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(72) Inventor: **Moreschi, Sergio**
I-25045 Castegnato (Brescia) (IT)

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(74) Representative: **Manzoni, Alessandro**
MANZONI & MANZONI,
UFFICIO INTERNAZIONALE BREVETTI,
P.le Arnaldo 2
I-25121 Brescia (IT)

(71) Applicant: **CO.FE.MO S.p.A.**
I-25045 Castegnato (Brescia) (IT)

(54) Selector device to lock the oscillating support of a chair seat in various positions

(57) A chair of the type either with an oscillating seat or with a seat and backrest having synchronized movements comprising: a stationary box-body (13) fixed onto a support base (14); an oscillating support (11), hinged to said box-body (13) and bearing the seating means; and a selector device (17) to lock/unlock the oscillating

support (11) on the stationary body. The selector device comprises a locking element (18) and a preselection connecting rod (19) revolving independently on a pin and interconnected with a pair of elastic elements (20, 21) acting in opposition to each other.

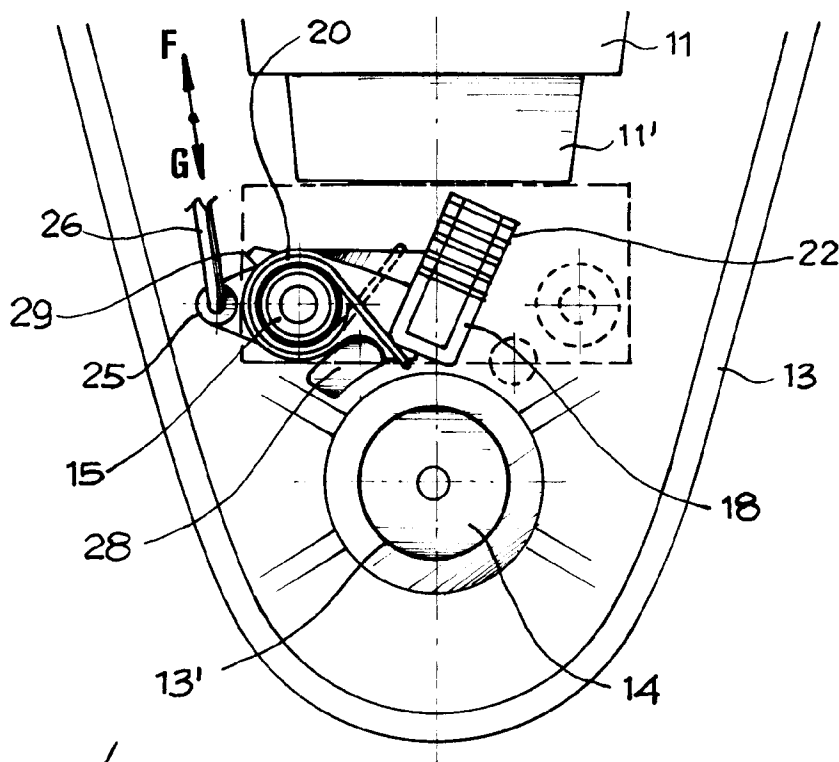


Fig. 1a

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Description

The present invention pertains to chairs, especially office chairs, of the type comprising: a stationary box-shaped body fixed onto a supporting base, an oscillating support hinged onto said body and bearing the seat, and a mechanical device locking/unlocking the oscillating support, and therefore the seat, on the stationary body.

In such chairs, the locking/unlocking device is used as a selector to vary horizontal arrangement of the oscillating support and to establish correspondingly many positions to use the seat for a more comfortable and handier use of the chair.

Locking/unlocking devices with such a function have already been proposed placed and operating between the fixed box-body and the oscillating support and controlled by a control lever through a rigid connecting tie-rod.

It is however an object of the present invention to propose a position selector device for chairs, either with an oscillating seat or with a seat and backrest having synchronized movements, achieved through a new arrangement and combination of elements for a simpler construction, handier assembly and greater reliability of the device.

The selector device proposed herein is basically as claimed in claim 1. It shall anyhow be described more in detail in the continuation of the description made with reference to the accompanying drawings in which:

Figures 1 and 1a are plan views of the oscillating unit complete with selector device in an operating and non-operating position respectively;

Figure 2 is a cross-sectional view according to the II-II in Fig. 1; and

Figure 3 is a partial cross-sectional according to line III-III in Fig. 1.

In said drawings, the oscillating unit for chairs is indicated globally with 10 and basically comprises an oscillating support 11 that supports the seating elements of seat and backrest, oscillating integrally or equipped with synchronized oscillations, and which is hinged, by means of at least one horizontal-transverse pin 12, to a box-body 13 applied fixed onto a supporting upright 14 that rises up from a base - not illustrated. The coupling by means of the pin 12 allows the support 11 to oscillate with respect to the box-body 13, and, to obtain this, said pin 12 is located transversely in the front portion of the two components 11, 13 whereas the supporting upright 13 is located back so that the oscillating support 11 can tilt downwards towards the back starting from a basically horizontal position. The free end 11' of the oscillating support is turned towards the supporting upright 14 whose top is housed in a corresponding hole 13' made in the box-body 13.

Advantageously, this box-body 13 may be obtained by casting in a single piece and be provided on the inside

with at least one pair of reliefs 15 adjacent to the hole 13' designed to receive the supporting upright. The box-body 13 is then fitted with a cover 16 which has no bearing functions, but only aesthetic functions:

In the box-body 13, a selector device 17 is fixed which is designed to interact with the free end 11' of the oscillating support 11 to lock it in several positions and to allow changing the inclination of the seating elements on the box-body which remains fixed.

One of the reliefs 15 inside the box-body acts as a pin and the selector device 17 is applied onto this relief. Said selector device 17 essentially comprises a locking element 18, a preselection connecting rod 19, and a pair of elastic means 20, 21 acting in opposite directions to each other.

The locking element 18 and the preselection connecting rod 19 are fitted both rotating on a relief or pin 15. The elastic means 20, 21 are for example in the shape of helical springs also fitted on said relief or pin 15 and are for an elastic connection between the preselection connecting rod 19 and the locking element 18.

The locking element 18, eccentrically, has a head 22 with a face turned towards the free end 11' of the oscillating support, and said face has a number of teeth or steps 23, arranged for height and designed to intercept and lock said free end 11' of the oscillating support at various levels.

The preselection connecting rod 19 has a first arm 24 turned towards the head 22 of the locking element 18 and a second arm 25 turned in the opposite direction. This second arm 25 is connected to one end of a rigid tie-rod 26 whose opposite end is connected to a control lever 27 on one side of the unit 10 and susceptible to rotate around its axis to control, through the tie-rod 26, the rotation of the connecting rod 19.

Of the two springs, a first spring 20 has one of its ends engaged to the first arm 24 of the preselection connecting rod 19 and its other end hooked onto the locking element 18 adjacent to its head 22; the other spring 21 also has an end engaged to the first arm 24 of said connecting rod 19 and the other one hooked onto the locking element 18, but so as to act on this in opposition to the action of the first spring 20.

It is to be noted that the springs 20, 21 may be fitted in situ with no pre-charging and therefore handily; they are pre-charged with the connection of the connecting rod 19 to the tie-rod 26. The toothed locking element 18 has then a useful operating stroke towards and away from the free end 11' of the oscillating support 11 bounded by two stops 28, 29.

In the drawings the arrangement of the device 17 is clear along with its possibility to interact with the oscillating support 11 to lock the latter in various positions. It is sufficient to act on the control lever 27 to lock and unlock the device by means of the tie-rod 26. Then, a movement of the tie-rod in the direction of the arrow F in Fig. 1a tends to move the toothed head 22 of the locking element 18 further away from the oscillating support.

However, the movement of the locking element 18 is not immediate since it is still engaged to the support because of the load weighing on this and on the tooth with which the support is joined.

The connecting rod is however turned charging the spring 21. So as soon as the load on the seat is lightened, the locking element 18, stimulated by said spring, moves away from the support unlocking it. With a movement of the tie-rod 26 in the opposite direction (arrow G, in Fig. 1a) the connecting rod turns in the opposite direction and then it is the spring 20 that acts so as to move the locking element 18 into a position to intercept and stop the oscillating support in the desired position.

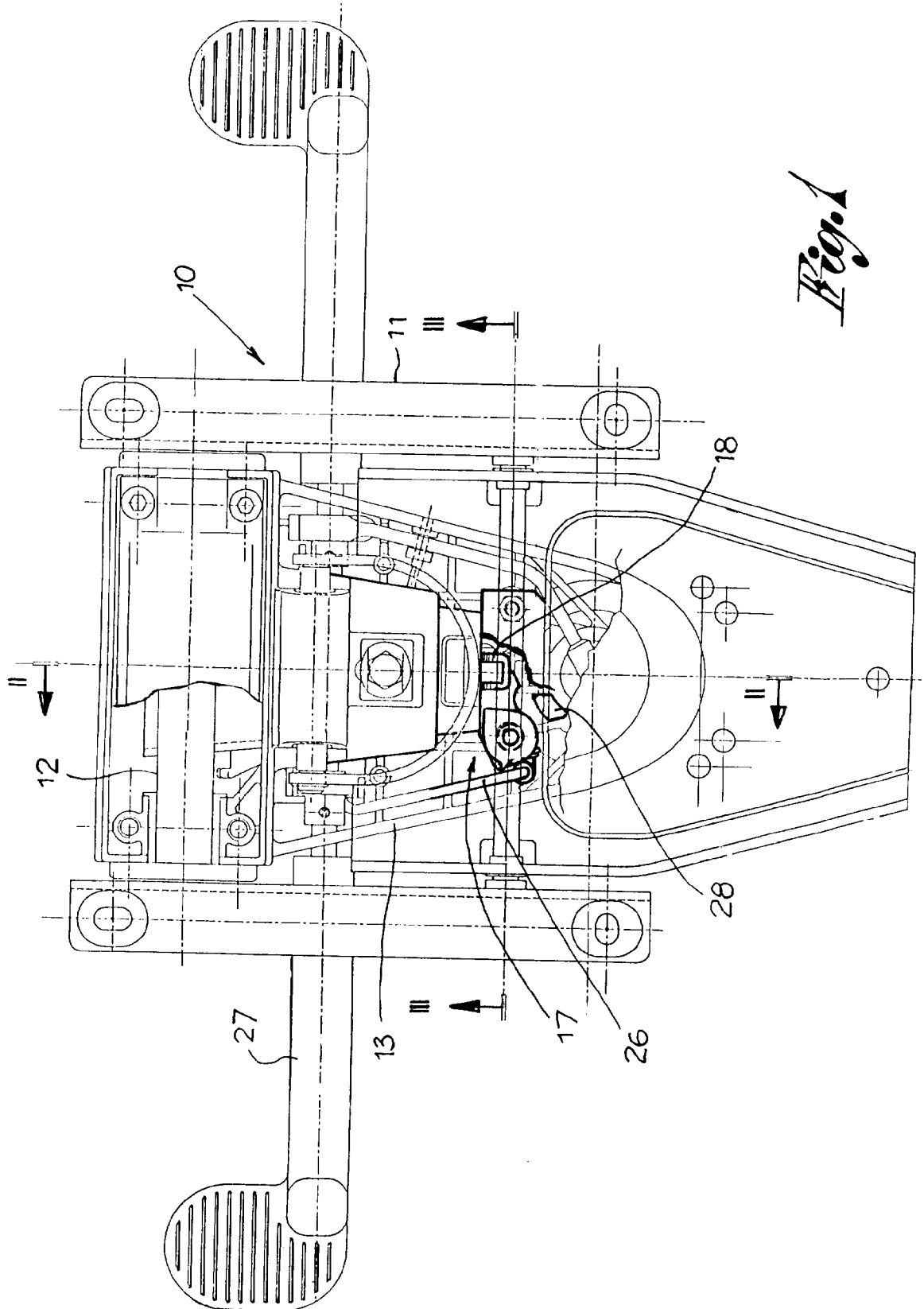
In any case, it should be noted that the elastic means 20, 21 may also be of a different configuration and coupled with the locking element on one side and with the connecting rod on the other in a different manner to the above description without by this going outside the sphere of the invention.

Claims

1. A chair of the type either with an oscillating seat or with a seat and backrest having synchronized movements, comprising: a stationary box-body (13) fixed on a support base (14); an oscillating support (11) hinged to said box-body (13) and bearing the seating means; and a selector device (17) locking/unlocking the oscillating support (11) and therefore the seating means on the stationary body so as to vary the horizontal arrangement of the oscillating support and to define many positions of use of the seating, **characterized in that** said box-body (13) has at least one internal relief (15) acting as a pin bearing the selector device (17) and in that said selector device comprises a locking element (18) revolving on said relief or pin (15) and having teeth or steps (23) designed to interact with a free end of said oscillating support (11) to lock it and unlock it and a preselection connecting rod (19) also revolving on said relief or pin and designed to determine the rotatory movements of said locking element (18) with the aid of a pair of elastic elements (20, 21) acting in opposition to each other, the preselection connecting rod (19) being controlled manually with a control lever (27) and with the aid of a rigid tie-rod (26) connecting said lever to said connecting rod.
2. A chair according to claim 1, wherein said elastic means (20, 21) are helical springs also fitted around said relief or pin (15).
3. A chair according to claims 1 and 2, wherein
 - the locking element (18), eccentrically, has a head (22) with a face turned towards the free end (11') of the oscillating support, said face

having a number of teeth or steps (23), arranged for height and designed to intercept and lock said free end (11') of the oscillating support at various levels;

- the preselection connecting rod (19) has a first arm (24) turned towards the head (22) of the locking element (18) and a second arm (25) turned in the opposite direction, this second arm (25) being connected to one end of the rigid tie-rod (26) whose opposite end is connected to the control lever (27) on one side of the unit (10) and susceptible to rotation around its own axis;
- one of the two springs (20) has one of its ends engaged to the first arm (24) of the preselection connecting rod (19) and its other end hooked onto the locking element (18) adjacent to its head (22) and the other spring (21) also has one end engaged to the first arm (24) of said connecting rod (19) and the other one hooked onto the locking element (18), but so as to act on this in opposition to the action of the first spring (20).



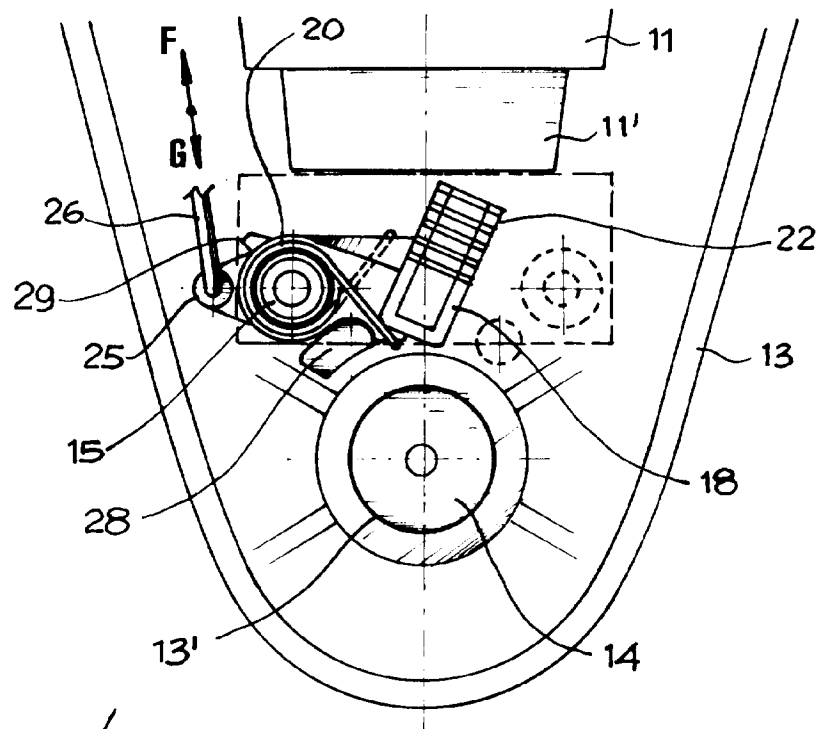


Fig. 1a

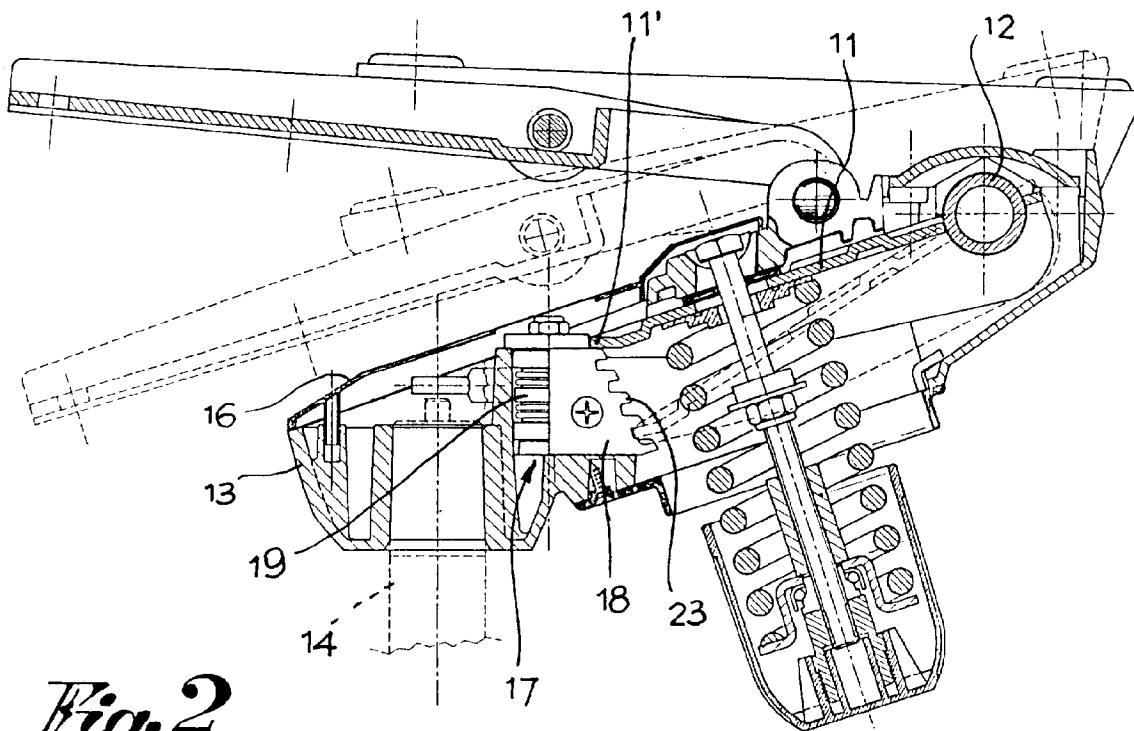
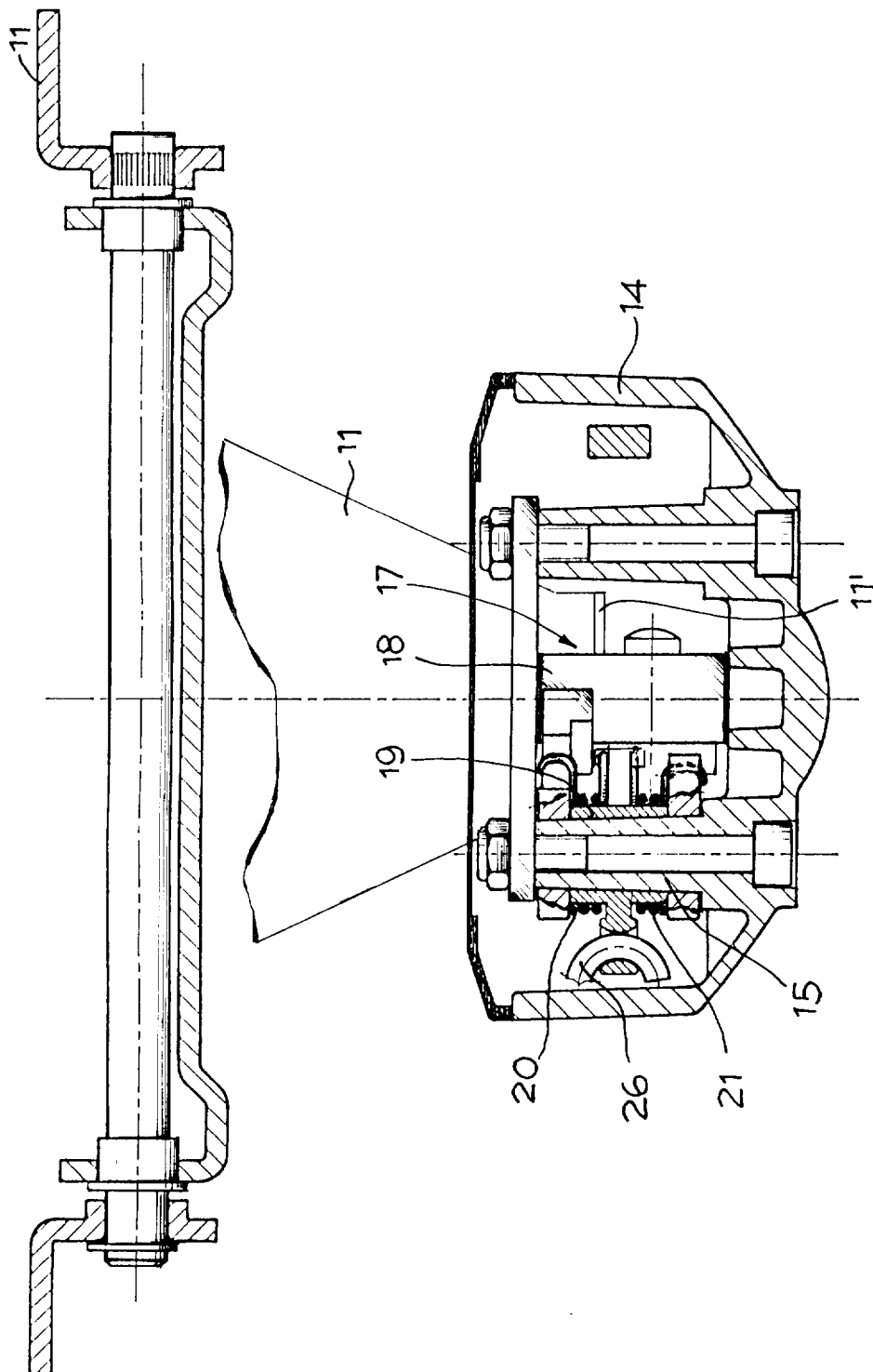


Fig. 2





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EUROPEAN SEARCH REPORT

Application Number
EP 95 83 0264

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.6)
A	EP-A-0 482 439 (AMBASZ) * column 5, line 17 - column 9, line 30; figures 1-5 * ---	1	A47C1/032 A47C3/026
A	DE-A-36 38 273 (GEBR. THONET) * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 January 1996	Examiner Mysliwetz, W
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

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