

DESCRIPTION

INVIOABLE OPENING FRAMES SYSTEM

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.

So far the manufacturing technologies of aluminium systems for hinged opening doors and windows, has not yielded any similar invention. 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.

The invention, 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.

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 accessory (5) that is shown in Figure 3. Figure 3 shows a part of the locking profile (5), which is in the form of a "I", 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).

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.

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.

The basic principle of the implementation of the locking method, according to the invention, can be applied 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 is 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.

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.

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.

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.

For every need concerning construction, the forms of the accessories may be changed, without altering the main principle of the invention, with the advantages that were described above, which are the result of the study and the designing of this invention.

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CLAIMS

1: An inviolable system of opening hinged frames, for doors and windows, characterized by the fact that an aluminium sash's profile (1) has a groove (2), inside of which a main accessory (9) is placed, which transmits the linear motion, which derives from the rotation of the framework's cremone, to the drive belt (12),
5 which in turn transmits the linear motion to the accessories (7) that push out or restore the locking profile (5), that are placed at the four sides circumferentially of the framework of the sash (1), and are securely attached with the drive belt (12) using screws. The accessories (7) that push out or restore the locking profile (5), by moving, are "slid" into the groove (2) of the aluminium sash's profile (1), and
10 mainly because of their slope, push out the locking profile (5), which has similar slope, at all four sides of the movable hinged framework, that results the circumferential entering of the locking profile (5) into the framework of the basic frame (3). The locking profile (5), is pushed out of the framework which is assembled by the sash's profile (1) and moves, because of the placement of the
15 lateral motion restriction accessories (20) of the locking profile (5) at the framework's four corners, at the initial assembling stage of the framework.

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