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(54) **Clutch blocking device for adjusting and blocking doors or windows in a desired position.**

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Description

The invention concerns a frictional locking device for stopping a door or window wing hinged to a stationary frame in a desired position, with no manual intervention on the blocking device.

Door and window blocking devices are known, in very many shapes and types of application. All aim to allow the wings to be opened as desired and blocked in a certain position, so that draughts, or other accidental causes, cannot cause undesired movements of the wings, such as door and window slamming.

However, these devices suffer from the inconvenience of requiring manual adjustment from time to time for a given open position of the sashes. This means that, once the open angle is established, the device effects the wing block by means of mechanisms comprising grooves, pins, screws, sliding clamps or analogous devices; therefore, varying the angle always requires manual handling of the device.

For example, the devices known from the German utility model Applications No. 1,899,327, No. 1,927,526, No. 75 15 214, No. 72 17 157 and No. 27 52 962 and from German patent applications No. 25 04 271 and No. 2940812 all aim to adjust the opening of doors and windows, but all require manual intervention whenever the position of the wings is to be changed.

A door stop device is also disclosed in the German patent No. 574 789, in which the door wing can be stopped only in a position selected between few positions, by the engagement of a vertical pin, having a small upper head covered with felt and supported by the door wing with the interposition of a helical spring, and which engages the lower surface of a band rail bent according to a quarter of a helical turn of a vertical axis. The pitch of said helical rail can be varied according to a discrete number of lengths, for adjustment purpose of the wing stop position. In this case the stopping of said wing takes place only when the increasing frictional force attains a predetermined value.

A US patent 1 560 960 corresponding to the preamble of claim 1 is also known, which discloses a stopping device, which comprises an arm connected at one of its ends, to the door wing by means of a slot and stud assembly while the other end of which is pivotally connected to a threaded bolt, which is a part of a hinge device mounted in a casing supported by the stationary door frame. Said hinge device comprises a conical spring held against a washer by the wing nut of said threaded bolt, said washer being mounted on the bored end of said arm.

According to this solution the door wing can be stopped in any desired position only owing to the very modest frictional force created between the washer surface and the upper surface of the arm and, i.e. between two substantially smooth surfaces so that a little blast of wind could slam the door wing.

In order to overcome said inconveniences of the devices of the prior art, the invention aims to realize a device as described in the above-cited literature, but which allows the wing of a door or window to be opened and closed without requiring manual intervention to stop said wing in any desired open position and which allows the door or window wing to be moved with no noise.

The invention achieves this goal by realizing a very efficient frictional connection between the door or window wing and the respective stationary frame, where this connection is simultaneous with the movement of the wing and a direct locking effect, with no manual intervention, and where the frictional force of the device is adjustable, said frictional effect being due to a pair of frictional plates made of a material, as asbestos, capable of generating a high frictional effect and which is wear resistant.

In a first embodiment of the invention, said frictional connection is realized by means of a hinge consisting essentially of two elements connected by a hinge headed bolt, the first of which is fixed to the frame of a door or a window, while the second one consists in an arm which can rotate about said bolt and is connected by means of a slot and stud assembly to the wing where said first and second elements are connected to one another for a relative rotary movement about said bolt. The invention provides the application on each side of said second element of a frictional disc made of a material capable of generating a high frictional effect and which is wear resistant or the like, as well as a bucket spring or the like placed in turn on the outer sides of each disc, while the bolt is provided of a threaded end portion to receive an adjustment nut.

The fundamental concept of this first embodiment of the invention thus lies in the use of a frictional hinge device, which allows a door or window wing to be stopped almost silently in any desired position, from 0° to 180°.

According to the invention, the most importance has the characteristics of the material to be placed between said first fixed element and said second movable element, which must satisfy the double requirement of generating a high friction effect and of showing a good wear resistance, preferably asbestos or the like. The invention also provides that said elastic means consists of springs, preferably bucket springs, having their convex surfaces towards the outside of said first fixed element.

According to the invention, the length of the slot in said second element must be at least equal to the distance between the rotation axis of the coaxial hinges of the door wing and the axis of the bolt of the frictional hinge, which is a part of the stopping device.

The invention also provides that just above the bolt head, the bolt has a square portion, to be received into a complementary recess, arranges on the outer surface of the lower flange of two parallel flanges of said first fixed element. Such an arrangement prevents the bolt rotation.

Finally, according to the invention, the material

suitable for the first element forming the hinge device according to the invention may be selected from lightweight alloys, preferably aluminium, as well as from other materials, such as synthetic resins, satisfying the requirements for the construction of a hinge.

According to a second embodiment of the invention, said frictional connection between the door or window wing and the respective stationary frame is realized by a device comprising two parallel horizontal arms equipped with wear resistant frictional plates, fixed on a door or window wing which operates via friction along the entire 180° opening of said wing directly on a horizontal flange shaped in the form of a circular sector and connected to the door frame.

The fundamental concept of this second embodiment of the device of the invention is still based on the force of friction, developed by a two arm assembly joined to a wing, directly on the sector-like flange extending outwardly from a horizontal bar joined to the stationary frame of a door or window.

According to the invention, said two arm assembly is realized in three variants:

— the first provides a pincer braking action of said two arms due to the presence of a helical expansion spring mounted between the outer ends of said arms, and the provision of an adjustment vertical threaded bolt with nut, acting as pivot pin;

— the second provides the braking action in the presence of the threaded bolt only;

— the third provides that said arms are hinged about a horizontal transversal pin and that the braking action by means of a replaceable spring.

The member fixedly connected to the door or window frame i.e. the bar and the sector-like flange thereof are made of metal, preferably well polished, hardened, elastic steel, to allow application to the frame, optionally with the interposition of a spacer.

The bar is applied at one side or at the opposite side of the circular sector flange, depending on whether it is applied to the right or left side of the stationary frame. Said sector will have a 180° center angle if the wing has to be entirely opened or about a 90° center angle, if the opening cannot exceed this value. The 90° flanges are also folded at an angle at the base, in one direction or the opposite one, depending on whether they are to be applied to the right or left side of the door.

The radius passing through the mid-point of the 180° sectors or, respectively, through the point corresponding to a right angle of the 90° sectors, must always be perpendicular and coplanar with the axis passing through the provided hinges to enable a rotation of the wing with respect of the stationary frame.

The advantages obtained with both embodiments of the present invention reside in the frictional connection of a door or window wing with respect of the respective stationary frame. Opening or closing the wing, the frictional hinge device or the pincer device enables to automatically stop the wing in any desired position along the entire opening arc in an absolutely silent fashion.

The invention is described in more detail with reference to embodiments shown in the accompanying drawings, given merely in an exemplificative and non-limiting way. The drawings, show; in

Figure 1, a prospective view of the frictional hinge device according to the invention, applied to the frame and wing of a door;

Figure 2, an exploded view of the individual component elements of the device of Figure 1;

Figure 3, a detail in an enlarged scale, of the frictional device of Figure 1;

Figure 4, a view from above of the elements of Figure 2 in assembled condition thereof;

Figure 5, a perspective view of a door wing hinged to the stationary frame and provided with the pincer device equipped with adjustment hinge bolt and with an expansion spring for braking, and cooperating with a 180° sector flange of a bar, mounted on the right side;

Figure 6, a view, similar to that of Figure 5 with the variant of the frictional pincer's device including an adjust-threaded bolt, and which cooperates with a 90° sector flange of the bar fixed to the frame;

Figure 7, a view similar to that of Figures 5 and 6, with the variant of the pincer device including a replaceable expansion spring and cooperating with 90° sector flange, on the left side, of the first element.

In Figure 1, the frictional locking device according to the invention includes a frictional hinge indicated generically with 1. Said device comprises a bar 5 fixed to the stationary frame 2 of a door, and which is provided at one of its ends with two horizontal, vertically spaced away, flanges 5a. A second element 4 consists in a flat arm, having at one of its ends, a longitudinal slot 8 into whcih slides a vertical stud 7 fixed to the wing 3 of the door.

In the case of stationary frame 2 of the type of Figure 1, the bar 5 is fixed to the frame 2 with the interposition of a spacing member 13. The length of the slot 8 must be at least equal to the distance between the axis of the bolt 9 and the axis 15 of the coaxial hinges enabling the wing 3 to rotate with respect to the stationary frame 2.

Figure 2 shows all the component elements of the frictional locking device in an exploded view. The pair of horizontal flanges 5a of the bar 5 define a U-shaped housing or recess designed to receive the end portion of the arm 4, provided with a vertical hole 9″ coaxial with a square center recess 9′ arranged with the two flanges 5a. The hinge device 1 comprises a bolt 9 having a lower head 9a and an upper threaded end portion 9b for receiving a nut 11 and a washer 10.

Thanks to the presence of a square recess 9′ in each the flanges 9a, the bolt 11 is prevented to rotate and it will be possible to use a hinge device 1 according to the invention, either for a left or for a right wing 3, that is, by having the threaded part 9b of the bolt 9 protruding upward so as not to

interfere with the movement of the wing.

On two sides of the bored end of the arm 4 two discs 6 are mounted made of a material capable of generating a high frictional effect and which is wear resistant as asbestos. Between each disc 6 and the respective flange 5a of the fixed bar 5 there is a spring 6' preferably a bucket spring, which is convex toward the adjacent flange 5a. The degree of tightening of the bolt 9 with nut 10 and washer 11, in combination with the elastic deformation of the flanges 5a enables to regulate the pressure between the flanges 5a and the bar 4, pressure which in virtue of the action of springs 6' and discs 6 is apt to generate the elastic friction effect and so the locking of the wing 3, with almost no noise.

Figure 3 shows a detail of the frictional hinge 1.

Figure 4 shows the frictional locking device when completed assembled.

It would of course be possible to realize the frictional hinge 1 without springs, just by using the asbestos discs 6, or one could use helical springs instead of bucket springs.

Another embodiments of the invention are illustrated in three variants shown in Figures 5, 6 and 7.

In Figure 5 the stationary door frame is indicated with 101, the door wing with 102. This embodiment provides to use a pincer device generically indicated with E, comprising two parallel horizontal arms 103 and 104 respectively. The lower arm 103 of the pincer device E is fixed with screws 105 to the door wing 102 and has at one end a recess (not shown in the drawing) for anchoring the lower end of a helical expansion spring 106 and, not far away, a vertical threaded hole (not shown in the drawing) for receiving the lower end of a screw 107. The upper arm 104 has a lower blind hole (not shown in the drawing) for anchoring the upper end of the expansion spring 106 mounted coaxially to the blind hole of the arms 103, and a through hole 108 (not shown in the drawing), for the passage with a certain play of a screw 107 which fits into the threaded hole of the lower arm 103 on the facing surfaces of the arms 103, 104 asbestos plates 109, 109' are applied with slightly protruding edges. The spring 106 tends to lower the opposite end portions of the upper arm 104 of the pincer device toward the lower arm 103. Between the two parts 103 and 104, a 180° sector flange 111 enter extruding outwards from the bar 111, fixed to the frame 101 and consisting of well polished and hardened elastic steel. In this particular case, the arms 103, 104 of the pincer device are realized in metal, preferably in aluminium or in a hard synthetic resin. The pressure exerted by spring 106 can be regulated by means of screw 107. The friction developed between the asbestos plates 109, 109' and the semicircular sector flange 111a is thus transmitted directly between the wing 102 and the frame 101. The elasticity of the steel of which the sector flange 111a compensates for any excessive tolerances due to assembly or to the settlement of the parts.

Figure 6 shows a variant. The pincer device E' still consists of a lower arm 103 and an upper arm 104. The lower arm 103 is fixed to the wing 102 with screws 105. The upper arm 104 is connected to the lower arm 103 only by means of an adjusting screw 107, with wing nut 107a. A vertical guiding pin 107' extending upwards from the arm 103 and entering in a through hole of the arm 104 serves to prevent any mutual rotation between the arms 103, 104 during use. In this case the flange 111a' has the form of a 90° sector.

Figure 7 shows another variant. The pincer device E" still consists of a lower arm 103' and an upper arm 104'. The lower arm 103' is fixed to the wing 102 of the door by means of screws 105', and is pivotally connected to the upper arm 104' by means of horizontal pin 113. An expansion spring 106 is mounted between the outer ends of the arms 103', 104', while at the opposite ends asbestos plates 109, 109' frictionally engage the sector like flange 111a" of the bar 111. In this case the circular flange 111a" has a shape symmetrically equal to that of Figure 6.

The friction force depends upon the characteristics of the spring 106, which is mounted in an amovable manner.

Claims

1. A frictional and adjustable locking device for stopping a pivotally movable door or window wing (3; 102) in any desired open position with respect of the cooperating stationary frame (2; 101), and which consists of two co-operating elements, rotatably connected to each other about a vertical axis, the first element of which being supported by the stationary frame of the door or window and the second one being mounted on the movable wing, characterized by the fact that:

said first element (5; 110; 110'; 110") is connected to the second element (4, E, E', E") of the locking device by a sliding frictional connection, obtained by means of the interposition of a pair of frictional plates (6, 6'; 109, 109') capable of generating a high frictional effect and which is as wear resistant as asbestos said plates being put under the effect of adjustable pressure means (6, 6'; 106, 107) carried by one of said first and second elements, and applied on each of the surfaces sliding along the both sides of the stationary surface of the frictional sliding connection.

2. A device according to claim 1, in which the element (4) is a horizontal arm, pivotally connected, at one of its ends, to the element (5) fixed to the stationary frame (2) and, at the other end, to the wing (3) by means of a slot and stud device (7, 8), characterized by the fact that said element (5) is made of a slightly elastically deformable light metal, plastics or the like and consists of a flat bar (5) to be horizontally fixed near the lower edge of the upper transversal beam of the frame (2) and which is provided with two short parallel, horizontal, vertically spaced apart, outwardly extend-

ing flanges (5a), which define therebetween a housing adapted to receive the inner bored end of the arm (4) and the components of a hinge device (1), comprising a vertical headed bolt (9) having a threaded portion (9b) designed to receive a threaded nut (11), and, on each side of the arm (4), a frictional means (6) in the form of a disc of asbestos, upon which is placed a bucket spring (6'), said hinge components, as well as the flanges (5a) being provided with coaxial holes to receive the pivot bolt (9), while means (9a, 9c) are provided to prevent any rotation of the bolt (9) with respect to the flanges (5a) by which the hinge device (1) is supported, by the stationary frame (2), the frictional force transmitted between the plates (6) and the arm (4) being adjusted by screwing or unscrewing the nut (11) on the bolt (9), owing to the elastical deformation of the flanges (5a) of the bar (5).

3. A device according to claim 2, characterized by the fact that the vertical axis of the hinge device (1) is spaced apart from the vertical pivot axis (15) of the wing (3) with respect of the frame (2), and that, in said stud and slot connection device (7, 8), said slot (8) has a length equal to said horizontal distance between the axis of the hinge device (1) and the axis (15).

4. A device according to claim 1, characterized by the fact, that the stationary element (110, 110', 110") consists of a bar (111) to be connected, to the horizontal beam of the stationary frame (101), near the lower edge thereof, said bar (111) having a lower horizontal flange (111a, 111b, 111b'), extending outwardly and shaped in the form of circular sector having a center angle from 90° to 180°, while the element (E, E', E") consists in a pincer device comprising two parallel horizontal arms (103, 104; 103', 104'), vertically spaced apart from each other, the lower arm (103; 103') of which is fixed to the movable wing (102) near the upper edge thereof, while the upper arm (104; 104') is supported by the arm (103; 103') and is connected to this latter at an intermediate point by a pivot bolt (107; 107'), while on the facing surfaces of the inner ends of said arms (103, 103'; 104, 104') frictional plates (109, 109') are applied, between which a peripheral band portion of the flange (111a; 111b; 111b') is frictionally and slidably sandwiched, so that the wing (102) can be stopped in any desired open position.

5. A device according to claim 4, characterized by the fact that at least the sector-like flange (111a; 111b; 111b') is made of metal, preferably, of hardened and polished steel, and that the vertical radial cross sectional plane of the sector-like flange (111a; 111b; 111b'), which is set at right angle to the bar (111), contains the axis (15) of the door hinges.

6. A device according to claims 1 and 4, characterized by the fact that in the pincer device (E) the bolt (107) is provided with a threaded end portion designed to engage a nut (107), said bolt (107) passing, with a clearance, through a vertical hole provided in the upper arm (104) and enters a blind coaxial threaded hole of the arm (103), while between the outer end portions of the arms (103, 104) an expansion helical spring (106) is mounted, the frictional force of which can be adjusted by screwing or unscrewing the nut (107a) on the bolt (107).

7. A device according to claims 1 and 4, wherein in the pincer device (E'), in an intermediate point of the arms (103, 104) these latter are connected to each other by a threaded bolt (107) provided with nut (107a), while near the outer end portion of said arms, a vertical guiding pin (107') projects vertically from the inner surface of one of said arms and is slidably received into a coaxial hole arranged in the other, in order to prevent any horizontal relative angular displacement of said arms.

8. A device according to claims 1 and 4, wherein in the device (E") the arm (103') has two parallel longitudinal, vertical flanges, extending upwardly, which support a transversal pivot bolt (107"), while between the outer end portions of the arms (103', 104') an expansion helical spring (106) is mounted in such a manner, that said spring can be replaced by another of different force.

Patentansprüche

1. Einstellbare Reibungs-Sperreinrichtung zum Feststellen eines schwenkbaren Tür- oder Fensterflügels in jeder gewünschten Öffnungsstellung gegenüber einem dazugehörigen stationären Rahmen, welche zwei zusammenwirkende Elemente aufweist, die über eine vertikale Achse miteinander verbunden sind, wobei sich das erste Element an dem stationären Rahmen der Tür oder des Fensters abstützt und das zweite Element an dem bewegbaren Flügel angeordnet ist, dadurch gekennzeichnet, daß das erste Element (5, 110; 110', 110") der Sperreinrichtung verbunden ist mit dem zweiten Element (4, E; E', E") über eine Gleitreibungsverbindung aus einem Paar zusammenwirkender Reibscheiben (6, 6'; 109, 109'), welche einen hohen Reibungseffekt gewährleisten und widerstandsfähig sind, wie Asbest, sowie durch die Wirkung einstellbarer, auf einem der besagten ersten und zweiten Elemente aufgenommener Druckmittel (6, 6'; 109, 109') angedrückt und auf jeder Gleitoberfläche längs der beiden Seiten der stationären Oberfläche der Gleitreibungsverbindung angeordnet sind.

2. Reibungs-Sperreinrichtung nach Anspruch 1, bei der das Element (4) aus einem horizontalen Arm besteht, der mit einem seiner Enden an dem seinerseits am stationären Rahmen (2) befestigten Element (5) und mit dem anderen Ende über eine Schlitz- und Zapfenführung am Flügel (3) schwenkbar angelenkt ist, dadurch gekennzeichnet, daß das Element (5) aus begrenzt elastisch verformbarem Leichtmetall, Kunststoff od. dgl. besteht und einen flachen Riegel (5) enthält, der in horizontaler Lage in der Nähe des unteren Randes des oberen Querbalkens des Rahmens (2) befestigt ist und zwei kurze Flanschen (5a) aufweist, die sich auswärts erstrecken und in vertikalem

Abstande voneinander in Parallellage horizontal verlaufen sowie zwischen sich ein Gehäuse für die Aufnahme des inneren durchbohrten Endes des Arms (4) und der Komponenten einer Scharniereinheit bilden, welche einen vertikalen Kopfbolzen (9) mit einem zur Aufnahme einer Gewindemutter (11) bestimmten Gewindeabschnitt (9b) und auf jeder Seite des Arms (4) ein Reibungsmittel (6) in Gestalt einer Asbestscheibe enthält, auf der eine Tellerfeder (6') angeordnet ist, wobei die Scharnierkomponenten ebenso gut wie die Flanschen (5a) mit koaxialen Lochungen zur Aufnahme des Lagerzapfens (9) versehen sind, während Mittel (9a, 9c) vorgesehen sind um jegliche Drehung des Lagerbolzens (9) gegenüber den Flanschen (5a) zu verhindern, durch welche die Scharniereinheit an dem stationären Rahmen (2) befestigt ist, wobei die zwischen den Platten (6) und dem Arm (4) auftretende Reibungskraft durch das Aufschrauben oder Lösen der Gewindemutter (11) auf dem Bolzen (9) über die elastisch deformierbaren Flanschen (5a) des Riegels (5) einstellbar ist.

3. Reibungs-Sperreinrichtung nach Anspruch 2, dadurch gekennzeichnet, daß die vertikale Achse der Scharniereinheit (1) im Abstand von der vertikalen Drehachse (15) des Flügels (3) gegenüber dem Rahmen (2) angeordnet ist und daß in der Zapfen- und Schlitzführungseinheit (7, 8) der Schlitz (8) eine Länge gleich des besagten horizontalen Abstandes zwischen der Achse der Scharniereinheit (1) und der Achse (15) aufweist.

4. Reibungs-Sperreinrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das stationäre Element (110, 110', 110") einen Riegel (111) aufweist, der mit dem horizontalen Querbalken des stationären Rahmens (101) in der Nähe seines unteren Randes verbunden ist, welcher Riegel (111) einen unteren, sich horizontal erstreckenden Flansch (111a, 111b, 111b') aufweist, der sich auswärts erstreckt in Gestalt eines über einen Umfangswinkel zwischen 90° und 180° reichenden Kreissektors, während das Element (E, E') eine Klemmeinrichtung mit zwei parallel zueinander verlaufenden Armen (103, 104; 103', 104') besitzt, die in vertikalem Abstand voneinander verlaufen, wobei der untere Arm (103, 103') an dem bewegbaren Flügel (102) in der Nähe seines oberen Randes befestigt ist, während der obere Arm (104, 104') an dem anderen Arm (103, 103') aufgenommen und mit diesem durch einen Zapfen (107, 107') verbunden ist, wobei an den einander zugekehrten Oberflächen der inneren Enden der besagten Arme (103, 103'; 104, 104') Reibscheiben (109, 109') angeordnet sind, zwischen denen ein peripherer Randabschnitt des Flanschs (111a, 111b, 111b') reibungsschlüssig und gleitbar aufgenommen ist, so daß der Flügel (102) in jeder gewünschten Öffnungsstellung festgestellt werden kann.

5. Reibungs-Sperreinrichtung nach Anspruch 4, dadurch gekennzeichnet, daß wenigstens der sektorartige Flansch (111a, 111b, 111b') aus Metall besteht, vorzugsweise aus gehärtetem und poliertem Stahl, und daß der Krümmungsmittelpunkt des sektorartigen Flanschs (111a, 111b, 111b'), der sich rechtwinklig von dem Riegel (111) forterstreckt, über der Achse (15) des Türflügels liegt.

6. Reibungs-Sperreinrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß in der Klemmeinrichtung (E) der Bolzen (107) mit einem für die Aufnahme einer Mutter (107) bestimmten Gewindeabschnitt versehen ist, welcher Bolzen (107) mit Spiel durch ein in dem oberen Arm (104) angeordnetes vertikales Loch hindurchpaßt und in ein mit Gewinde versehenes Sackloch in dem Arm (103) eingeschraubt ist, während zwischen den äußeren Endabschnitten der Arme (103, 104) eine unter Vorspannung stehende zylindrische Schraubenfeder (106) aufgenommen ist, wobei die Reibkraft durch Anziehen oder Lösen der Mutter (107a) auf dem Bolzen (107) einstellbar ist.

7. Reibungs-Sperreinrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß die Arme (103, 104) der Klemmeinrichtung (E') durch einen Schraubenbolzen (107) mit einer aufgeschraubten Mutter (107a) miteinander verbunden sind, während in der Nähe des außeren Endabschnittes der Arme ein vertikaler Führungsstift (107') vorgesehen ist, der sich von der inneren Oberfläche eines der Arme vertikal forterstreckt und gleitbar in einem koaxial dazu verlaufenden Loch in dem anderen Arm aufgenommen ist, um jede Verlagerung der beiden Arme relativ zueinander zu verhindern.

8. Reibungs-Sperreinrichtung nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß der Arm (103') der Einheit (E") zwei sich parallel zueinander erstreckende vertikale Flanschen aufweist, die aufwärts gerichtet und von einem Lagerzapfen (107") durchdrungen sind, während zwischen den äußeren Endabschnitten der Arme (103', 104') eine vorgespannte zylindrische Schraubenfeder in solcher Weise angeordnet ist, daß die Feder durch andere Differenzkräfte ersetzt sein kann.

Revendications

1. Dispositif de fermeture à friction réglable, destiné à maintenir une porte pivotante ou un panneau de fenêtre (3, 102) dans n'importe quelle position ouverte par rapport au cadre dormant correspondant (2, 101), ledit dispositif étant constitué à partir de deux éléments coopérant entre eux, reliés l'un à l'autre de manière pivotante autour d'un axe vertical, le premier élément étant maintenu par le cadre dormant de la porte ou de la fenêtre, tandis que le second élément est monté sur le panneau mobile, caractérisé en ce que ledit premier élément (5, 110, 110', 110") est relié au second élément (4, E, E', E") du dispositif de fermeture par une liaison à friction obtenue au moyen de l'interposition de deux disques à friction (6, 6', 109, 109') susceptibles de fournir un important effet de friction, lesdits disques étant aussi résistants à l'usure que l'amiante tout en étant soumis à l'effet de moyens de pression

réglables (6, 6', 106, 107) portés par un desdits premier et second éléments et appliqués sur chacune des faces de glissement situées sur les deux côtés de la surface fixe de la liaison à friction.

2. Dispositif selon la revendication 1, dans lequel l'élément (4) est un bras horizontal, relié de manière pivotante par une de ses extrémités à l'élément (5) fixé sur le cadre dormant (2) et par son autre extrémité au panneau (3) par l'intermédiaire d'une fente et d'un goujon (7, 8), caractérisé en ce que ledit élément 5 est un métal léger facilement déformable par élasticité, en plasque ou analogue et comprend une patte plate (5) destinée à être fixée horizontalement à proximité du bord inférieur de la traverse supérieure (2) du cadre, laquette patte est pourvue de deux joues (5*a*) courtes s'étendant vers l'extérieur, parallèles, horizontales, espacées verticalement l'une de l'autre, lesquelles définissent un logement adapté propre à recevoir l'extrémité intérieure alésée du bras (4) ainsi que les composants de la charnière (1) comprenant un boulon à tête vertical (9) pourvu d'une partie filetée (9*b*) conçue pour recevoir un écrou fileté (11) et en ce que sur chaque côté du bras (4) est prévu un moyen de friction (6) ayant la forme d'un disque d'amiante sur lequel est placé un ressort cuvette (6') lesdits composants de la charnière de même que les joues (5*a*) étant pourvus de trous co-axiaux destinés à recevoir le boulon à tête vertical (9), tandis que les parties (9*a*, 9*c*) sont prévues de manière à éviter le pivotement du boulon (9) par rapport aux joues (5*a*) lesquelles maintiennent la charnière (1) sur le cadre dormant (2), la force de friction transmise entre les disques (6) et le bras (4) étant ajustée par le vissage ou le dévissage de l'écrou (11) sur le boulon (9) grâce à la déformation par élasticité des joues (5*a*) de la patte (5).

3. Dispositif suivant la revendication 2, caractérisé en ce que l'axe vertical de la charnière (1) est éloigné de l'axe à pivot vertical (15) du panneau (3) par rapport au cadre (2) et en ce que dans la liaison constituée par le goujon et la fente (7, 8), ladite fente (8) a une longueur égale à ladite distance horizontale séparant l'axe de la charnière (1) de l'axe (15).

4. Dispositif suivant la revendication 1, caractérisé en ce que l'élément fixe (110, 110', 110") comprend une patte (111) pourvue d'un voile horizontal (111*a*, 111*b*, 111*b'*) se projettant vers l'extérieur, ayant la forme d'un secteur circulaire dont l'angle au centre varie de 90° à 180°, alors que l'élément (E, E', E") est constitué d'une pince comprenant deux bras parallèles et horizontaux (103, 104, 103', 104') espacés verticalement l'un par rapport à l'autre, le bras inférieur duquel (103, 103') est fixé au panneau mobile (102) à proximité de son bord supérieur, tandis que le bras supérieur (104, 104') est maintenu par le bras (103, 103') auquel il est relié en un point intermédiaire par un boulon (107, 107') constituant pivot alors que sont appliqués sur les surfaces en vis-à-vis des extrémités intérieures desdits bras (103, 103', 104, 104') des disques de friction (109, 109') entre lesquels une brande périphérique du voile (111*a*, 111*b*, 111*b'*) est prise en sandwich par friction et glissement de telle sorte que le panneau (102) puisse être maintenu dans la position ouverte désirée.

5. Dispositif suivant la revendication 4, caractérisé en ce qu'au moins la voile en forme de secteur (111*a*, 111*b*, 111*b"*) est en métal, de préférence, en acier traité et poli et en ce que le plan en coupe verticale et radiale du voile en forme de secteur (111*a*, 111*b*, 111*b'*) qui forme un angle droit avec la patte (111) renferme l'axe (15) des charnières de la porte.

6. Dispositif suivant les revendications 1 et 4, caractérisé en ce que dans la pince (E), le boulon (107) est pourvu à son extrémité d'une partie filetée destinée à coopérer avec l'écrou (107), ledit boulon (107) passent avec jeu au travers du trou vertical prévu dans un trou borgne fileté, co-axial du bras (103), tandis qu'est monté entre les extrémités extérieures des bras (103, 104) un ressort de compression hélicoïdal (106) dont la force de friction peut être adaptée par vissage ou dévissage de l'écrou (107*a*) sur le boulon (107).

7. Dispositif suivant les revendications 1 et 4, caractérisé en ce que dans la pince (E') les bras (103, 104) sont reliés entre eux en un point intermédiaire au moyen d'un boulon fileté (107) pourvu d'un écrou (107*a*), tandis qu'à proximité de l'extrémité extérieure desdits bras, une goupille (107') s'étend verticalement de la surface intérieure d'un desdits bras et pénètre par glissement dans un trou coaxial disposé dans l'autre bras, afin d'éviter tout déplacement horizontal angulaire relatif desdits bras.

8. Dispositif suivant les revendications 1 et 4, caractérisé en ce que dans la pince (E') le bras (103') présente deux flasques parallèles, longitudinaux et verticaux s'étendant vers le haut, lesquels maintiennent un boulon transversal (107") constituant pivot, tandis qu'entre les extrémités extérieures des bras (103', 104') est monté un ressort de compression hélicoïdal (106) de telle manière que ce ressort puisse être remplacé par un autre ressort de force différente.

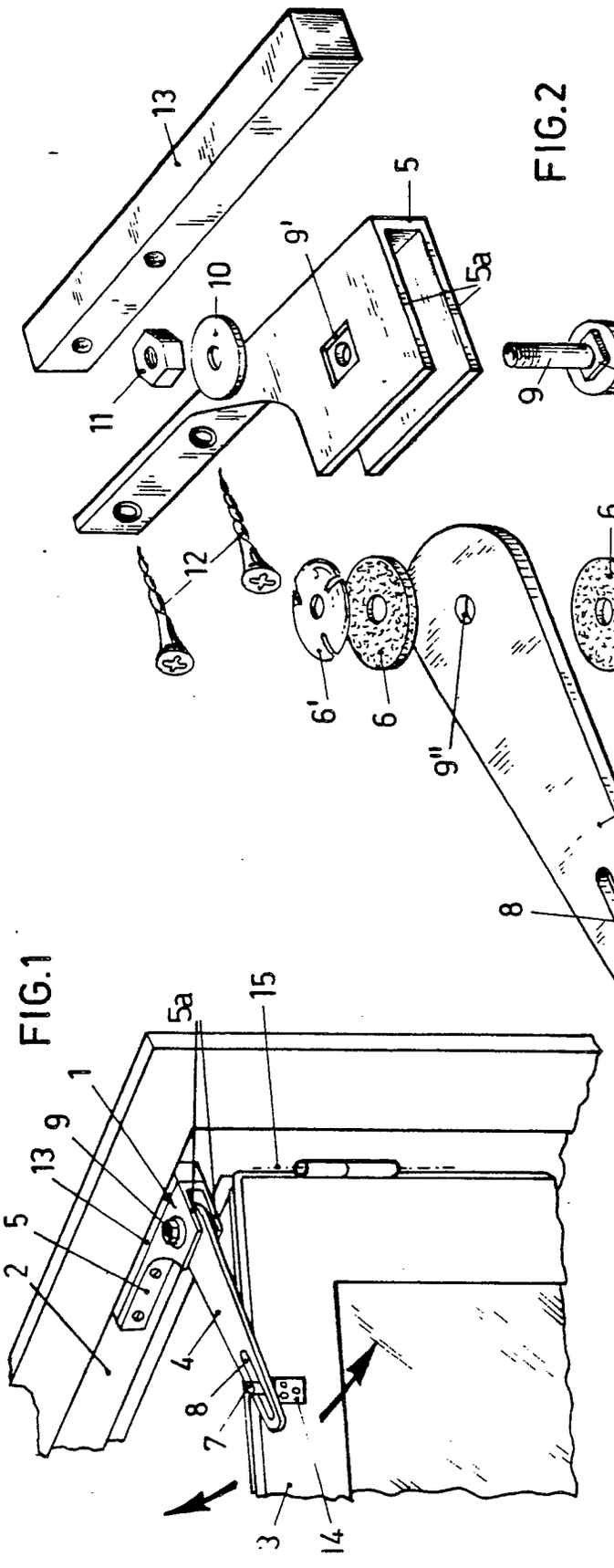
FIG.1
1
2
3
4
5
5a
7
8
9
13
14
15

FIG.2
5
5a
9'
10
11
12
13
6
6'
9''
4
8
7
14

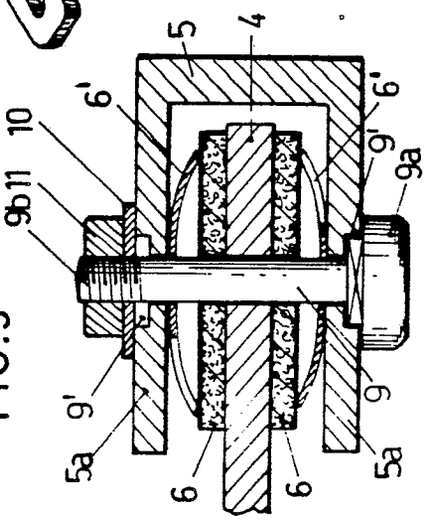
FIG.3
4
5
5a
6
6'
9
9'
9a
9b
10
11

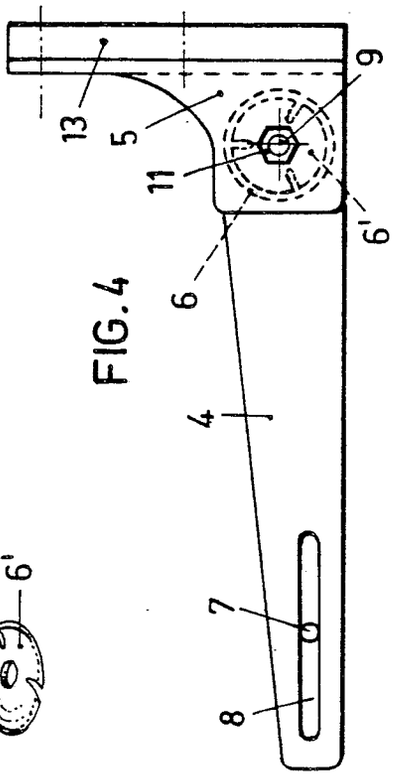
FIG.4
4
5
6
6'
7
8
9
11
13

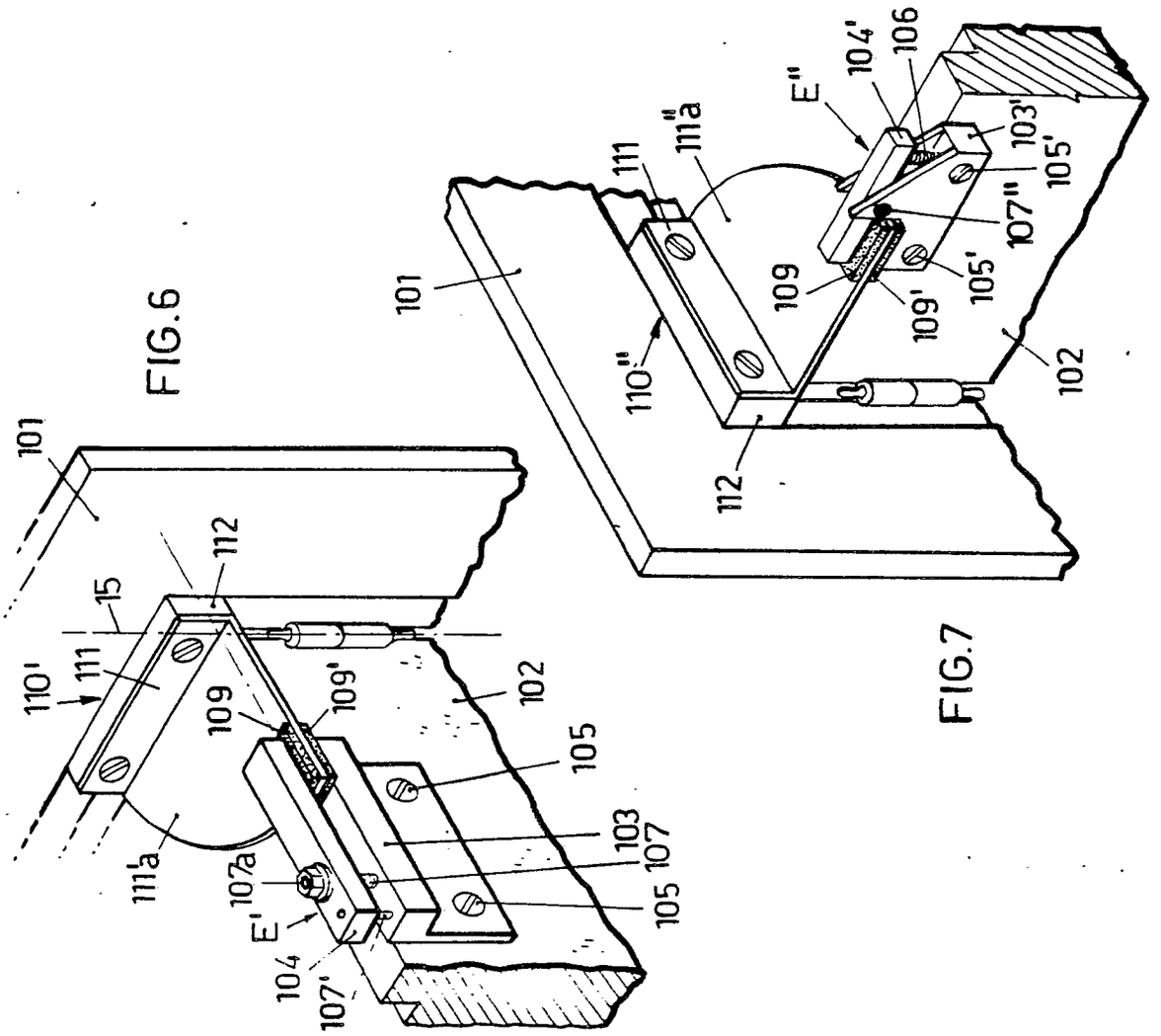

FIG.6

FIG.7

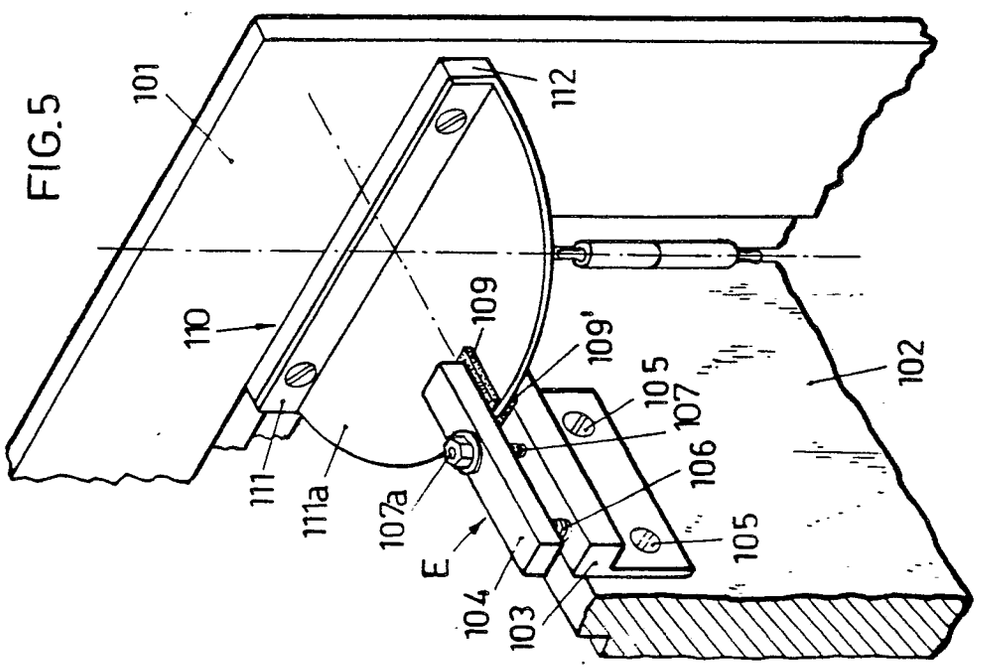

FIG.5