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(54) Box for roll-up awnings

Gehäuse für Rollstoren

Caisson pour stores enroulables

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Description

[0001] The present invention relates to a box for roll-up awnings.

[0002] In order to cover the openings of buildings, such as doors, windows, skylights and the like, it is known to use awnings constituted by a covering sheet which can be rolled up onto a roller which is accommodated rotatably in a respective box arranged above the opening. The sheet is associated by means of its upper end with the roller and is connected by means of its lower end to a transverse bar for grip on the part of the user; each one of the two lateral edges of the sheet can be guided or not slidingly by an appropriate rail of a provided guiding assembly associated with the opening to be covered. Such guiding assembly notoriously comprises two vertical posts which have a substantially U-shaped transverse cross-section and are fixed so as to face each other on the open side of said U-shape. In a practical example of installation, the posts are fixed to the internal sides of an opening by way of appropriate screw means inserted in corresponding holes.

[0003] If the covering sheet rolls up incorrectly, or if a foreign object becomes interposed between two successive layers of rolled-up sheet, it is necessary to work inside the box in order to remove the fault.

[0004] Further, in order to perform operations for replacing the sheet or the actuation device and for modifying and adjusting the stroke limit of the roll-up action, it is essential to access effectively the inside of the box.

[0005] Currently commercially available boxes require the disassembly of fixed parts in case of maintenance. Moreover, it must be noted that in order to allow such disassembly and reassembly, it is necessary to provide appropriate slots in the closure housings which will be removed, such slots allowing to remove the housings without having to also disassemble the actuation element (generally a winch, which can be actuated by means of a rod provided with a crank at one end and with a hook at the other).

[0006] An example of a box with with roll-up awning that can be disassembled is available from the document AT 399 200 B.

[0007] The aim of the present invention is to obviate the above-mentioned shortcomings and meet the mentioned requirements, by providing a box for roll-up awnings which can be opened easily for maintenance without the aid of specific tools.

[0008] Within this aim, an object of the present invention is to provide a device which is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0009] This aim and this and other objects that will become better apparent hereinafter are achieved by a box for roll-up awnings, according to the present invention that has the features of claim 1.

[0010] A method for fixing a laminar element to a box for roll-up awnings, according to the present invention, which has the steps of claim 9.

[0011] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a box for roll-up awnings, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of a box for roll-up awnings according to the invention, with manual actuation;
Figure 2 is an exploded perspective view of a box for roll-up awnings according to the invention, with automated actuation;
Figure 3 is a side view of a box for roll-up awnings according to the invention;
Figure 4 is a side view of a lamina of a box for roll-up awnings according to the invention;
Figure 5 is a side view of a frame of a box for roll-up awnings according to the invention;
Figure 6 is a side view of a detail of the assembly of a box for roll-up awnings according to the invention;
Figure 7 is a side view of a detail of the assembly of a box for roll-up awnings according to the invention;
Figure 8 is a side view of a detail of the assembly of a box for roll-up awnings according to the invention;
Figure 9 is a side view of a detail of the assembly of a box for roll-up awnings according to the invention;
Figure 10 is a side view of a detail of the assembly of a box for roll-up awnings according to the invention;
Figure 11 is a side view of a detail of the assembly of a box for roll-up awnings according to the invention;
Figure 12 is a perspective view of a closure plug of a box for roll-up awnings according to the invention.

[0012] With reference to the figures, the reference numeral 1 generally designates a box for roll-up awnings.

[0013] The box 1 for roll-up awnings comprises a fixed frame 2 for the longitudinal support of a roller 3 for rolling up the awning: the roller 3 is supported so that it can rotate about its own axis of symmetry, so that by rotating it allows to roll up and and unroll the awning.

[0014] Inside the box 1 an actuation element 4 is also provided, which is associated with the roller 3 by way of a transmission assembly; the actuation element can be a hand winch 4a, the rotating sprocket of which is engaged on a head of the roller 3, rigidly coupling its movements (in this case, manual actuation performed by means of an appropriate rod equipped with an end crank, not shown in the figure, which engages in the hand winch 4a), or a small electric motor 4b, which is coupled to the roller 3 in order to drive its movement and is constituted by a motor body 5.

[0015] At the front, the box 1 has a sort of closure housing, which is constituted by a laminar element 6 provided with appropriate longitudinal folding lines, which form a

substantially L-shaped profile thereof.

[0016] The laminar element 6 is provided, at the upper anchoring end 7, with a crest 8, which is perpendicular to its profile and is directed toward the inside of said profile.

[0017] Below the end 7 there is a flat portion 9, whose height is substantially equal to the total height of the entire box 1; such portion in turn ends by connecting to a bottom 10, which is also flat and substantially perpendicular to the portion 9.

[0018] At the connection between the portion 9 and the bottom 10 there is a rib 10a, which is directed toward the inside of the L-shape (laminar element 6) and perpendicular to the portion 9 and mates with a respective protrusion provided inside appropriate end closure means, described subsequently, and further helps to stiffen the laminar element 6.

[0019] The fixed frame 2 is provided with an upper front seat 11, whose shape is conveniently complementary to the shape of the upper anchoring end 7 of the lamina 6; the profile has a first substantially curved portion 12, which is connected to the frame 2 at an abutment border 13 and ends by blending with a second flat portion 14, which is substantially parallel to the upper face 15 of the frame 2; at the end of the second portion 14 there is a connection to a third angular portion 16 (the surface 17 connected to the second portion 14 is substantially perpendicular to the portion 14).

[0020] The frame 2 has, at its upper face 15, substantially perimetric bands 18, which are intended for detachable interlocking in a respective bracket 19, which is coupled to a fixed supporting structure by means of suitable connecting elements (screws 20 in the figure). The perimetric bands 18 are also provided on the plugs 21.

[0021] The box 1 can be closed at its ends by means of appropriately provided plugs 21.

[0022] Each one of the plugs 21 is constituted by a flat face 22, which is provided with a perimetric lateral edge 23 along which protruding interlocking means 24 are distributed proximate to respective receptacles formed by protrusions 25 which correspond thereto on the frame 2 and facilitate assembly and centering operations (in order to ensure the stability of the connection, screws 24a are provided).

[0023] In a preferred embodiment, the plug 21 can be made of plastics in order to avoid any machining on aluminum, which is demanding and can compromise the paintwork with aesthetic problems. Accordingly, the holes are provided only on the plastic plug 21.

[0024] The face 22 and the edge 23 delimit a compartment for accommodating the actuation element 4.

[0025] In the case of a box 1 for awnings with manual actuation, the edge 23 has a lower opening 26 for the passage of a tab 27 for the manual actuation of the hand winch 4a, in which an appropriate rod, provided with an end crank not shown in the figure, engages.

[0026] In the case instead of a box 1 for awnings with automated actuation, the edge 23 generally has only a small opening for the passage of at least one electric power supply cable (not shown in the figure and in any case not essential, since the power supply cables can also be received directly through holes provided in the frame 2) of the electric actuation motor 4b.

[0027] In any case, the edge 23 is interrupted in its front portion, and the limits of the edge 23 at the interruption form respective seats 28 for the ends of a removable closure flap 29. The presence of the flap 29 allows to access easily the actuation element 4 for cleaning or maintenance operations.

[0028] Once the laminar element 6 has been fitted in the frame 2, the upper end 7 rests on the abutment border 13 and the crest 8 rests within the track 30 delimited by the two surfaces of the third angular portion 16.

[0029] In these conditions, the lower end 31 of the lamina 6 is located proximate to a lower cross-member (not designated by a reference numeral in the figure) of the frame 2.

[0030] In order to fix the laminar element 6 to the frame 2, it is convenient to follow the operations defined by means of Figures 6 to 11. First of all, it is necessary to align horizontally the upper end 7 of the laminar element 6 with the upper front seat 11 of the frame 2 (Figure 6) and then insert the end 7 in the seat 11 until the head 32 of the end 7 rests on the connecting corner 33 between the first portion 12 and the second portion 14 (Figure 7).

[0031] At this point, it is necessary to lower the laminar element 6, turning it instantly first around a resting point on the second portion 14 and then around the head 34 of the crest 8 which rests within the track 30 until the head 32 of the end 7 rests against the abutment border 13.

[0032] The operation of the invention is as follows: once the bracket 19 has been fitted by means of the screws 20, it is necessary to arrange the lateral plugs 21 by coupling the corresponding actuation element 4 to the roller 3.

[0033] Assembly is completed by fixing with an interlocking coupling the frame 2 to the bracket 19, which internally accommodates the roller 3 on which the awning is wound and by arranging the laminar element 6 as described above.

[0034] Advantageously, the box 1 for roll-up awnings according to the invention can be opened easily for maintenance without the aid of specific equipment.

[0035] Conveniently, the lateral plugs 21 also can be opened by removing the flap 29, thus allowing easy maintenance of the actuation elements 4.

[0036] It has thus been shown that the invention achieves the intended aim and object.

[0037] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0038] 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 box for roll-up awnings, comprising: a fixed frame (2) for the longitudinal support of a roller (3) for rolling up said awning with an actuation element (4, 4a, 4b) associable by means of a transmission assembly with said roller (3); and an appropriate closure housing, said closure housing being a laminar element (6) provided with suitable folding lines, with a substantially L-shaped profile, and, at the upper anchoring end (7), with a crest (8), which is perpendicular to said profile and is directed toward the inside of said profile, said fixed frame (2) having an upper front seat (11) which is shaped complementarily to said upper anchoring end (7) and has a profile which has a first substantially curved portion (12) which leads to the frame (2) at an abutment border (13), said first curved portion (12) ending with a second flat portion (14), which is substantially parallel to the upper face (15) of the frame (2) and is associated with a third angular portion (16), in which the surface (17) associated with said second portion (14) is substantially perpendicular thereto, **characterized in that** it further comprises plugs (21) for closing the ends of the box (1), each one of said plugs (21) comprising a flat face (22) provided with a perimetric lateral edge (23) along which protruding means (24) are distributed for interlocking at respective receptacles formed by protrusions (25) of the corresponding frame (2) and a removable closure flap (29), said edge (23) being interrupted in its front portion, the limits of the edge at the interruption forming respective seats (28) for accommodating the ends of said removable closure flap (29).

2. The box according to claim 1, **characterized in that** after the laminar element (6) has been fitted inside the frame (2), said upper end (7) rests on said abutment border (13) and said crest (8) rests within the track (30) delimited by the two surfaces of said third angular portion (16).

3. The box according to claim 1, **characterized in that** said laminar element (6) is provided with a rib (10a) shaped as a lower flap, whereby once the laminar element (6) has been fitted inside the frame (2), the lower flap (10a) of the laminar element (6) is coupled by elastic forcing with a respective protrusion of said plug (21), ensuring the stable closure of said box (1).

4. The box according to claim 3, **characterized in that** said laminar element has a lower end (31) that locates proximate to a lower cross-member of the frame (2) once the lower flap (10a) of the laminar element (6) is coupled by elastic forcing with the respective protrusion of said plug (21), to ensure the stable closure of said box (1).

5. The box according to claim 1, **characterized in that** said face (22) and said edge (23) delimit a compartment for accommodating said actuation element (4).

6. The box according to claims 1 or 5, **characterized in that** said edge (23) has a lower opening (26) for the passage of a tab (27) for the manual actuation of said actuation element **(4a).**

7. The box according to claims 1, 5 or 6, **characterized in that** said edge (23) is provided with an opening for the passage of at least one cable for the electric power supply of said actuation element (4b).

8. The box according to claim 1, **characterized in that** said frame (2) has an upper face (15) which is provided with substantially perimetric bands (18) for removable interlocking in a respective bracket (19), which is rigidly coupled to a fixed supporting structure, said perimetric bands (18) being provided on the plugs (21) as well.

9. Method for fixing a laminar element to a box according to claim 1, comprising the steps of:

   - aligning horizontally the upper end (7) of the laminar element (6) with the front upper seat (11) of the frame (2),
   - inserting said end (7) until the head (32) rests on the connecting corner (33) between the first portion (12) and the second portion (14) of said seat (11),
   - lowering the laminar element (6), first making it turn instantly around a resting point on the second portion (14) and then around the head (34) of the crest (8), which rests within the track (30) delimited by the two surfaces of said third angular portion (16) until the head (32) of the end (7) rests against the abutment frame (13),

   characterized in that, before the aligning step of the upper end (7) of the laminar element (6) , it also comprises the steps of:

   - arranging the lateral plugs (21), by coupling the actuation element (4, 4a, 4b) to a roller (3),
   - interlocking the protruding means (24) with the protrusions (25) of the frame (2); and
   - inserting the ends of the removable closure flaps (29) in the respective seats (28) formed at the limits of the edge of each interruption of the edges (23) of the plugs (21).

10. The method according to claim 9, **characterized in**

that once the laminar element (6) has been fitted inside the frame (2), the lower flap (10a) of the laminar element (6) is coupled by elastic forcing with a respective protrusion of said plug (21), ensuring the stable closure of said box (1).

Patentansprüche

1. Kasten für Rollstores mit einem feststehenden Rahmen (2) zur Längsstützung einer Rolle (3) zum Aufrollen des Rollstores mit einem Betätigungselement (4, 4a, 4b), das mittels einer Übertragungsanordnung der Rolle (3) zugeordnet werden kann; und einem angemessenen Verschlussgehäuse, bei dem es sich um ein Laminarelement (6) handelt, das mit geeigneten Faltlinien versehen ist, mit einem im Wesentlichen L-förmigen Profil und am oberen Verankerungsende (7) mit einem Kamm (8), der senkrecht zum Profil verläuft und zum Inneren des Profils gerichtet ist, wobei der feststehende Rahmen (2) einen oberen vorderen Sitz (11) hat, der komplementär zum oberen Verankerungsende (7) ausgebildet ist und ein Profil hat, das einen ersten, im Wesentlichen gebogenen Abschnitt (12) hat, der zum Rahmen (2) an einer Anschlageinfassung (13) führt, wobei der erste gebogene Abschnitt (12) mit einem zweiten flachen Abschnitt (14) endet, der im Wesentlichen parallel zur oberen Seite (15) des Rahmens (2) verläuft und einem dritten winkelförmigen Abschnitt (16) zugeordnet ist, bei dem die dem zweiten Abschnitt (14) zugeordnete Fläche (17) im Wesentlichen senkrecht dazu verläuft, **dadurch gekennzeichnet, dass** er ferner Aufsätze (21) zum Verschließen der Enden des Kastens (1) umfasst, wobei jeder der Aufsätze (21) eine flache Fläche (22) mit einem umfangsmäßig verlaufenden Seitenrand (23) umfasst, entlang dem vorragende Mittel (24) verteilt sind, die an jeweiligen, durch Vorsprünge (25) des entsprechenden Rahmens (2) gebildeten Aufnahmen verriegelt werden, sowie eine entfernbare Verschlussklappe (29), wobei der Rand (23) an seinem vorderen Abschnitt unterbrochen ist und die Grenzen des Rands an der Unterbrechung jeweilige Sitze (28) zur Aufnahme der Enden der entfernbaren Verschlussklappe (29) bilden.

2. Kasten nach Anspruch 1, **dadurch gekennzeichnet, dass** das obere Ende (7) auf der Anschlageinfassung (13) ruht und der Kamm (8) in der durch die beiden Flächen des dritten winkelförmigen Abschnitts (16) definierten Schiene (30) ruht, nachdem das Laminarelement (6) im Rahmen (2) angebracht worden ist.

3. Kasten nach Anspruch 1, **dadurch gekennzeichnet, dass** das Laminarelement (6) mit einer Rippe (10a) versehen ist, die wie eine untere Klappe ausgebildet ist, wodurch die untere Klappe (10a) des Laminarelements (6), nachdem das Laminarelement (6) im Rahmen (2) angebracht worden ist, durch elastische Kraft an einen jeweiligen Vorsprung des Aufsatzes (21) gekoppelt wird, wodurch der stabile Verschluss des Kastens (1) sichergestellt ist.

4. Kasten nach Anspruch 3, **dadurch gekennzeichnet, dass** das Laminarelement ein unteres Ende (31) hat, das in der Nähe einer unteren Querstrebe des Rahmens (2) angeordnet ist, wenn die untere Klappe (10a) des Laminarelements (6) durch elastische Kraft an den jeweiligen Vorsprung des Aufsatzes (21) gekoppelt wird, um den stabilen Verschluss des Kastens (1) sicherzustellen.

5. Kasten nach Anspruch 1, **dadurch gekennzeichnet, dass** die Fläche (22) und der Rand (23) ein Fach zur Unterbringung des Betätigungselements (4) begrenzen.

6. Kasten nach Anspruch 1 oder 5, **dadurch gekennzeichnet, dass** der Rand (23) eine untere Öffnung (26) für den Durchgang einer Lasche (27) zur manuellen Betätigung des Betätigungselements (4a) hat.

7. Kasten nach Anspruch 1, 5 oder 6, **dadurch gekennzeichnet, dass** der Rand (23) mit einer Öffnung für den Durchgang mindestens eines Kabels für die Stromversorgung des Betätigungselements (4b) versehen ist.

8. Kasten nach Anspruch 1, **dadurch gekennzeichnet, dass** der Rahmen (2) eine obere Fläche (15) hat, die mit im Wesentlichen umfangsmäßig verlaufenden Bändern (18) zum entfernbaren Verriegeln in einem jeweiligen Bügel (19) versehen ist, der starr an eine feststehende Stützstruktur gekoppelt ist, wobei die Umfangsbänder (18) ebenfalls an den Aufsätzen (21) vorgesehen sind.

9. Verfahren zur Befestigung eines Laminarelements an einem Kasten nach Anspruch 1, mit folgenden Schritten:

   - das obere Ende (7) des Laminarelements (6) wird horizontal auf den vorderen oberen Sitz (11) des Rahmens (2) ausgerichtet,
   - das Ende (7) wird soweit eingeführt, bis der Kopf (32) auf der Verbindungsecke (33) zwischen dem ersten Abschnitt (12) und dem zweiten Abschnitt (14) des Sitzes (11) ruht,
   - das Laminarelement (6) wird abgesenkt, wobei es zuerst sofort um einen Ruhepunkt am zweiten Abschnitt (14) gedreht wird und dann um den Kopf (34) des Kamms (8), der in der durch die beiden Flächen des dritten winkelförmigen

Abschnitts (16) begrenzten Schiene (30) ruht, bis der Kopf (32) des Endes (7) am Anschlagrahmen (13) ruht,

dadurch gekennzeichnet, dass das Verfahren vor dem Ausrichten des oberen Endes (7) des Laminarelements (6) ferner die folgenden Schritte umfasst:

- die seitlichen Aufsätze (21) werden angeordnet, indem das Betätigungselement (4, 4a, 4b) an eine Rolle (3) gekoppelt wird, wobei die vorragenden Mittel (24) mit den Vorsprüngen (25) des Rahmens (2) verriegelt werden, und
- die Enden der entfernbaren Verschlussklappen (29) werden in die jeweiligen Sitze (28) eingeführt, die an den Grenzen des Rands jeder Unterbrechung der Ränder (23) der Aufsätze (21) ausgebildet sind.

10. Verfahren nach Anspruch 9, **dadurch gekennzeichnet, dass** die untere Klappe (10a) des Laminarelements (6), nachdem das Laminarelement (6) im Rahmen (2) angebracht worden ist, durch elastische Kraft an einen jeweiligen Vorsprung des Aufsatzes (21) gekoppelt wird, wodurch der stabile Verschluss des Kastens (1) sichergestellt ist.

Revendications

1. Caisson pour stores à enroulement, comprenant : un cadre (2) fixe pour le support longitudinal d'un rouleau (3) pour l'enroulement dudit store avec un élément d'actionnement (4, 4a, 4b) pouvant être associé au moyen d'un assemblage de transmission audit rouleau (3) ; et un logement de fermeture approprié, ledit logement de fermeture étant un élément laminaire (6) pourvu de lignes de pliage appropriées, avec un profil sensiblement en forme de L, et, à l'extrémité d'ancrage supérieure (7), d'une crête (8), qui est perpendiculaire audit profil et qui est dirigée vers l'intérieur dudit profil, ledit cadre (2) fixe comportant un siège avant supérieur (11) qui est formé de manière complémentaire à ladite extrémité d'ancrage supérieure (7) et qui a un profil qui a une première partie (12) sensiblement incurvée qui mène au cadre (2) au niveau d'une bordure de butée (13), ladite première partie (12) incurvée se terminant par une deuxième partie (14) plate, qui est sensiblement parallèle à la face supérieure (15) du cadre (2) et qui est associée à une troisième partie (16) angulaire, dans lequel la surface (17) associée à ladite deuxième partie (14) est sensiblement perpendiculaire à celle-ci, **caractérisé en ce qu'**il comprend en outre des éléments d'obturation (21) pour fermer les extrémités du caisson (1), chacun desdits éléments d'obturation (21) comprenant une face (22) plate pourvue d'un bord latéral périmétral (23) le long duquel des moyens faisant saillie (24) sont répartis pour s'emboîter dans des réceptacles respectifs formés par des protubérances (25) du cadre (2) correspondant et un volet de fermeture (29) amovible, ledit bord (23) étant interrompu dans sa partie avant, les limites du bord au niveau de l'interruption formant des sièges (28) respectifs pour recevoir les extrémités dudit volet de fermeture (29) amovible.

2. Caisson selon la revendication 1, **caractérisé en ce que**, après que l'élément laminaire (6) a été monté à l'intérieur du cadre (2), ladite extrémité supérieure (7) repose sur ladite bordure de butée (13) et ladite crête (8) repose dans le rail (30) délimité par les deux surfaces de ladite troisième partie (16) angulaire.

3. Caisson selon la revendication 1, **caractérisé en ce que** ledit élément laminaire (6) est pourvu d'une nervure (10a) ayant la forme d'un volet inférieur, moyennant quoi, une fois que l'élément laminaire (6) a été monté à l'intérieur du cadre (2), le volet inférieur (10a) de l'élément laminaire (6) est accouplé par forçage élastique avec une protubérance respective dudit élément d'obturation (21), garantissant la fermeture stable dudit caisson (1).

4. Caisson selon la revendication 3, **caractérisé en ce que** ledit élément laminaire a une extrémité inférieure (31) qui se positionne à proximité d'une traverse inférieure du cadre (2) une fois que le volet inférieur (10a) de l'élément laminaire (6) est accouplé par forçage élastique avec la protubérance respective dudit élément d'obturation (21), pour garantir la fermeture stable dudit caisson (1).

5. Caisson selon la revendication 1, **caractérisé en ce que** ladite face (22) et ledit bord (23) délimitent un compartiment pour recevoir ledit élément d'actionnement (4).

6. Caisson selon la revendication 1 ou 5, **caractérisé en ce que** ledit bord (23) comporte une ouverture inférieure (26) pour le passage d'une languette (27) pour l'actionnement manuel dudit élément d'actionnement (4a).

7. Caisson selon les revendications 1, 5 ou 6, **caractérisé en ce que** ledit bord (23) est pourvu d'une ouverture pour le passage d'au moins un câble pour l'alimentation électrique dudit élément d'actionnement (4b).

8. Caisson selon la revendication 1, **caractérisé en ce que** ledit cadre (2) a une face supérieure (15) qui est pourvue de bandes (18) sensiblement périmétrales pour un verrouillage amovible avec un support (19) respectif, qui est accouplé rigidement à une structure de support fixe, lesdites bandes (18) péri-

métrales étant également prévues sur les éléments d'obturation (21).

9. Procédé pour fixer un élément laminaire à un caisson selon la revendication 1, comprenant les étapes consistant à :

- aligner horizontalement l'extrémité supérieure (7) de l'élément laminaire (6) avec le siège supérieur avant (11) du cadre (2),
- insérer ladite extrémité (7) jusqu'à ce que la tête (32) repose sur le coin de liaison (33) entre la première partie (12) et la deuxième partie (14) dudit siège (11),
- abaisser l'élément laminaire (6), en le faisant d'abord tourner instantanément autour d'un point d'appui sur la deuxième partie (14) et ensuite autour de la tête (34) de la crête (8), qui repose dans le rail (30) délimité par les deux surfaces de ladite troisième partie (16) angulaire jusqu'à ce que la tête (32) de l'extrémité (7) repose contre le cadre de butée (13),

caractérisé en ce que, avant l'étape d'alignement de l'extrémité supérieure (7) de l'élément laminaire (6), il comprend également les étapes consistant à :

- agencer les éléments d'obturation (21) latéraux, par un accouplement de l'élément d'actionnement (4, 4a, 4b) à un rouleau (3),
- verrouiller les moyens faisant saillie (24) avec les protubérances (25) du cadre (2) ; et
- insérer les extrémités des volets de fermeture (29) amovibles dans les sièges (28) respectifs formés au niveau des limites du bord de chaque interruption des bords (23) des éléments d'obturation (21).

10. Procédé selon la revendication 9, **caractérisé en ce que,** une fois que l'élément laminaire (6) a été monté à l'intérieur du cadre (2), le volet inférieur (10a) de l'élément laminaire (6) est accouplé par forçage élastique à une protubérance respective dudit élément d'obturation (21), garantissant la fermeture stable dudit caisson (1).

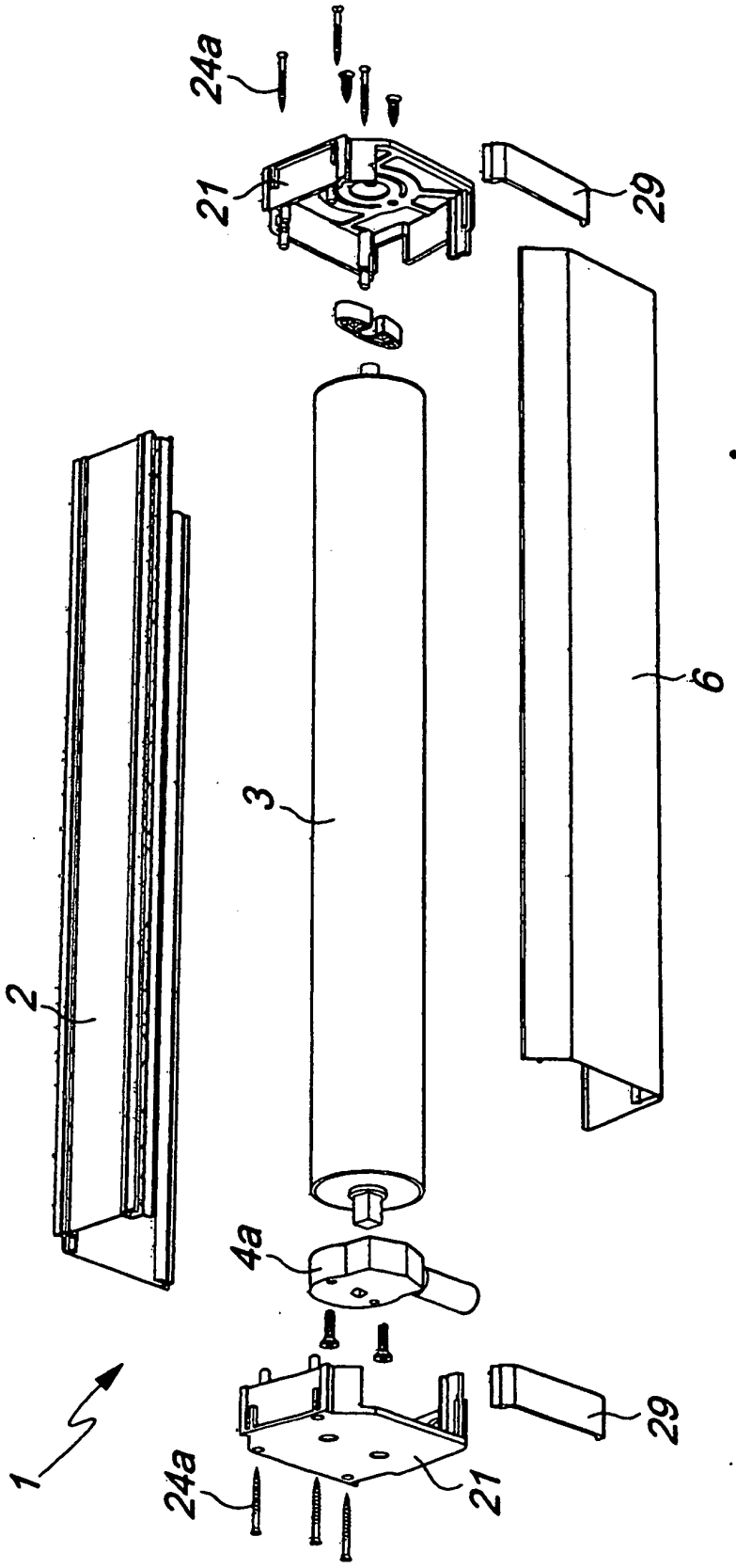


Fig. 1

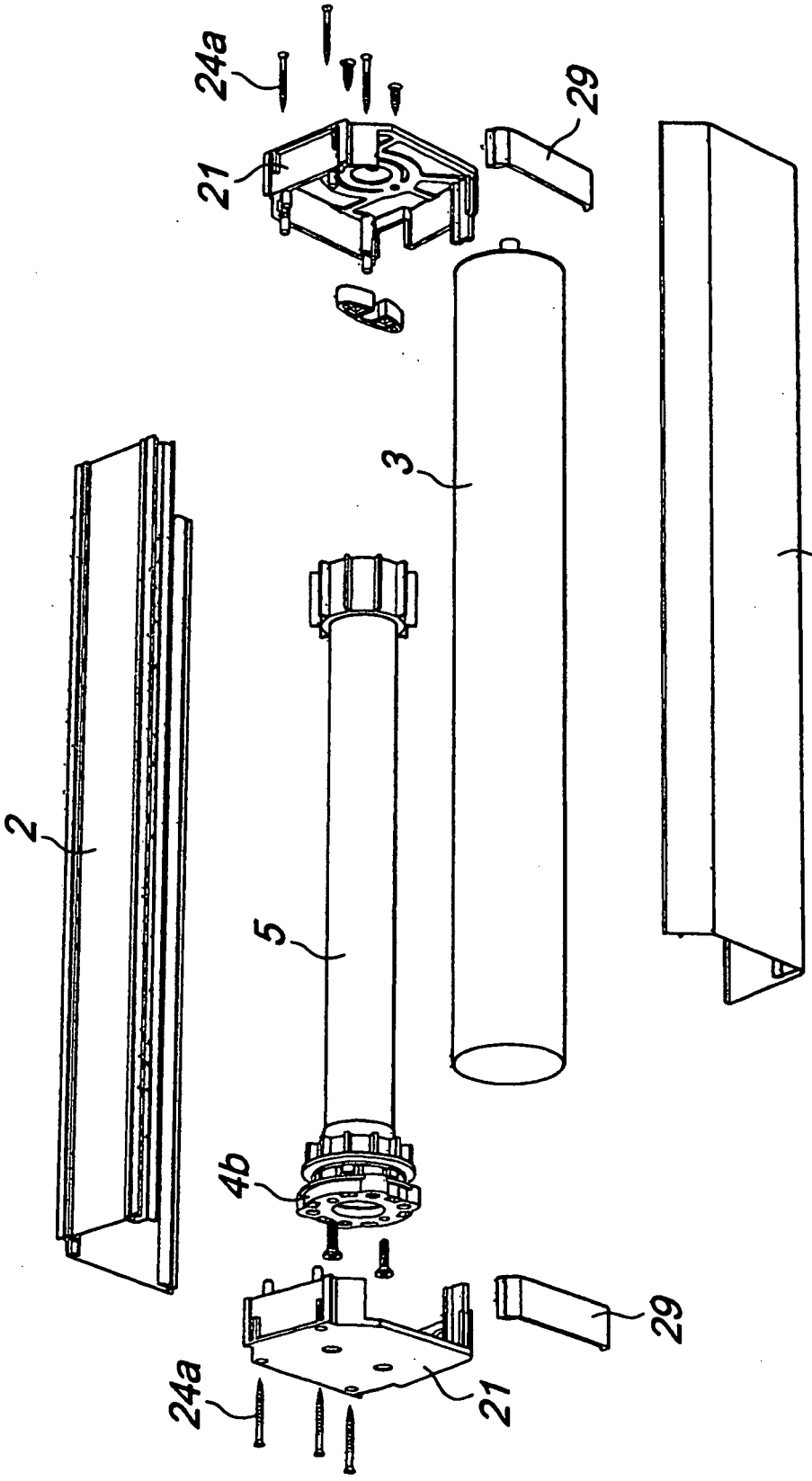


Fig. 2

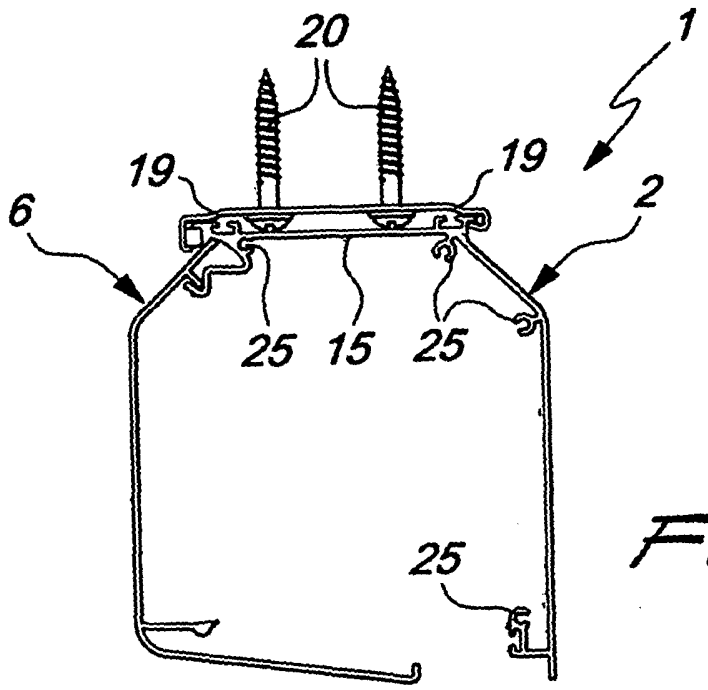


Fig. 3

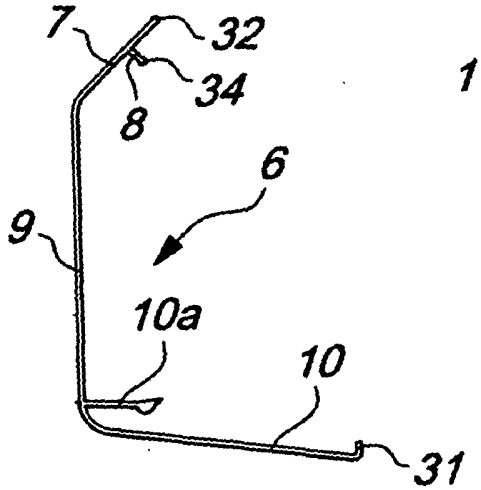


Fig. 4

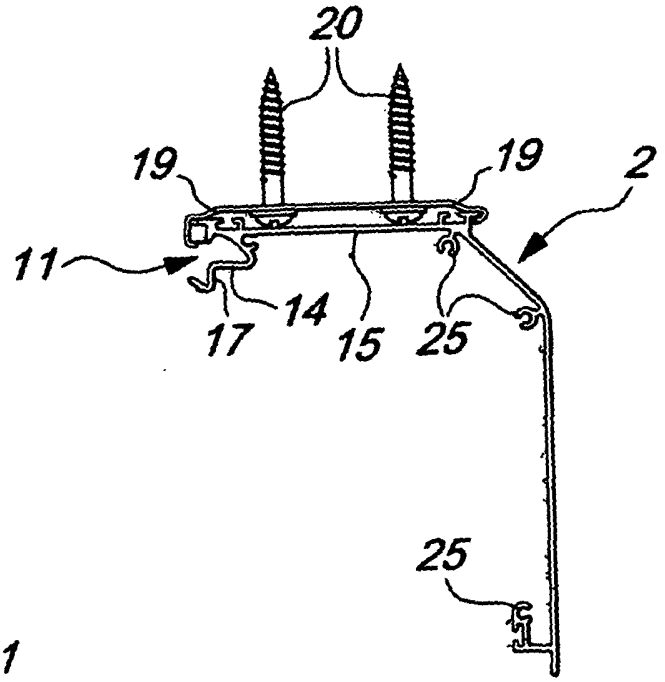


Fig. 5

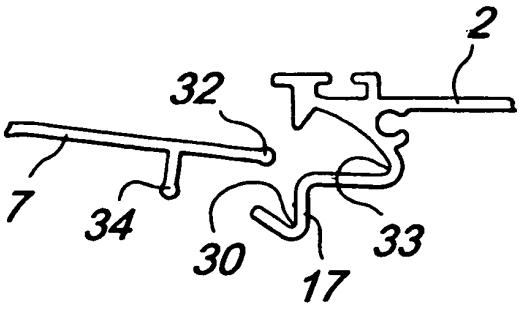


Fig. 6

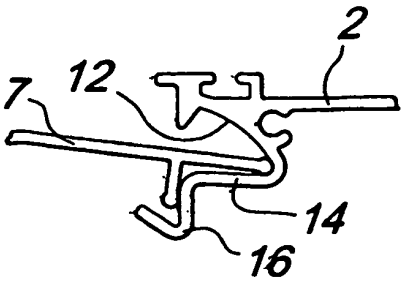


Fig. 7

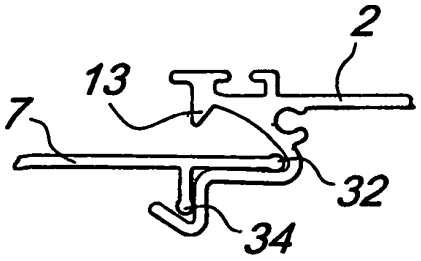


Fig. 8

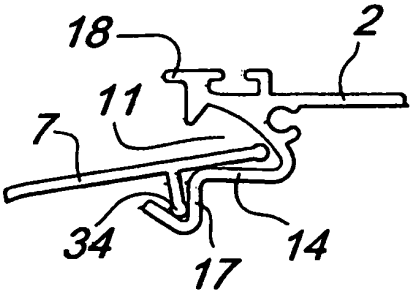


Fig. 9

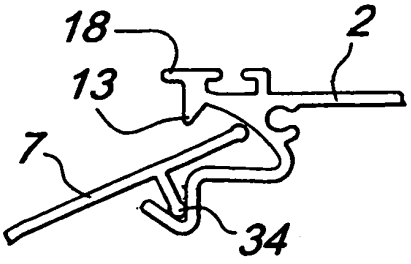


Fig. 10

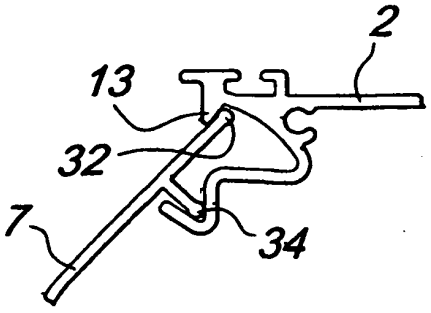


Fig. 11

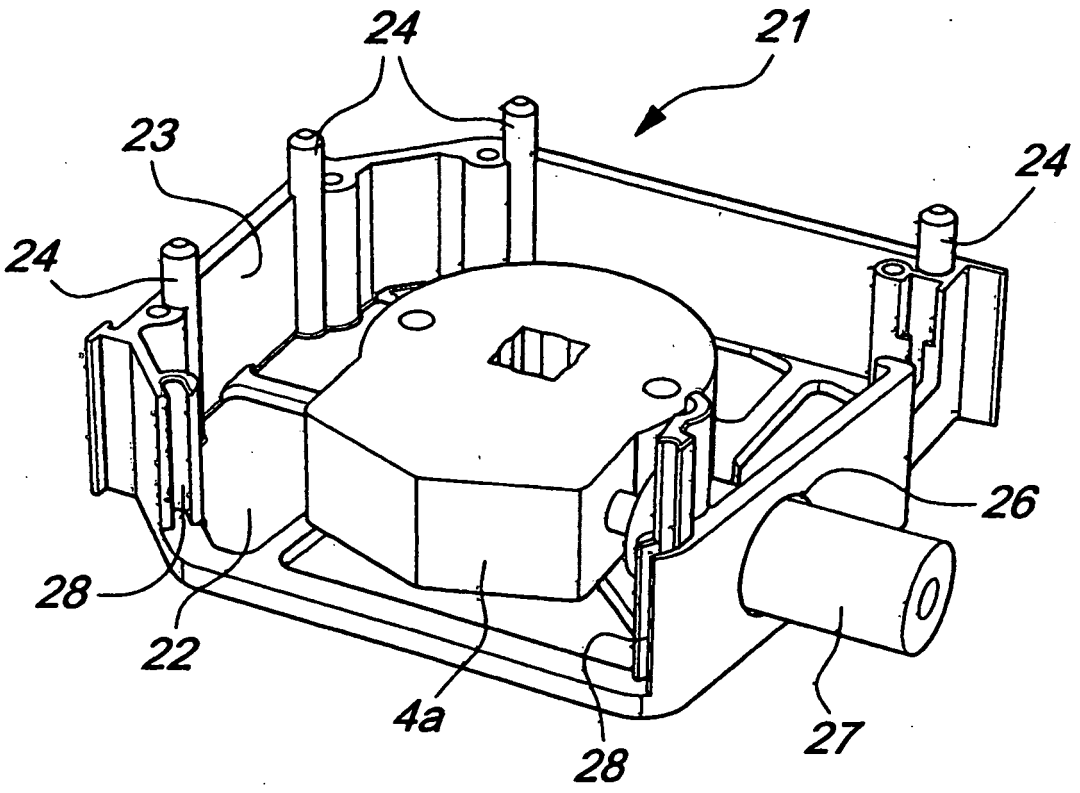


Fig. 12

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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