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(54) Drive assembly for door and window frames

(57) Drive assembly (22) for door and window frames (10), including a plurality of drive members (26, 46, 48) able to be inserted into elongated slots with undercut profile (16) of the door or window frame (10. The drive members (26, 46, 48) can be inserted into the respective slots (16) with a movement in the transverse direction relative to the longitudinal direction of the slot (16).

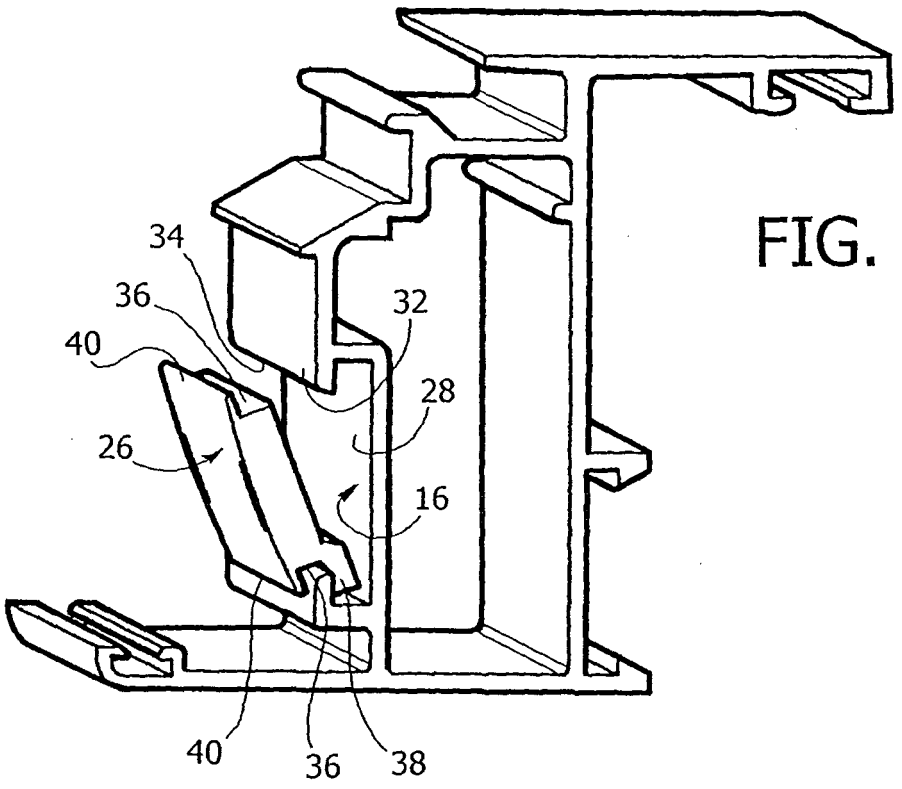

FIG. 6

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Description

[0001] The present invention relates to a drive assembly for door and window frames, usable for windows and doors openable with swivel wing or for windows and doors openable only in wing mode or only in swivel mode.

[0002] The present invention applies to door and window frames formed by section bars provided with elongated slots with undercut cross section. In the remainder of the description and in the claims, the term "drive assembly" means the set of devices that allow to transmit the opening/closing motion from the handle to the various closure elements. In case of doors and windows openable with swivel wing, the drive assembly enables selectively to activate positions of closure, opening in wing mode or opening in swing mode under the command of a cremone bolt device. In the case of doors and window frames openable only in wing mode or only in swivel mode, the drive assembly allows to select the closed or open positions of the door or window frame.

[0003] The drive assembly includes a plurality of drive members mounted inside the slots with undercut section of the section bars. In known solutions, the drive members are inserted into the slots with a motion in the longitudinal direction starting from one end of the slot. In traditional solutions the drive members have a profile that is coupled in sliding fashion with the undercut profile of the slot, forming a constraint that prevents the disengagement of the drive member in the transverse direction with respect to the slot.

[0004] The insertion of the drive members along the longitudinal axis of the slot starting from one end of the slot is a rather complex operation that requires, when fabricating the door or window frame, the formation of openings in the junction area between two section bars to leave open the ends of the slots.

[0005] The object of the present invention is to provide an enhanced system that allows to reduce the mounting time and to simplify the installation procedure of the drive assemblies on the windows or door frames.

[0006] According to the present invention, said object is achieved by a drive assembly for door and window frames having the characteristics set out in the claims.

[0007] The present invention shall now be described in detail with reference to the accompanying drawings, provided purely by way of non limiting example, in which:

- Figure 1 is a partial perspective view of a door or window frame provided with a drive assembly according to the present invention,
- Figure 2 is perspective view in enlarged scale of the part indicated by the arrow II in Figure 1,
- Figures 3, 4 and 5 are perspective views that illustrate the mounting sequence of one of the drive elements or members according to the present invention, and
- Figures 6 and 7 are perspective views illustrating two alternative embodiments of one of the drive members.

[0008] With reference to Figures 1 and 2, the number 10 designates the movable frame of a window or door constituted by extruded section bars made of light alloy. The movable frame 10 comprises two parallel vertical section bars 12 and two horizontal section bars 14, only one of which is visible in the figures. Each of the section bars 12, 14, in known fashion has on its outer side a longitudinal slot 16 with undercut cross section.

[0009] The frame 10 is provided with a cremone bolt command device 18, (Figure 1) including a handle 20 whereby the positions of closed window or door and open window or door can be selected. In the case of doors and window frames openable with swivel wing, the cremone bolt command 18 allows to select the positions of: closed window or door, window or door opened in wing mode and window or door open in swivel wing mode.

[0010] The movable frame 10 is provided with drive assemblies globally designated with the numbers 26, 50, 52. Figure 1 shows only the drive assemblies mounted in the upper part of the movable frame 10. The drive assemblies comprise all devices and components which, under the command of the cremone bolt device 18, select the configurations of closed frame, wing-opened frame or swivel-opened frame. In particular, the drive assembly comprises the so-called accessories 50, 52 and the connecting rods 26 which operatively connect the accessories to each other.

[0011] According to the present invention, the accessories 50, 52 and the connecting rods 26 which globally form the drive assembly are shaped in such a way as to be inserted into the respective slots 16 with a motion in transverse direction with respect to the longitudinal direction of the slot. With the solution according to the present invention, instead of inserting the accessories 50, 52 and the transmission rods 26 in the longitudinal direction starting from one end of the slot 16, such components are inserted frontally in the manner that will be described below.

[0012] In the remainder of the description and in the claims the term "drive members" defines the members that engage in fastening relationship a respective slot 16 or that are movable relative to the slot 16 between at least two operative positions corresponding to respective operative states of the frame 10, such as closed position, wing-opened position, swivel-opened position. In traditional solutions, each of said operating members is provided with two longitudinal tenons that engage opposite longitudinal edges of a respective slots 16. According to the present invention, each of the drive members of the drive assembly is provided with only one longitudinal tenon. In this way, each drive member is inserted into the respective slot 16 engaging the tenon in the undercut part of the slot 16 and making the drive member oscillate towards the slot in orthogonal direction to the longitudinal axis of the slot.

[0013] An example of the way in which the drive mem-

bers according to the present invention are mounted on the door or window frame is described hereafter with reference to Figures 3 through 5. These figures illustrate the mounting of a connecting rod 26. The same mounting sequence is used for any drive member comprised in the drive assembly.

[0014] With reference to Figures 3 through 5, the section bar 14 of the frame (identical to the section bar 12) has a guiding slot 16 with a bottom wall 28, two lateral walls 30 and two longitudinal edges 32 oriented towards each other and parallel to the bottom wall 28. The longitudinal edges 32 define a longitudinal opening 34 whose width is smaller than the distance between the lateral walls 30 in such a way that, in its cross section, the slot 16 has an undercut profile. Each of the longitudinal edges 32 has an outer surface, a front surface and an inner surface. The shapes of the section bar 14 and of the slot 16 do not differ from known solutions and have been described only to allow a better understanding of the present invention.

[0015] The connecting rod 26 according to the present invention has two parallel lateral surfaces 36 separated from each other by a slightly smaller distance than the width of the opening 34. The connecting rod 26 is provided with a single longitudinal tenon 38 that extends parallel and below relative to one of the lateral surfaces 36. In the embodiment illustrated in Figures 3 to 5, the connecting rod 26 is also provided with two longitudinal bearing edges 40 that project in lateral direction beyond the lateral surfaces 36.

[0016] The mounting sequence of the connecting rod 26 provides for inserting the tenon 38 below a longitudinal edge 32 of the slot 16 until bringing the longitudinal surface 36 adjacent to the tenon 38 in contact with the front surface of the edge 32 (Figures 3 and 4). Hence, the connecting rod 26 is made to oscillate towards the interior of the slot 16 as indicated by the arrow 42 in Figure 5 until bringing the bearing edge 40 in contact with the outer surface of the corresponding longitudinal edge 32 of the slot 16. At this point, the mounting operation is complete. It can be noted that the lateral surfaces 36 of the connecting rod 26 are guided between the front surfaces of the edges 32 and the bearing edges 40 bear on the outer surfaces of the edges of 32 of the slot 16.

[0017] Figures 6 and 7 show a connecting rod obtained as described above (Figure 6) next to a modified version (Figure 7). In the modified version are not present the bearing edges 40 and the rod 26 is provided on the opposite longitudinal side relative to the tenon of a longitudinal bearing foot 44 that is destined to bear on the bottom wall 28 of the slot 16.

[0018] The structural characteristics and the mounting modes described above in relation to the connecting rods 26 apply to all the drive members of the drive assembly 22. For example, in Figure 2 the reference numbers 46 and 48 designate the drive members respectively of an angular transmission device 50 and of a scissors arm 52. The drive members 46, 48 are provided with a single tenon 38 and, on the longitudinal side opposite the tenon 38, have a front surface 36 (dashed in Figure 3) lacking a tenon, in order to allow the insertion into the slot in transverse direction to the longitudinal direction of the slot, as described above for the connecting rod 26.

[0019] The solution described herein applies both to the door and window frames provided with a swivel wing opening motion, and to the door and window frames provided solely with a wing opening motion or solely with a swivel opening motion.

Claims

1. A drive assembly (22) for door and window frames (10), including a plurality of drive members (26, 46, 48) able to be inserted into elongated slots with undercut profile (16) of the door or window frame (10), **characterised in that** the drive members (26, 46, 48) can be inserted into the respective slots (16) with a movement in a transverse direction relative to the longitudinal direction of the slot (16).

2. Drive assembly as claimed in claim 1, **characterised in that** each of said drive members (26, 46, 48) comprises two parallel lateral surfaces (36) and one single tenon (38) that extends parallel to one of said lateral surfaces (36).

3. Drive assembly as claimed in claim 2, **characterised in that** each of said drive members (26, 46, 48) comprises at least one longitudinal bearing edge (40) projecting laterally beyond a corresponding lateral surface (36).

4. Drive assembly as claimed in claim 3, **characterised in that** each of said drive members (26, 46, 48) comprises at least one pair of longitudinal bearing edges (40) projecting laterally beyond said lateral longitudinal surfaces (36).

5. Drive assembly as claimed in claim 2, **characterised in that** each of said drive members (26, 46, 48) comprises a longitudinal bearing foot (44) situated on the opposite longitudinal edge with respect to the tenon (38).

FIG. 1

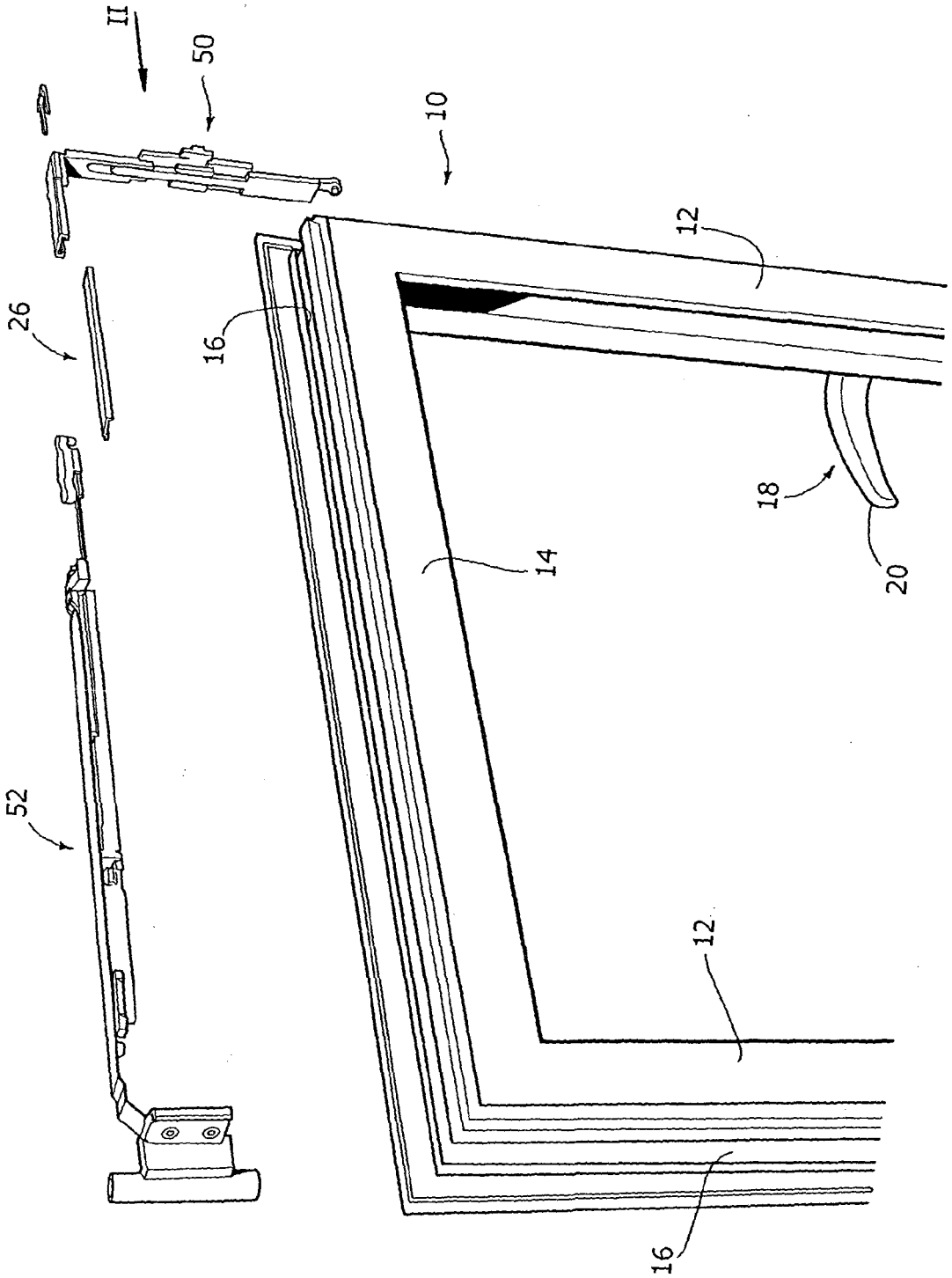


FIG. 2

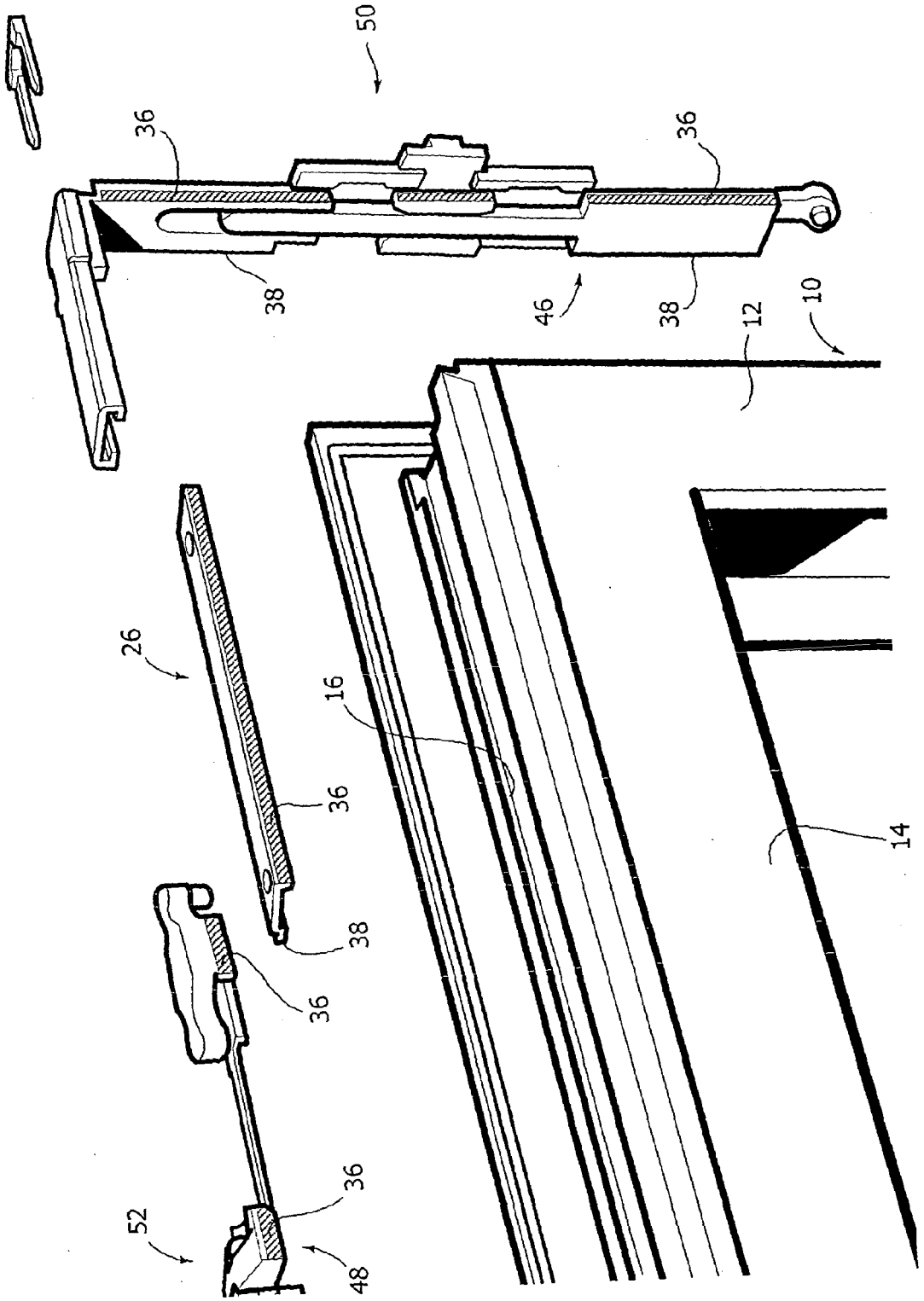
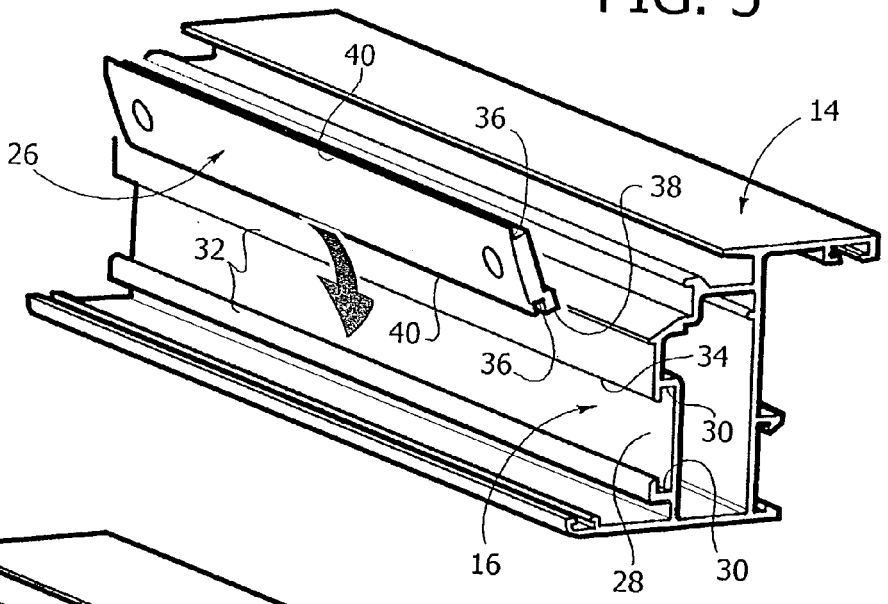


FIG. 3



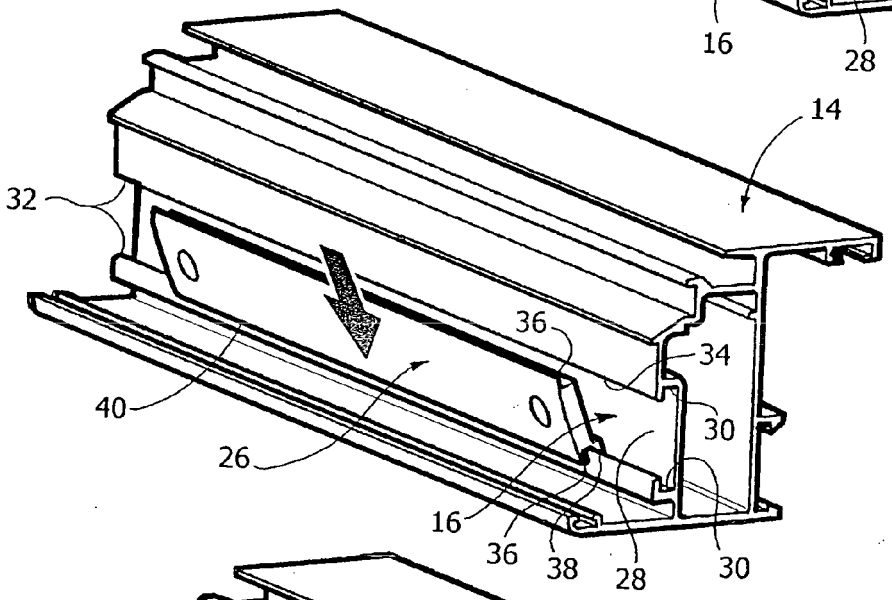


FIG. 4

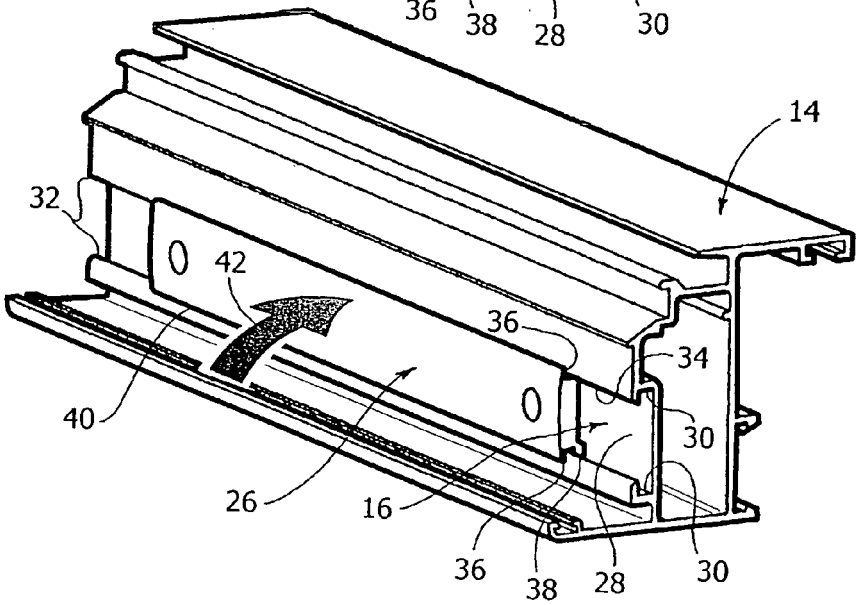


FIG. 5

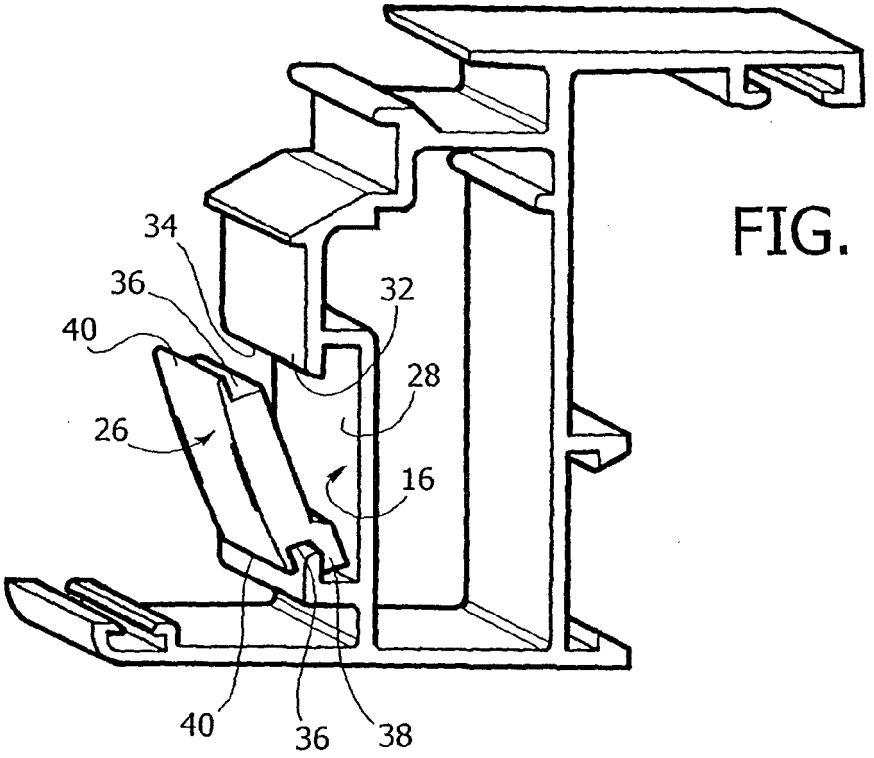


FIG. 6

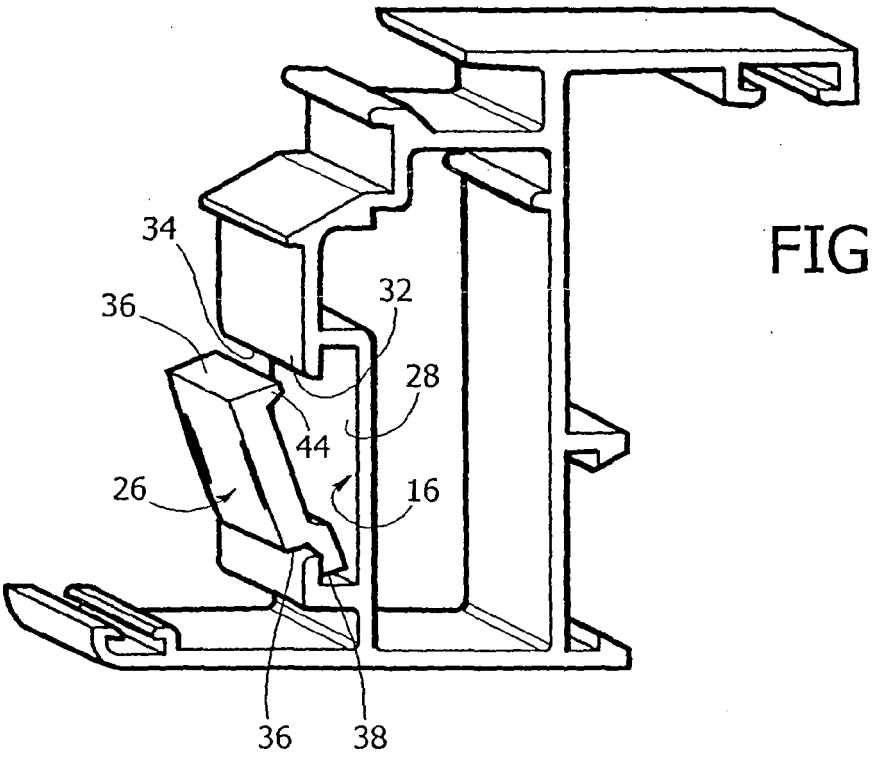


FIG. 7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5179

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 32 25 049 A1 (GEZE GMBH; GEZE GMBH, 7250 LEONBERG, DE) 12 January 1984 (1984-01-12) * page 12, paragraph 1 * * page 13, paragraph 3 - paragraph 4 * * page 16, paragraph 5 * * page 18, paragraph 1; figure *	1	E05C9/00
X	EP 1 270 856 A (NORSK HYDRO ASA) 2 January 2003 (2003-01-02) * column 1, paragraph 3 - paragraph 4 * * column 3, paragraph 17 - column 4, paragraph 24; figure *	1	
X	EP 1 256 680 A (ROTO FRANK AG) 13 November 2002 (2002-11-13) * the whole document *	1	
X	FR 2 722 527 A (ALCAN FRANCE SA) 19 January 1996 (1996-01-19) * figure 3 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	24 November 2005	Pieracci, A

CATEGORY OF CITED DOCUMENTS

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24-11-2005

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82