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(54) **Self-mounting hinge structure for casements, door- and window-frames and the like.**

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(73) Proprietor : **ALPROGETTI S.r.l.**
Via Grimani 42
I-34139 Trieste (IT)

(72) Inventor : **Ferro, Nicolo'**
Via Campo Marzio 4
I-34123 Trieste (IT)

(74) Representative : **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB
Modiano & Associati Via Meravigli, 16
I-20123 Milano (IT)

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Description

The present invention relates to a self-mounting hinge structure for casements, door- and window-frames and the like.

As is known, for the coupling of hinges to casements, frames and the like, various means are currently used which generally require the provision of perforations in the profiled element of the shutter to perform the coupling of the hinge, with subsequent application of said hinge, by means of screws.

Other known solutions which do not require the provision of perforations, involve the insertion of small counterplates into seats appropriately provided on the casement and the execution of the coupling of the hinge by means of a screwing operation which in practice performs the fixing between the hinge element and the counterplate which is inserted inside the seat.

All known solutions unavoidably require the use of screw means with consequent need for screwing operations which, in many cases, may be laborious and which do not always allow rapid, precise positioning of the hinge element.

DE-A-2 516 264 shows a hinge element being connected to a window casing portion in a longitudinal seat thereof. An angled wedge piece positioned in the same seat is used to secure the an end of the hinge element in the seat, the wedge and the hinge each having a mutually shaped contacting angled surface.

The aim proposed by the present invention is indeed to eliminate the above described disadvantages by providing a self-mounting hinge structure for casements, door- and window-frames and the like, which allows to execute the coupling of the hinge element to the casement without having to resort to perforations or to the adoption of screw means.

Within the above described aim, a particular object of the invention is to provide a self-mounting hinge structure which always allows precise positioning of the hinge element, without thereby having to resort to complicated or laborious operations.

Still another object of the present invention is to provide a self-mounting hinge structure which, by virtue of its peculiar constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

Not least object of the present invention is to provide a self-mounting hinge structure which is easily obtainable starting from simply constructed elements and which is furthermore advantageous from a merely economical point of view.

The above described aim, as well as the objects mentioned and others which will become apparent hereinafter, are achieved by a self-mounting hinge structure for casements, door- and window-frames and the like, according to the invention, as claimed in the appended claim 1.

Further preferred embodiments of the invention

are defined in dependent claims 2-8.

Further characteristics and advantages will become apparent from the detailed description of a structure of self-mounting hinge for shutters of casements, door- and window-frames and the like, illustrated only by way of non-limitative example in the accompanying drawings, wherein :

figure 1 is a schematic exploded perspective view of the hinge structure, according to the invention, and the related casement ;

figure 2 is a perspective view of the hinge, applied to the casement ;

figure 3 is a sectional view taken along a line III-III of figure 2.

With reference to the above described figures, the self-mounting hinge structure for casements, door and window-frames and the like, according to the invention, comprises a right-angled wedge element, generally indicated by the reference numeral 1, which preferably but not necessarily is manufactured in plastic material.

The right-angled wedge element 1 substantially has an L-shaped configuration and defines a planar wing 2 which, at the inner edge, has an expansion 3 which also extends in the shape of an L and defines a front surface 3a, arranged parallel to the plane of arrangement of the wing 2, and a lateral surface 3b which is perpendicular to the plane of arrangement of the wing 2.

At the expansion 3, on the rear face of the right-angled wedge element 1, a groove 4 is defined which is insertable astride a counter-wing 5 which delimits the seat 6 in which said right-angled element is partially insertable.

The seat 6 is defined by the profiled elements 7 which are used for the production of the frame of the casement.

The hinge furthermore has a hinge element, generally indicated by the reference numeral 10 and preferably but not necessarily obtained from a portion of an extruded element, said hinge element defining an insertion end which is at least partially accommodatable within the seat 6.

At the insertion end, said hinge element 10 has an engagement tooth 11 which is adapted to engage with the lateral wall of the seat 6 and with the inner surface of a wing 12 arranged opposite the counter-wing 5.

The insertion end has a rest foot 13 which couples by contact with the outer surface of the profiled element 7 in a lateral region with respect to the area where the seat 6 is defined.

The hinge element 10 furthermore has an arm 14 ending in a pivoting hole 15 for the insertion of the rotation pivot, coupled to the part of the hinge connected to the frame.

An important peculiarity of the invention resides in the fact that said right-angled element defines a first inclined plane 20 and a second inclined plane 21

which have the function of pushing the insertion end of the hinge element towards the part of the seat opposite to the counter-wing 5 and furthermore to push it against the inner surface of the engagement tooth, thus performing the locking.

More in detail, the first inclined plane 20 is defined as a wedge-shaped element which extends on the front surface 3a of the expansion 3 while the second inclined plane 21 is obtained as a wedge-shaped element which extends from the lateral surface 3b of the expansion 3.

The inclined planes 20 and 21 are divergent from the vertex of the right-angled element, that is to say they increase in thickness as one moves further away from the center of the right-angled element 1.

Furthermore, the inclined plane 20 preferably has a knurled surface which better facilitates its coupling deformation. The knurled surface allows the wedge element 1 to more easily slightly deform which thereby provides a deformation elastic coupling force between the wedge element 1 and the hinge element 10.

A locking protrusion, indicated at 25, is provided at the end of the inclined planes, and the axial end of the insertion end of the hinge element abuts against it.

Said inclined planes 20 and 21 act by contact on a square-shaped recess 30 defined by the hinge element, which has, in greater detail, a surface 30a which performs the thrust towards the lateral part of the seat where the lateral wing 12 is provided, and a second surface 30b perpendicular thereto on which there acts the second inclined plane 21, which in practice thrusts against the inner surface of the wing, thus performing the locking.

In mounting, after applying the square element in the corner region, the insertion end of the hinge element is inserted in the seat 6 at the region of the expansion 3 not having the inclined planes; then a translatory motion of the hinge element is performed so as to obtain the forcing against the inclined planes which perform locking of the hinge element against the profiled element.

From what has been described it can thus be seen that the invention achieves the intended aim and objects, and in particular the fact is stressed that a hinge structure is provided which is applied without having to use screws and always having the certainty of a precise and correct positioning.

In practice, the materials employed, so long as compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting

effect on the scope of each element identified by way of example by such reference signs.

5 Claims

1. Self-mounting hinge structure for casements, door and window-frames and the like, comprising a right-angled wedge element (1) applicable at a corner region of a casement and at least partially insertable in a seat (6) defined by a profiled element region (7) of said casement, said seat (6) being delimited by a pair of oppositely arranged wings (5, 12) of said profiled element region (7), a hinge element (10) defining an insertion end having an engagement tooth (11), said engagement tooth (11) being accommodatable in said seat (6) and being engageable with an inner surface of said seat (6) defined at one (12) of said pair of wings (5, 12), said wedge element (1) defining a first-inclined surface (20) adapted to thrust said engagement tooth (11) towards said inner surface of said seat (6), said structure characterized in that said wedge element further comprises a second inclined plane (21) adapted to thrust said engagement tooth (11) against said wing (12) and a rest foot (13) associable with an outer surface of said profiled element (7).

2. Hinge structure, according to claim 1, characterized in that said right-angled element (1) has a substantially L-shaped configuration with a planar wing (2) and an expansion (3) at the inner edge, said expansion defining a frontal plane (3a) substantially parallel to the plane of arrangement of said planar wing (2) and a lateral plane (3b) substantially perpendicular to the plane of arrangement of said planar wing (2).

3. Hinge structure, according to the preceding claims, characterized in that said right-angled element (1) has a groove (4), at the rear face of said right-angled element (1), associable astride a counter-wing (5) delimiting said seat (6).

4. Hinge structure, according to one or more of the preceding claims, characterized in that said first inclined plane (20) is defined as a wedge-shaped element on said frontal wall (3a) of said expansion (3) and said second inclined plane (21) is defined as a wedge-shaped element on said lateral wall (3b) of said expansion (3).

5. Hinge structure, according to one or more of the preceding claims, characterized in that it comprises on said inclined planes (20, 21) knurlings adapted to facilitate deformation of said right-angled element (1).

6. Hinge structure, according to one or more of the preceding claims, characterized in that it comprises a locking wing (25) provided at the free ends of said right-angled element (1).

7. Hinge structure, according to one or more of the preceding claims, characterized in that said hinge

element has a recess (30) defining mutually perpendicular abutment surfaces (30a, 30b) respectively associable with said first inclined plane (20) and with said second inclined plane (21).

8. Hinge structure, according to one or more of the preceding claims, characterized in that said right-angled element (1) has a first inclined plane (20) and a second inclined plane (21) on each of its arms.

Patentansprüche

1. Selbsthaltende Scharniereinrichtung für Behälter, Tür- oder Fensterrahmen und dergleichen, umfassend ein rechtwinkliges Keilelement (1), welches im Eckbereich eines Behälters anbringbar und wenigstens teilweise in einen Aufnahmesitz (6) einführbar ist, welcher durch einen Profilelementbereich (7) des Behälters gebildet wird, wobei der Aufnahmesitz (6) durch zwei einander gegenüberliegende Stege (5, 12) des Profilelementbereiches (7) begrenzt ist, ferner ein Scharnierelement (10), an welchem ein Einführende mit einer Eingriffsnase (11) ausgebildet ist, wobei die Eingriffsnase (11) in den Aufnahmesitz (6) einsetzbar und mit einer inneren Oberfläche des Aufnahmesitzes (6) in Eingriff bringbar ist, die an einem (12) der beiden Stege ausgebildet ist, wobei ferner das Keilelement (1) eine erste Schrägfläche (20) hat, die die Eingriffsnase (11) gegen die innere Oberfläche des Aufnahmesitzes andrückt, **dadurch gekennzeichnet**, daß das Keilelement eine zweite Schrägfläche (21) hat, die die Eingriffsnase (11) gegen den Steg (12) andrückt, sowie einen Stützfuß (13), welcher an eine Außenfläche des Profilelements (7) anlegbar ist

2. Scharniereinrichtung nach Anspruch 1, **dadurch gekennzeichnet**, daß das rechtwinklige Element (1) eine im wesentlichen L-förmige Ausbildung hat mit einem planaren Steg (2) und einem Fortsatz (3) an der Innenkante, wobei der Fortsatz eine im wesentlichen zur Anordnungsebene des planaren Steges (2) parallele Vorderfläche (3a) und eine im wesentlichen zur Anordnungsebene des planaren Steges (2) rechtwinklige Seitenfläche (3b) hat.

3. Scharniereinrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet**, daß das rechtwinklige Element (1) eine Nut (4) an der Rückfläche dieses rechtwinkligen Elementes (1) aufweist, die einen den Aufnahmesitz (6) begrenzenden Gegensteg (5) rittlings umgreift.

4. Scharniereinrichtung nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet**, daß die erste Schrägfläche (20) als ein an der Vorderfläche (3a) des Fortsatzes (3) angeordnetes keilförmiges Element und daß die zweite Schrägfläche (21) als ein an der Seitenwand (3b) des Fortsatzes (3) angeordnetes keilförmiges Element ausgebildet sind.

5. Scharniereinrichtung nach einem oder mehre-

ren der vorangehenden Ansprüche, **dadurch gekennzeichnet**, daß es an den Schrägflächen (20, 21) Riffelungen hat, die eine Verformung des rechtwinkligen Elementes (1) erleichtern.

6. Scharniereinrichtung nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet**, daß es einen Abschlußsteg (25) an den freien Enden des rechtwinkligen Elementes (1) umfaßt.

7. Scharniereinrichtung nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet**, daß das Scharnierelement eine Ausnehmung (30) hat, welche zueinander senkrechte Anlageflächen (30a, 30b) bildet, die mit der ersten Schrägfläche (20) bzw. mit der zweiten Schrägfläche (21) zusammenwirken.

8. Scharniereinrichtung nach einem oder mehreren der vorangehenden Ansprüche, **dadurch gekennzeichnet**, daß das rechtwinklige Element (1) eine erste Schrägfläche (20) und eine zweite Schrägfläche (21) an jedem seine Arme hat.

Revendications

1. Structure de charnière auto-bloquante pour châssis de porte, de cadres de fenêtre et similaires, comportant un élément de calage (1) en équerre pouvant être appliqué dans une région de coin d'un châssis et étant au moins partiellement insérable dans un siège (6) délimité par une région d'élément profilé (7) dudit châssis, ledit siège (6) étant délimité par une paire d'ailes (5, 12) agencées en opposition par rapport à ladite région d'élément profilé (7), un élément de paumelle (10) délimitant une extrémité d'insertion et comportant un rebord d'engagement (11), ledit rebord d'engagement (11) pouvant être logé dans ledit siège (6) et pouvant être en prise avec une surface intérieure dudit siège (6) définie à l'une (12) des dites paires d'ailes (5, 12), ledit élément de calage (1) délimitant une première surface inclinée (20) adaptée pour pousser ledit rebord d'engagement (11) vers ladite surface intérieure dudit siège (6), ladite structure étant caractérisée en ce que ledit élément de calage comporte en outre un deuxième plan incliné (21) adapté pour pousser ledit rebord d'engagement (11) contre ladite aile (12) et un pied d'appui (13) pouvant être associé à une surface extérieure dudit élément profilé (7).

2. Structure de charnière selon la revendication 1, caractérisée en ce que ledit élément en équerre (1) est sensiblement en forme de L avec une aile plane (2) et une protubérance (3) sur le bord intérieur, ladite protubérance définissant un plan frontal (3a) sensiblement parallèle au plan d'agencement de ladite aile plane (2) et un plan latéral (3b) sensiblement perpendiculaire au plan d'agencement de ladite aile plane (2).

3. Structure de charnière selon les revendications précédentes, caractérisée en ce que ledit élément en équerre (1) comporte une encoche (4) sur la face arrière dudit élément en équerre (1), pouvant être associée en chevauchement à un contre-rebord (5) qui délimite ledit siège (6). 5

4. Structure de charnière selon une ou plusieurs des revendications précédentes, caractérisée en ce que ledit premier plan incliné (20) est défini comme un élément en forme de coin sur ladite paroi frontale (3a) de ladite protubérance (3) et ledit deuxième plan incliné (21) est défini comme un élément en forme de coin sur ladite paroi latérale (3b) de ladite protubérance (3). 10

5. Structure de charnière selon une ou plusieurs des revendications précédentes, caractérisée en ce qu'elle comporte sur lesdits plans inclinés (20, 21) des stries adaptées pour faciliter la déformation dudit élément en équerre (1). 15

6. Structure de charnière selon une ou plusieurs des revendications précédentes, caractérisée en ce qu'elle comporte une aile de blocage (25) prévue aux extrémités libres dudit élément en équerre (1). 20

7. Structure de charnière selon une ou plusieurs des revendications précédentes, caractérisée en ce que ledit élément de calage comporte un évidement (30) définissant des surfaces de butée (30a, 30b) perpendiculaires l'une à l'autre, pouvant être associées respectivement audit premier plan incliné (20) et audit deuxième plan incliné (21). 25 30

8. Structure de charnière selon une ou plusieurs des revendications précédentes, caractérisée en ce que ledit élément en équerre (1) comporte un premier plan incliné (20) et un deuxième plan incliné (21) sur chacun de ses bras. 35

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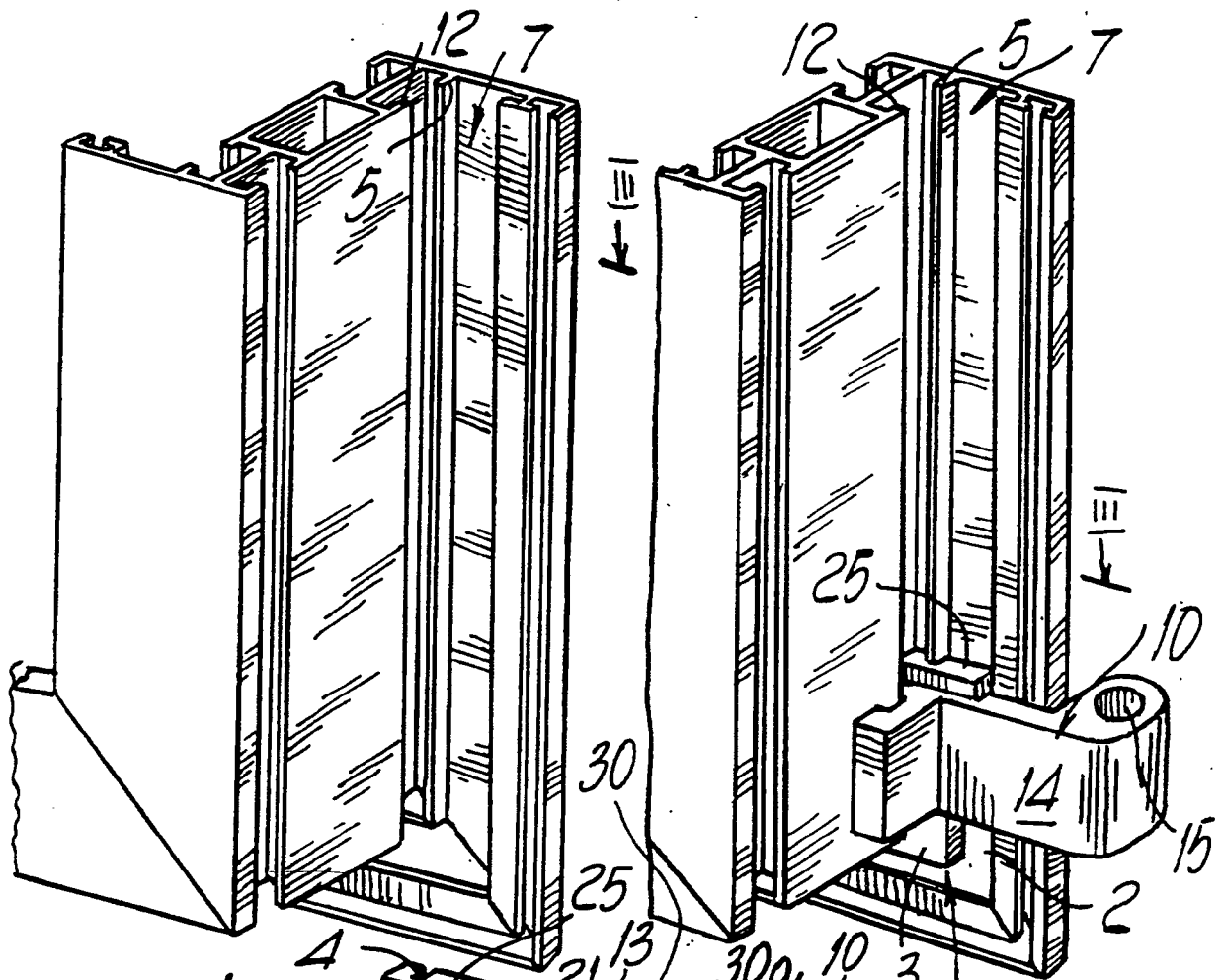


Fig. 1

Fig. 2

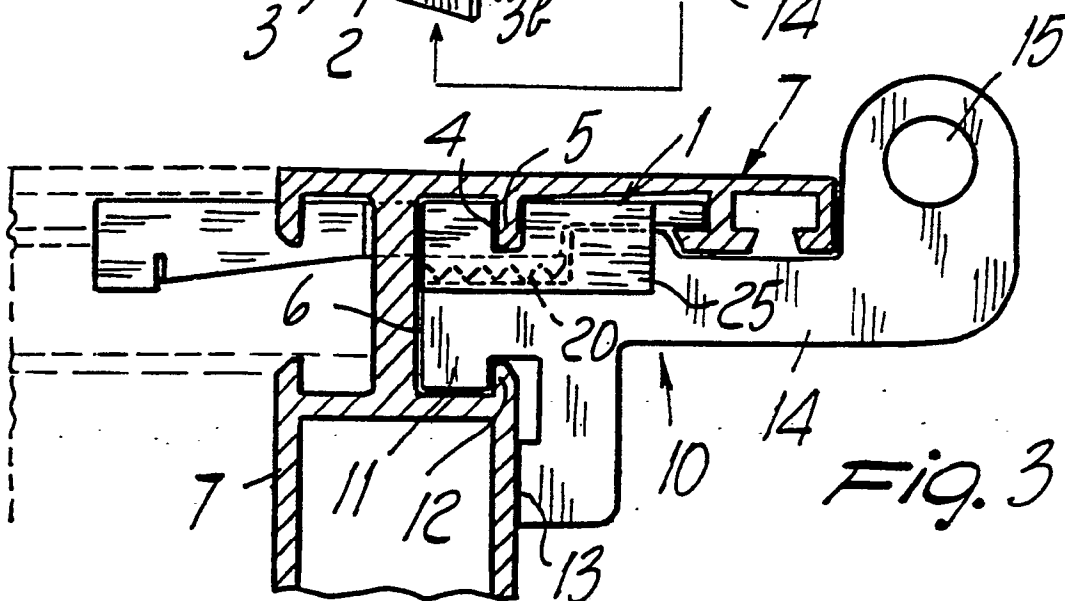


Fig. 3