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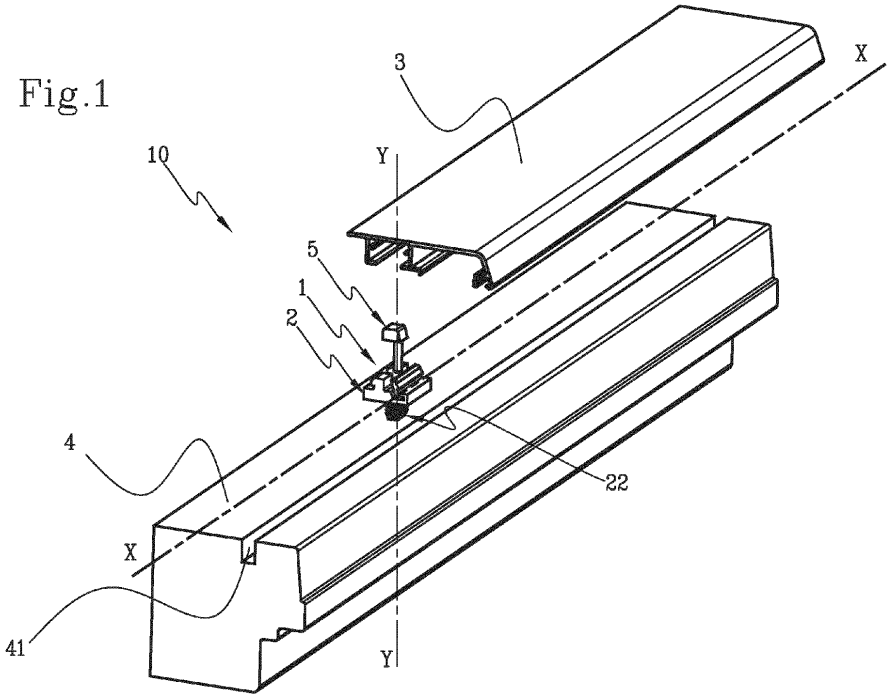
(54) ANCHORING DEVICE FOR DOORS OR WINDOWS

(57) An anchoring device 1 for doors or windows, in particular intended to connect at least two members of said door or window, comprising a main body 2 extending mainly along an axis X to define a connection between a first member 3 and a second member 4 wherein said main body 2 comprises a shaped portion 21 configured to be associated with a first member 3 and; an expandable portion 22 defining a housing volume 23 and configured to be mechanically connected to a second member 4; and wherein said anchoring device 1 comprises expansion means 5 mechanically associable with said main body 2 and configurable between a first position in which said expansion means 5 is decoupled from said expandable portion 22, and a second position in which said expansion means 5 is inserted in said housing volume 23 of said expandable portion 22 so as to achieve an expansion of said expandable portion 22 and mechanically constrain said main body 2 to said second member 4.

Fig.1



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Description

Technical field

[0001] The present invention relates to an anchoring device for doors or windows intended to mechanically connect at least two members or parts thereof so as to assemble such members and make them integral with each other, according to the preamble to independent claim number 1.

[0002] More in detail, the anchoring device for doors or windows according to the present invention is intended for use in the building and construction sector, in particular in the sector of doors or windows, for example doors or windows made by assembling members of different materials together (e.g., windows and/or French doors or windows in wood/aluminium, aluminium/wood and PVC). Preferably, the present invention is precisely for doors or windows made of wood-aluminium which comprise a wooden frame and an aluminium covering which is arranged on the outer side of the wooden frame so as to protect it from the weather.

[0003] Therefore, the invention is advantageously intended for the field of the production and marketing of anchoring devices for doors or windows, as well as to the field of the production and marketing of accessories and fittings for the aforesaid doors or windows, in particular in applications where it is required to assemble members of the above-mentioned materials to make a door or window.

Prior art

[0004] In general, a door or window is typically used to physically isolate an internal environment, such as a room in a house, from the external environment. That is, a door or window defines a barrier between the aforesaid internal environment and the external environment so as to prevent atmospheric agents (e.g., rain, hail, wind) from entering the internal environment.

[0005] This results - during the service life of the door or window - in wear and tear and degradation of the same door or window surface, in particular if the door or window is made of wood.

[0006] It is known in the technical field of reference, and in particular in the field of doors or windows, to reduce the wear and tear described above, e.g., to cover the door or window with cornices or the like.

[0007] In more detail, a door or window comprises a frame, e.g., made of wood, having an essentially rectangular shape, a covering/cladding cornice, e.g., made of aluminium, and shaped so as to cover/clad the frame, and at least one anchoring device for mechanically connecting the covering/cladding cornice to the aforesaid frame.

[0008] The anchoring devices commonly used are known in the technical jargon of the field as clips.

[0009] Such clips comprise a main body shaped to be laid on the surface of the frame and fixing means, in particular threaded (e.g., screws or the like), to mechanically connect the main body to the frame itself.

[0010] Typically, multiple clips must be used to make a door or window, and in particular, the larger the size of a door or window, the more clips must be used for its assembly.

[0011] Operationally, such clips are positioned manually on the surface of a door or window frame at a certain distance, e.g., at regular spacing intervals, and then screwed to the frame, e.g., with the aid of a screwdriver or an automatic tool (e.g., an electric screwdriver or the like).

[0012] Therefore, the anchoring devices of known type such as those briefly described above have in practice proved to include drawbacks.

[0013] In particular, the main drawback lies in the fact that the anchoring devices of known type are complex to use. In fact, such devices require an accurate positioning on the surface of the frame and a precise spacing of one device from the next. This translates into a considerable expenditure in terms of execution times of such operations, which is reflected in a lower number of doors or windows produced in the unit of time and therefore in a higher production cost of the door or window itself.

[0014] A further drawback lies in the fact that the known anchoring devices do not allow to obtain high-precision doors or windows. In fact, the positioning and spacing operations of the aforesaid anchoring devices require the manual dexterity of a specialised operator in order to achieve a precise alignment of the devices so that the covering is then aligned with the door or window. Therefore, the final dimensional quality of the doors or windows produced is closely linked to the manual skills of the operator carrying out the aforesaid operations. This translates into frequent opportunities to make mistakes, which is reflected in doors or windows with a substantially inconsistent and repetitive final shape and size.

[0015] A further drawback lies in the fact that the known anchoring devices create an irreversible coupling between frame and cornice. That is, after the door or window is assembled, it is not possible to decouple the cornice from the frame without compromising the structural integrity of the cornice, the frame or both.

[0016] A further drawback lies in the fact that the anchoring devices of known type require tools for their assembly. In particular, the connection of such devices to the frame of a door or window is commonly carried out by means of threaded elements. Such elements are screwed using a screwing tool. This makes the devices of known type inconvenient to use and, in some environments, in particular in places where there is no electric power outlet nearby, such devices are unusable.

Objects of the invention

[0017] The object of the present invention is to provide an anchoring device which allows to overcome, at least

in part, the above-mentioned drawbacks of the prior art.

[0018] A further object of the present invention is to provide an anchoring device which is easy and fast to use.

[0019] A further object of the present invention is to provide an anchoring device which is structurally and functionally completely reliable.

[0020] A further object of the present invention is to provide an anchoring device which is economically advantageous.

[0021] A further object of the present invention is to provide an anchoring device which can be made easily, quickly and at low cost.

[0022] A further object of the present invention is to provide an anchoring device which can be used in any working environment.

Summary

[0023] It should be appreciated that this summary introduces a selection of concepts in simplified form, which will be further elaborated on in the detailed description provided below.

[0024] All the objects, either singly or in any combination thereof, and others which will result from the following detailed description are achieved, according to the invention, by an anchoring device having the features indicated in the independent claim number 1.

[0025] In particular, the aforesaid objects are achieved by an anchoring device 1 for doors or windows, in particular intended to connect at least two members or parts of the door or window, comprising a main body 2 extending mainly along an axis X to define a connection between a first member 3 and a second member 4, wherein the main body 2 comprises a shaped portion 21 configured to be associated with the first member 3 and; an expandable portion 22 defining a housing volume 23 and configured to be mechanically connected to the second member 4; and wherein the anchoring device 1 comprises expansion means 5 mechanically associable with the main body 2 and configurable between a first position in which the expansion means 5 is decoupled from the expandable portion 22, and a second position in which the expansion means 5 is inserted in the housing volume 23 of the expandable portion 22 so as to achieve an expansion of the expandable portion 22 and mechanically constrain the main body 2 to the second member 4.

Brief description of the drawings

[0026] Further features and advantages of the present invention will become more apparent from the indicative and thus non-limiting description of a preferred but non-exclusive embodiment of an anchoring device, as illustrated in the appended drawing tables, in which:

- figure 1 illustrates, according to a perspective view, a door or window according to an embodiment of the present invention;
- figure 2 illustrates, according to a perspective view, an anchoring device for doors or windows according to an embodiment of the present invention;
- figure 3 illustrates, according to a side plan view, a detail of the anchoring device for doors or windows illustrated in figure 2;
- figure 4 illustrates, according to a top plan view, the detail of the anchoring device for doors or windows illustrated in figure 3;
- figure 5 illustrates, according to a further side plan view, the detail of the anchoring device for doors or windows illustrated in figure 3;
- figure 6 illustrates, according to a side plan view, a further detail of the anchoring device for doors or windows illustrated in figure 2;
- figure 7 illustrates, according to a top plan view, the detail of the anchoring device for doors or windows illustrated in figure 6;
- figures 8-10 illustrate, according to a perspective view, operating steps for assembling the anchoring device on a door or window according to the present invention.

[0027] With reference to the drawings, they serve solely to illustrate embodiments of the invention with the aim of better clarifying, in combination with the description, the inventive principles on which the invention is based.

Detailed description of the invention and some preferred embodiments thereof

[0028] The present invention relates to an anchoring device which, with reference to the appended figures, has been generally indicated by the number 1.

[0029] Any modifications or variants which, in the light of the description, are evident to the person skilled in the art must be considered to fall within the scope of protection established by the present invention, according to considerations of technical equivalence.

[0030] Preferably, the device in question is intended to mechanically connect the members of a door or window together, in particular the frame and a cladding/covering element of the same door or window.

[0031] In accordance with an embodiment of the present invention, figure 1 shows an anchoring device 1 for doors or windows, in particular intended to connect at least two members of said door or window, which comprises a main body 2 extending mainly along an axis X to define a connection between a first member 3 and a second member 4.

[0032] In more detail, the first member 3 is preferably a covering, cladding or similar element (e.g., a cornice made of aluminium or other material), and the second member 4 is preferably a frame (e.g., made of wood), preferably rectangular in shape, which preferably internally defines at least one seat, e.g., to accommodate a substantially plate-like element and preferably made of

glass.

[0033] In particular, the first member 3 is preferably made of aluminium.

[0034] The second member 4 is preferably made of wood.

[0035] However, the first member 3 and the second member 4 can be made of any other material without thereby falling outside the scope of protection of the present invention. The main body 2 comprises a shaped portion 21 configured to be associated with the first member 3 and an expandable portion 22 defining a housing volume 23, configured to be mechanically connected to the second member 4.

[0036] In more detail, the shaped portion 21 of the main body 2 preferably comprises a deformable part 21' which is preferably configured to snap couple to the first member 3 so as to achieve a stable coupling.

[0037] The shaped portion 21 of the main body 2 also preferably comprises a fixed portion 21" which defines a coupling shaping, relative to a section transverse to the axis X, so as to achieve a stable coupling with the first member 3.

[0038] That is, the shaped portion 21 of the main body 2 is preferably shaped - according to a section transverse to the axis X so as to snap couple to the transverse section of the first member 3.

[0039] More in detail, the deformable part 21' preferably defines a chamfer 24 which preferably ends with a first tooth 24a, and the fixed portion 21' preferably ends with a second tooth 24b.

[0040] Operationally, i.e., during the coupling between the main body 2 and the first member 3, the profile of the transverse section of the member 3 couples on one side with the fixed portion 21" preferably by means of the aforesaid tooth 24b, and on the opposite side it slides along the chamfer 24 of the deformable part 21' according to a direction substantially parallel to the axis Y (i.e., to the connection direction between the main body 2 and the member 3).

[0041] Advantageously, such sliding along the chamfer 24 produces a movement of the deformable part 21' by elastic deformation. As a consequence, the deformation of the deformable part 21' allows it to adapt to the shape of the transverse section of the first member 3, snap coupling onto the member 3 itself by means of the aforesaid tooth 24a.

[0042] Advantageously, the first tooth 24a and the second tooth 24b preferably define abutment elements such as to render the coupling between the main body 2 and the member 3 stable and fixed.

[0043] The deformable part 21' is made by means of a cantilevered portion of the shaped portion 21 and inclined towards the axis Y. Between such a deformable part 21' and the shaped portion 21, there is a hollow inlet which allows the deformable part 21' to flex, exploiting such a free space.

[0044] That is, the connection between the first member 3 and the shaped portion 21 of the main body 2 is of the snap-fit type. Advantageously, the connection between the main body 2 and the first member 3 is simple and quick to use.

[0045] Preferably, the deformable part 21' and the fixed portion 21" are symmetrically arranged relative to the axis X.

[0046] More in detail, the fixed portion 21" preferably defines a housing seat 6 configured to accommodate a head portion 51 (introduced in more detail later in the description) of the expansion means (introduced in more detail later in the description) in the second position.

[0047] In accordance with the embodiment illustrated in the appended figures, the expandable portion 22 preferably extends along an axis Y which is substantially orthogonal to the axis X, preferably between a first end 221 and a second end 222.

[0048] In more detail, the expandable portion 22 preferably comprises a first portion 22' and a second portion 22", in which the first portion 22' and the second portion 22" are preferably mechanically connected at the first end 221 and preferably free at the second end 222 in order to deform in the second position of the expansion means 5 (introduced in more detail later in the description).

[0049] Advantageously, the first and second portions 22', 22" preferably have at least one protuberance, preferably protruding in projection, relative to the axis Y, to achieve a stable coupling of the main body 2 with the second member. Preferably, such a protuberance is defined by knurls or serrations on the external surface of such first and second portions 22', 22".

[0050] Preferably, the first and second portions 22', 22" have multiple protuberances, in particular arranged preferably uniformly along the axis Y, between the first end 221 and the second end 222.

[0051] Advantageously, the connection between the expandable portion 22 and the second member 4 is stable and long-lasting.

[0052] Preferably, the first and second portions 22', 22" of the expandable portion 22 are preferably substantially equal and preferably opposite each other relative to the axis Y.

[0053] Preferably, the expandable portion 22 has a shape of its transverse section along the axis Y which is substantially rectangular, preferably square or preferably circular.

[0054] In accordance with the embodiment illustrated in the appended figure 3, the housing volume 23 of the expandable portion 22 preferably extends substantially along the axis Y and preferably passes through the expandable portion 22 and preferably through the shaped portion 21 of the main body 2.

[0055] That is, the housing volume 23 preferably extends coaxially to the expandable portion and the shaped portion 21 of the main body 2.

[0056] Preferably, the housing seat 6 of the fixed portion 21" is arranged so that the axis Y passes substantially through the centreline of the seat 6 itself.

[0057] The anchoring device 1 further comprises expansion means 5 which is mechanically associable with the main body 2 and configurable between a first position in which the expansion means 5 is decoupled from the expandable portion 22, and a second position in which the expansion means 5 is inserted in the housing volume 23 of the expandable portion 22 so as to achieve an expansion of the expandable portion 22 and mechanically constrain the main body 2 to the second member 4.

[0058] That is, the coupling between the main body 2 and the second member 4 is of the interference type. In more detail, the expansion means 5 in the second position produces a dilation of the expandable portion 22 along a substantially radial direction relative to the axis Y, such as to generate a friction force which mechanically constrains the main body 2 to the second member 4.

[0059] In particular, such a connection does not require further drilling and threading on the second member 4. Advantageously, the above-described connection is stable, simple, quick and long-lasting, and also lacks auxiliary threaded elements.

[0060] In more detail, the expansion means 5 preferably comprises a head portion 51, and preferably a tail portion 52. The tail portion 52 is preferably mechanically connected to the head portion 51, extends along an axis preferably substantially parallel to the axis Y, and is configured to mechanically engage in the housing volume 23 of the expandable portion 22.

[0061] The tail portion 52 has a transverse overall dimension relative to the axis Y which is greater relative to at least part of the housing volume 23.

[0062] Preferably, the tail portion 52 has a substantially cylindrical shape, or preferably substantially rectangular, or preferably substantially square.

[0063] Preferably, the head portion 51 is shaped so that, during the second position, it has an overall dimension, according to a direction parallel to the axis Y, which is preferably less than or equal to the overall dimension defined by the shaped portion 21 of the main body 2 so as preferably not to protrude relative to the shaped portion 21.

[0064] That is, the head portion 51 in the second position does not protrude beyond the overall dimension defined by the shaped portion 21. Thereby, the head portion does not hinder or obstruct the coupling between the main body 2 and the first member 3.

[0065] The head portion 51 further has, preferably, an enlarged portion according to a direction transverse to the axis Y, relative to the tail portion 52, to preferably define a mechanical abutment in the second position.

[0066] That is, the tail portion 52 penetrates the housing volume 23 of the expandable portion 22 by a predetermined amount and preferably equal to the length of the tail portion 52 itself.

[0067] In accordance with the embodiment illustrated in the figures, the main body 2 and the expansion means 5 are preferably made of polymeric material.

[0068] Advantageously, the main body 2 and the expansion means 5 are preferably made by means of a moulding process, such as injection moulding in particular. Thereby, the main body 2 and the expansion means 5 are obtained in a simple manner, in particular in the case in which such a main body 2 and such expansion means 5 define complex shapes.

[0069] Furthermore, for high production volumes, the main body 2 and the expansion means 5 are economically obtained.

[0070] It is further an object of the present invention a door or window 10 comprising a frame defining the second member 4 and a covering of at least part of the frame defining the first member 3.

[0071] The door or window 10 also preferably comprises at least one anchoring device 1 for doors or windows, preferably of the type described above and of which the same numerical references will be retained for the sake of descriptive simplicity.

[0072] In more detail, the anchoring device 1 is arranged between the first member 3 and the second member 4 to mechanically connect them together.

[0073] Advantageously, the second member 4 preferably defines at least one groove 41 preferably extending at least partially along the axis X and preferably configured to accommodate the expandable portion 22 of the main body 2.

[0074] Preferably, the groove 41 has a shape of the transverse section along the axis Y which is substantially counter-shaped to the section of the expandable portion 22 along the axis Y.

[0075] Preferably, the groove 41 has a substantially rectangular shape of the transverse section along the axis Y.

[0076] In more detail, the groove 41 preferably defines a seat which acts as a mechanical abutment for positioning the main body 2 on the second member 4 (e.g., on the frame). Thereby, the main body 2 is mechanically connected to the groove 41 without the need to carry out complex and time-consuming measurement operations of the positioning of main body 2 itself on the frame.

[0077] That is, the groove 41 defines a unique reference for the connection of main body 2 on the frame. Operationally, an operator inserts the expandable portion 22 of the main body 2 into the groove 41 without performing any type of additional operation. This allows to minimise the possibility of an operator making errors in the positioning of the main body 2 on the second member 4.

[0078] Advantageously, the mechanical connection between the main body 2 and the second member 4 does not require the use of threaded elements, such as in particular screws or the like; and therefore of screwing tools. In particular, the anchoring device, and in particular the expandable portion, lacks screws. This allows to obtain a quick and easy mechanical connection.

[0079] It is clear from the above that the anchoring device for doors or windows according to the invention is particularly advantageous in that:

- it is structurally and functionally completely reliable and in particular it allows a mechanical connection to be made between a frame and a covering or cladding (e.g., a cornice) of a door or window in a stable and long-lasting manner;
- it is compact and hardly bulky;
- it is cost-effective;
- it is quick to use;
- it allows a mechanical coupling between a frame and a cornice to be achieved in a precise, repeatable manner and with a high degree of aesthetics and quality;
- it is simple and easy to use, as it requires no auxiliary tools for its operation and/or set-up;
- it has at least one alternative characterisation, both in terms of construction and function, relative to the known traditional solutions.

[0080] The present invention has been illustrated and described in a preferred embodiment thereof, but it is understood that embodiment variations can be made thereto in practice, without however going beyond the scope of protection of the present patent for an industrial invention.

Claims

1. An anchoring device (1) for doors or windows, in particular intended to connect at least two members of said door or window, comprising a main body (2) extending mainly along an axis X to define a connection between a first member (3) and a second member (4);

   characterised in that said main body (2) comprises:

   - a shaped portion (21) configured to be associated with said first member (3) and;
   - an expandable portion (22) defining a housing volume (23) and configured to be mechanically connected to said second member (4);

   and **in that** said anchoring device (1) comprises expansion means (5) which is mechanically associable with said main body (2) and configurable between a first position in which said expansion means (5) is decoupled from said expandable portion (22), and a second position in which said expansion means (5) is inserted in said housing volume (23) of said expandable portion (22) so as to achieve an expansion of said expandable portion (22) and mechanically constrain said main body (2) to said second member (4);
   characterised in that said expandable portion (22) extends along an axis Y substantially orthogonal to said axis X, between a first end (221) and a second end (222),
   and **in that** said housing volume (23) of said expandable portion (22) extends substantially along said axis Y and passes through said expandable portion (22) and said shaped portion (21) of said main body (2).

2. The anchoring device (1) according to claim 1, **characterised in that** said expandable portion (22) comprises a first portion (22') and a second portion (22"), said first portion (22') and said second portion (22") being mechanically connected at said first end (221) and free at said second end (222) as to be able to deform in said second position of the expansion means (5).

3. The anchoring device (1) according to claims 1 to 2, **characterised in that** said first and second portion (22', 22") of said expandable portion (22) are substantially the same and opposite each other relative to the axis Y.

4. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said first and second portion (22', 22") have at least one protrusion protruding in projection to achieve a stable coupling of said main body (2) with said at least a second member (4).

5. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said expansion means (5) comprises:

   - a head portion (51)
   - a tail portion (52) mechanically connected to said head portion (51), extending along an axis substantially parallel to said axis Y, and configured to mechanically engage in said housing volume (23) of said expandable portion (22);

   said tail portion (52) having a transverse overall dimension relative to the axis Y which is greater relative to at least part of said housing volume.

6. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said head portion (51) is shaped so that, during said second position, it has an overall dimension, according to a direction parallel to said axis Y, which is less than or equal to the overall dimension defined by said shaped portion (21) of said main body (2) so as not to protrude relative to said shaped portion (21).

7. The anchoring device (1) according to claim 5 or 6, **characterised in that** said head portion (51) has an enlarged part, according to a direction transverse to

the axis Y, relative to the tail portion to define a mechanical abutment in said second position.

8. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said shaped portion (21) of said main body (2) comprises a deformable part (21') which is configured to snap couple said first member (3) so as to achieve a stable coupling.

9. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said main body (2) and said expansion means (5) are made of polymeric material.

10. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said shaped portion (21) of said main body (2) defines a fixed portion (21") defining a coupling shaping, relative to a section transverse to said axis X, so as to achieve a stable coupling with said first member (3).

11. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said fixed portion (21") defines a housing seat (6) configured to accommodate said head portion (51) of said expansion means in said second position.

12. The anchoring device (1) according to any one of the preceding claims, **characterised in that** said deformable part (21') and said fixed portion (21") are arranged symmetrically relative to said axis X.

13. A door or window (10) comprising:

- a frame defining said second member (4);
- a covering of at least part of said frame and defining said first member (3);

characterised in that it comprises an anchoring device (1) according to any one of the preceding claims arranged between said first member (3) and said second member (4) for mechanically connecting them together.

14. The door or window (1) according to claim 13, **characterised in that** said second member (4) defines at least one groove (41) extending at least partially along said axis X and configured to accommodate said expandable portion (22) of said main body (2).

15. The door or window (1) according to claim 13 or 14, **characterised in that** said first member (3) is made of aluminium and said second member (4) is made of wood.

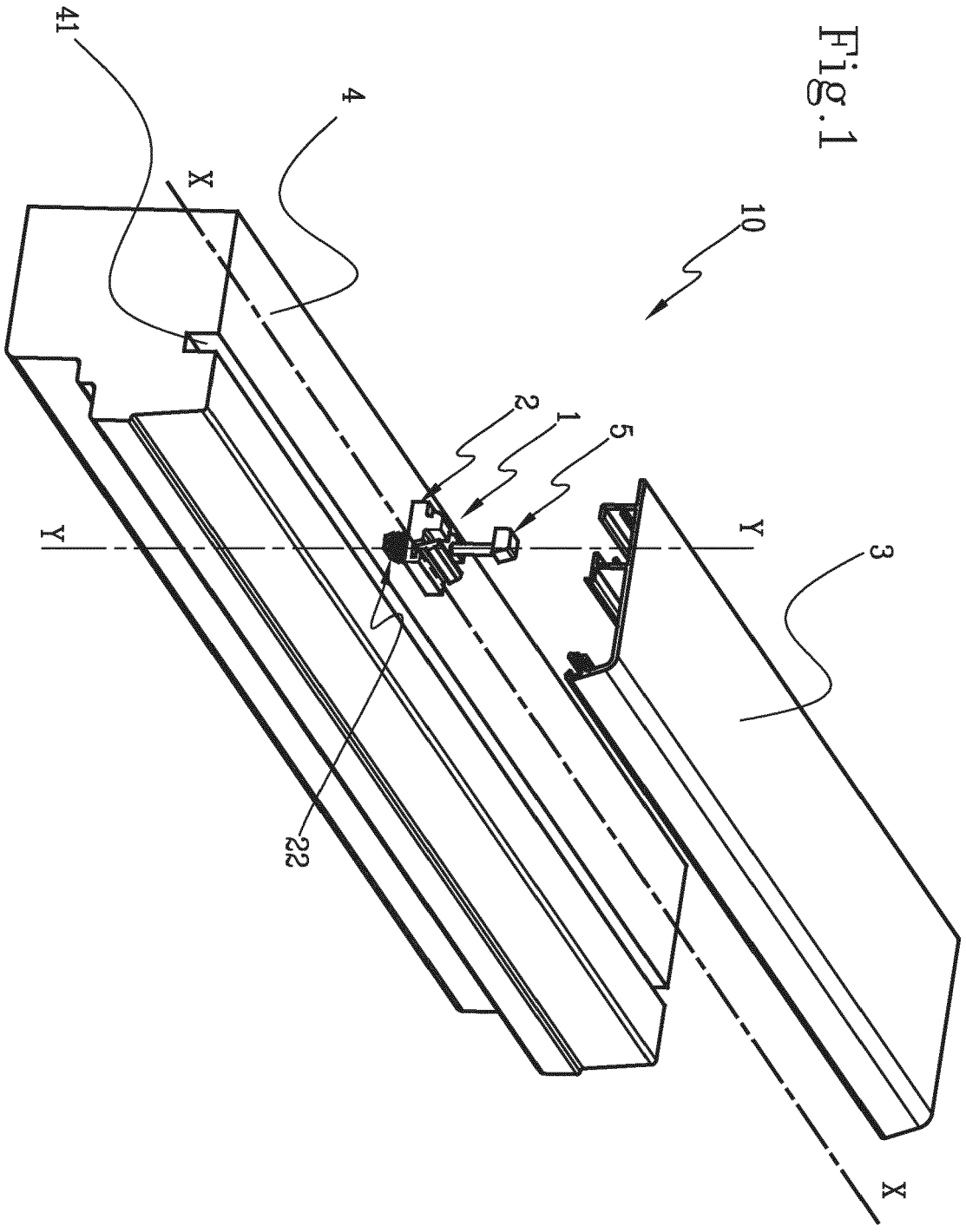


Fig. 1

51

Fig.2

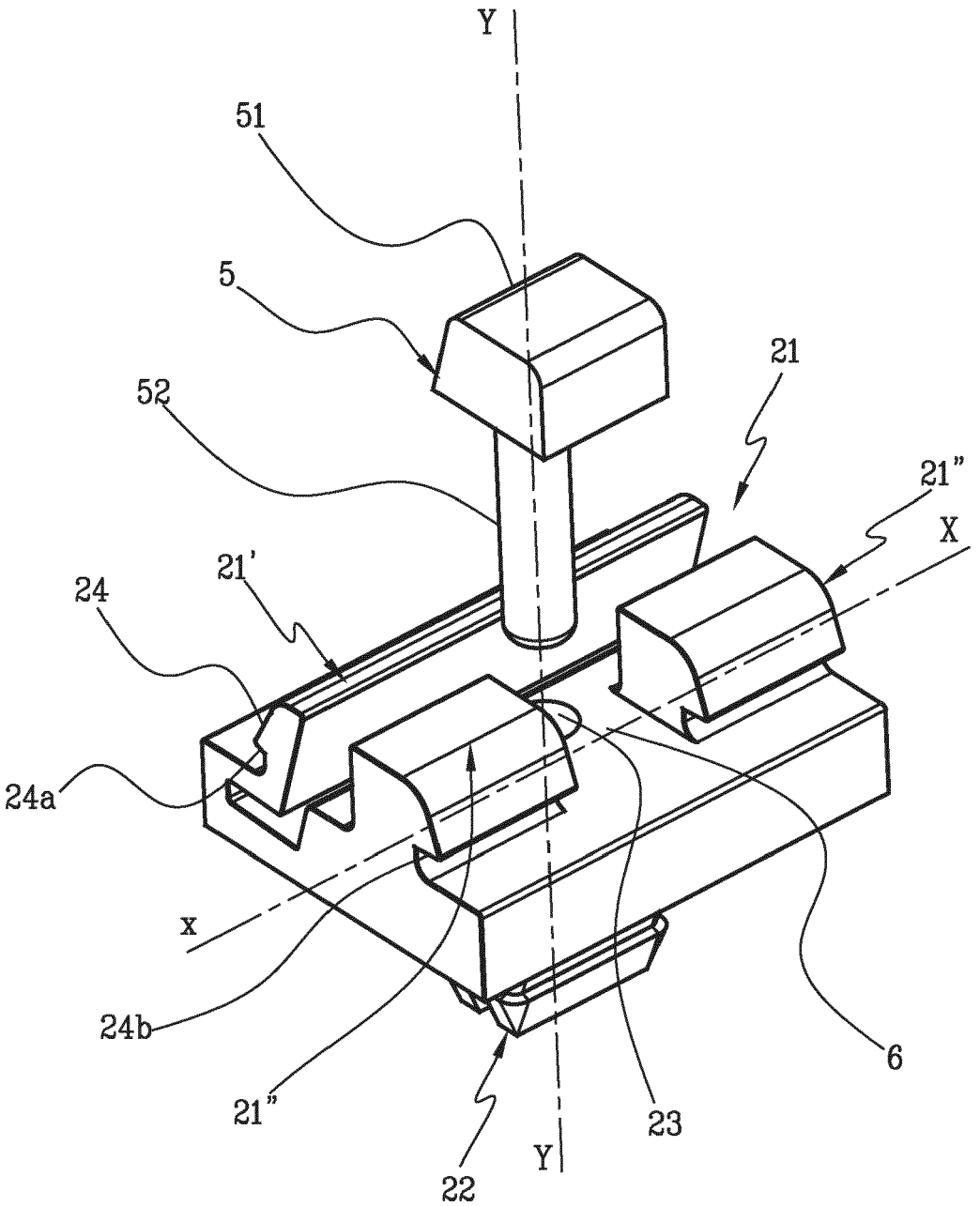


Fig.3

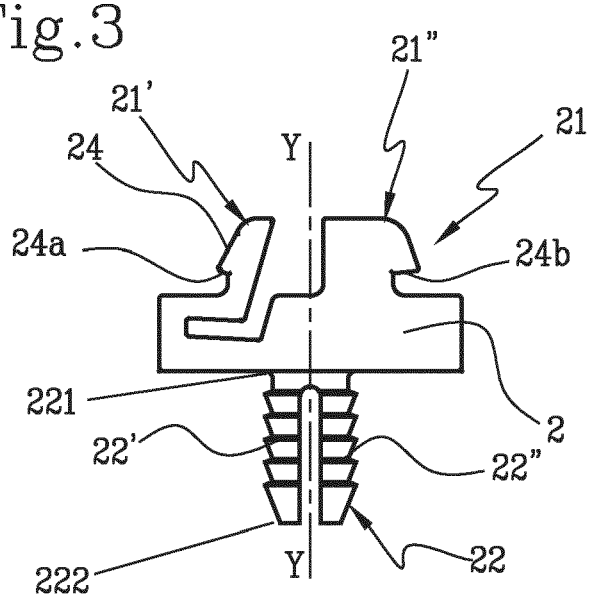
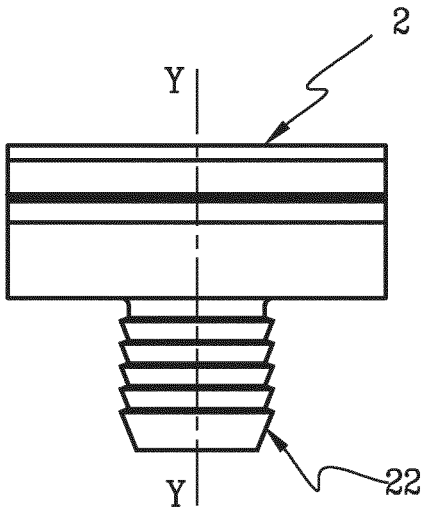


Fig.5



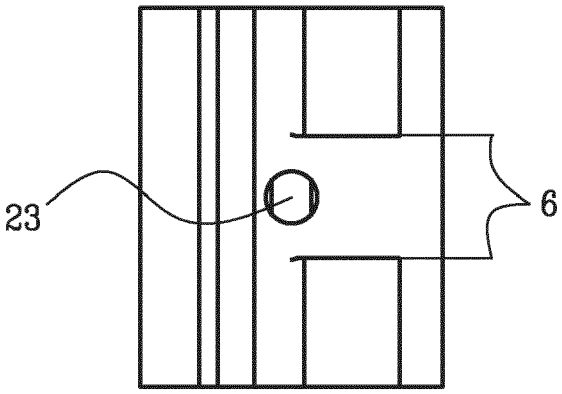
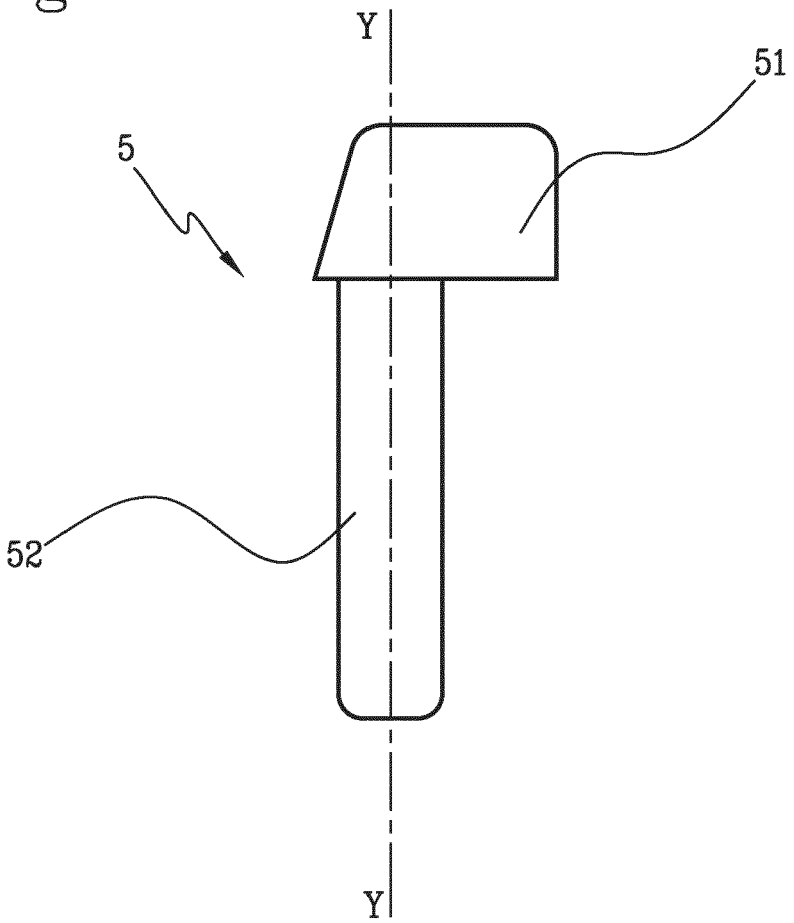


Fig.4

Fig.6



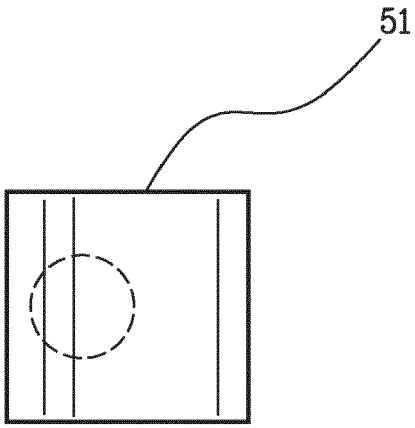


Fig.7

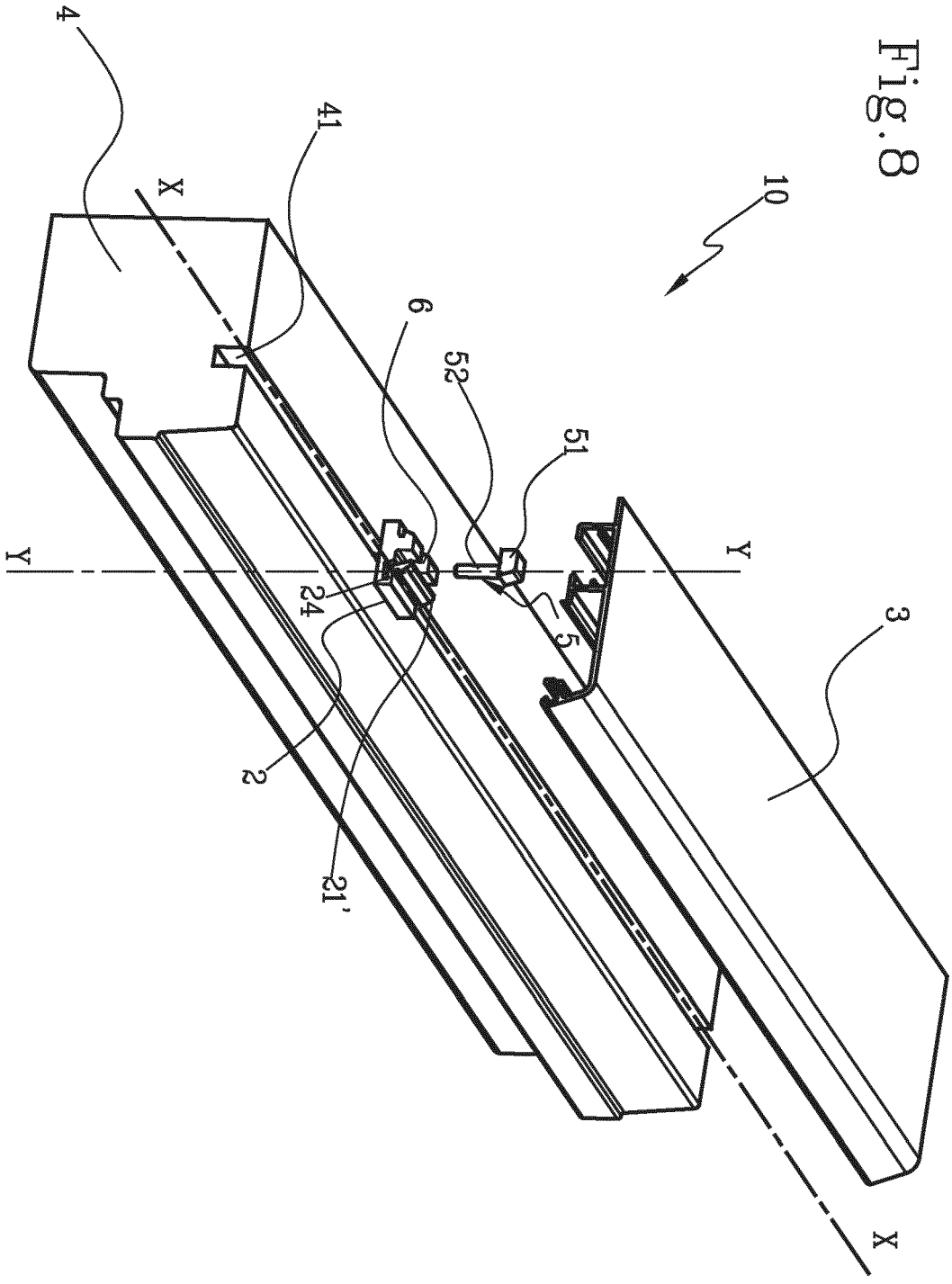


Fig.8

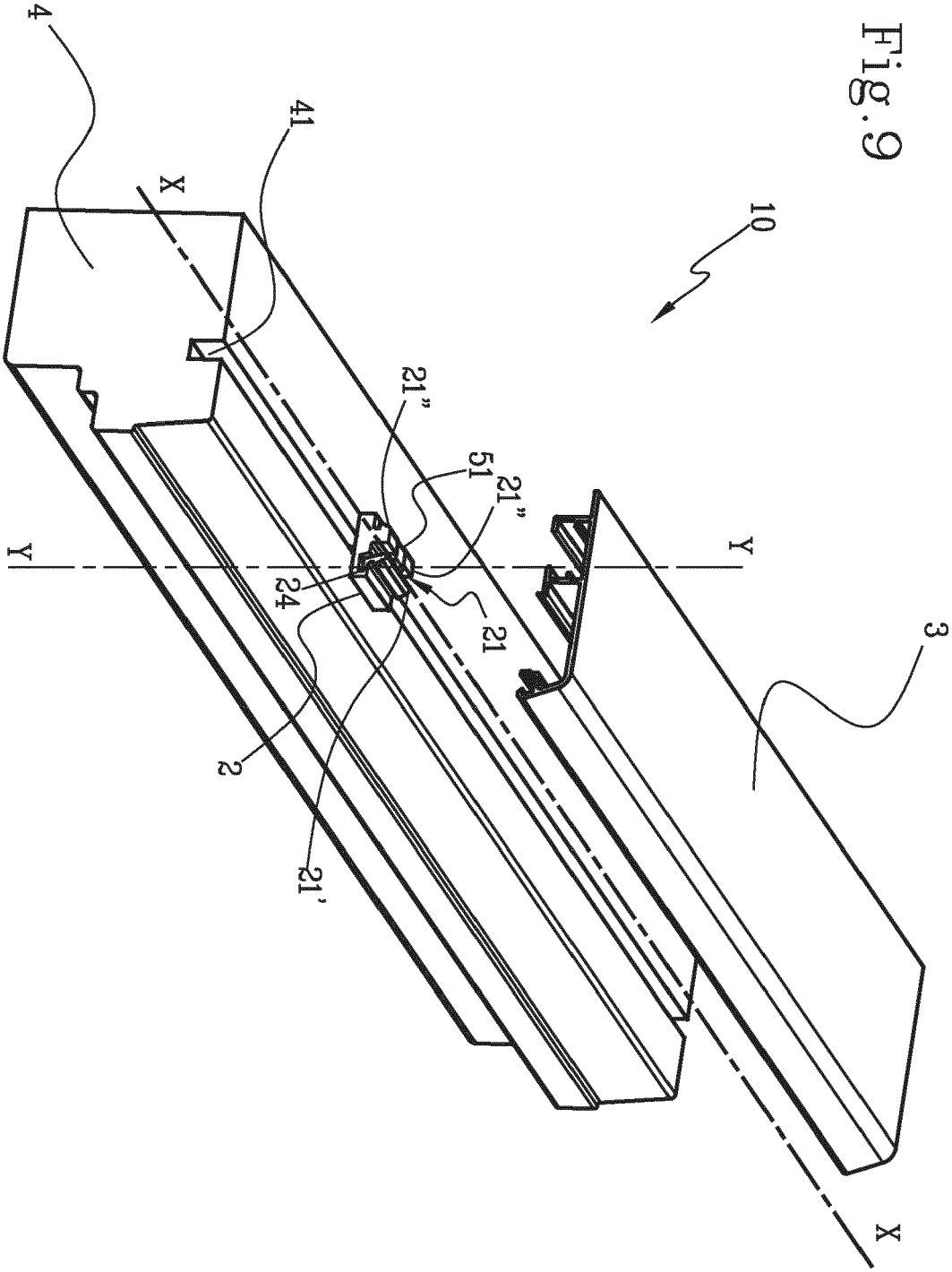


Fig.9

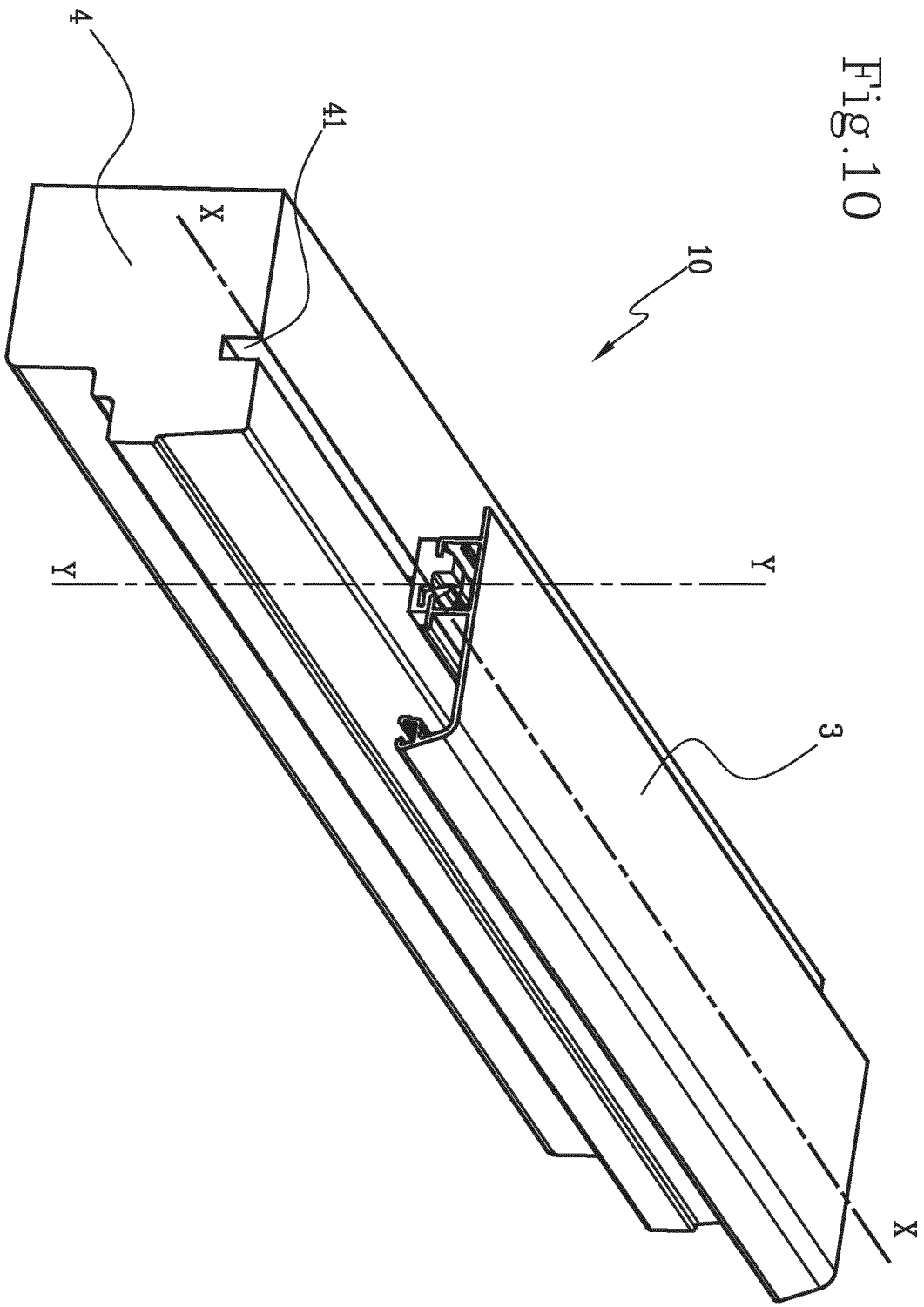


Fig.10

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 195 46 346 C5 (SCHWEIZER AG E [CH]) 24 December 2008 (2008-12-24) * figure 2 *	1	INV. E06B3/30
A	DE 88 15 464 U1 (ELTREVA AG, AESCH, CH) 19 April 1990 (1990-04-19) * figures 1-6 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	18 July 2024	Crespo Vallejo, D

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