinet by a mixed type of opening and closing system, i.e. including a slidable wing and a tilting wing, thereby combining the advantages provided by the tilting wing with the easy opening of the slidable wing.

[0036] In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, depending on requirements.

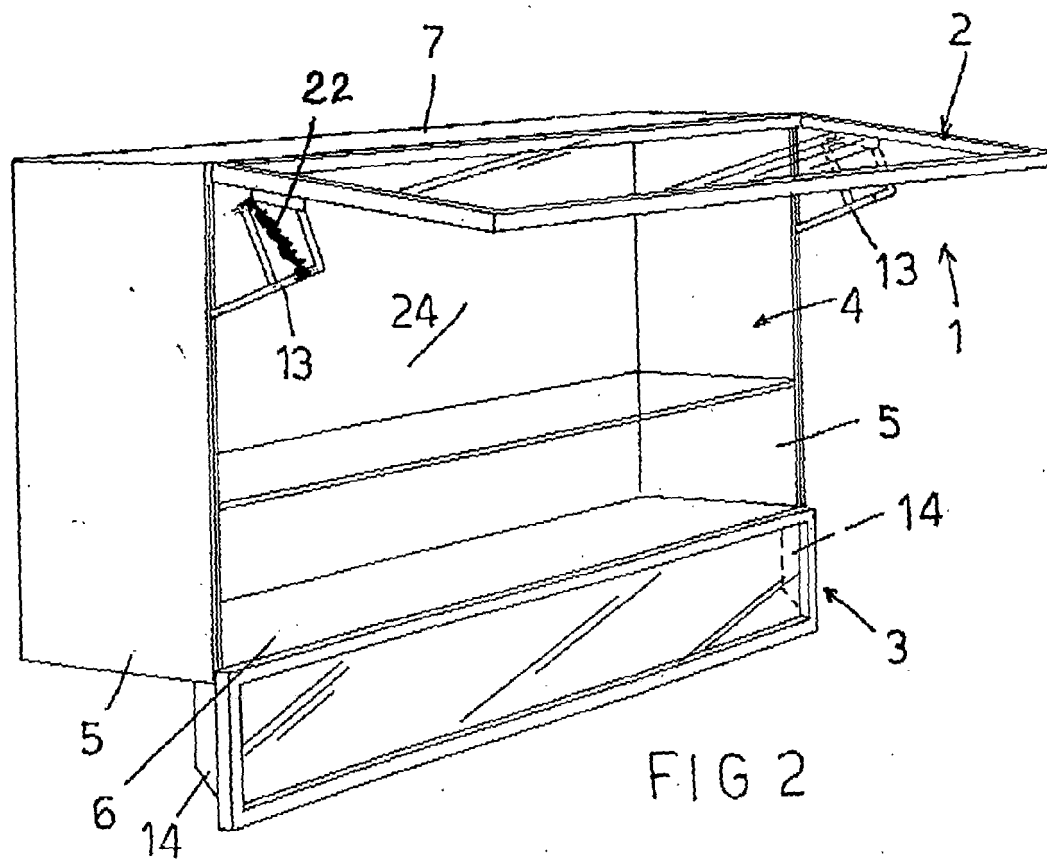
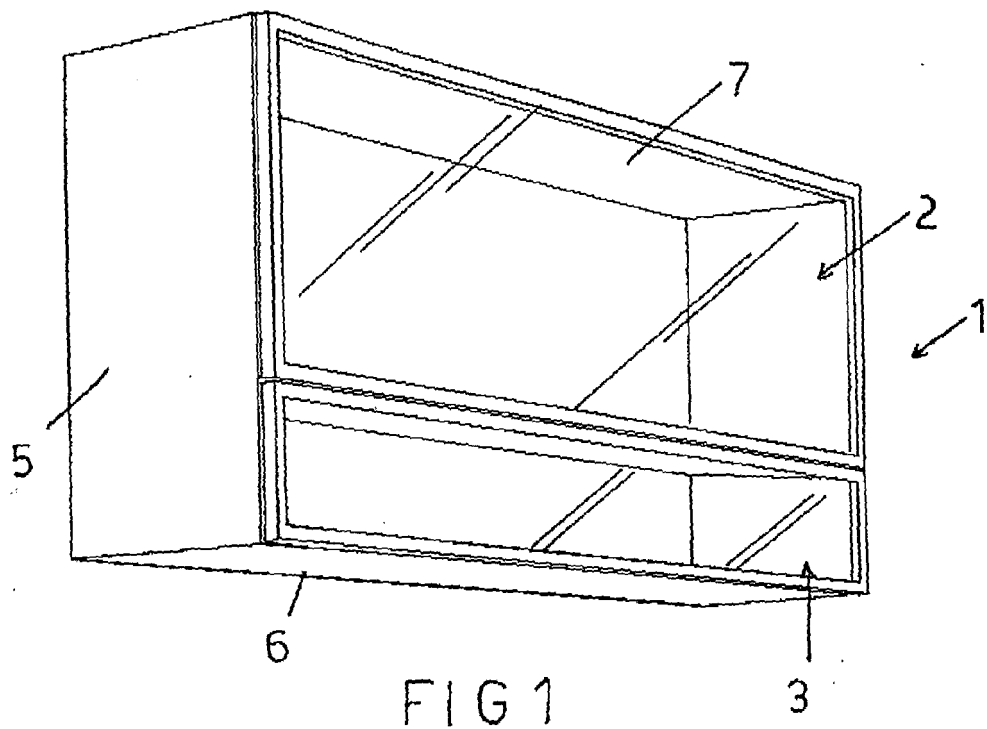
## Claims

1. An opening and closing device, for suspended cabinets and the like, **characterized in that** said device comprises at least a tilting wing cooperating with a slidable wing for closing an opening of said cabinet, and that said tilting wing and slidable wing are pivoted to one another by a pivoting mechanism, thereby, to a translatory movement of said slidable wing will correspond a tilting or swinging movement of said tilting wing, to define at least a closed position and at least an open position of said wings.
2. An opening and closing device, according to claim 1, **characterized in that** said cabinet comprises two sidewalls, a base panel, a top panel and a bottom, and that said pivoting mechanism is applied to one sidewall or both said sidewalls.
3. An opening and closing device, according to claims 1 and 2, **characterized in that** said pivoting mechanism operates so that, as said slidable wing is lowered and raised, said tilting wing is respectively raised and lowered.
4. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said pivoting mechanism comprises a vertical bracket having a top portion pivoted to a pivoting assembly, supporting said tilting wing, and a bottom end portion thereof coupled to a support bar for supporting said slidable wing.
5. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said tilting wing is supported by said pivoting assembly and is hinged or articulated to the construction of the furniture piece by a top hinge.
6. An opening and closing device, according to one or

more of the preceding claims, **characterized in that** said top hinge is preferably fixed inside the top panel of the furniture piece construction.

more of the preceding claims, **characterized in that** said device comprises either one or more of the disclosed and/or illustrated characteristics.

7. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said vertical bracket is slidable along a guide included in a box-like body. 5
8. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said box-like body is coupled to the sidewall and comprises a protective cover element. 10
9. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said vertical bracket is adjustable in length, to fit the pivoting mechanism to furniture pieces of different heights. 15  
20
10. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said vertical bracket comprises a top portion and a bottom portion, each said portion including a perforated portion, thereby adjusting an overall length of said bracket, by arranging at a different spacing the perforated portions onto one another and by fixing said perforated portions by fixing bolts, rivets or the like, engaged through holes formed through said two portions. 25  
30
11. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said device further comprises dampening means for dampening the opening and closing stroke of end positions of said device. 35
12. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said dampening means comprise a first piston damper and a second piston damper, said piston dampers being mounted on a mounting block fixed to the body of the device in parallel to said guide at a middle position, to be respectively and alternatively engaged by the top portion of said supporting bracket. 40  
45
13. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said pivoting mechanism comprises a return spring so calibrated as to counterbias the weight of the tilting wing. 50
14. An opening and closing device, according to one or more of the preceding claims, **characterized in that** said slidable wing comprises a handle or other gripping member. 55
15. An opening and closing device, according to one or



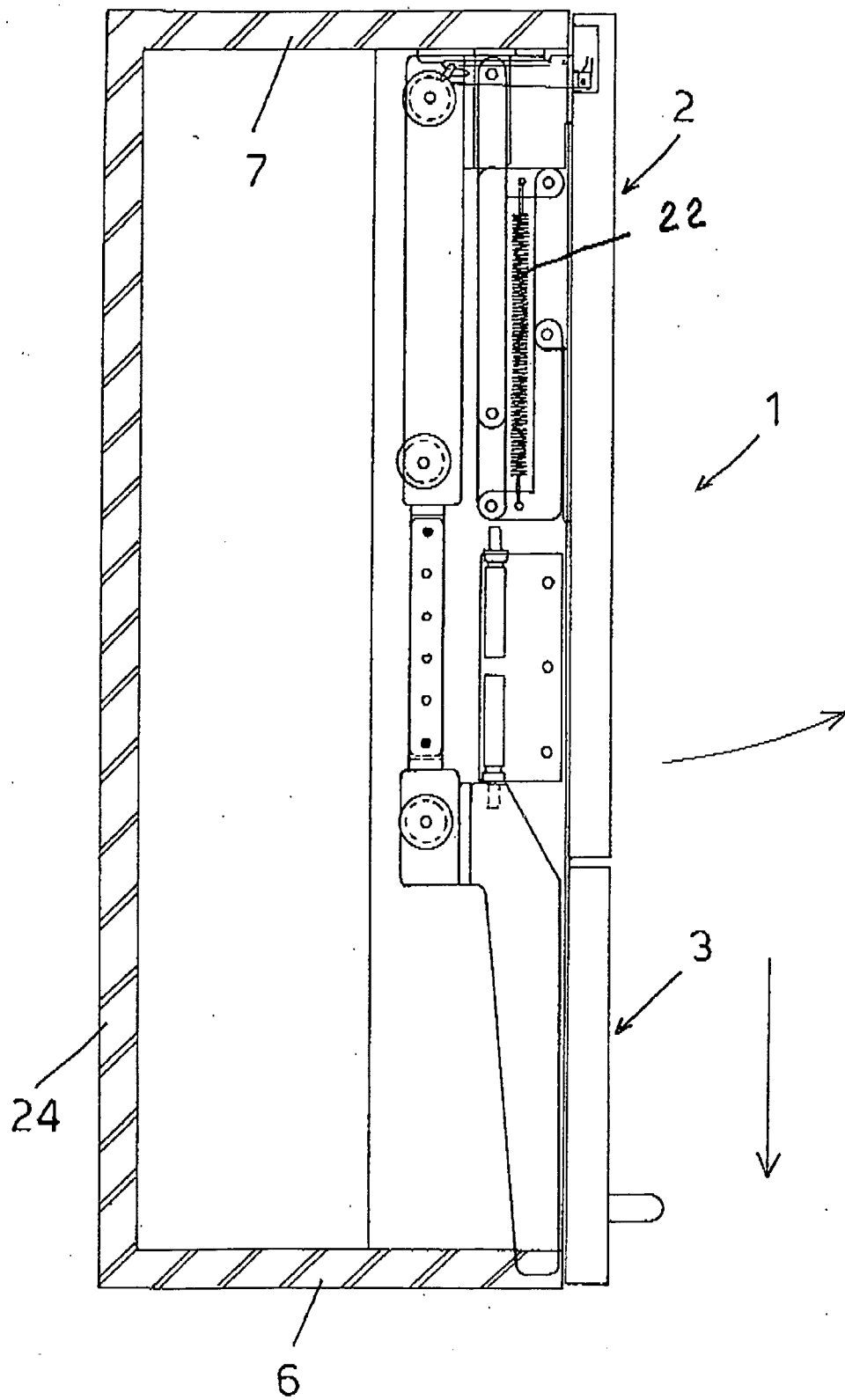
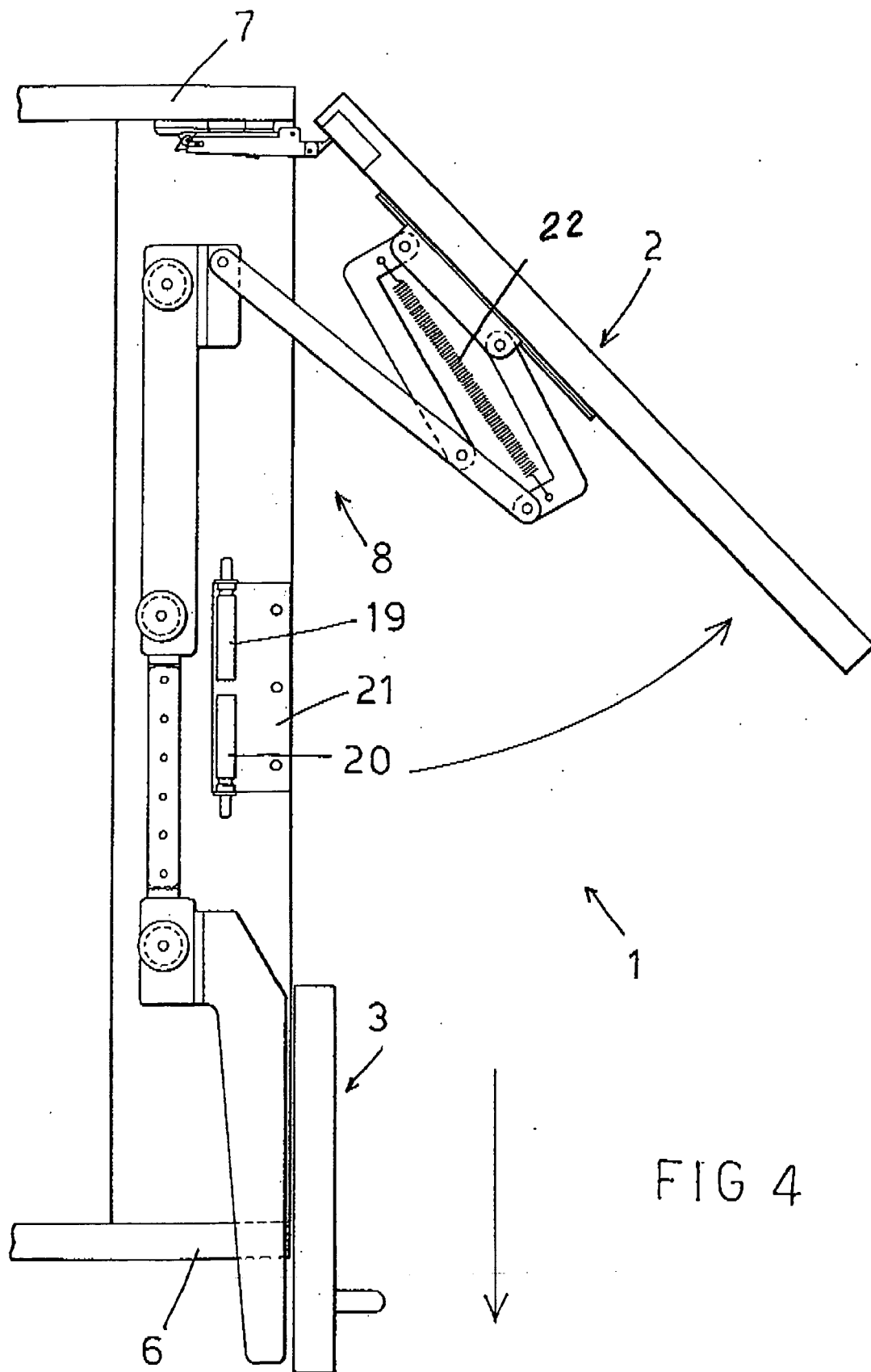


FIG 3



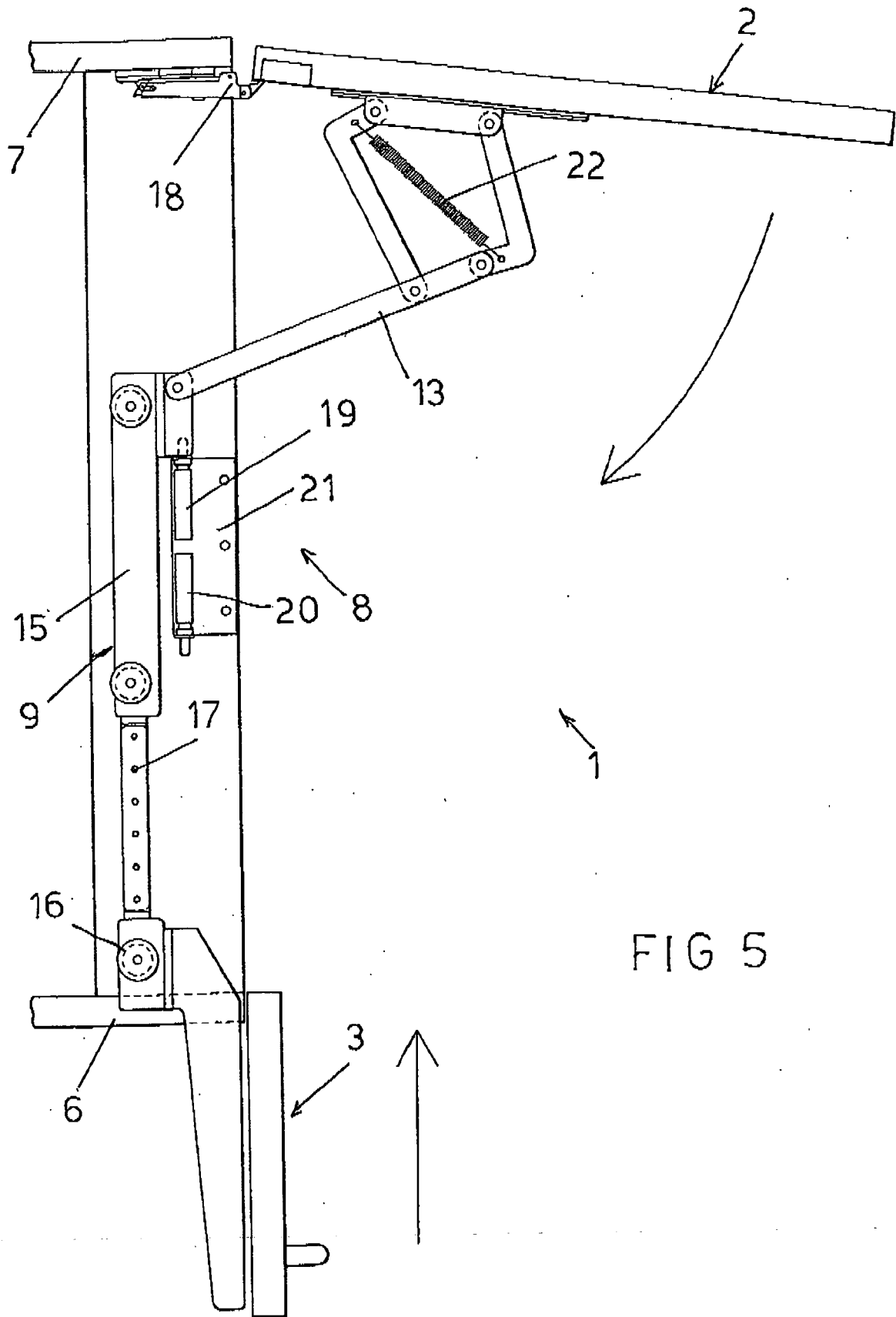
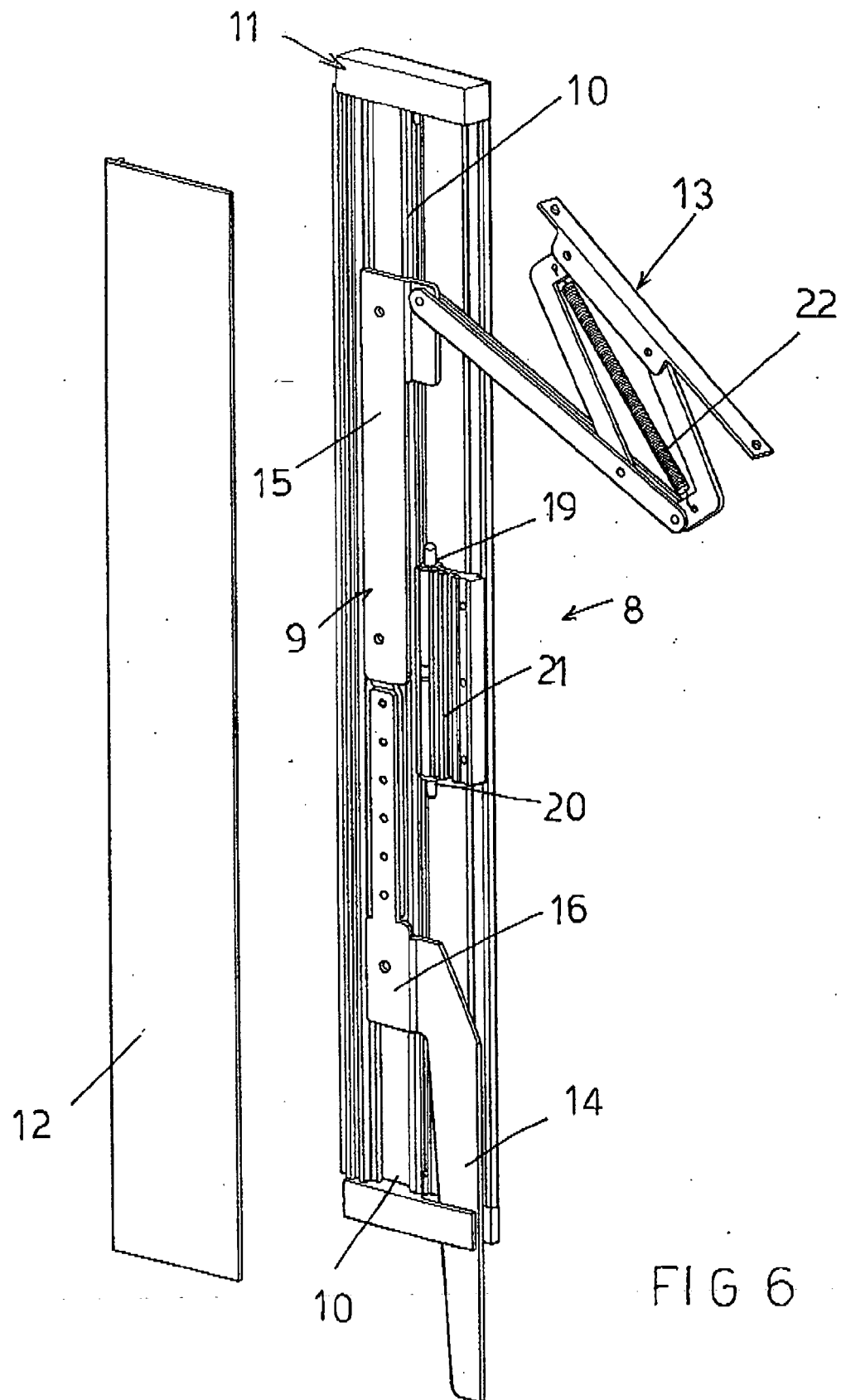


FIG 5





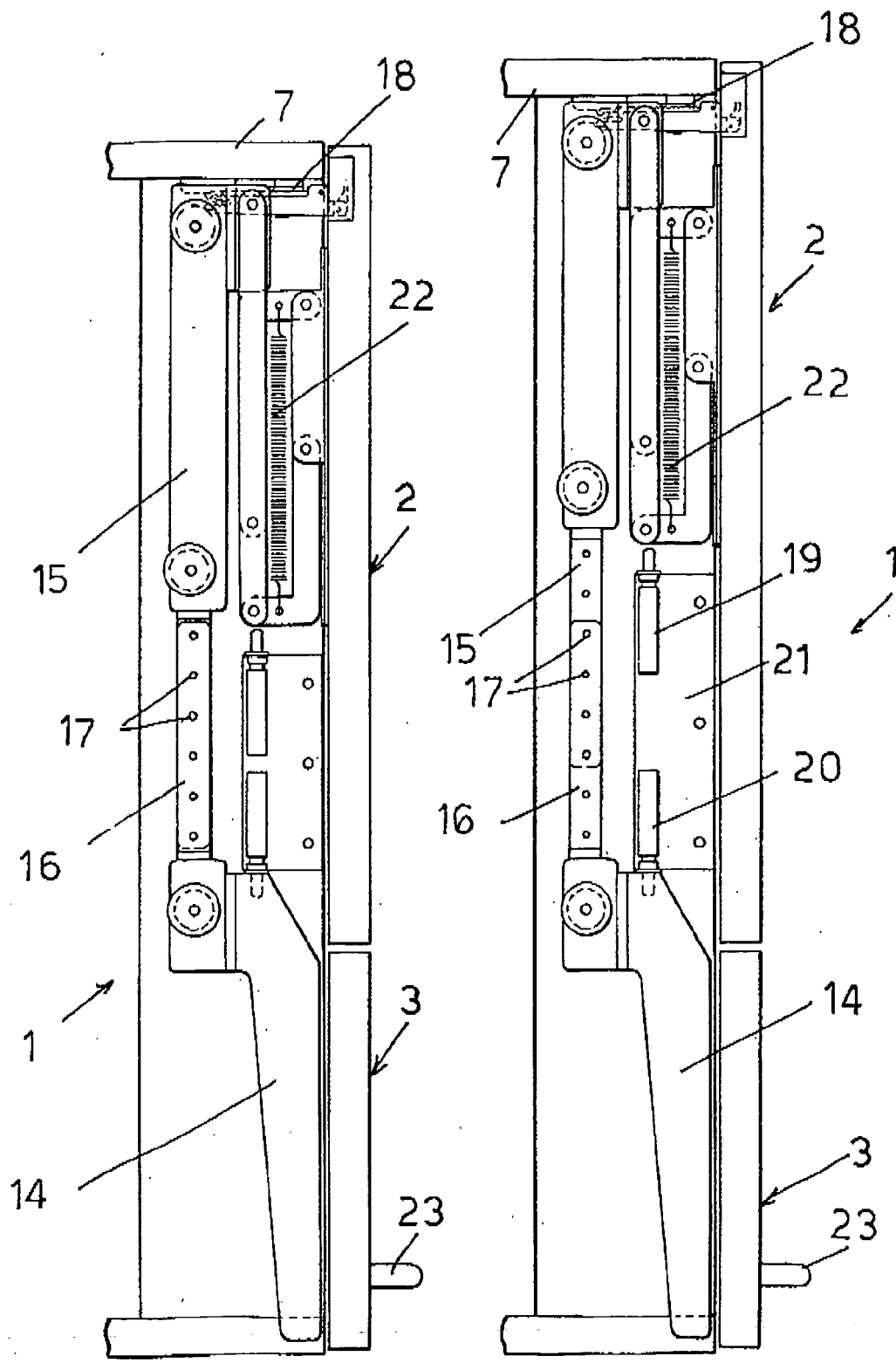


FIG 7

FIG 8

