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(54) **INVOLABLE OPENING FRAMES SYSTEM**

RAHMENSYSTEM MIT UNZERSTÖRBAREN BOHRUNGEN

SYSTÈME À CADRES D'OUVERTURE INVOLABLE

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(56) References cited:
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GB-A- 1 064 642

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Description

[0001] The invention refers to an inviolable system of opening hinged frames, for doors and windows, (glazing and shutters), whose two main profiles (the basic frame & the sash) are designed in such a way, that by the addition of the minimum accessories, enables the entrapment and full integration of the movable framework of the sash into the already stable on the wall, framework of the basic frame.

[0002] In current systems, the methods of locking the movable framework made of the sash's profile, into the stable framework made of the basic frame's profile, require several and highly time-consuming processes which use many complex and expensive accessories, without eventually achieving an inviolable locking between the two frames. Even in mounting circumferential locking system of multiple points, the chance of an invasion remains feasible, even by using relatively simple forms of mechanical stress upon the locking mechanism of the frame. Known locking systems for doors and windows achieving a circumferential projection of members are disclosed in DE 3037805 A or GB 1064642 A.

[0003] The invention as defined by appended claim 1, with the intention to solve the above disadvantages, follows a brand new and innovative method in designing and constructing the two profiles, of the sash and of the basic frame, in the hinged opening systems, for doors and windows, achieving a circumferential projection and extension of the sash, which by rotating the cremone to the locking position, penetrates circumferentially into the profile of the basic frame, all the way along the entire length of the perimeter of the framework and makes it totally inviolable.

[0004] An example of the construction method of the system, is described hereunder, with reference to several drawings which clearly illustrate how to implement the basic principle of the invention, where Figures 3 and 6 illustrate accessories of the system in the normal and inverted side, in such a way as to disclose the necessary details:

Figure 1 shows the cross section of a profile of a hinged opening aluminium sash (1), which has been designed, having as its main characteristic the existence of a groove (2). Figure 2 shows the cross section of a profile of an aluminium basic frame (3), which has as its main characteristic the existence of a groove (4), which is going to host the locking profile member (5) that is shown in Figure 3. Figure 3 shows a part of the locking profile (5), which is in the form of a "II", which is shaped in such a way that it presents the appropriate inclined material removal at the two facing (opposite) sides, at standard distances. Figure 4 shows the locking profile's (5) cross section, being placed into the groove (2) of the hinged opening aluminium sash profile (1), in its final place relatively to the profile of the basic frame (3). In Figure 4, the locking system has not been activated. Figure 5 shows the same cross section as in Figure 4, with the difference that the

locking system is activated and the locking profile (5) is pushed out and has entered into the groove (4) of the profile of the basic frame (3), resulting the profile of the sash (1) has been embodied with the basic frame profile (3) and eventually to achieve the circumferential locking of the whole hinged opening frame of a door or a window. Figure 6 shows the accessory (7) that pushes out or restores the locking profile (5) and it has the lateral projections (8), with the help of which, it enters into the groove (2) of the sash's profile (1). The main accessory (9) of the motion transmission also has lateral projections (8), which help it to "slide" into the groove (2) of the profile of the sash (1), as is shown at Figures 4, 5 & 6. Figure 7 illustrates in detail, the main accessory (9) for the motion transmission from the cremone toward the drive belt (12). Thus, Figure 7 shows two throughbores (10) and (11) in which screws (commercially available) are entering as follows: the screw in the hole (10) immobilizes one end of the drive belt (12), after having entered the main accessory (9) through the hole of rectangular cross section (14), while the other end of the drive belt, after driven along the perimeter of the frame, it enters to the corresponding rear hole of similar cross-section (15) and finally exits from the upper end of the bore (15).

[0005] At this stage and before the immobilization of the main accessory (9) to the drive belt (12) with the aid of a screw (commercially available), which goes into the hole (11), precedes a stretching of the drive belt (12) and then the protruding part is to be removed. Also in Figure 7 is illustrated a pin (17) which goes into the hole (16) of the main accessory (9) and transmits the movement of the cremone, (commercially available), to the main accessory (9). Figure 8 illustrates in detail the accessory (7), which pushes out or restores the locking profile (5) as is shown in Figure 6, which has a hole (18) in which a screw (commercially available) goes and immobilizes the accessory (7) on the drive belt (12). Also Figure 8 illustrates, the throughbore (19) of rectangular cross section, in which the drive belt (12) goes through and also shows, the lateral projections (8), by means of which the accessory (7) "slides" into the groove (2) of the profile of the sash (1). Figure 9 illustrates the accessory (20) that will be placed at the four corners of the frame, assembled by the sash profile (1), in order to restrict the lateral motion of the locking accessory (5). The accessory (20) also has lateral projections (8) with the aid of which is placed into the groove (2) of the profile of the sash (1) and a throughbore of rectangular cross section (21) from which the drive belt (12) freely passes through, comes out and changes direction.

[0006] By the use of the sash's profile (1), the movable opening frame can be assembled and be installed, by means of hinges (commercially available), on the stable framework that has been assembled by the use of the profile of the basic frame (3), according to the well known technical custom.

[0007] The basic principle of the implementation of the locking method, according to the invention, can be ap-

plied in the following three basic phases.

Phase 1: The main accessory (9) is slid and placed into the groove (2) of the sash's profile (1), which is adjusted to the cremone by the use of the pin (17). As the cremone revolves by an individual, it transforms the rotary motion to linear motion that moves the main accessory (9), which in turn transfers the motion to the drive belt (12) with whom it is securely attached.

Phase 2: As long as the drive belt (12) moves, it transmits the linear motion to the accessories (7), that push out or restore the locking profiles (5), which are placed circumferentially along the four sides of the sash's frame (1) and which are securely attached to the drive belt (12).

Phase 3: The accessories (7), which are slid in the groove (2) of the sash's profile (1), because of their slope, as they move towards a direction, oblige the locking profiles (5), to get pushed out along all four sides of the movable frame assembled by the sash's profile (1), since the locking profiles (5) also have in both sides inclined material removal of similar slope. That has as a result the circumferential projection of the locking profiles (5) and their entering into the groove (4) of the profile of the basic frame (3). The reason that the locking profiles (5), are being pushed out from the sash's profile (1) framework, is because of the initial placement of the lateral motion's restriction accessory (20) of the locking profile (5), at the sash's framework's four corners, during the assembling stage of the framework.

[0008] At this phase, the movable frame made of the sash profile (1) (glazing or shutter), is locked and embodied with the stable framework made of the basic frame's profile (3), in such a way that it makes the whole hinged opening aluminium frame completely inviolable.

[0009] As the cremone revolves afterwards to its original place, the above mechanism is activated backwards and unlocks the movable framework of the sash's profile (1) from the stable framework of the basic frame's profile (3), since the locking profile (5) is forced to return to its original place in the groove (2), at all four sides of the framework. The extremely strong and absolutely secure embodiment of the two frames (movable and stable), of a hinged opening aluminium frame, door or window, in the way that it is described above, is the main principle of the invention.

[0010] The above main accessories and materials, can be used in any form desired, in any size or shape and they cooperate, as shown in the drawings attached, according to its main purpose and implementation's method.

[0011] For every need concerning construction, the forms of the accessories may be changed, without altering the main principle of the invention as defined by the appended claim, with the advantages that were de-

scribed above, which are the result of the study and the designing of this invention.

5 Claims

1. An inviolable system of hinged frames for opening doors and windows comprising a stable frame of a basic profile member (3) and a movable frame of a sash profile member (1), said movable frame of the sash profile member (1) hingedly attached onto said stable frame of the basic profile member (3) and being provided with a cremone, said cremone being adapted to rotate with a scope of alternatively setting said hinged frames in a locked condition and an unlocked condition, wherein said movable frame of the sash profile member (1) having a first groove (2) adapted to receive a locking profile member (5) in each one of four sides thereof when said hinged frames are brought in an unlocked condition; said stable frame of the basic profile member (3) having a second groove (4) adapted to host said locking profile member (5) in each one of four sides thereof when said hinged frames are brought in a locked condition; said locking profile member (5) being a II-section member that is inserted within said first groove (2) along each one of four sides of said movable frame of the sash profile member (1), first accessories (7) being adapted to move said locking profile member (5) from an unlocked condition in which said locking profile member (5) is fully inserted within said first groove (2) of said movable frame of the sash profile member (1) to a locked condition in which it is being extended outwardly thereof and into said second groove (4) of said stable frame of the basic profile member (3) and vice versa, said first accessories (7) being provided with lateral projections (8) adapted to slide within said first groove (2) of said movable frame of the sash profile member (1), said first accessories (7) having a slope in the direction of movement thereof within said first groove (2) of said movable frame of the sash profile member (1), said II-section member (5) being provided with inclined cuts (6) wherefrom material has been removed, said inclined cuts (6) having an inclination similar to the slope of said first accessories (7), said first accessories (7) being adapted to push said locking profile member (5) to the locked condition or restore it to the unlocked condition during corresponding rotation of said cremone that sets said hinged frames in the locked and the unlocked condition respectively; a second accessory (20) with a through bore (21) being mounted at each one of four corners of said movable frame of the sash profile member (1), each said second accessory (20) being adapted to restrict lateral movement of said locking profile member (5); said cremone being connected by means of a pin

(17) to a main motion transmission accessory (9) that converts rotation of said cremone to linear motion, said main motion transmission accessory (9) being provided with lateral projections (8) adapted to slide within said first groove (2) of said movable frame of the sash profile member (1), one end of a drive belt (12) being fixedly mounted within a hole (14) at a first end of said main motion transmission accessory (9), said drive belt (12) being driven along the perimeter of the movable frame of said sash profile member (1), passing freely through the through bore (21) of each one of said second accessories (20) at each one of the four corners of the movable frame of said sash profile member (1) and the drive belt (12) being fixedly connected with first accessories (7), the other end of said drive belt (12) being fixedly mounted within a hole (15) at a second end of said main motion transmission accessory (9), said first accessories (7) being provided with a through bore (19) wherein passes said drive belt (12), each one of said first accessories (7) being securely attached to said drive belt (12) by means of a screw passing through a hole (18) thereof, wherein said hinged frames are being set at a locked condition when said locking profile members (5) extend outwardly said first groove (2) of said movable frame of the sash profile member (1) and are being inserted within said second groove (4) of said stable frame of the basic profile member (3), whereby said movable frame of the sash profile member (1) is being embodied within said stable frame of the basic profile member (3) circumferentially around said hinged frames.

Patentansprüche

- Ein unverbrüchliches System von gegliederten Rahmen zum Öffnen von Türen und Fenstern, das mit einem stabilen Rahmen eines Grundstammprofils (3) und einem beweglichen Rahmen des Tür- und Fensterflügelprofils (1) versehen ist, wobei der besagte bewegliche Rahmen von Fenster und Türen-Flügelprofilelementen (1) an dem besagten stabilen Rahmen des Grundstammprofils (3) auf eine gegliederte Weise verbunden ist und ist mit einer Rahmengriff versehen, wo der besagte Rahmengriff so angepasst ist, dass er sich umdrehen kann, damit die besagten gegliederten Rahmen alternativ in einem Verriegelungszustand und einen Entriegelungszustand versetzt werden, wobei der besagte bewegliche Rahmen des Tür- und Fensterflügelprofils (1) eine erste Rille (2) enthält, die so angepasst ist, um ein Verriegelungsprofilelement (5) an jeder von vier Seiten davon aufnehmen zu können, wenn die besagten gegliederte Rahmen in einem Entriegelungszustand gebracht werden; der besagte stabile Rahmen des Grundstammprofils

(3) eine zweite Rille (4) enthält, die so angepasst ist, um das Verriegelungsprofilelement (5) an jeder von vier Seiten aufnehmen zu können, wenn die besagten gegliederte Rahmen in einem Verriegelungszustand gebracht werden; wobei das Verriegelungsprofilelement (5) ein Querschnitts-Element II ist, das innerhalb der besagten ersten Rille (2) entlang von jeder der vier Seiten des besagten beweglichen Rahmens von Fenster und Türen-Flügelprofilelementen (1) eingeführt wird, wobei die ersten Zubehöre (7) sind so angepasst, um das besagte Verriegelungsprofilelement (5) aus einem Entriegelungszustand zu bewegen, indem das besagte Verriegelungsprofilelement (5) vollkommen innerhalb der ersten Rille (2) des besagten beweglichen Rahmens des Tür- und Fensterflügelprofils (1), in einem Verriegelungszustand, eingeführt wird, indem es sich nach außen von der besagten ersten Rille und innerhalb der zweiten Rille (4) des besagten stabilen Rahmens des Grundstammprofils (3) und umgekehrt erstrecken wird, wobei die besagten erste Zubehöre (7) mit seitlichen Vorsprüngen (8) versehen sind, die so angepasst sind, damit sie innerhalb der besagten ersten Rille (2) des besagten beweglichen Rahmens des Tür- und Fensterflügelprofils (1) gleiten können, wobei die besagten erste Zubehöre (7) eine Neigung in Richtung von deren Bewegung innerhalb der besagten ersten Rille (2) des beweglichen Rahmens des Tür- und Fensterflügelprofils (1) haben, wobei das besagte Querschnittselement II (5) mit geneigten Einschnitten (6) versehen ist, von denen Material entfernt wurde, die besagten geneigten Einschnitte (6) mit einer Neigung ähnlich der Neigung der besagten ersten Zubehöre (7) versehen sind, wobei die erste Zubehöre (7) so angepasst werden, um das Verriegelungsprofilelement (5) in dem Verriegelungszustand zu schieben oder in einem Entriegelungszustand während einer entsprechenden Drehung des besagten Rahmengriffes wiederzurückbringen, indem die besagten gegliederte Rahmen in Verriegelungs- und Entriegelungszustand versetzt werden; ein zweites Zubehör (20) mit einer Durchgangsbohrung (21), die an jeder der vier Ecken des besagten beweglichen Rahmens des Tür- und Fensterflügelprofils (1) angebracht ist, wobei jedes besagtes zweites Zubehör (20) so angepasst ist, um die seitliche Bewegung des besagten Verriegelungsprofilelementes einzuschränken (5); wobei der besagte Rahmengriff ist durch einen Zapfen (17) in einem zentralen Bewegungsübertragungszubehör (9) verbunden, das die Drehung des besagten Rahmengriffes in einer linearen Bewegung umwandelt, wobei das besagte Zentralbewegungsübertragungszubehör (9) mit seitlichen Vorsprüngen (8) versehen ist, die so angepasst sind, um innerhalb der besagten ersten Rille (2) des besagten beweglichen Rahmens des Tür- und Fens-

terflügelprofils (1) zu gleiten, wo ein Ende eines Antriebsriemens (12) stabil innerhalb einer Öffnung (14) an einem ersten Ende des besagten Zentralbewegungsübertragungszubehörs (9) befestigt ist, wobei der besagte Antriebsriemen (12) entlang des Umfangs des beweglichen Rahmens des besagten Tür -und Fensterflügelprofils (1) angetrieben wird und frei durch die Durchgangsbohrung (21) von jedem der besagten zweiten Zubehör (20) an jedem der vier Ecken des beweglichen Rahmens des besagten Tür -und Fensterflügelprofils (1) verläuft und wobei der Antriebsriemen (12) stabil mit den ersten Zubehören (7) verbunden ist, wo das andere Ende des besagten Antriebsriemens (12) stabil innerhalb einer Öffnung (15) an einem zweiten Ende des Zentralbewegungsübertragungszubehörs (9) angebracht wird, wobei die besagten erste Zubehöre (7) mit einer Durchgangsbohrung (19) versehen sind, durch der der besagte Antriebsriemen (12) verläuft, wobei jedes der ersten Zubehöre (7) sicher an dem besagten Antriebsriemen (12) durch eine Schraube, die durch eine Öffnung (18) von jedem der besagten ersten Zubehören davon verläuft, wobei die gegliederte Rahmen in einem Verriegelungszustand versetzt werden, wenn die besagten Verriegelungsprofilelemente (5) sich außerhalb der besagten ersten Rille (2) des besagten beweglichen Rahmens des Tür -und Fensterflügelprofils (1) erstrecken und innerhalb der besagten zweiten Rille (4) der besagten stabilen Rahmen des Grundstammprofileteils (3) eingesetzt werden, so daß, der bewegliche Rahmen des Tür -und Fensterflügelprofils (1) innerhalb des besagten stabilen Rahmens des Grundstammprofileteils (3) umfänglich um die besagten gegliederten Rahmen einverleibt wird.

Revendications

1. Système inviolable pour châssis articulés pour l'ouverture de portes et fenêtres comprenant un cadre stable d'un membre profilé principal (3) et un cadre mobile d'un membre de panneau profilé (1), où ledit cadre mobile du membre de panneau profilé (1) est connecté de manière articulée sur ledit cadre stable du membre profilé principal (3), et est muni d'une espagnolette, où ladite espagnolette est adaptée afin de mettre alternativement lesdits châssis articulés dans un état de verrouillage et dans un état de déverrouillage, dans lequel :

ledit cadre mobile du membre de panneau profilé (1) comporte une première rainure (2) adaptée pour recevoir un membre profilé de verrouillage (5) sur chacun de ses quatre côtés, lorsque lesdits châssis articulés sont amenés dans un état de déverrouillage ;

ledit cadre stable du membre profilé principal (3) comporte une seconde rainure (4) adaptée pour accueillir ledit membre profilé de verrouillage (5) sur chacun de ses quatre côtés lorsque lesdits châssis articulés sont amenés dans un état de verrouillage ;

où ledit membre profilé de verrouillage (5) est un membre de section II qui est inséré à l'intérieur de ladite première rainure (2) le long de chacun des quatre côtés dudit cadre mobile du membre de panneau profilé (1), où les premiers accessoires (7) sont adaptés pour déplacer ledit membre profilé de verrouillage (5) d'un état de déverrouillage dans lequel ledit membre profilé de verrouillage (5) est entièrement inséré à l'intérieur de ladite première rainure (2) dudit cadre mobile du membre de panneau profilé (1) dans un état de verrouillage dans lequel il s'étend vers l'extérieur à partir de ladite première rainure et à l'intérieur de ladite seconde rainure (4) dudit cadre stable du membre profilé principal (3) et inversement, où lesdits premiers accessoires (7) sont munis de saillies latérales (8), adaptées afin de coulisser à l'intérieur de ladite première rainure (2) dudit cadre mobile du membre de panneau profilé (1), où lesdits premiers accessoires (7) ont une inclinaison dans la direction de leur mouvement à l'intérieur de ladite première rainure (2) dudit cadre mobile du membre de panneau profilé (1), où ledit membre de section II (5) est muni d'entailles inclinées (6), à partir desquelles est retiré un matériau, lesdites entailles inclinées (6) ayant une inclinaison similaire à l'inclinaison desdits premiers accessoires (7), où lesdits premiers accessoires (7) sont adaptés afin de pousser ledit membre profilé de verrouillage (5) dans un état de verrouillage ou de le ramener dans un état de déverrouillage durant la rotation correspondante de ladite espagnolette avec laquelle lesdits châssis articulés sont placés respectivement dans un état de verrouillage et de déverrouillage ;

un second accessoire (20) avec un orifice traversant (21) est monté sur chacun des quatre coins dudit cadre mobile du membre de panneau profilé (1), où chaque dit second accessoire (20) est adapté afin de limiter le mouvement latéral dudit membre profilé de verrouillage (5) ; où ladite espagnolette est connectée, au moyen d'un goujon (17), à un accessoire principal de transmission de mouvement (9), lequel convertit la rotation de ladite espagnolette en mouvement linéaire, où ledit accessoire principal de transmission de mouvement (9) est muni de saillies latérales (8) adaptées afin de coulisser à l'intérieur de ladite première rainure (2) dudit cadre mobile du membre de panneau profilé (1), où une extrémité d'une courroie de transmission

(12) est solidement fixée à l'intérieur d'un orifice (14) sur une première extrémité dudit accessoire principal de transmission de mouvement (9), où ladite courroie de transmission (12) se déplace le long du périmètre du cadre mobile dudit membre de panneau profilé (1), passant librement à travers un orifice traversant (21) de chacun desdits seconds accessoires (20) sur chacun des quatre coins du cadre mobile dudit membre de panneau profilé (1), et où la courroie de transmission (12) est fixement connectée aux premiers accessoires (7), où l'autre extrémité de ladite courroie de transmission (12) est fixement montée à l'intérieur d'un orifice (15) sur une seconde extrémité dudit accessoire principal de transmission de mouvement (9), où lesdits premiers accessoires (7) sont munis d'un orifice traversant (19) à travers lequel passe ladite courroie de transmission (12), où chacun desdits premiers accessoires (7) est solidement fixé à ladite courroie de transmission (12) au moyen d'une vis qui passe à travers un orifice (18) de chacun desdits premiers accessoires (7) ;

où lesdits châssis articulés sont placés dans un état de verrouillage, lorsque lesdits membres profilés de verrouillage (5) s'étendent vers l'extérieur de ladite première rainure (2) dudit cadre mobile du membre de panneau profilé (1) et sont insérés dans ladite seconde rainure (4) dudit cadre stable du membre profilé principal (3), ainsi le cadre mobile du membre profilé principal (1) est inséré à l'intérieur dudit cadre stable du membre profilé principal (3) circonférentiellement autour desdits châssis articulés.

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Figure 1

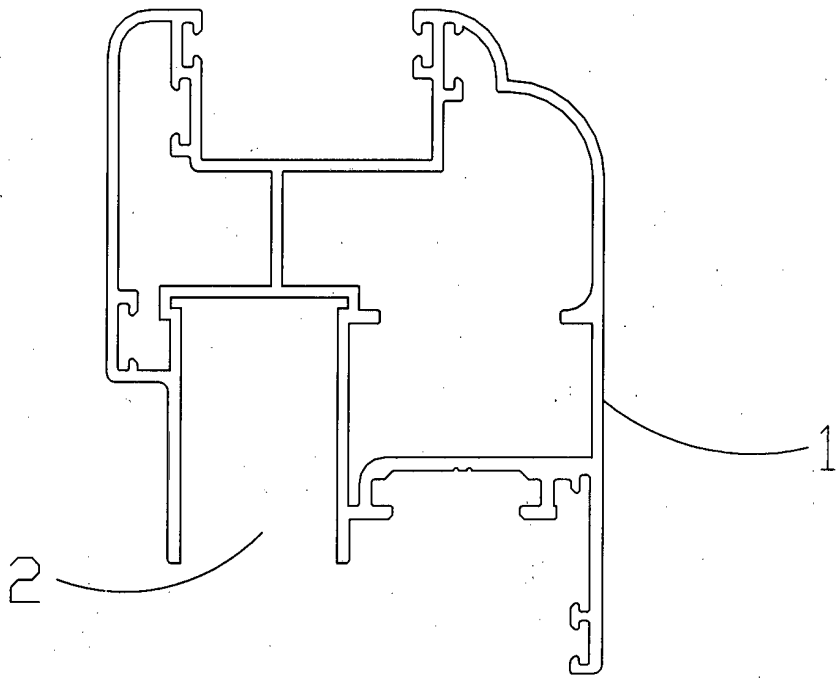


Figure 2

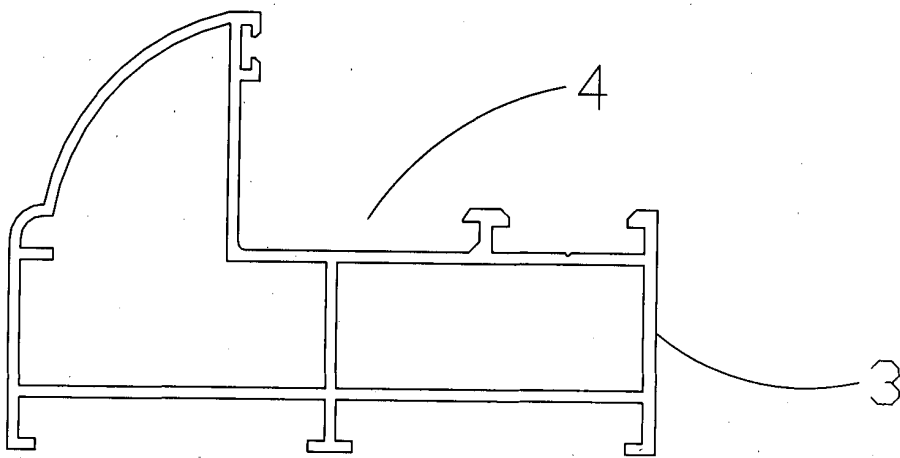


Figure 3

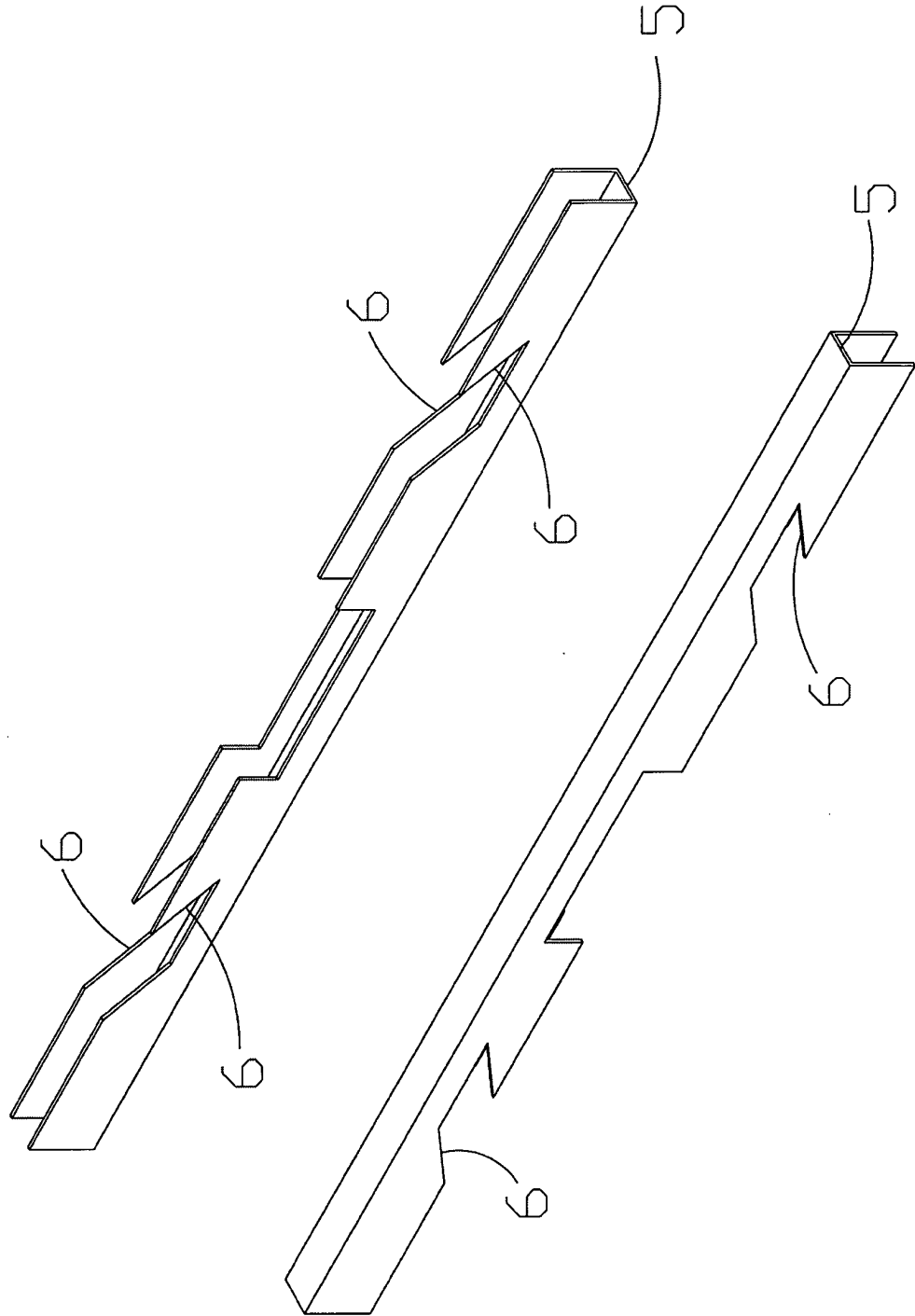


Figure 4

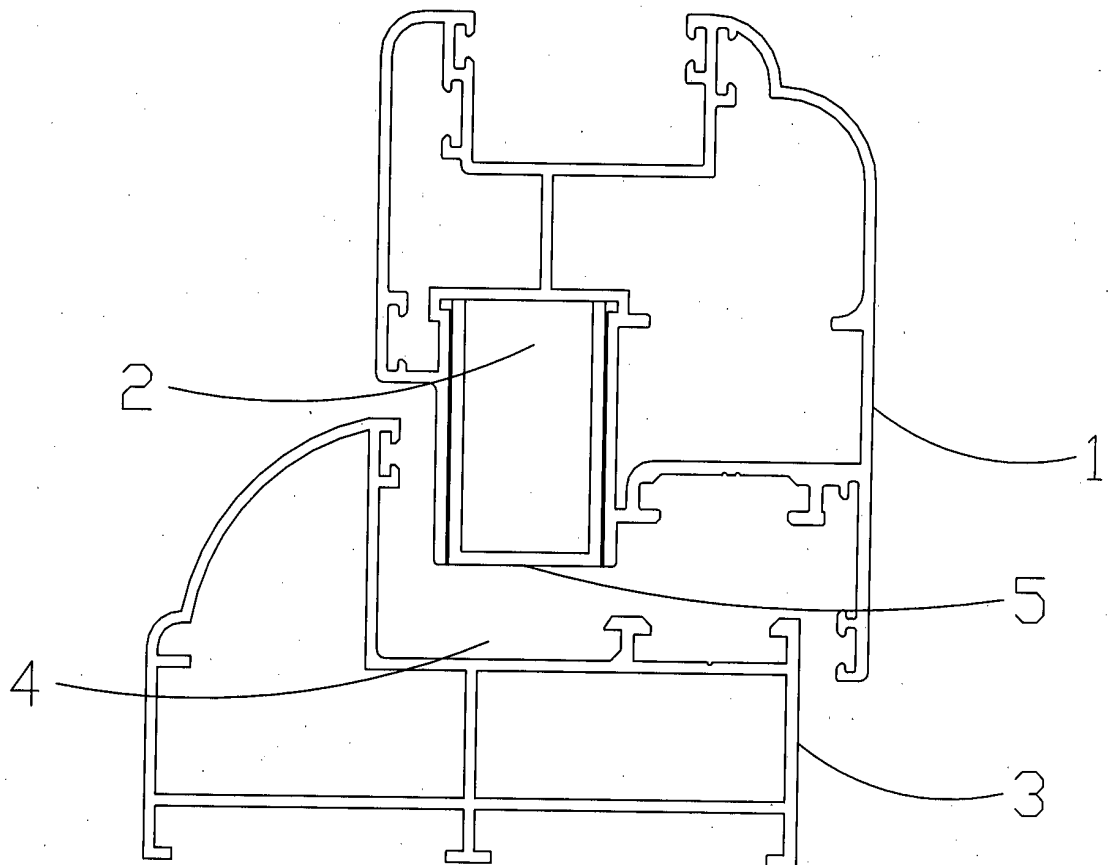


Figure 5

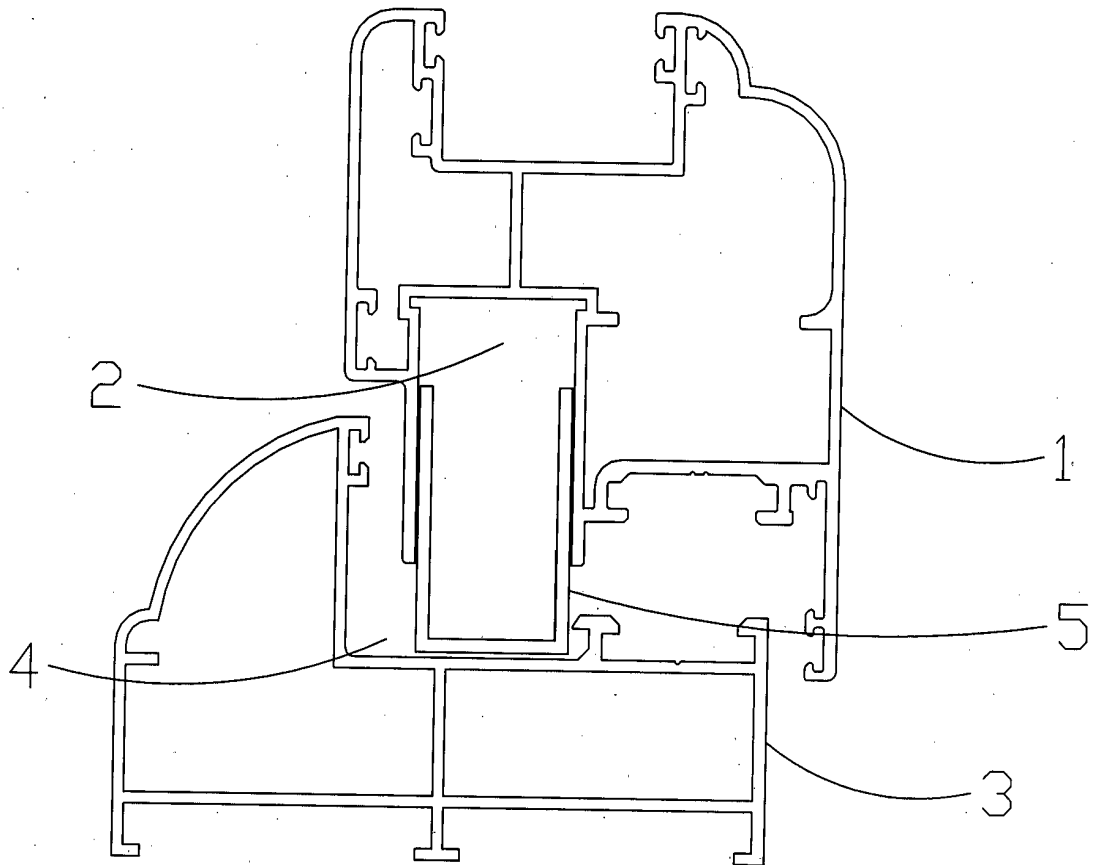


Figure 6

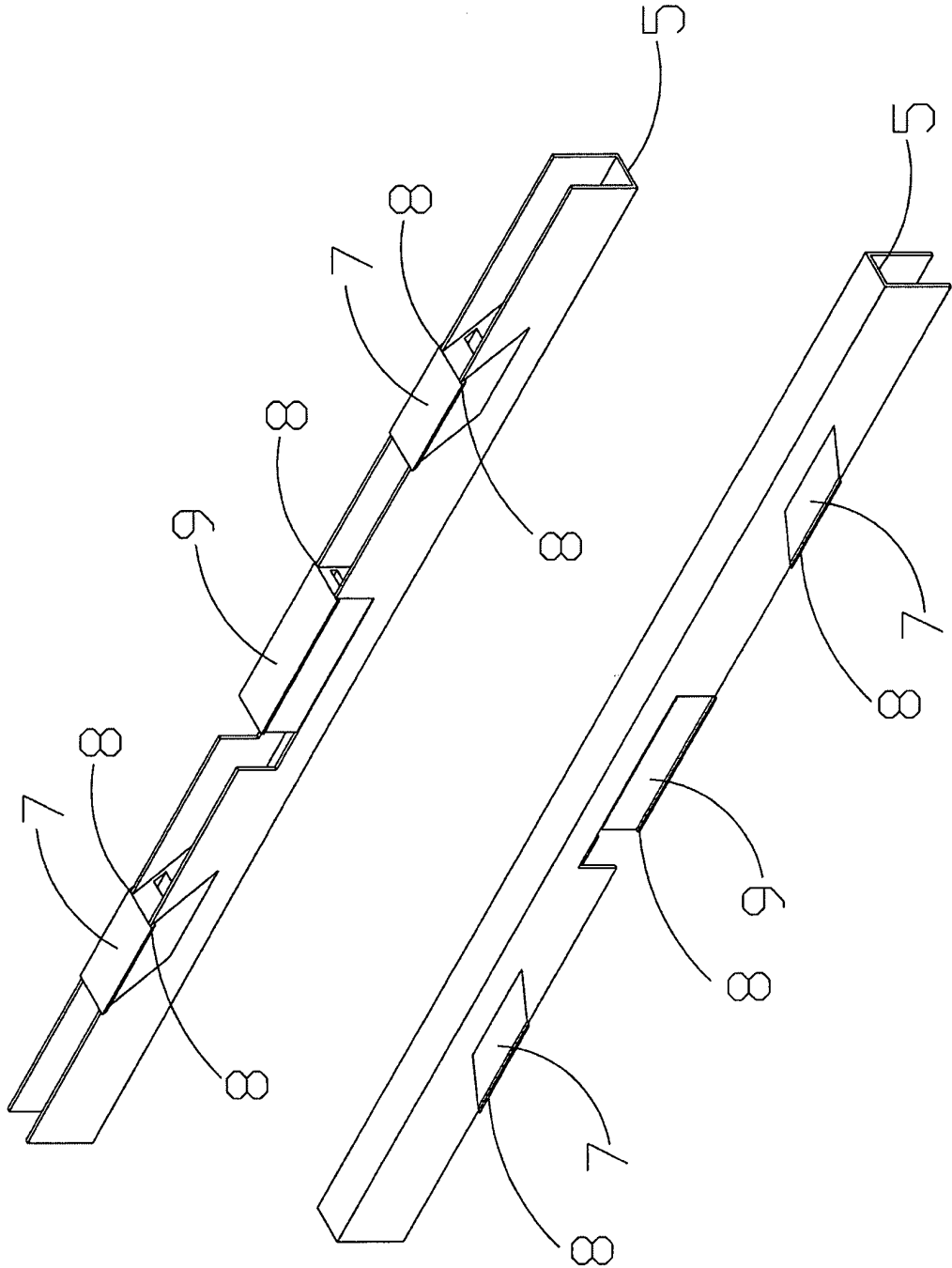


Figure 7

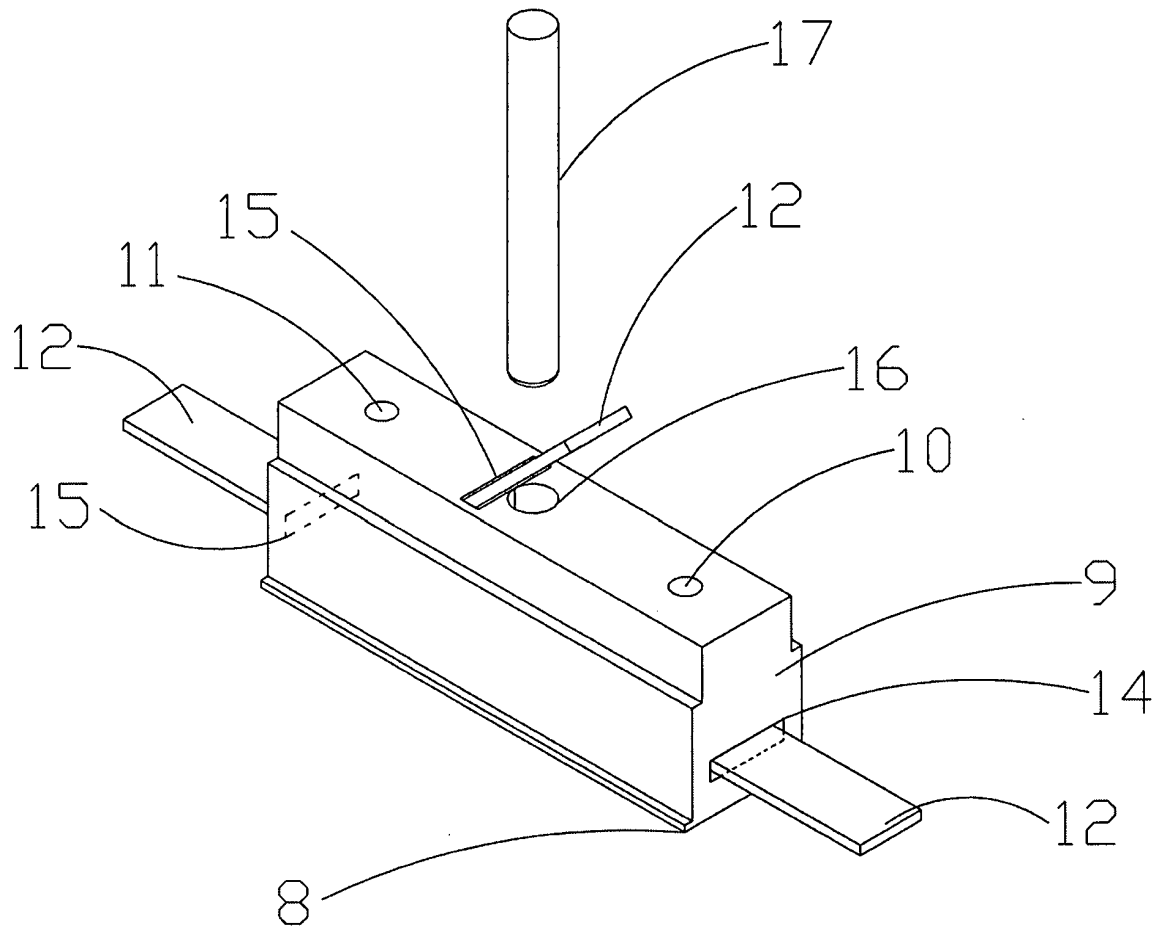


Figure 8

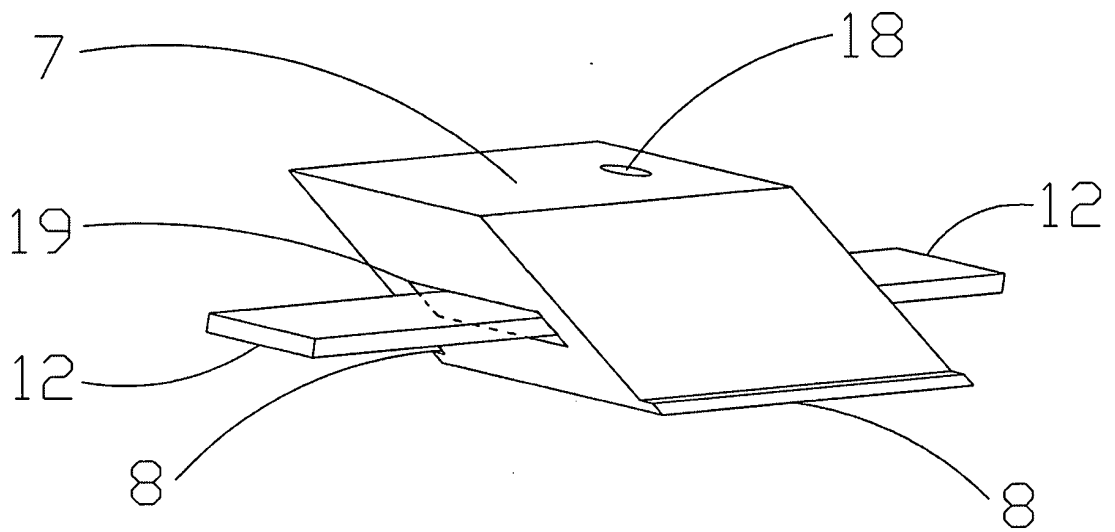
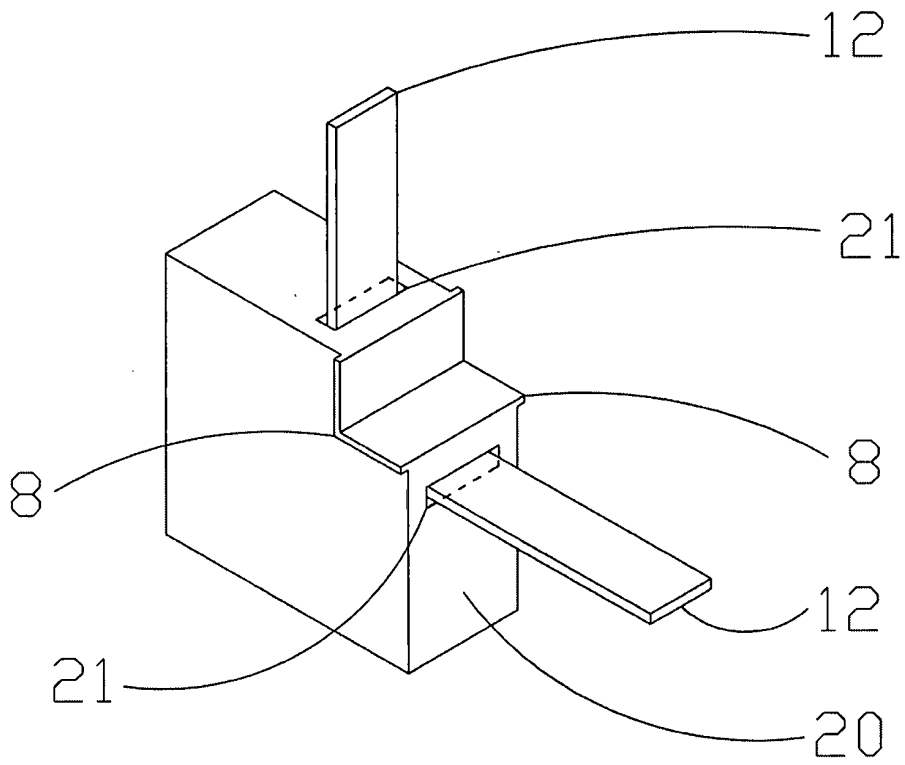


Figure 9



REFERENCES CITED IN THE DESCRIPTION

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