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(54) **Cross-member for in-wall frames of retractable sliding doors**

Querstrebe für Wandeinbaurahmen zurückziehbarer Schiebetüren

Traverse pour châssis muraux de portes coulissantes rétractables

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Description

[0001] The present invention relates to a cross-member for in-wall frames of retractable sliding doors.

[0002] Nowadays it is known to provide door frames which involve the use of a casing, positioned inside a wall, in which a door or a panel is slideably associated and which is also known as a "retractable door".

[0003] Such solution makes it possible to reduce the encumbrances of the door in a room thanks to the possibility of sliding it into the casing: thus one can use the space adjacent to the door, which would otherwise be occupied by doors of the type that are hinged laterally to a casement.

[0004] In the known art, the frame embedded in the wall is usually constituted by a framework which comprises a plurality of vertical profiled elements, a front post and a rear post, which are connected by horizontal cross-members which define a containment casing of the panel or of the door.

[0005] Protruding above the case, along an axis that is longitudinal with respect to the case proper and that extends from the side opposite to that of the containment case, is a rail which is hidden by a jamb.

[0006] Trolleys coupled to the upper edge of the door are slideably integrated in the rail in order to enable the sliding of the door into and out of the in-wall casing.

[0007] Usually associated with the end of the rail which is not associated with the vertical post locators is an additional post that acts as a terminal for the abutment of the front edge of the door.

[0008] Such conventional door frames thus use metallic profiles that can be mounted together and are sold for example in kit form for assembly.

[0009] To this end, this applicant is holder of Italian application no. TV2010A000011 in which an in-wall casing is disclosed for retractable sliding doors, which is characterized in that at least the crossbeam, the rail, the cross-members, and the spacer can be cut to measure because reference pre-cuts are provided, and also in which the jambs comprise at least the crossbeam jamb which can be cut to measure so that the in-wall casing can be modified at installation time, in order to obtain various different possibilities for the passage opening, further provided with an adjustable infill jamb with integrated architraves and a door track that can be adjusted for multiple door panel thicknesses.

[0010] Although such solution is valid, it suffers a drawback in that the user has to physically shorten the components in order to adapt them to the dimensions of the spaces.

[0011] This requires time and the use of special tools that require, furthermore, a certain level of skill in the use thereof.

[0012] WO 2007/076569 A1 discloses an adjustable in-wall cavity sliding door frame assembly comprising a pair of spaced apart vertical frame members 10,11 adjustably connectable together, each having a plurality of horizontally extending struts 13,14 that are mutually aligned and can overlap each other when pushed together. Each strut is provided with a plurality of spaced apart round openings 16, and a forwardly extending projection in the form of a small lug 15, that can be bent 90° to pass through a respective opening and then be bent further to about 180° to securely lock the lug into the opening.

[0013] The aim of the present invention is therefore to resolve the above mentioned technical problems, by eliminating the drawbacks in the cited known art and hence providing an invention that enables the user to mount components of an in-wall casing of retractable sliding doors rapidly and with great ease, without using special cutting tools.

[0014] Within this aim, an important object of the invention is to provide a component of an in-wall casing of retractable sliding doors, whose dimensions adapt to the spaces in which it is to be placed.

[0015] Another object is to obtain a component of an in-wall casing of retractable sliding doors which can be considered universal and thus adaptable on-site on the basis of specific requirements.

[0016] Another object is to provide an invention that is structurally simple, can be provided with conventional systems and machines, and is low cost.

[0017] In accordance with the invention, there is provided a cross-member for in-wall frames of retractable sliding doors, as defined in the appended claims.

[0018] Further characteristics and advantages of the invention will become better apparent from the detailed description of a particular, but not exclusive, embodiment, illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective view of two cross-members that are not coupled together;
Figure 2 is a perspective view of two cross-members that are coupled together;
Figure 3 is a plan view of the region of interconnection between two cross-members;
Figure 4 is a sectional view taken along the line IV-IV in Figure 3;
Figure 5 is a perspective view of the stable locking between two cross-members that are coupled together;
Figure 6 shows a detail of Figure 5.

[0019] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be interchanged with other, different characteristics, existing in other embodiments.

[0020] Moreover, it should be noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0021] With reference to the figures, the reference numeral 1 generally designates a cross-member for in-wall frames of retractable sliding doors, which, in a transversal

sectional view, is substantially Ω-shaped so as to define a base 2 and a pair of L-shaped lateral wings 3a, 3b.

[0022] The cross-member has, at the flat base 2 and proximate to the perimetric edge 4 of one end 5, temporary axial coupling means that are constituted by a flap 6 protruding below the plane of arrangement of the upper surface 7 of the flat base 2.

[0023] The flap 6 is advantageously provided at the median axis of the flat base 2.

[0024] The flap 6 is obtained preferably by drawing and advantageously has a shape structure, in a longitudinal sectional view, that is substantially curved with concavity directed toward the inside of the flat base 2.

[0025] The flap 6 is substantially rectangular in plan view and has the free end directed toward the perimetric edge 4.

[0026] The flap 6 cooperates with one of several engagement means 8 that are present on an upper surface 9 of a flat base 10 of another, similar cross-member 101, the means being constituted by a seat 11 that is adapted to accommodate the flap 6.

[0027] The number of seats 11 can be any, as a function of specific requirements, such as the length of the cross-members 1 and/or 101.

[0028] The seats 11 are further defined at the median axis of the flat base 10 of the cross-member 101 and are arranged at intervals of a chosen distance, which may be constant or variable as a function of the length of the cross-member 101.

[0029] The flap 6 can be removed from the seat 11 by pushing it from below so that it exits from the seat 11 so as to make it possible to decouple the cross-members 1 and 101 from each other.

[0030] The flap 6 can be arranged in the chosen one of the seats 11 that are provided on the upper surface 9 of the flat base 10 of the cross-member 101.

[0031] The cross-members 1 and 101, thus connected, can be selectively locked in position by way of temporary locking means that are constituted by screws 12; in particular, the screws 12 can be two in number and be arranged at the vertical rib 13 of the lateral wings 3a, 3b, which conveniently have previously been perforated so as to obtain a chosen number of holes 14 arranged at intervals of a chosen distance.

[0032] The holes 14 can also be defined on the vertical rib 15 of the lateral wings 16a, 16b of the cross-member 101.

[0033] Advantageously the screwing of the screws 12 can occur according to a plane that is inclined with respect to the plane of arrangement of the vertical ribs 13.

[0034] Thus it has been found that the invention fully achieves the intended aim and objects, a cross-member being devised that can be put together to measure, as a function of the specific dimensions found on-site, so as to obtain, rapidly and with great ease, an in-wall casing of the desired measurements.

[0035] Furthermore, thanks to the ability to interconnect the components by way of a bayonet-like coupling, a product can be obtained that is stable in its structure and without using special cutting tools and without therefore the need to shorten them.

[0036] Thus an in-wall casing of retractable sliding doors can be provided whose width and height dimensions are adapted directly on-site to the spaces in which it is to be placed.

[0037] Finally, the assembly operations are considerably facilitated for the technician, the invention being thereby structurally simple, it being possible to provide it with the usual plants and machines and being low cost.

[0038] The invention is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0039] The materials used as well as the dimensions of the individual components of the invention may be more pertinent according to specific requirements.

[0040] The various means for achieving certain different functions certainly need not coexist only in the embodiment shown, but may be present in many embodiments, even if they are not shown. The characteristics indicated above as advantageous, convenient or the like, may also be missing or be substituted by equivalent characteristics.

[0041] 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 interpretation of each element identified by way of example by such reference signs.

Claims

1. A cross-member (1, 101) for in-wall frames of retractable sliding doors, which is substantially Ω-shaped so as to define a flat base (2) and a pair of L-shaped lateral wings (3a, 3b), further comprising, at said flat base (2), temporary axial coupling means (6) that cooperate with one of several engagement means (8) that are present on another, similar cross-member (101) that is selectively lockable in position by way of temporary locking means, **characterized in that** it has, at said flat base (2) and proximate to a perimetric edge (4) of one end (5), temporary axial coupling means that are constituted by a flap (6) protruding below the plane of arrangement of the upper surface (7) of the flat base (2), said flap (6) being obtained by drawing and has a shape structure, in a longitudinal sectional view, that is substantially curved with concavity directed toward the inside of said flat base (2), said flap (6) being removable from said seat (11) by pushing it from below so that it exits from said seat (11) so as to make it possible to decouple said cross-members (1) and (101) from each other.

2. The cross-member according to claim 1, **characterized in that** said flap (6) is provided at the median axis of said flat base (2).

3. The cross-member according to claim 1, **characterized in that** said flap (6) cooperates with one of several engagement means (8) that are present on the upper surface (9) of the flat base (10) of another, similar cross-member (101), said means being constituted by at least one seat (11) that is adapted to accommodate said flap (6).

4. The cross-member according to claim 1, **characterized in that** said flap (6) is substantially rectangular in plan view and has the free end directed toward said perimetric edge (4).

5. The cross-member according to claim 3, **characterized in that** the number of said seats (11) varies as a function of specific requirements, such as the length of said cross-members (1) and/or (101).

6. The cross-member according to claim 3, **characterized in that** said seats (11) are defined at the median axis of said flat base (10) of said cross-member (101) and are arranged at intervals of a chosen distance, constant or variable as a function of the length of said cross-member (101).

7. The cross-member according to one or more of the preceding claims, **characterized in that** said flap (6) is arranged in the chosen one of said seats (11) which are provided on the upper surface (9) of said flat base (10) of said cross-member (101).

8. The cross-member according to one or more of the preceding claims, **characterized in that** said cross-members (1) and (101) thus connected can be selectively locked in position by way of temporary locking means that are constituted by one or more screws (12) arranged at one or both of the vertical ribs (13) of said lateral wings (3a, 3b), which have previously been perforated so as to obtain a chosen number of holes (14) arranged at intervals of a chosen distance.

9. The cross-member according to claim 8, **characterized in that** said holes (14) are defined also on one or both of the vertical ribs (13) of the lateral wings (16a, 16b) of said cross-member (101).

10. The cross-member according to claim 8, **characterized in that** the screwing of said screws (12) occurs according to a plane that is inclined with respect to the plane of arrangement of said vertical ribs (13).

Patentansprüche

1. Eine Querstrebe (1, 101) für Wandeinbaurahmen zurückziehbarer Schiebetüren, die im Wesentlichen Ω-förmig ist, um eine flache Basis (2) und ein Paar L-förmiger seitlicher Flügel (3a, 3b) zu bestimmen; an der flachen Basis (2) weiter Mittel (6) zur vorübergehenden axialen Kopplung umfassend, die mit einem von mehreren Eingriffsmitteln (8) zusammenwirken, welche an einer anderen, ähnlichen Querstrebe (101) vorhanden sind, die durch Mittel zum vorübergehenden Blockieren wahlweise in ihrer Position blockiert werden kann; **dadurch gekennzeichnet, dass** sie an der flachen Basis (2) und nahe einer Umfangskante (4) eines Endes (5) Mittel zur vorübergehenden axialen Kopplung hat, die aus einer Klappe (6) bestehen, welche unterhalb der Anordnungsebene der oberen Oberfläche (7) der flachen Basis (2) herausragt; wobei die Klappe (6) durch Ziehen hergestellt wird und in der Längsschnittansicht eine Form hat, die im Wesentlichen gekrümmt ist, wobei die Konkavität zur Innenseite der flachen Basis (2) hin gerichtet ist; wobei die Klappe (6) aus dem Sitz (11) entfernt werden kann durch Schieben derselben von unten, so dass sie aus dem Sitz (11) austritt, um so die Entkopplung der Querstreben (1) und (101) voneinander zu ermöglichen.

2. Die Querstrebe gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Klappe (6) an der Mittelachse der flachen Basis (2) angebracht ist.

3. Die Querstrebe gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Klappe (6) mit einem von mehreren Eingriffsmitteln (8) zusammenwirkt, die an der oberen Oberfläche (9) der flachen Basis (10) einer anderen, ähnlichen Querstrebe (101) vorhanden sind; wobei die Mittel aus mindestens einem Sitz (11) bestehen, der ausgebildet ist, um die Klappe (6) aufzunehmen.

4. Die Querstrebe gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Klappe (6) im Wesentlichen rechteckig im Grundriss ist und dass ihr freies Ende der Umfangskante (4) zugewandt ist.

5. Die Querstrebe gemäß Anspruch 3, **dadurch gekennzeichnet, dass** die Anzahl der Sitze (11) je nach den spezifischen Anforderungen, wie zum Beispiel der Länge der Querstreben (1) und/oder (101), variiert.

6. Die Querstrebe gemäß Anspruch 3, **dadurch gekennzeichnet, dass** die Sitze (11) an der Mittelachse der flachen Basis (10) der Querstrebe (101) bestimmt und in Intervallen mit ausgewähltem Abstand, konstant oder variabel, in Abhängigkeit von der Länge der Querstrebe (101), angeordnet sind.

7. Die Querstrebe gemäß einem oder mehreren der obigen Ansprüche, **dadurch gekennzeichnet, dass** die Klappe (6) in dem ausgewählten der Sitze (11), die an der oberen Oberfläche (9) der flachen Basis (10) der Querstrebe (101) angebracht sind, aufgenommen wird.

8. Die Querstrebe gemäß einem oder mehreren der obigen Ansprüche, **dadurch gekennzeichnet, dass** die derart verbundenen Querstreben (1) und (101) durch Mittel zum vorübergehenden Blockieren wahlweise in ihrer Position blockiert werden können, welche aus einer oder mehreren Schrauben (12) bestehen, die an einer oder beiden der vertikalen Rippen (13) der seitlichen Flügel (3a, 3b) angebracht sind, welche zuvor mit Löchern versehen wurden, um eine ausgewählte Anzahl von Löchern (14) zu bilden, die in Intervallen mit ausgewähltem Abstand angeordnet sind.

9. Die Querstrebe gemäß Anspruch 8, **dadurch gekennzeichnet, dass** die Löcher (14) auch an einer oder beiden der vertikalen Rippen (13) der seitlichen Flügel (16a, 16b) der Querstrebe (101) bestimmt sind.

10. Die Querstrebe gemäß Anspruch 8, **dadurch gekennzeichnet, dass** das Einschrauben der Schrauben (12) auf einer Ebene stattfindet, die im Verhältnis zur Anordnungsebene der vertikalen Rippen (13) geneigt ist.

Revendications

1. Traverse (1, 101) pour des châssis muraux à encastrer de portes coulissantes rétractables, qui est sensiblement en forme de Ω de manière à définir une base plate (2) et une paire d'ailes latérales en forme de L (3a, 3b), comportant en outre, sur ladite base plate (2), des moyens de couplage axial temporaire (6) qui coopèrent avec l'un des moyens de prise (8) qui sont présents sur une autre traverse similaire (101) qui peut être sélectivement bloquée en position par des moyens de blocage temporaire, **caractérisée en ce qu'**elle a, sur ladite base plate (2) et près d'un bord périmétrique (4) d'une extrémité (5), des moyens de couplage axial temporaire qui sont constitués d'un rabat (6) faisant saillie sous le plan d'agencement de la surface supérieure (7) de la base plate (2), ledit rabat (6) étant obtenu par étirage et a une structure de forme, dans une vue en coupe longitudinale, qui est sensiblement incurvée avec une concavité dirigée vers l'intérieur de ladite base plate (2), ledit rabat (6) pouvant être retiré dudit logement (11) en le poussant par le dessous de sorte qu'il sort dudit logement (11) de manière à pouvoir séparer lesdites traverses (1) et (101) l'une de l'autre.

2. Traverse selon la revendication 1, **caractérisée en ce que** ledit rabat (6) est agencé sur l'axe médian de ladite base plate (2).

3. Traverse selon la revendication 1, **caractérisée en ce que** ledit rabat (6) coopère avec l'un des moyens de prise (8) qui sont présents sur la surface supérieure (9) de la base plate (10) d'une autre traverse similaire (101), lesdits moyens étant constitués d'au moins un logement (11) qui est adapté pour recevoir ledit rabat (6).

4. Traverse selon la revendication 1, **caractérisée en ce que** ledit rabat (6) est sensiblement rectangulaire en vue de dessus et a l'extrémité libre dirigée vers ledit bord périmétrique (4).

5. Traverse selon la revendication 3, **caractérisée en ce que** le nombre desdits logements (11) varie en fonction d'exigences spécifiques, telles que la longueur desdites traverses (1) et/ou (101).

6. Traverse selon la revendication 3, **caractérisée en ce que** lesdits logements (11) sont définis sur l'axe médian de ladite base plate (10) de ladite traverse (101) et sont agencés à des intervalles d'une distance choisie, constante ou variable en fonction de la longueur de ladite traverse (101).

7. Traverse selon une ou plusieurs des revendications précédentes, **caractérisée en ce que** ledit rabat (6) est agencé dans le logement choisi parmi lesdits logements (11) qui sont prévus sur la surface supérieure (9) de ladite base plate (10) de ladite traverse (101).

8. Traverse selon une ou plusieurs des revendications précédentes, **caractérisée en ce que** lesdites traverses (1) et (101) ainsi reliées peuvent être sélectivement bloquées en position par des moyens de blocage temporaire qui sont constitués d'une ou plusieurs vis (12) agencées sur l'une des nervures verticales (13) desdites ailes latérales (3a, 3b), ou sur les deux nervures, qui ont préalablement été perforées de manière à obtenir un nombre choisi de trous (14) agencés à des intervalles d'une distance choisie.

9. Traverse selon la revendication 8, **caractérisée en ce que** lesdits trous (14) sont définis également sur l'une des nervures verticales (13) des ailes latérales (16a, 16b) de ladite traverse (101), ou sur les deux nervures.

10. Traverse selon la revendication 8, **caractérisée** ce que le vissage desdites vis (12) est effectué suivant

un plan qui est incliné par rapport au plan d'agencement desdites nervures verticales (13).

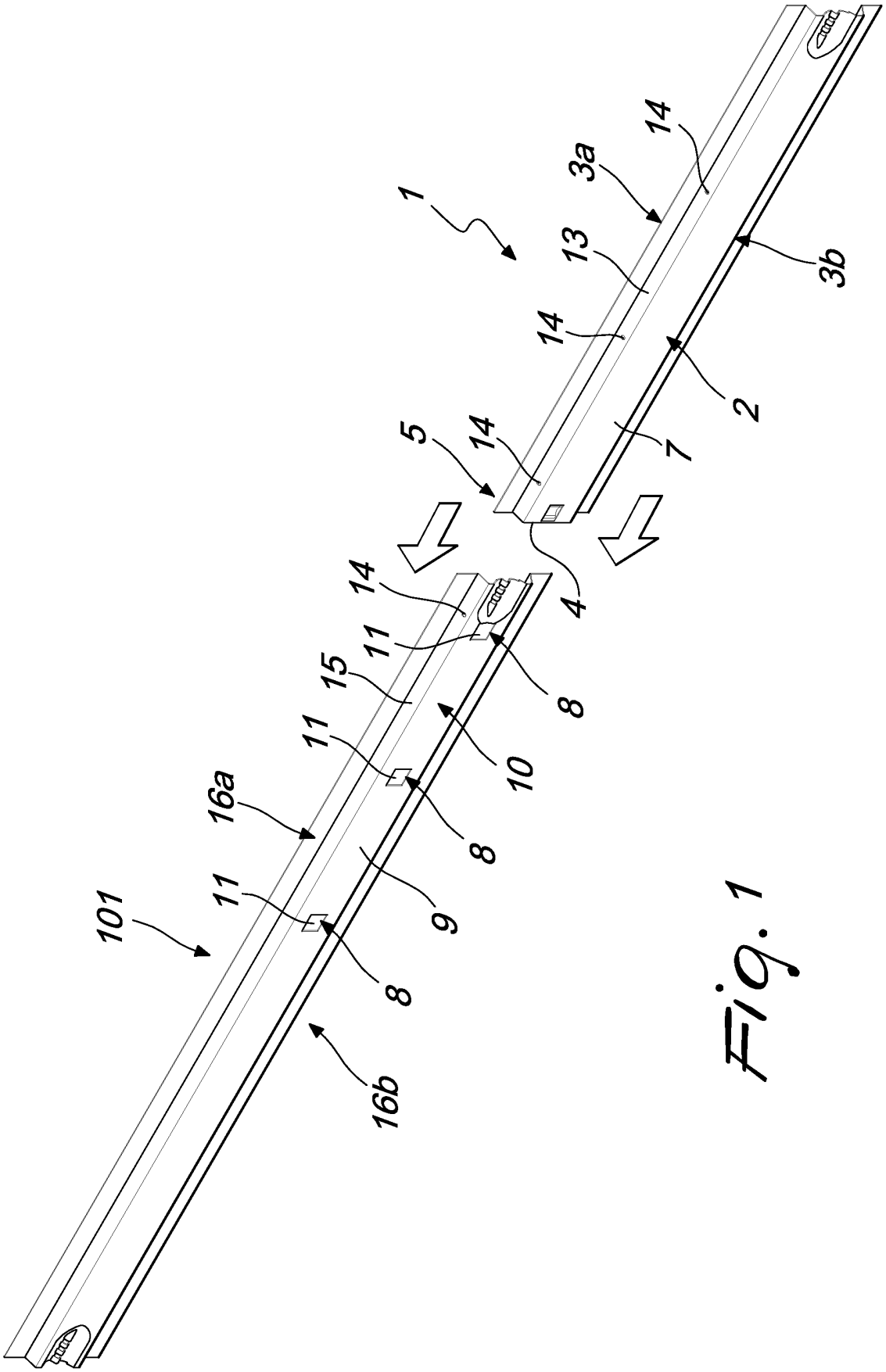

Fig. 1

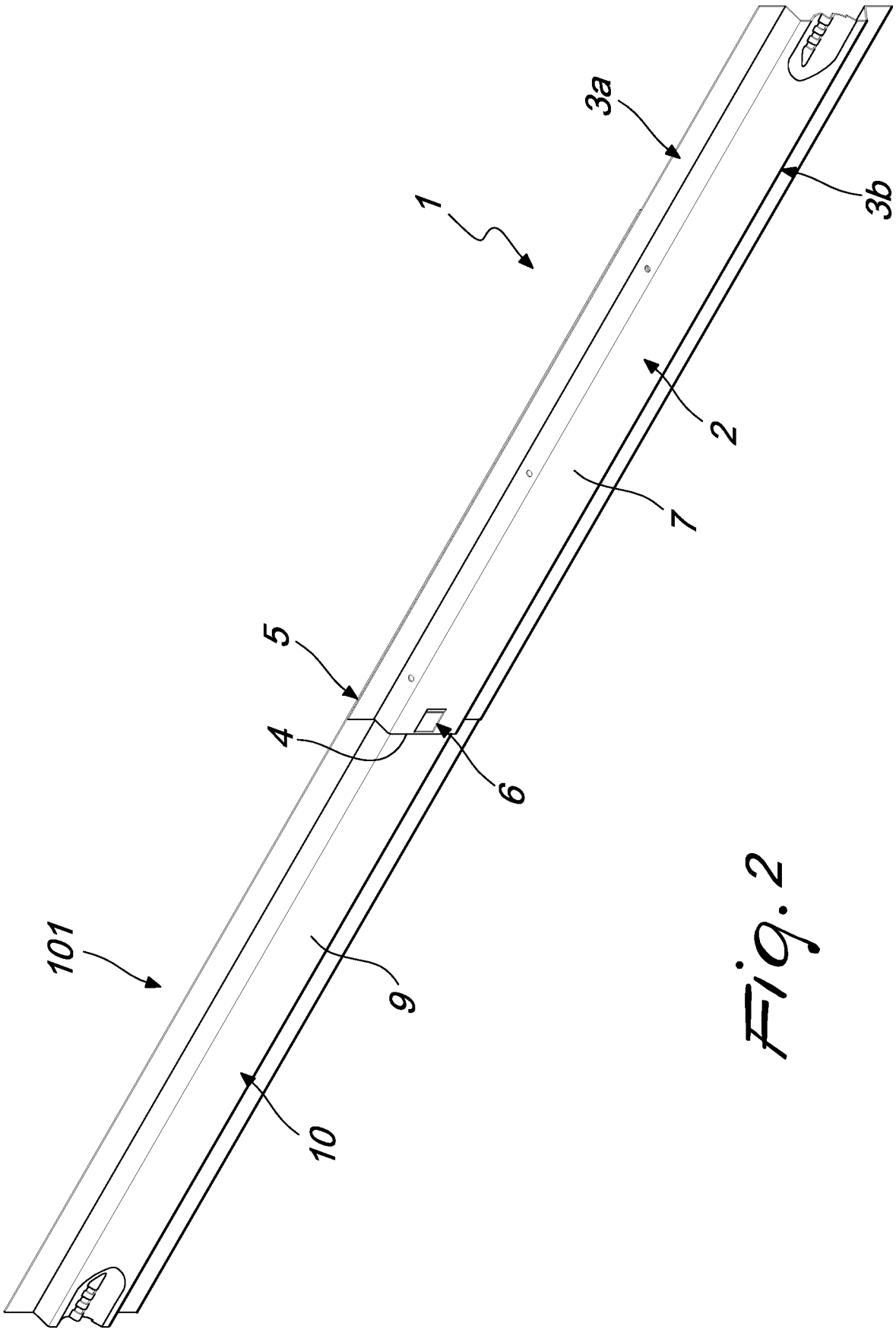

Fig. 2

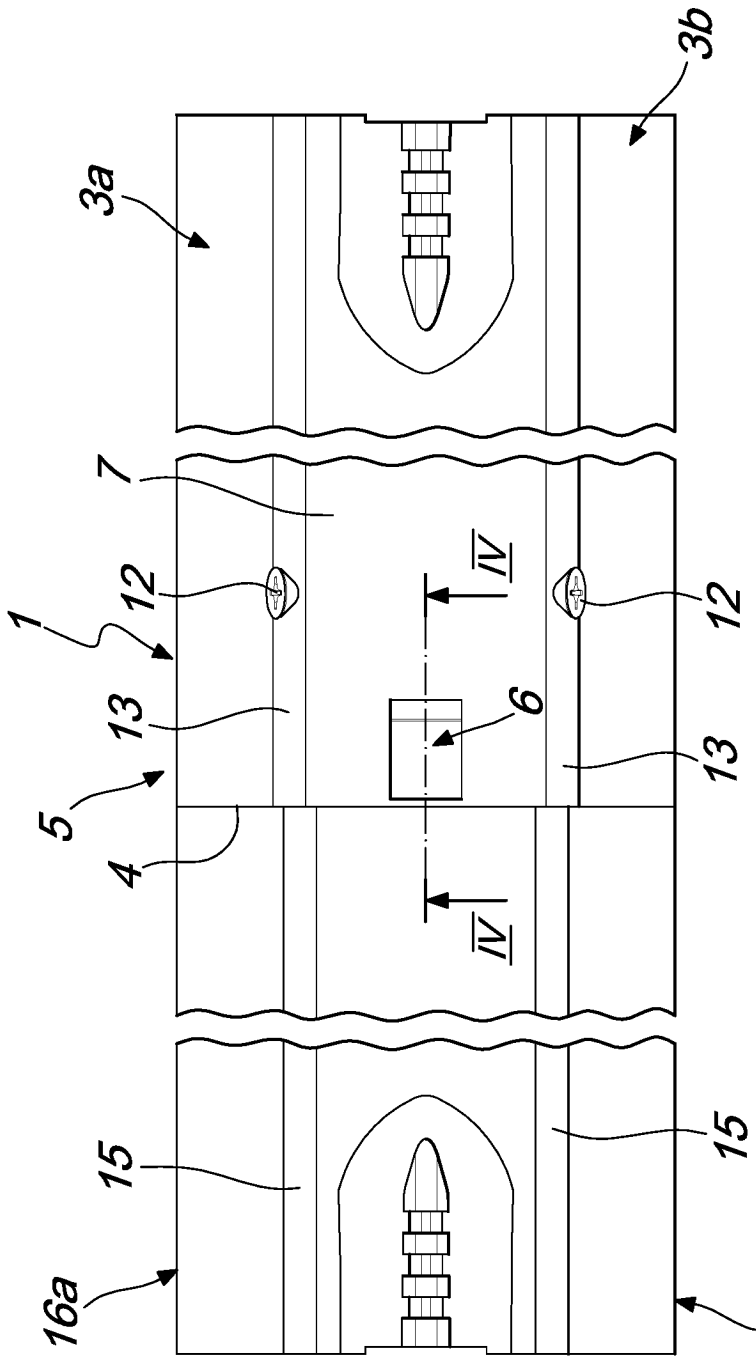

Fig. 3

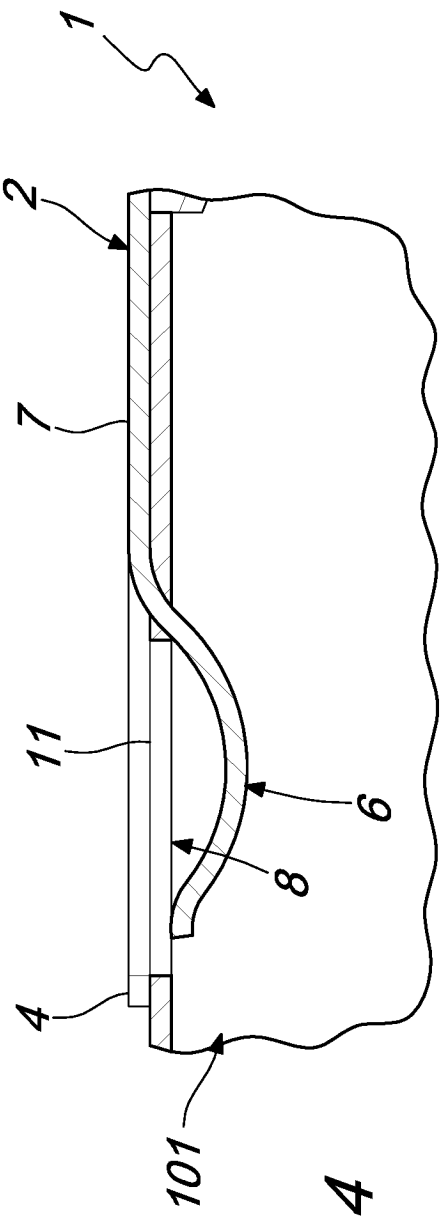

Fig. 4

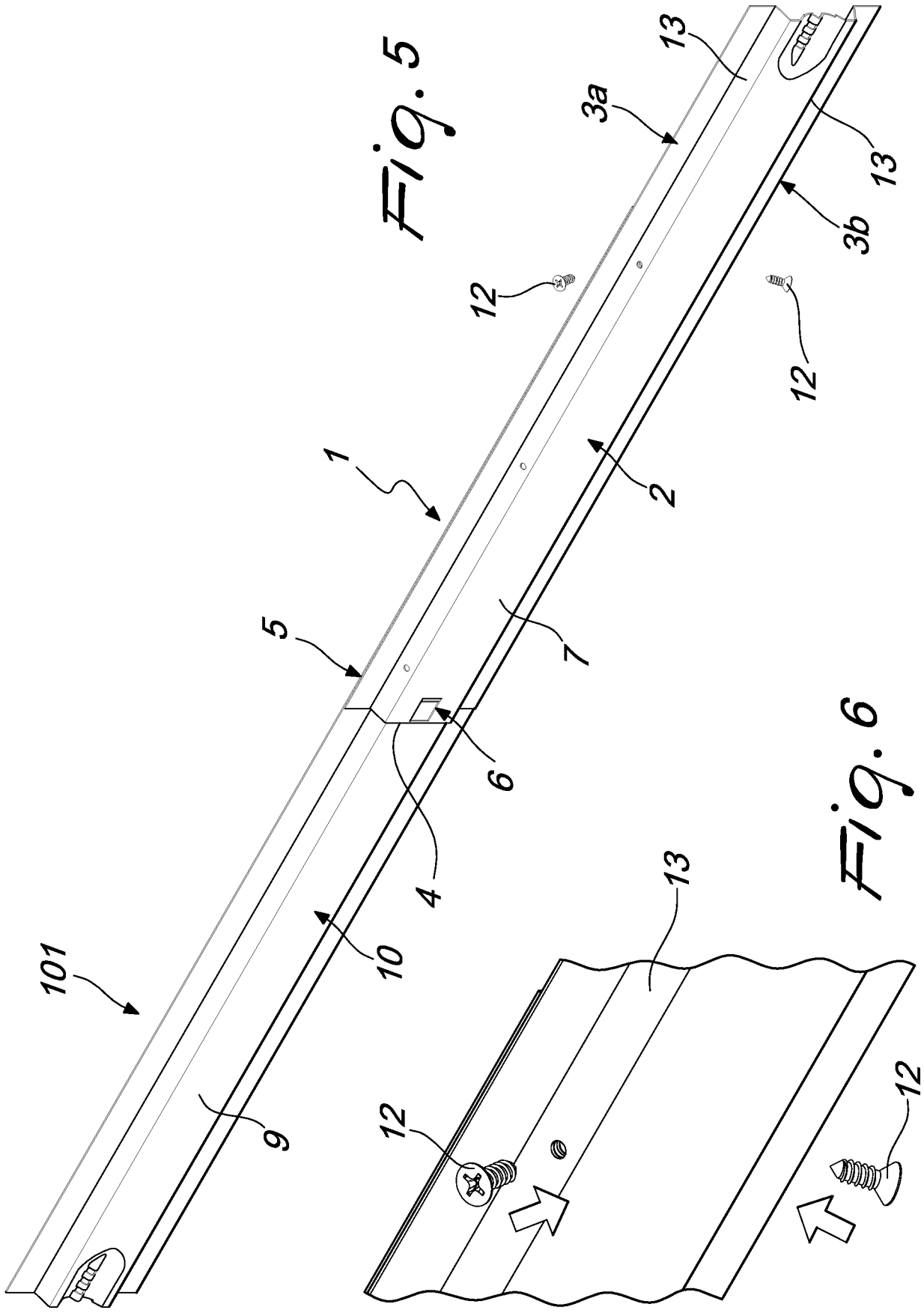
Fig. 5
13
3a
13
3b
12
12
1
2
5
7
6
4
10
101
9
Fig. 6
13
12
12

REFERENCES CITED IN THE DESCRIPTION

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