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(54) **INSECT SCREEN HANDLEBAR WITH DISAPPEARING RETRACTABLE BRUSH AND INSECT SCREEN WITH HANDLEBAR INTEGRATING A DISAPPEARING RETRACTABLE BRUSH**

(57) An insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush wherein the handlebar includes a handlebar body (21) suitable for engaging, for the movement, the end of the protection net (3) of an insect screen, the handlebar body (21) in correspondence with the head ends being provided with one first head terminal (23) and with one second head terminal (24), wherein at least the handlebar body (21) includes at least one recessed seat (22) suitable for housing at least one brush (4) which last is engaged, for the movement at least in retraction, to at least one movement lever (6) hinged to at least one head terminal (23, 24).

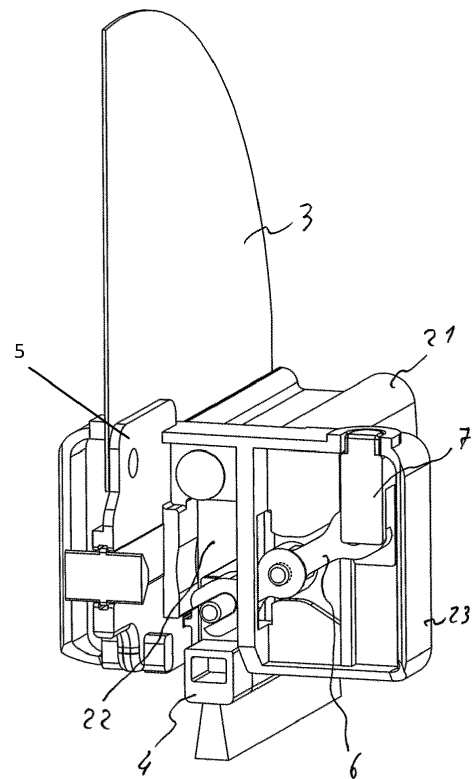


Fig. 2

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Description

[0001] The present invention relates to an insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush.

Field of the invention

[0002] The invention is applicable particularly, but not exclusively, to the sector of the industry for the production and marketing of screening devices and systems for building openings such as, in particular, insect screens, for example insect screens for doors and windows with vertical sliding, aiming to prevent insects from entering usually inhabited places, such as buildings for civil or commercial and even industrial use, being applicable in particular to the industry for the production and preeminent marketing of insect screens and net-barrier elements for equipping building openings and widely in the industry for the production and marketing of components and accessories for frames.

[0003] Building openings actually connect interior and exterior of the same buildings, and because of this characteristic and in case nothing obstructs the passage, they are intended to allow access to the internal spaces of the building equipped with said openings, said access may also be accessible by unwanted insects. Therefore, in order to supply a screen which prevents the access of insects to inhabited spaces, the solutions suitable for interposing barriers to the building openings are long-known and well-known. Said barriers, commonly indicated with the term insect screen, are usually supplied as equipment for doors, windows and skylights and are traditionally made by nets with dense mesh, each one having such dimensions as to prevent insects from crossing them, even if insects have limited dimensions, in any case said barriers being structured to prevent at least the most commonly annoying insects from entering, such as mosquitos, flies or gnats. With specific reference to known solutions of insect screens, in very brief synthesis, they may be arranged in the predisposition of a usually framed reticular barrier, interposed between the building openings, typically doors or windows, in such a way as to prevent, while permanently assuring the air exchange between the internal and the external environment, insect intrusion in the internal environments of the building. In a traditional type of solution, the execution is provided of a rigid frame bearing a dense mesh net having a suitable area for the intended purpose, said frame being perimetrically compatible with the measures of the door or window openings which are intended to be equipped with the insect screen itself.

[0004] According to the current, most common solutions, insect screens can be divided into two categories. A first category, the so-called "measure", is a type of insect screen made at the origin according to measures received by the customer, in order to be delivered to the

final consignee and installed by qualified personnel; a second category, indicated as insect screen in assembly kit, which is the most common on the market for which there is the possibility to be installed by expert personnel but also by the buyer itself, some kinds of insect screens in assembly kit being prepared in such a way as to allow the installation to be also done by non-expert personnel. With reference to both the above-mentioned categories of insect screens, even though with prevailing reference to the category of insect screens in assembly kit, it is possible to find common construction elements, concretizing in the box of the type generally consisting of an aluminum extruded profile or bar, in which the winding roller of the net of the insect screen is coaxially inserted and it retains a first end of said net. By means of said box, the net comes out from a suitable longitudinal opening, and it has the second end joined to a handlebar which is movable back and forth with respect to the box. In some solutions, the winding roller can also comprise a corresponding pre-loaded return spring to facilitate the rewinding of the net. Furthermore, it is provided that the box ends are usually closed by suitable plates, which last are supplied together with counter-plates of the adjustable type. In this solution, the box is provided with one or more guides or sliding elements, inside which the end of the handlebar and the corresponding side edge of the net slide back and forth.

[0005] Among various solutions of insect screens, other variants are also known, such as for example horizontally sliding insect screens, instead of vertically sliding insect screens, which cause the handlebar to do a translation movement which is directed to pull the net along a horizontal axis. From the structural point of view, said insect screens, which are considered for information and completeness purposes only, since they are not part of the present invention, appear to be very similar to the currently described solutions and are recurrent both in roller curtains and in sun blinds. One of these, for example, relates to less valuable insect screens, without preloaded spring inside them. These last ones are different from the first ones, because they require manual operations, both to unwind the net from the roller and to rewind it. In one case, for example, a closed-circuit chain is usually used, which engages, on one side, a wheel or keyed pulley to the relative winding roller, housed inside a box, determining, in a controlled way, the winding or the unwinding, of the net of the insect screen.

[0006] Also in the present patent literature, some solutions are found of insect screen structures, particularly with vertical movement, among which the following are mentioned, as mere examples:

D1 n. KR201 30005011 (Yyun)

D2 N. CN204192120 (Yong)

Disadvantages

[0007] All the known solutions of insect screen systems

of prior art have deficiencies and limits, which cause consequent disadvantages.

[0008] According to the applicant, a first disadvantage characterizing all the known solutions of insect screen handlebars and of insect screens integrating a handlebar for the vertical sliding of the protection net, has been identified in the detected circumstance in which the current solutions contemplate the predisposition of a brush integrated into the handlebar of the type rigidly integral with same and permanently visible from the outside both when the handlebar is lowered near the threshold of the opening of the space for frame equipped with the insect screen and when the handlebar is raised in a position close to the box of the insect screen.

[0009] According to the applicant, another disadvantage characterizing all the known solutions of insect screen handlebars and of insect screens integrating a handlebar for the vertical sliding of the protection net, has been identified in the detected circumstance in which the current solutions, also when integrating a brush equipping the handlebar, do not involve the possibility for it to be lowered or retracted depending on the position in which the same handlebar is, causing the disadvantage of permanently maintaining said brush visible also when the same is not fulfilling the function for which it is provided.

[0010] As a whole, according to these introductory considerations, it can be understood that it is a priority to identify alternative solutions.

[0011] The aim of this invention is also to avoid the above-mentioned disadvantages.

Summary of the invention

[0012] This and other aims are reached by the present invention according to the characteristics as in the included claims solving the described problems by means of an insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush wherein the handlebar includes a handlebar body (21) suitable for engaging, for the movement, the end of the protection net (3) of an insect screen, the handlebar body (21) in correspondence with the head ends being provided with one first head terminal (23) and with one second head terminal (24), wherein at least the handlebar body (21) includes at least one recessed seat (22) suitable for housing at least one brush (4) which last is engaged, for the movement at least in retraction, to at least one movement lever (6) hinged to at least one head terminal (23, 24).

Aims and advantages

[0013] In this way, thanks to the considerable creative contribution the effect of which constitutes an immediate technical progress, multiple advantages are achieved.

[0014] A first advantageous aim characterizing the insect screen handlebar with disappearing retractable

brush and insect screen with handlebar integrating a disappearing retractable brush according to the present invention is to allow that the brush be positioned or not in working condition according to the handlebar positioning, allowing the movement of the brush in lowering or retraction according to the fact that the handlebar is lowered near the threshold of the opening of the space of the frame equipped with the insect screen or that it is raised in a position near the box of the insect screen.

[0015] Another advantageous aim characterizing the insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to the present invention is to allow that the retractable brush equipping the handlebar be, according to the position in which the handlebar is, hidden from sight when same is not in operative condition.

[0016] These and other advantages will appear in the following detailed description of some preferred embodiments with the aid of the enclosed schematic drawings, the execution details of which are not to be considered limitative but illustrative only.

Content of the drawings

[0017]

Figure 1 shows a view particularly of the mechanism allowing the movement of the brush associated to the handlebar in the insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to the subject matter of the present invention, wherein the brush is in lowered condition;

Figure 2 shows a view particularly of the mechanism allowing the movement of the brush associated to the handlebar in the insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to the subject matter of the present invention, wherein the brush is in retracted condition;

Figure 3 shows a whole view of the insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to the subject matter of the present invention, wherein the handlebar is lowered and the brush comes out of it;

Figure 4 shows a whole view of the insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to the subject matter of the present invention, wherein the handlebar is totally lifted near the box and the brush is completely retracted;

Figure 5 shows a view particularly of a portion of the insect screen handlebar with disappearing retractable

ble brush and insect screen with handlebar integrating a disappearing retractable brush according to figure 3;

Figure 6 shows a view particularly of a portion of the insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to figure 4.

Practical execution of the invention

[0018] With reference to also the representations as in figures from 1 to 6 an insect screen handlebar with disappearing retractable brush is described and an insect screen with handlebar integrating a disappearing retractable brush (1) wherein, as particularly represented in figure 1 and in figure 2, the handlebar (2) is made in such a way as to include a handlebar body (21) which is preferably made in metallic profile, in the described embodiment, particularly in extruded aluminum, however, indifferently, said handlebar body (21) may be made of any other type of material provided with the characteristics suitable for the intended purpose, for example in plastic or composite material. The handlebar (2) according to the subject matter of the present invention is preferably of the type arranged for the vertical sliding being associated to the insect screen structure equipped with it, in such a way as to be positioned horizontally. In a known way, the handlebar body (21) is made in such a way as to be moved upwards or downwards, to this aim being arranged in such a way that a part of it creates a grip profile, furthermore providing that, in a known way, the handlebar (2) is made in such a way as to allow the appropriate engagement of an end of the protection net (3) so as to allow its movement.

[0019] More in detail according to the described embodiment, as particularly represented in figure 1 and in figure 2, the handlebar body (21) is provided, at the lower part, with an appropriate recessed seat (22) which last extends for the whole length of the handlebar body (21). Shape and sizes of said recessed seat (22) are such to allow it to contain a brush (4), which, when closing, can compensate the distance between the completely lowered handlebar (2) and the threshold of the space of the frame equipped with the insect screen. It is provided that the handlebar, (2), in correspondence with the head ends of the handlebar body (21) is equipped with one first head terminal (23) and with one second head terminal (24), the first head terminal (23) being arranged identically and in a specular way with respect to the second head terminal (24). In more detail according to the described embodiment, as particularly shown in figure 1 and in figure 2, which last represent the first head terminal (23), it is provided that each head terminal (23, 24) is made in such a way as to comprise an appropriate opening (231) made in such a way as to allow the insertion within same of the terminal part of the head of the brush (4). Furthermore, and in a known way, each head terminal (23, 24) of the

handlebar (2), for the guided movement of the protection net (3), engages a guide sliding element (5) of known type.

[0020] In detail of the subject matter of the invention, in order to allow the movement of the brush (4), with respect to the profile of the handlebar (2), in lowered or retracted position, it is provided that each head terminal (23, 24) is made so as to comprise a movement lever (6) provided with one first engagement terminal (61) and with one second engagement terminal (62) and opportunely hinged to the head terminal (23, 24), in which both the first engagement terminal (61) and the second engagement terminal (62) of the movement lever (6), in the described embodiment, are made like a fork, each engagement terminal (61, 62) being suitable for opportunely engage a pin for the movement. In more detail, as particularly represented in figure 1 and in figure 2, it is provided that the movement lever (6) is hinged at the intermediate zone of same, in the described embodiment, said movement lever (6) being provided with an appropriate hinging pin (63) conveniently and in a known way engaged to the bottom wall (232) of the head terminal (23, 24) so as to allow the movement lever (6) to accomplish semi-rotation movements around the hinging axis consisting of the hinging pin (63).

[0021] In more detail, it is provided that a portion of the movement lever (6), in the described embodiment, crosses a through opening (233) which last is in communication with the opening (231) with which the head terminal (23, 24) is equipped in which the brush (4) is positioned. In more detail, in order to allow the movement in lowering and in retraction, the brush (4), in correspondence with each head terminal, is opportunely equipped with a movement pin (41) suitable to be engaged, in the example, by the first engagement terminal (61) of the movement lever (6). The movement lever (6), likewise in order to allow the movement of the brush (4), with the second engagement terminal (62) is provided to opportunely engage an engagement portion of a sliding body (7) which last is made so as to be sliding in a guided way, in the example along the vertical axis, within a guide seat (234) with which each head terminal (23, 24) is provided. Said sliding body (7), furthermore, in the described example, is made so as to comprise a protruding head (71) which is inserted in an appropriate through seat (235) with which the head terminal (23, 24) is equipped in correspondence with its upper part.

[0022] In more detail of the described embodiment, it is provided that in the condition in which the handlebar (2) is lowered, also the brush (4) is in lowered condition, in particular, in the described embodiment, it is the weight itself of the brush (4) which allows it to remain in the lowered position, indifferently the case being also possible that the lowered position of the brush (4) is maintained by an elastically deformable device, such as for example a spring, which may be interposed between the brush (4) and the upper part of the recessed seat (22) of the handlebar body (21), a different positioning being also pos-

sible of said spring provided that it allows the lowering of the brush (4). The constraint of the movement lever (6) to the movement pin (41) of the brush (4) on the one hand and to the sliding body (7) on the other hand, allows to make interdependent the movement of the first one with respect to the second one in such a way that the forced lowering of the sliding body (7) determines the retraction of the brush (4) inside the recessed seat (22) of the handlebar (2). The retraction of the brush (4) further to the pushing action downwards of the sliding body (7) is carried out by means of the arrangement of an appropriate protruding body (8) with which the insect screen is conveniently equipped in such a way that this last can interact with said sliding body (7) further to the movement of the handlebar (2) towards the same protruding body (8). Said protruding body (8) can be opportunely and conveniently engaged to an element forming the insect screen, in a position compatible with the complete winding of the protection net (3).

[0023] The insect screen integrating the handlebar (2) with disappearing retractable brush according to the subject matter of the present invention includes, in a known way, a horizontal box (9), in the example made of metallic box-like element, inside said box (9) there is a winding roller of known type, which last is positioned longitudinally inside the same box (9), being provided that the protection net (3) is, in a known way, wound around the winding roller of the box (9) being opportunely and in a known way engaged with an end to same. The same box (9), in correspondence with the lower part of same is equipped with a longitudinal slit made in order to allow the passage of the protection net (3) in winding and unwinding at the winding roller with which the box is equipped (9). Furthermore, in order to allow the correct support of the winding roller inside the box (9) in order to allow the winding roller itself to be revolving on its axis and also in order to allow the engagement of the box (9) in operative position, it is provided that the same box (9), in correspondence with the head ends, is equipped with one first head element (91) and with one second head element (92) opportunely made to be engaged to the first engagement stanchion (10) and to the second engagement stanchion (11) with which the insect screen system is equipped (1).

[0024] In more detail of the described embodiment, it is provided that preferably both the first head element (91) and the second head element (92) of the box (9) are each one equipped with a protruding body (8) opportunely positioned in order to interact with the sliding body (7) with which both the first head terminal (23) and the second head terminal (24) of the handlebar (2) are preferably provided when this last is positioned, in a condition of complete opening, near the box (9) so that the protruding body (8), being inserted into the through seat (235) with which the head terminals (23, 24) of the handlebar (2) are provided, moves in lowering the sliding body (7) which last, by means of the movement of the movement lever (6) engaged to the movement pin (41) of the brush (4), determines the retraction of the brush (4) within the re-

cessed seat (22) of the handlebar body (21). Furthermore, the insect screen is equipped at least with a first guide stanchion (12) and with a second guide stanchion (13), positioned orthogonally to the box (9) and each one equipped with an appropriate guide slit, said guide slit being made in a known way in order to allow the sliding of the protection net (3). In the described embodiment, as represented in figure 3 and in figure 4, it is provided that the first guide stanchion (12) is associated with a first engagement stanchion (10) and the second guide stanchion (13) is associated with a second engagement stanchion (11), of known type, in which said engagement stanchions (10, 11) are intended to be anchored to the jambs of the space of the frame equipped with the insect screen.

REFERENCES

[0025]

- (1) Insect screen handlebar with disappearing retractable brush and insect screen with disappearing retractable brush
- (2) handlebar
- (21) handlebar body
- (22) recessed seat
- (23) first head terminal
- (24) second head terminal
- (231) opening
- (232) bottom wall
- (233) through opening
- (234) guide seat
- (235) through seat
- (3) protection net
- (4) brush
- (41) movement pin
- (5) guide sliding element
- (6) movement lever
- (61) first engagement terminal
- (62) second engagement terminal
- (63) hinging pin
- (7) sliding body
- (71) protruding head
- (8) protruding body
- (9) box
- (91) first head element
- (92) second head element
- (10) first engagement stanchion
- (11) second engagement stanchion
- (12) first guide stanchion
- (13) second guide stanchion

Claims

1. Insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush wherein the

- handlebar (2) includes a handlebar body (21) suitable for engaging, for the movement, the end of the protection net (3) of an insect screen and wherein the handlebar body (21), in correspondence with the head ends, is provided with one first head terminal (23) and with one second head terminal (24) **characterised in that** at least the handlebar body (21) includes at least one recessed seat (22) suitable for housing at least one brush (4) which last is engaged, for the movement at least in retraction, to at least one movement lever (6) hinged to at least one head terminal (23, 24).
2. Insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to the previous claim **characterised in that** the movement of the movement lever (6) in retraction of the brush (4) is executed by means of the interaction with at least one protruding body (8) with which the insect screen is provided, which insect screen is provided with the handlebar (1).
 3. Insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to at least one of the preceding claims **characterised in that** each head terminal (23, 24) is made so as to comprise an appropriate opening (231) made so as to allow for the insertion within the same opening (231) of the head terminal part of the brush (4).
 4. Insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to at least one of the preceding claims **characterised in that** each head terminal (23, 24) is made so as to comprise a movement lever (6) provided with one first engagement terminal (61) and with one second engagement terminal (62), wherein the movement lever (6) is provided with a hinging pin (63) engaged to the bottom wall (232) of the head terminal (23, 24) so as to allow for the movement lever (6) to accomplish semi-rotation movements around the hinging axis consisting of the hinging pin (63), wherein both the first engagement terminal (61) and the second engagement terminal (62) are made like a fork and wherein the first engagement terminal (61) of the movement lever (6) engages at least one movement pin (41) with which the brush (4) is equipped and wherein the second engagement terminal (62) engages an engagement portion of the sliding body (7) which last is made so as to be sliding in a guided way within a guide seat (234) with which each head terminal (23, 24) is provided.
 5. Insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to at least one of the preceding claims **characterised in that** the sliding body (7) is made so as to comprise at least one protruding head (71) suitable for at least partial insertion within at least one through seat (235) with which the head terminal (23, 24) is provided in correspondence with its upper part.
 6. Insect screen handlebar with disappearing retractable brush and insect screen with handlebar integrating a disappearing retractable brush according to at least one of the preceding claims **characterised in that** the insect screen comprises at least one box (9) internally provided with an engaging revolving winding roller, for the winding and the unwinding, a protection net (3) which protection net (3) itself is with an end engaged to the winding roller around which same it is wound and then unwound coming out at the bottom of the box (9) through a longitudinal slit, wherein the end of the protection net (3) opposite to the one engaged to the winding roller is equipped with a horizontal handlebar (1) suitable for allowing for the unwinding and winding movement of the protection net (3), wherein the insect screen comprises at least one pair of vertical guide stanchions (12, 13), which same are equipped with a guide slit which last allows for the guided unwinding and winding of the protection net (3) and wherein the box (9) is horizontally positioned in a position above and perpendicular to the guide stanchions (12, 13) and wherein the box is equipped with one first head element (91) and with one second head element (92), at least one of which head elements (91, 92) is equipped with at least one protruding body (8).

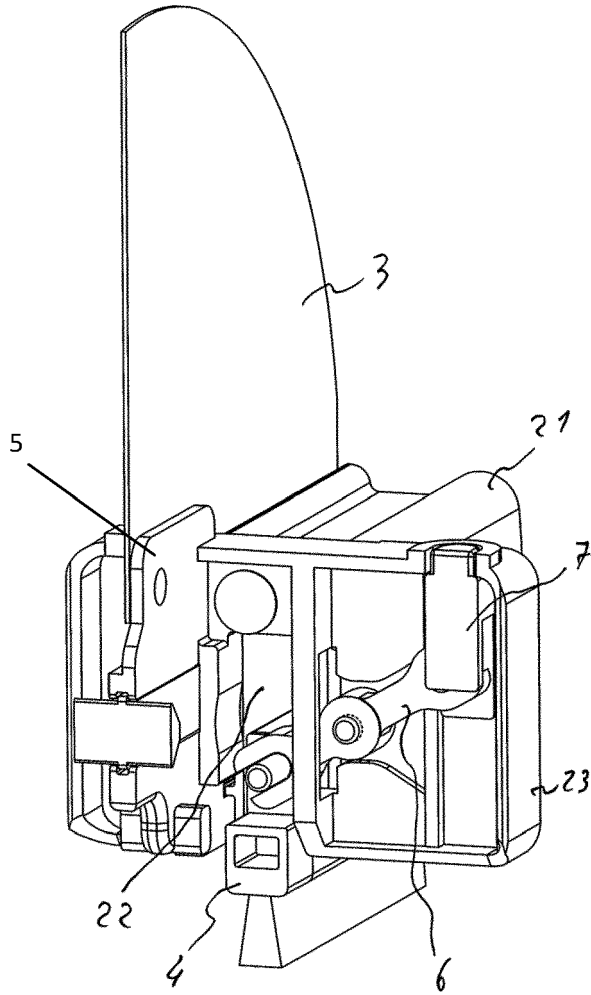


Fig. 1

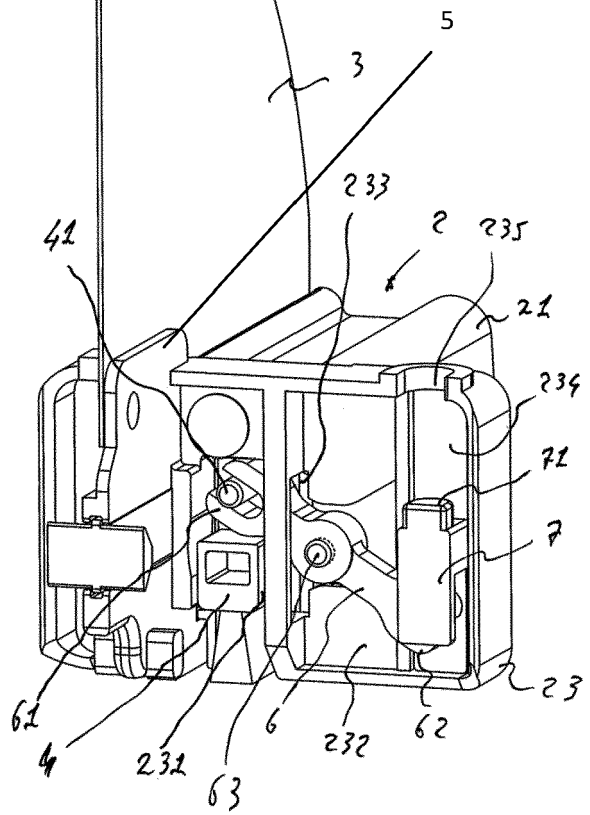


Fig. 2

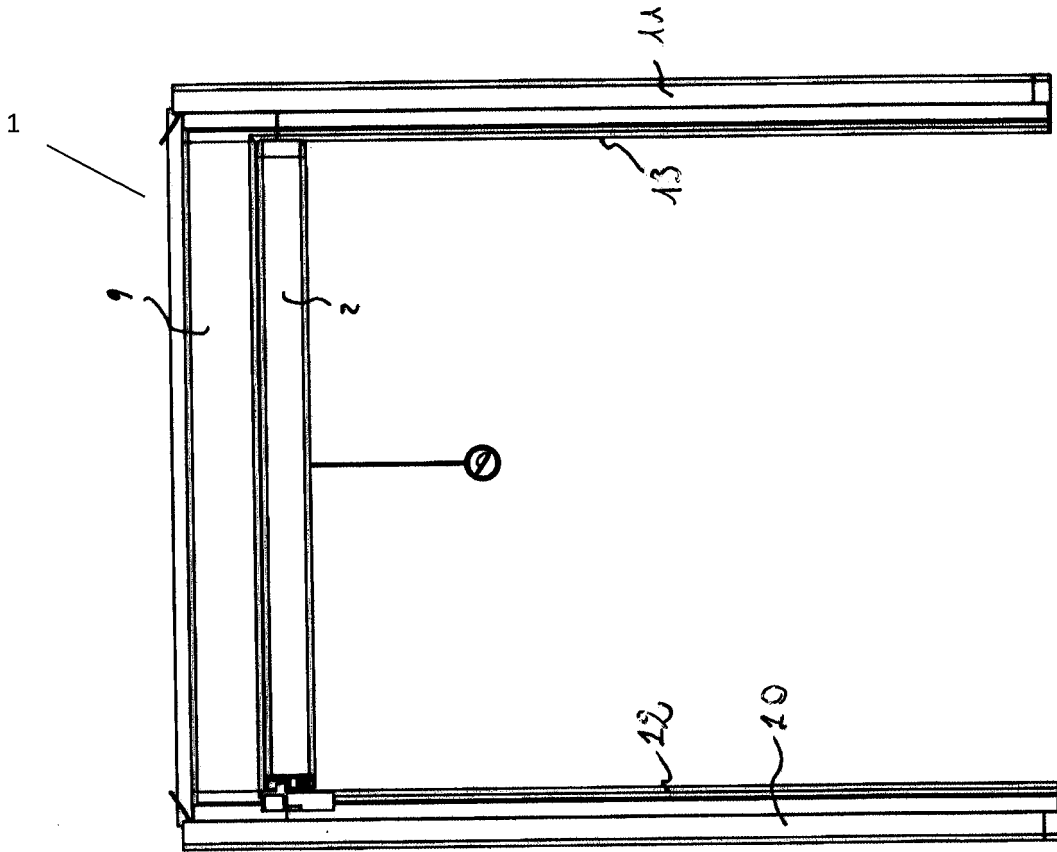


Fig. 4

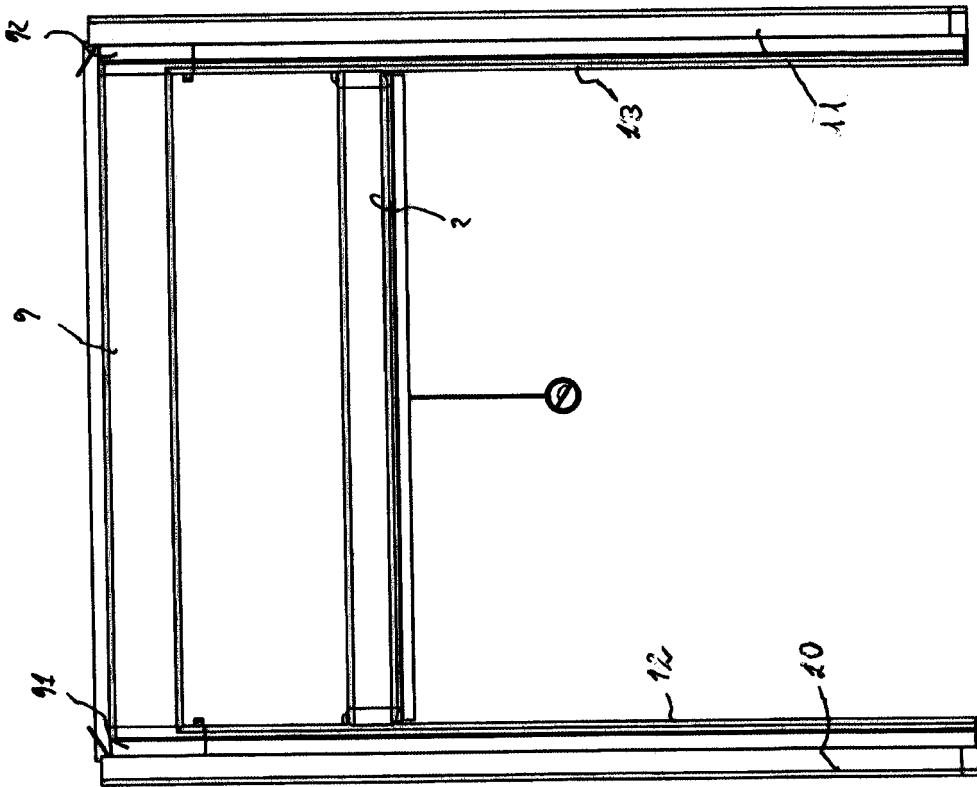


Fig. 3

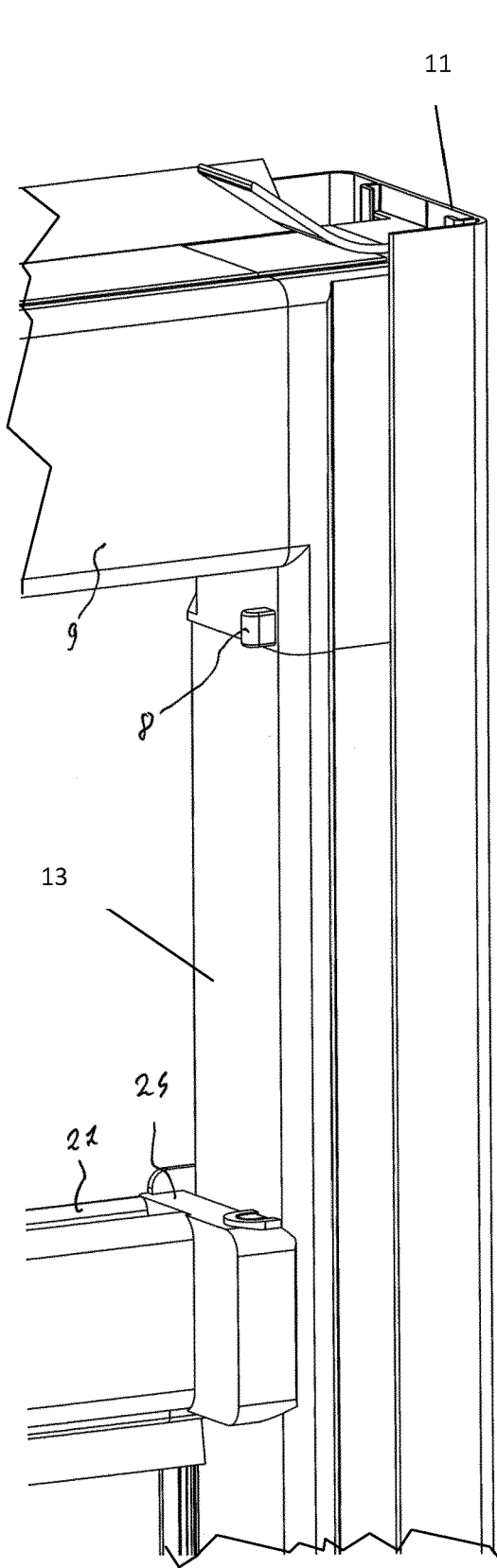


Fig. 5

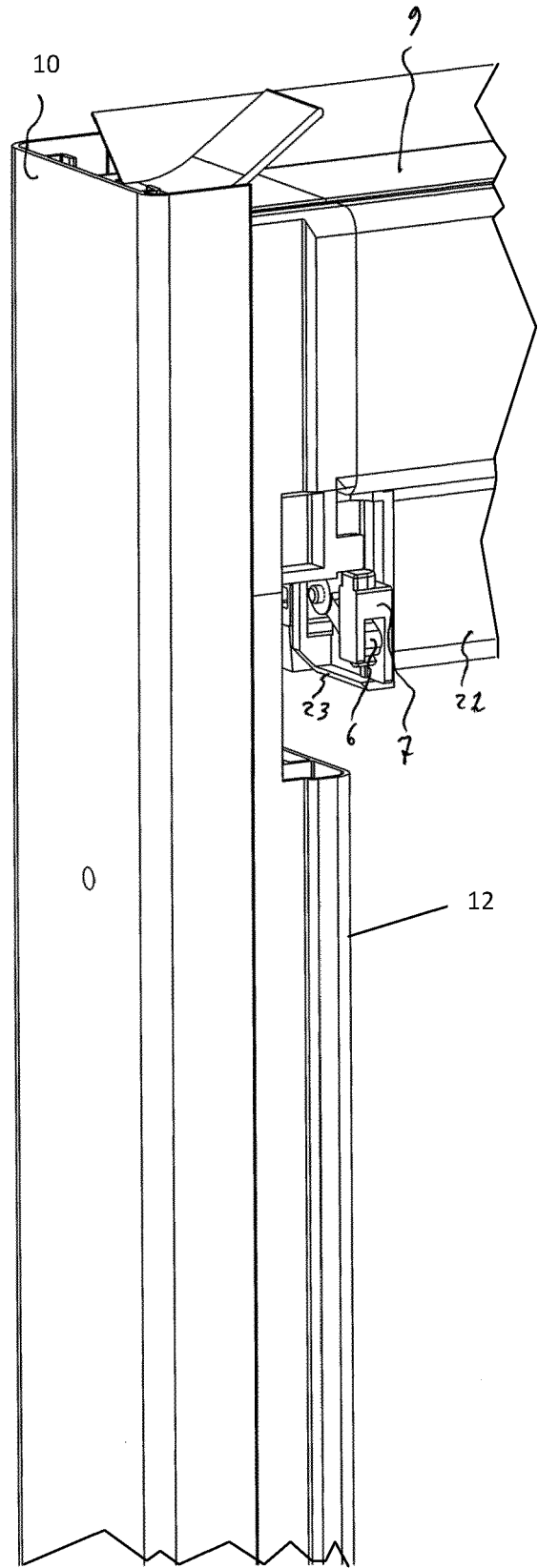


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 21 02 0115

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 July 2021	Examiner Kofoed, Peter
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 21 02 0115

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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