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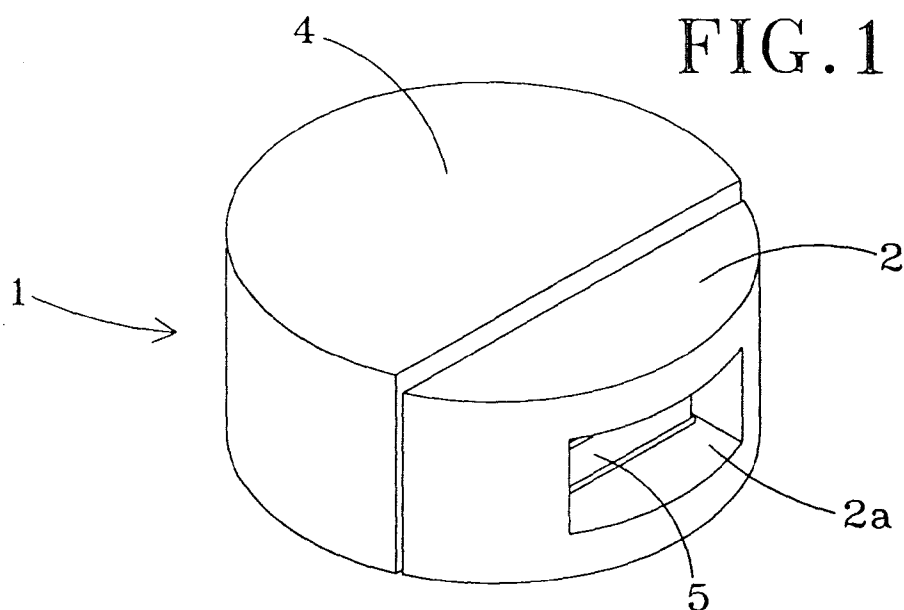
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(54) Retaining stop for doors and the like

(57) It comprises means for anchoring it to the ground, a front resilient member (2) constituting a stop for the door (10), and a magnet (5) which can cooperate with a metal strip (11) associated to the door to keep the latter in open position, and it is characterized in that the magnet (5) is mounted and guided to be displaceable between an inoperative position, in which it is kept with-

drawn from the surface of contact between the resilient member (2) and the door (10), and an operative position, in which the magnet is advanced towards the front part of the resilient member (2) to bring it near enough to the metal strip of the door in order to retain the latter; and in that it comprises means (7) for displacing the magnet automatically from said operative position to said inoperative position.



EP 0 903 458 A1

Description

[0001] The present invention relates to a retaining stop for doors and the like, of the type performing the function of a stop and further allowing to keep the door in open position.

BACKGROUND OF THE INVENTION

[0002] Known in the art are stops for doors that are anchored to the ground and are provided with a resilient member in order to prevent the door from striking against the wall or against an item of furniture when it is opened; some of this stops are combined with means to retain the door in open position, such that they have a double stopping and retaining function.

[0003] Some of this retainers consist e.g. in a thin strip, narrow and elongate, mounted at one end on the stop itself, which can turn around the stop and pass under the door. The strip has a projection arranged on its free end, such that when the retainer is in an inoperative position the door can be opened against the stop and then the strip can be moved under the door until it is placed in front of it, such that the door is retained between the stop and the projection at the end of the strip. This assembly has obvious drawbacks, mainly those arising from the need for manual handling in order to withdraw the operative presence of the projection and release the door in order to close it.

[0004] Another type of device allowing to retain the door open is described in utility model ES-U-260402, in the name of the present applicant, and foresees the arrangement of a clamp on the door leaf, said clamp being pivotable between an inoperative position and a retaining position; in this latter, the clamp grips the stop which is secured to the ground and which is constituted by a cylindrical member.

[0005] Other retaining stops include a magnet which attracts a metal strip fixed to the door; in some cases, the stop member and the magnet are mounted on opposite sides of a rotatable base, whereby change from the stop function to the retaining function involves turning the base in order to make the retaining magnet face the door. Another known arrangement consists in placing a rotatable bipolar magnet on a base secured to the ground, and a simple magnet on the door, such that by turning the bipolar magnet on the base it is possible to achieve that the magnets facing each other have the same polarity, thereby not attracting each other (stop function) or that the magnets facing each other have opposite polarities, thereby attracting each other (retaining function).

[0006] In all the above cases, the need to handle manually the device in order to change the function makes it uncomfortable to use.

DESCRIPTION OF THE INVENTION

[0007] The object of the present invention is to provide a retaining stop for doors which does not have the mentioned drawbacks, which can be fitted to any kind of door and which is comfortable to use.

[0008] According to this object, the retaining stop of the invention is of the type comprising means for being anchored to the ground, a front resilient member which constitutes a stop to the opening of the door or the like, and a magnet that can cooperate with a metal strip associated to the door or the like in order to keep the latter in open position.

[0009] This retaining stop is characterized in that the magnet is mounted and guided to be displaceable between an inoperative position, in which it is kept withdrawn from the surface of contact between the resilient member and the door or the like, such that it is not attracted by the metal strip arranged on the door when the latter contacts the stop, and an operative position, in which the magnet is advanced to the maximum extent towards the front part of the resilient member, attracted by the metal strip arranged on the door when the latter is pressed sufficiently to bring the metal strip of the door near enough to the magnet such as to cause said advancement and to make the magnet contact the metal strip of the door in order to keep the latter retained; and in that it comprises means for displacing the magnet automatically from said operative position to said inoperative position withdrawn in its housing when the door is released from the retaining stop.

[0010] Shifting of the magnet to the operative position does not occur by the simple contact of the door against the retaining stop, even if the door hits the stop with a certain force. In order to change to the operative position it is necessary that the door exerts a special pressure on the stop, such that the front resilient portion of the stop becomes deformed, the metal strip of the door thus approaches the magnet which is at the rear of the stop, until the magnet is attracted by the metal strip and therefore advances until it directly contacts the metal strip fixed to the door, whereby the latter is positively retained.

[0011] In order to release the door from this retention it is sufficient to pull the door overcoming the force of the magnet, whereby the magnet will automatically return to the inactive position.

[0012] By virtue of this features it is not necessary to handle the device for shifting from the simple stop function to the retaining function; it is sufficient to push the door deforming the front resilient member of the stop until the metal strip of the door enters the action field of the magnet and causes it to advance to the operative position.

[0013] According to the preferred embodiment of the invention, the means for automatically displacing the magnet from said operative position to said inoperative position comprise a metal member arranged in a posi-

tion which is opposite to that of the advancement of the magnet to contact the door.

[0014] This mechanism is simple and reliable, since it is not subject to suffering failures and it does not wear with time, and further its assembly has no difficulty.

[0015] Advantageously, the magnet is slidably arranged within a housing of non-magnetic material having the resilient stop member engaged on the front part thereof.

[0016] This arrangement allows the device to have a smooth and aesthetically pleasant exterior aspect, and protects the magnet from dust, blows, etc.

[0017] According to one particular aspect of the invention, the metal member which causes the magnet to withdraw to the inoperative position is a plate bent at right angles at one of its ends, which is arranged with this bent end fitted with play between a side wall and a rear wall of the magnet housing, and having the other end free to be displaced following the movement of the magnet.

[0018] This arrangement of the movable plate that can undergo an angular displacement around one end thereof allows to keep one end always near the magnet, even when the latter has travelled forward to its operative position, and this assists the subsequent attraction of the magnet by the plate and the return of the magnet to the inoperative position, once the door is released.

[0019] Preferably, the magnet is arranged between two parallel metal sheets, which are provided on a portion of their length with side projections limiting their forward travel.

[0020] Also preferably, the metal sheets are further provided with a rear projection in a portion of their width, preventing the metal plate from being in direct contact with the whole width of the magnet.

[0021] The side projections of the two metal sheets that sandwich and guide the magnet in its movement abut against the front part of the inner box of the body of the device, and at the same time the rear projection prevents the return plate from being in direct contact with the whole width of the magnet. The presence of these sheets sandwiching the magnet allows the latter to be a simple conventional rectangular block.

[0022] Also preferably, its overall housing is constituted by a base and a cover, having inner projections for mutual engagement of the base and cover and for the retention of the front resilient member, as well as for guiding the magnet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] For a better understanding of the above description, appended is a set of drawings in which, schematically and only by way of non-limiting example, a practical embodiment is shown.

[0024] In said drawings,

figure 1 is a perspective view of the retaining stop

of the invention, assembled;

figure 2 is a view in cross-section along a vertical plane of the stop of figure 1;

figure 3 shows the resilient member in plan view and in cross-section; and

figures 4,5 and 6 are plan views of the retaining stop of the previous figures, in its three operating positions.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0025] Figure 1 shows the outer aspect of the retaining stop of the invention, indicated generally with reference 1. Said stop has on the front part thereof a resilient member 2, made of a block of elastomeric material, a base 3 (which can be seen in figure 2) and a cover 4, these parts constituting the basic structure of the device. The resilient member 2, shown in plan view and in cross-section in figure 3, is coupled by means of two side lugs 2b is a gap defined between the base 3 and the cover 4.

[0026] As shown in figure 2, which is a cross-sectional view of the device taken along a vertical plane, the magnet 5 is inserted between two sheets 6 that are attached to it. Within the assembly, in addition to the movable magnet 5, there is a metal plate 7 arranged between the rear side of the magnet 5 and the rear wall 3a of the base 3. The shape and function of this plate 7 will be described below.

[0027] The magnet 5 can travel in the direction of arrow A, between the position of figure 2, in which it is completely withdrawn towards the rear of its housing, and a position in which its front side protrudes slightly from the resilient member.

[0028] The base 3 and the cover 4 have elongate inner projections 3b, arranged in the direction of displacement of the magnet, to facilitate its movement.

[0029] In the following the operation of the retaining stop will be described with reference to figures 4,5 and 6, which show the device in three different positions. These figures are plan views from above, in which the cover 4 has been omitted in order to show the movement of the inner parts 5 and 7 of the retaining stop.

[0030] The door 10 facing the retaining stop is provided with a metal strip 11, arranged to face and engage the magnet 5 when the device has to act as a retainer.

[0031] In figure 4 the magnet 5 and the plate 7 are in the same position shown in figures 1 and 2. In figure 4 it can be seen that the base has the shape of a portion of a circle, from which rises a rectangular enclosure formed by the rear wall 3a and the two side walls 3c. Between the end of one of the side walls 3c and the rear wall 3a there is a gap through which extends and is inserted the metal plate 7.

[0032] The sheets 6 that sandwich the magnet 5 have the shape shown in figures 4,5,6, with a rear projection 6a and a pair of side projections 6b; the magnet, on the contrary, is a rectangular member without projections like those of the sheets 6, in order to avoid a complex

manufacture.

[0033] The side projections 6b guide the magnet laterally, and at the same time serve as a stop to its forward movement, when they engage the front shoulders 3d of the base 3; the projection 6a prevents the metal plate 7 from engaging directly the magnet in all the width thereof, in order to avoid an excessive attraction force.

[0034] In figures 4,5,6 the opening 2a of the resilient member and the portion of the sheets 6 (and magnet 5) that would remain hidden within said opening are drawn in phantom lines, in order to show more clearly the movements of the magnet and its associated sheets 6.

[0035] The device is normally in the position of figure 4, with the magnet withdrawn inside its housing, attracted by the metal plate 7.

[0036] In this condition, when the door 10 contacts the resilient member, the latter deforms only slightly, dampening the blow and therefore performing its stopping function.

[0037] If the user wants the device to hold the door retained in open position, it is sufficient for him to press on the door in the direction of arrow B in figure 5, against the resilient member 2, which will deform allowing the metal strip 11 of the door to approach further the magnet 5 until it causes its forward displacement towards the strip 11 of the door, thus shifting to the position of figure 5, in which the magnet 5 remains in contact in all its width with the strip 11, the magnet therefore exerting all its capacity to retain the door.

[0038] When the user subsequently lets go of the door, the resilient member 2 tends to recover its initial shape: as a consequence of the elastic force exerted by the resilient member 2, and since the magnet 5 has a larger contact surface with the strip 11 than with the plate 7, it disengages from the latter and travels forward to the position of figure 6. This advancement is limited by the side projections 6b.

[0039] The door is thus retained by the magnet 5, and the resilient member 2 does not remain compressed.

[0040] When the door has to be released, it is enough to pull it in the opposite direction to that of arrow B, in order to separate the strip 11 from the magnet 5. When the magnet is released from the attraction of the strip 11 of the door, the plate 7 arranged at the rear of the magnet housing exerts its attraction on it, causing the magnet to travel back to its withdrawn position of figure 4, the device being thus automatically prepared to perform again the stopping function or the retaining function.

[0041] It will be noted that the user is never required to act directly on the retaining stop, since in order to shift from the simple stopping function to the retaining function or vice versa it is enough to press or pull the door, and therefore the ease of the device in use is maximum.

[0042] The retaining stop naturally comprises means for anchoring it to the ground, such as a self-adhesive surface on its lower side; it may also include bores 8 on the base 3 (figure 4) in order to anchor it by means of screws if desired, etc.

[0043] Although in the present specification a particular embodiment of the device according to the invention has been described and represented, it is obvious that all the details that are not essential may be substituted by others technically equivalent thereto, without departing from the scope of protection defined by the appended claims.

[0044] For example, the housing, the resilient member and the magnet can have different shapes from those shown, and can also be made up of several parts.

[0045] Further, the metal plate attracting the magnet to drive it back to the withdrawn position could be substituted by a different metal member; the same function could also be performed by a spring arranged in compressed condition in front of the magnet or by any other element ensuring the return of the magnet to its withdrawn position upon the lack of presence of a facing metal member.

[0046] The present description has been given with reference to the use of the invention as a retaining stop for doors, but it can naturally be employed for window leafs or the like, with or without modifying the details.

Claims

1. A retaining stop for doors and the like, of the type comprising means for being anchored to the ground, a front resilient member (2) which constitutes a stop to the opening of the door (10) or the like, and a magnet (5) that can cooperate with a metal strip (11) associated to the door or the like in order to keep the latter in open position, characterized in that the magnet (5) is mounted and guided to be displaceable between an inoperative position, in which it is kept withdrawn from the surface of contact between the resilient member (2) and the door (10) or the like, such that it is not attracted by the metal strip arranged on the door when the latter contacts the stop, and an operative position, in which the magnet is advanced to the maximum extent towards the front part of the resilient member (2), attracted by the metal strip arranged on the door when the latter is pressed sufficiently to bring the metal strip of the door near enough to the magnet such as to cause said advancement and to make the magnet contact the metal strip of the door in order to keep the latter retained; and in that it comprises means (7) for displacing the magnet automatically from said operative position to said inoperative position withdrawn in its housing when the door is released from the retaining stop.
2. A retaining stop as claimed in claim 1, characterized in that the means for automatically displacing the magnet (5) from said operative position to said inoperative position comprise a metal member (7) arranged in a position which is opposite to the direc-

tion of the advancement of the magnet to contact the door (10).

3. A retaining stop as claimed in claims 1 or 2, characterized in that the magnet (5) is slidably arranged within a housing (3,4) of non-magnetic material having the resilient stop member (2) engaged on the front part thereof. 5
4. A retaining stop as claimed in claims 2 or 3, characterized in that the metal member which causes the magnet to withdraw to the inoperative position is a plate (7) bent at right angles at one of its ends, which is arranged with this bent end fitted with play between a side wall (3c) and a rear wall (3a) of the magnet housing, and having the other end free to be displaced following the movement of the magnet. 10 15
5. A retaining stop as claimed in any of the previous claims, characterized in that the magnet is arranged between two parallel metal sheets (6), which are provided on a portion of their length with side projections (6b) limiting their forward travel. 20 25
6. A retaining stop as claimed in claim 5, characterized in that the metal sheets are further provided with a rear projection (6a) in a portion of their width, preventing the metal plate (7) from being in direct contact with the whole width of the magnet (5). 30
7. A retaining stop as claimed in claim 3, characterized in that its overall housing is constituted by a base (3) and a cover (4), having inner projections for mutual engagement of the base and cover and for the retention of the front resilient member, as well as for guiding the magnet. 35 40 45 50 55

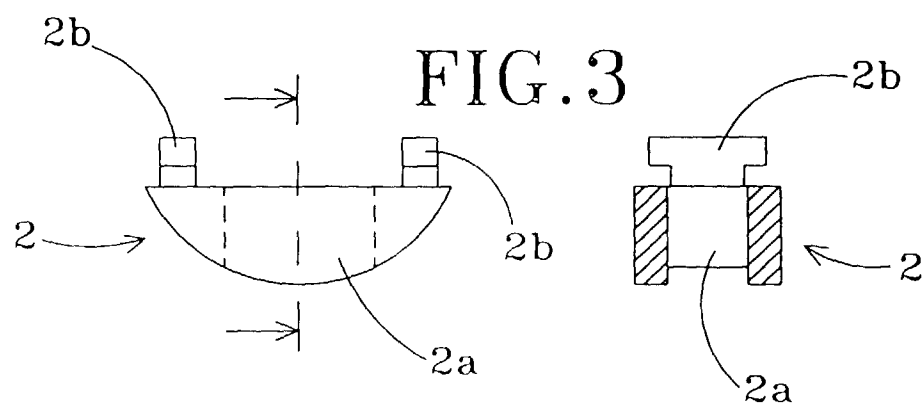
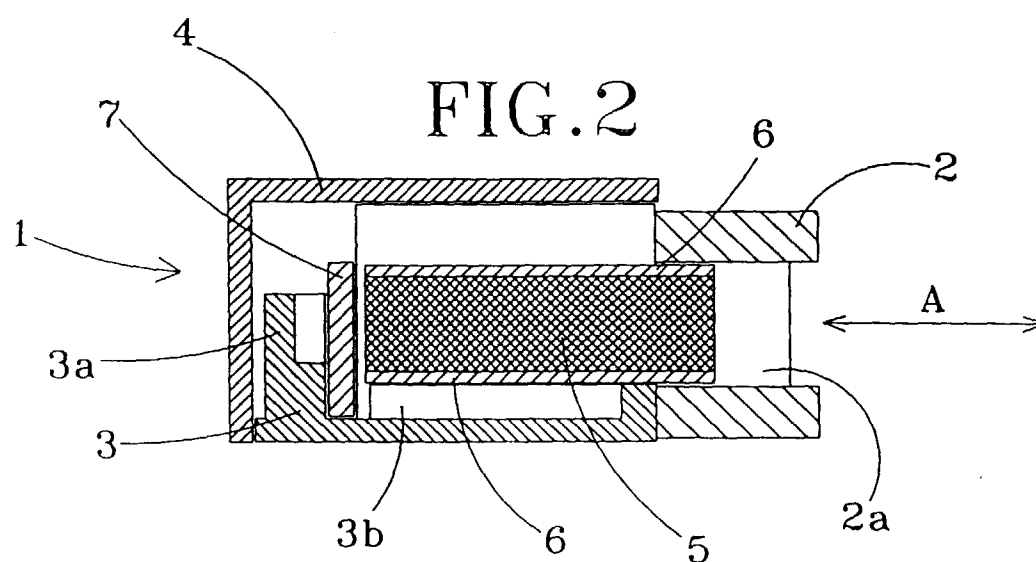
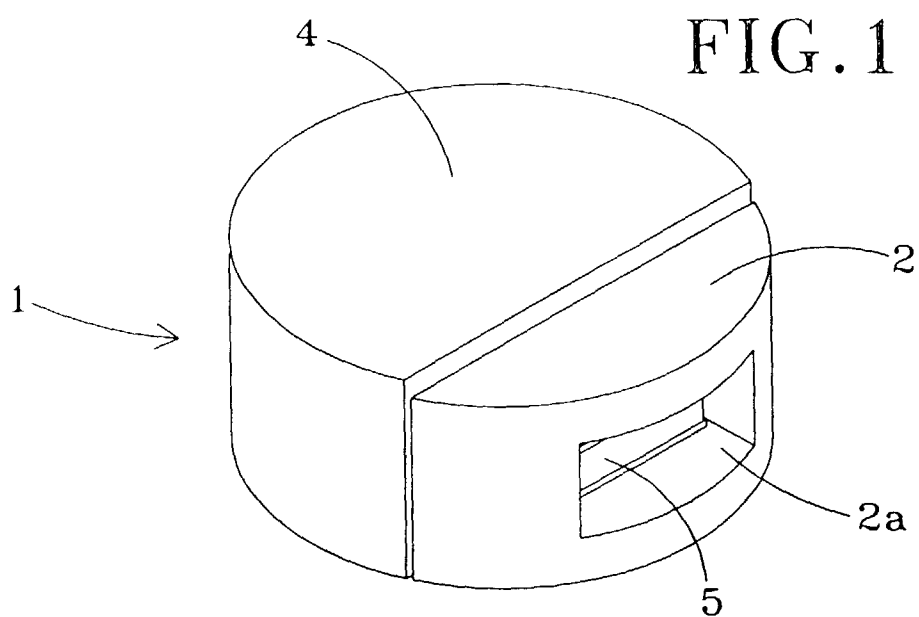


FIG. 4

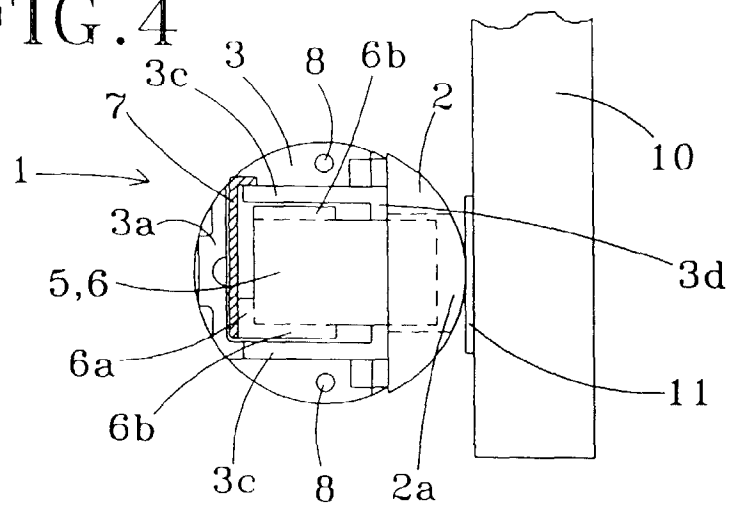


FIG. 5

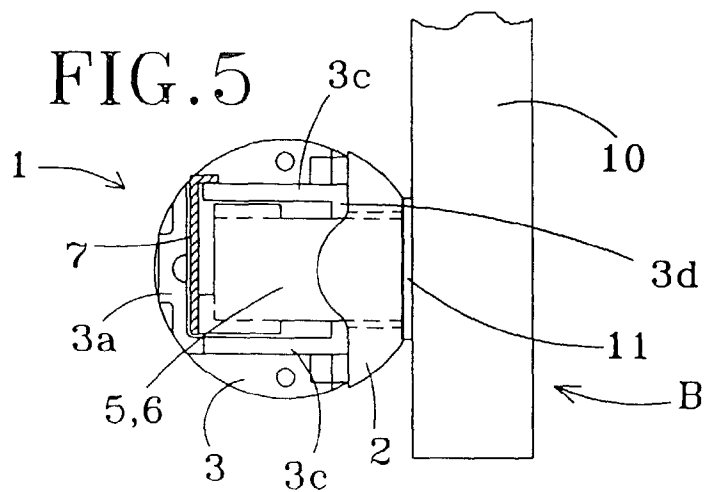
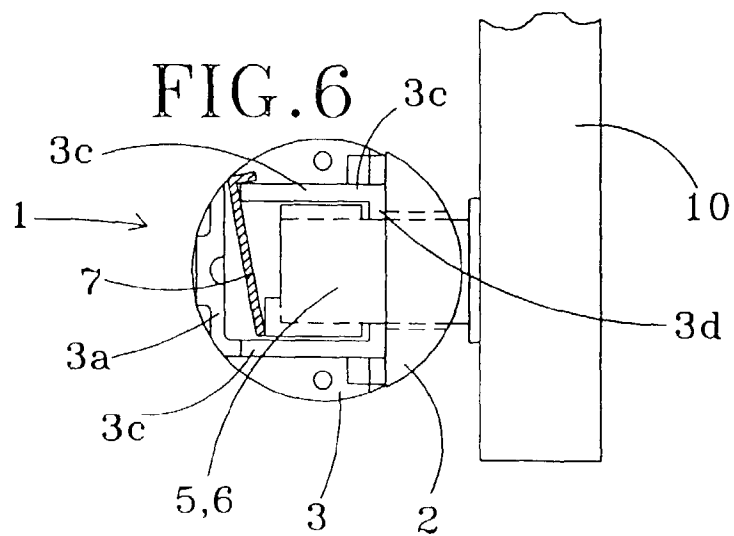


FIG. 6





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 98 50 0200

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	US 3 578 370 A (GREYTOK JAMES J) 11 May 1971 * the whole document *	1, 3, 5	E05C17/56
A	US 2 497 697 A (SMITH MERRILL H) 14 February 1950 * the whole document *	1	
A	US 5 010 622 A (MORITA TAMA0) 30 April 1991 * figures 1-22 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E05C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		4 January 1999	PEREZ MENDEZ, J
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 (P4/C01)

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

EP 98 50 0200

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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04-01-1999

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