

(19)



(11)

EP 3 971 384 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:

08.01.2025 Bulletin 2025/02

(51) International Patent Classification (IPC):

E06B 9/42 (2006.01)

(21) Application number: **21196480.4**

(52) Cooperative Patent Classification (CPC):

E06B 9/42

(22) Date of filing: **14.09.2021**

(54) **ROLLER SHUTTER BOX**

ROLLADENKASTEN

COFFRE DE VOLET ROULANT

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

(30) Priority: **15.09.2020 PL 43531820**

(43) Date of publication of application:

23.03.2022 Bulletin 2022/12

(73) Proprietor: **STEC KAZIMIERZ Z.P.U.H. PROMYK
31-990 Krakow (PL)**

(72) Inventor: **Stec, Kazimierz**

31-990 Krakow (PL)

(74) Representative: **JWP Patent & Trademark
Attorneys**

**Sienna Center, ul. Zelazna 28/30
00-833 Warszawa (PL)**

(56) References cited:

EP-A1- 3 453 823

EP-A2- 1 674 653

DE-A1- 102018 116 805

DE-A1- 3 844 171

JP-A- H0 254 081

US-B2- 10 544 621

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The subject matter of the invention is a window roller shade box used for interior and exterior fabric roller shades.

[0002] Two-part boxes for window roller shades used for interior or exterior fabric roller shades and made of aluminium are known. Most common solutions are two-part, where one part of the roller shade box makes both the back and upper wall or the back and lower wall.

[0003] European patent EP 2374982 B1 describes a two-part box of a roller shutter with a seat for the catch of the bottom part of the box, the seat constructed of two half-round components of different curve radii, making together with the half-round component tipped with the inserting stop the slot of a width slightly greater than the catch thickness.

[0004] Polish patent PL 181164 B1 describes a window blind case, whose back and lower wall are formed by a flap tiltably fixed to a ceiling plate.

[0005] European patent EP 2828461 B1 describes a roller shutter box comprising an upper longitudinal profile A destined to be attached to the wall, and a lower longitudinal profile B, detachably connected to the upper profile to permit opening of the shutter box. The lower profile B is connected to the upper profile by means of an extremal coupling portion D which is inserted in a catching relation in a housing seat C made at an extremal portion A1 of the upper profile A.

[0006] European patent EP 0841460 B1 describes a two-part roller shutter box with a circular top part and part-circular bottom part, the box provided at the end of the top half with an S-shaped recess, in which a Z-shaped portion of the bottom half engages.

[0007] German patent DE3844171 A1 describes a window roller receiving box which is constructed with the unit construction corner rails, connecting rails for neighbouring corner rails, and of edge rails, all rails being provided on their longitudinal edges with corresponding longitudinal-insertion profiles.

[0008] US patent 10544621 B2 describes a roller shade system comprising a covering material windingly coupled to a roller tube such that rotation of the roller tube causes the covering material to be raised or lowered. A mechanism is coupled to the roller tube to rotate the roller tube and a level adjuster is attached to each end of the roller tube. The level adjuster includes a baseplate with a levelling bar pivotally coupled to the baseplate. A valance assembly to enclose the roller tube, mechanism, and level adjuster, while permitting the fabric through an opening is also provided.

[0009] European patent EP3453823 A1 describes screen device with a protective casing and two lateral guides extending downward on either side of the protective casing, wherein the protective casing is provided with a screen roller and a screen which is rollable onto and unrollable from this screen roller and is attached on one of its sides to the screen roller, and wherein the lateral

guides are provided to guide the screen when the screen is rolled up and unrolled, wherein the protective casing and the lateral guides are each formed with a frame having a longitudinal direction, and wherein at least one frame is constructed with first elements and second elements which each extend over substantially the whole length of the frame and which are coupled to each other at least partially slidably in the longitudinal direction, wherein the first elements are manufactured from a first material and wherein the second elements are manufactured from a second material having a higher expansion coefficient than the first material.

[0010] The objective of the invention is to develop a three-part structure of a roller shade box, with each part of the box being an autonomous product. The box can be used for every type of fabric window roller shades, both interior and exterior, and is provided with catches making it possible to stick in/out any chosen elements of the roller shade box with its functionality as well as stable and stiff structure being at the same time maintained regardless of overall dimensions of the box. Additionally, the structure of the box provides easy access to its interior as the front strip can be opened. Versatility of the box makes it also possible to use roller winding tubes with a large span ($\varnothing 24 - \varnothing 50$ mm) and, with dedicated sides of the cassette being used, to install most commercially available elements cooperating with the box: drivers and side channels. The box of the invention can be used with most commercially available side channels. Additionally, the structure of the top strip makes it possible to use most commercially available mounting clips, bead chain mechanisms of the drivers and crank mechanisms.

[0011] The window roller shade box according to the invention is set out in claim 1.

[0012] Preferably, the catch elements are L-shaped.

[0013] Preferably, the projection is in the shape of a trapezoid.

[0014] Preferably, the groove is in the shape of a circle.

[0015] Preferably, the profile of the arm of the front strip is arch-shaped.

[0016] Preferably, the profile of the arm of the front strip is L-shaped.

[0017] Preferably, the top part of the arm is formed by a ledge set back in relation to the arm and having a curvature towards the outside.

[0018] Preferably, the arm of the back strip is inclined at angle $\alpha = 45^\circ$.

[0019] The window roller shade box of the invention is presented in the embodiments and in the drawing, where:

Fig. 1 shows the first embodiment of the window roller shade box in a front perspective view;
Fig. 2 shows the second embodiment of the window roller shade box in a front perspective view;
Fig. 3 shows the third embodiment of the day-night window roller shade box in a side perspective view;
Fig. 4 shows another embodiment of the window roller shade box without the back strip in a side

perspective view, with the arch-shaped front strip;
 Fig. 5 shows another embodiment of the window roller shade box without the back strip in a front perspective view, with the L-shaped front strip;
 Fig. 6 shows another embodiment of the window roller shade box provided only with the mounting top strip, in a front perspective view;
 Fig. 7 shows the profile of the top strip;
 Fig. 7a shows detail A of the profile of the top strip;
 Fig. 7b shows detail A' of the profile of the top strip;
 Fig. 8 shows the profile of the back strip;
 Fig. 8a shows detail A of the profile of the back strip;
 Fig. 9 shows the profile of the arch-shaped front strip;
 Fig. 9a shows detail A of the profile of the arch-shaped front strip;
 Fig. 10 shows the profile of the L-shaped front strip;
 Fig. 10a shows detail A of the profile of the L-shaped front strip;
 Fig. 11 shows the profile of the adapting element for the day/night fabric;
 Fig. 11a shows detail A of the profile of the adapting element.

[0020] The subject matter of the invention is a three-part window roller shade box 1, consisting in its full version of three strips, these being a top strip 3, back strip 10 and front strip 16, with a cylinder seated between the strips and having a window roller shade wound on it, the strips combined into a structure of the box by means of deflections 13, 19 and 22 and side elements not shown in the drawing.

[0021] In the first embodiment (Fig. 1), the complete window roller shade box 1 is shown, the box having a base strip in the form of a mounting top strip 3, detachably connected with the back strip 10 and the front strip 16 in the forms of a long arms. The profile of the top strip 3 (Fig. 7, 7a, 7b) is a long arm 4 provided at its each end with a bend 5 directed towards the inside, and together with an irregularly shaped supporting wall 6 forming an irregularly edged seat for receiving curvatures 13, 19 of the strips 10, 16. The arm 4 of the profile of the top strip 3 in its central part has a projection 7, said projection stiffening the structure and being in the shape of a trapezoid, and two L-shaped catch elements 8, 9, said elements positioned opposite to each other and symmetrically and directed towards the outside, to mount mounting clips to the top strip 3. The profile of the back strip 10 (Fig. 8, 8a) is a long arm 11 inclined at angle $\alpha=45^\circ$ at a first groove 12 towards curvature 13, said groove designed for fitting a mounting screw into it, and provided with a second groove 14 of the same diameter as the first groove 12. The second groove 14 has an edge shared with a T-shaped groove 15 being the tip of the arm 11 at the bottom end of the arm, with the other end of the arm 11 having a curvature 13 directed towards the outside and being a catch for the back strip 10 within the bend 5. The profile of the front strip 16 (Fig. 9, 9a) has the form of a long arm, the bottom end of said arm having a groove 17, where a pin is

placed into to counterbalance the strip, said groove having an edge shared with a T-shaped groove 18, said groove designed for the cord of the day-night fabric or a brush seal protecting against rubbing against the end of the front strip 16 and said groove being the tip of the arm of the front strip 16, while the top opposite end of the arm 16 having a curvature 19 directed towards the outside and being a catch of the arm 16 within the bend 5. The T-shaped grooves 15, 18 have the same technical features.
 The profile of the front strip 16 is bent in the shape of an arch. In order to assemble the window roller shade box 1, the top strip 3 is connected to the back strip 10 such that the curvature 13, being the catch of the arm 11, is placed into the bend 5 by gently tilting the arm 11 upwards and then lowering the arm 11. The curvature 19 being the catch for the arm 16 is analogously placed into the second bend 5. The stabilisation of curvatures 13 or 19 within the bend 5 is provided by a supporting wall 6, against which the curvature 13 or 19 leans. Disassembly of the arm 11 and/or 16 out of the bend 5 is realised by tilting the arm 11 and/or 16 upwards and pulling it out to the front/back.

[0022] In the second embodiment (Fig. 2), the window roller shade box 2 has the profile of a front strip 20 (Fig. 10, 10a) in the form of an L-shaped long arm, which top part forms a ledge 21, said ledge set on back surface of the arm 20 and having a curvature 22 that towards the outside, the curvature being the catch of the arm 20 in the seat formed between the bend 5 and the supporting wall 6. The process of assembling in and assembling out the arm of the front strip 20 of the box is conducted by placing the curvature 22 into the seat formed between the bend 5 and the supporting wall 6, is analogous to the first embodiment. Once the window roller shade box, is assembled, the bottom end of the front strip 20 and the bottom end of the back strip 10 are not connected with each other. Thus a working channel is formed between the bottom ends of the strips 20 and 10 for the fabric of the window roller shade.

[0023] In the third embodiment (Fig. 3), in the window roller shade box 23 with the day/night-type fabric, panel structure consists an irregularly-shaped adapting element 24 (Fig. 11, 11a), said element having a groove 25 with an approximately U-shaped cross-section, with the top end of said groove being a small curvature 26 directed towards the outside. The curvature 26 is a catch to seat the adapting element 24 in the seat formed between the bend 5 and the supporting wall 6 of top strip 3. The adapting element 24 is connected to the top strip 3 such that the curvature 26 of the adapting element 24 is placed into the bend 5 by gently tilting the adapting element 24 upwards and then lowering it. Disassembling the adapting element 24 out of the bend 5 is realised by tilting it upwards and pulling it out to the side. The roller shade fabric terminated with a stiff cord, said cord connected to the fabric with an adhesive layer, is inserted into the groove 25 from the top. As a result there is no need to dismount the winding cylinder and the adapting element

24 when placing the roller shade fabric into the groove 25, which ensures quick replacement and quick regulation of the fabric.

[0024] In further embodiments, the box 1' with the arch-shaped front strip 16 (Fig. 4) and the box 2' with the L-shaped front strip 16 (Fig. 5) is shown. Disclosed embodiment is a window roller shutter box without the back strip 10 mounted..

[0025] In yet another embodiment, the window roller shade box 27 (Fig. 6) in a minimalistic version is shown. In this embodiment only the top strip 3 is being used which is engaged with the side closing strip of the cassette and connected to the winding roll.

[0026] The elements of the roller shade box in the form of the top strip 3, back strip 10, front strip 16, 20 and adapting element 24 are extruded from aluminium.

Claims

1. A window roller shade box, having a three-part structure with three profile elements that are detachably connected to one another, wherein the window roller shade box comprises a top strip (3) a back strip (10) and selectively a front strip (16, 20) or an adapting element (24),

wherein the profile of the top strip (3) is a long arm (4) provided at its each end with a bend (5) and an irregularly shaped supporting wall (6), wherein each bend (5) having the same bend radius and being directed towards the inside, said arm is also provided with catch elements (8, 9) positioned opposite and symmetrically and a projection (7) positioned centrally between the catch elements (8, 9); wherein each bend (5) and the corresponding supporting wall (6) form a seat for detachably connecting:

the back strip (10), the front strip (16, 20) or the adapting element (24); wherein the profile of the back strip (10) is a long arm (11), said arm inclined at angle α by the first groove (12) and provided with a second groove (14) having the same diameter d , with the second groove (14) having an edge shared with a T-shaped groove (15), the latter being the tip of the arm (11) at one of the ends of the arm, with the other end of the arm (11) having a curvature (13) that is directed towards the outside and is dedicated to be detachably connected with the seat of the top strip (3) that is formed between the bend (5) and its corresponding supporting wall (6) at the one end of the top strip (3); wherein the profile of the front strip (16, 20)

is a long arm, whose bottom end is provided with a groove (17) with an edge shared with a T-shaped groove (18), the latter being the tip of the arm of the front strip (16, 20), with the top end having a curvature (19, 22) that is directed towards the outside and is dedicated to be detachably connected with the seat of the top strip (3) that is formed between the bend (5) and its corresponding supporting wall (6) at the second end of the top strip (3); wherein the adapting element (24) has a cross sectionally U-shaped groove (25) and is provided with a curvature (26) that is directed towards the outside and is dedicated to be detachably connected with the seat of the top strip (3) that is formed between the bend (5) and its corresponding supporting wall (6) at the second end of the top strip (3).

2. Window roller shade box of claim 1, **characterised in that** the catch elements (8, 9) are L-shaped.
3. Window roller shade box of claim 1, **characterised in that** the projection (7) is in the shape of a trapezoid.
4. Window roller shade box of claim 1, **characterised in that** the groove (17) is in the shape of a circle.
5. Window roller shade box of claim 1, **characterised in that** the profile of the arm of the front strip (16) is arch-shaped.
6. Window roller shade box of claim 1, **characterised in that** the profile of the arm of the front strip (20) is L-shaped.
7. Window roller shade box of claim 1, **characterised in that** the top part of the arm of the front strip (20) is formed by a ledge (21) set back in relation to the arm (20) and having a curvature (22) towards the outside.
8. Window roller shade box of claim 1, **characterised in that** the arm (11) of the back strip (10) is inclined at angle $\alpha = 45^\circ$.

Patentansprüche

1. Ein Rollladenkasten, aufweisend eine dreiteilige Struktur mit drei Profilelemente, die lösbar miteinander verbunden sind, wobei der Rollladenkasten eine obere Leiste (3), eine hintere Leiste (10) und wahlweise eine vordere Leiste (16, 20) oder ein Adaptierelement (24) umfasst,

wobei das Profil der oberen Leiste (3) ein langer Arm (4) ist, der an seinem jeden Ende mit einer Biegung (5) und einer unregelmäßig geformten Stützwand (6) versehen ist, wobei jede Biegung (5) den gleichen Biegeradius aufweist und zur Innenseite hin gerichtet ist, wobei der besagte Arm auch mit gegenüberliegend und symmetrisch positionierten Rastelementen (8, 9) und einem zentral zwischen den Rastelementen (8, 9) positionierten Vorsprung (7) versehen ist; wobei jede Biegung (5) und die entsprechende Stützwand (6) einen Sitz bilden zum lösbaren Verbinden:

der hinteren Leiste (10), der vorderen Leiste (16, 20) oder des Adaptierelements (24); wobei das Profil der hinteren Leiste (10) ein langer Arm (11) ist, wobei der besagte Arm an der ersten Nut (12) unter einem Winkel α geneigt ist und mit einer den gleichen Durchmesser d aufweisenden zweiten Nut (14) versehen ist, wobei die zweite Nut (14) eine Kante aufweist, die mit einer T-förmigen Nut (15) geteilt ist, wobei letztere an einem der Enden des Arms die Spitze des Arms (11) ist, wobei das andere Ende des Arms (11) eine Krümmung (13) aufweist, die zur Außenseite hin gerichtet ist und dazu bestimmt ist, lösbar mit dem Sitz der oberen Leiste (3), der an dem einen Ende der oberen Leiste (3) zwischen der Biegung (5) und ihrer entsprechenden Stützwand (6) gebildet ist, verbunden zu werden;

wobei das Profil der vorderen Leiste (16, 20) ein langer Arm ist, dessen unteres Ende mit einer Nut (17) mit einer Kante versehen ist, die mit einer T-förmigen Nut (18) geteilt ist, wobei letztere die Spitze des Arms der vorderen Leiste (16, 20) ist, wobei das obere Ende eine Krümmung (19, 22) aufweist, die zur Außenseite hin gerichtet ist und dazu bestimmt ist, lösbar mit dem Sitz der oberen Leiste (3), der an dem zweiten Ende der oberen Leiste (3) zwischen der Biegung (5) und ihrer entsprechenden Stützwand (6) gebildet ist, verbunden zu werden; wobei das Adaptierelement (24) eine im Querschnitt U-förmige Nut (25) aufweist und mit einer Krümmung (26) versehen ist, die zur Außenseite hin gerichtet ist und dazu bestimmt ist, lösbar mit dem Sitz der oberen Leiste (3), der an dem zweiten Ende der oberen Leiste (3) zwischen der Biegung (5) und ihrer entsprechenden Stützwand (6) gebildet ist, verbunden zu werden.

2. Der Rollladenkasten nach Anspruch 1, **dadurch gekennzeichnet, dass** die Rastelemente (8, 9) L-förmig sind.
3. Der Rollladenkasten nach Anspruch 1, **dadurch gekennzeichnet, dass** der Vorsprung (7) in Form eines Trapezes ist.
4. Der Rollladenkasten nach Anspruch 1, **dadurch gekennzeichnet, dass** die Nut (17) in Form eines Kreises ist.
5. Der Rollladenkasten nach Anspruch 1, **dadurch gekennzeichnet, dass** das Profil des Arms der vorderen Leiste (16) bogenförmig ist.
6. Der Rollladenkasten nach Anspruch 1, **dadurch gekennzeichnet, dass** das Profil des Arms der vorderen Leiste (20) L-förmig ist.
7. Der Rollladenkasten nach Anspruch 1, **dadurch gekennzeichnet, dass** der obere Teil des Arms der vorderen Leiste (20) durch einen relativ zu dem Arm (20) zurückgesetzten und eine Krümmung (22) zur Außenseite hin aufweisenden Absatz (21) gebildet ist.
8. Der Rollladenkasten nach Anspruch 1, **dadurch gekennzeichnet, dass** der Arm (11) der hinteren Leiste (10) unter einem Winkel $\alpha = 45^\circ$ geneigt ist.

Revendications

1. Coffre de store ou de volet roulant, ayant une structure en trois parties avec trois éléments de profil qui sont reliés de manière amovible l'un à l'autre, le coffre de store et ou volet roulant comprenant une bande supérieure (3), une bande derrière (10) et sélectivement une bande arrière (16, 20) ou un élément adaptateur (24),

le profil de la bande supérieure (3) étant un bras long (4) pourvu d'une courbure (5) à chacune de ses extrémités et une paroi d'appui de forme irrégulière (6), chacune courbure (5) ayant un même rayon de courbure et étant dirigée vers l'intérieur, ledit bras étant également pourvu des éléments de loquet (8, 9) placés à l'opposé et symétriquement et la saillie (7) placée de façon centrale entre les éléments de loquet (8, 9); chacune courbure (5) et la paroi d'appui correspondante (6) formant un siège pour relia de manière amovible:

la bande derrière (10), la bande arrière (16, 20) ou l'élément adaptateur (24);
le profil de la bande derrière (10) étant un

- bras long (11), ledit bras étant incliné à angle α par la première rainure (12) et pourvu d'une seconde rainure (14) ayant un même diamètre d, la seconde rainure ayant un bord partagé avec une rainure en forme de T (15), cette dernière étant une pointe du bras (11) à une des extrémités du bras, et l'autre extrémité du bras (11) ayant une déviation (13) qui est dirigée vers l'extérieur et est destinée à être reliée de manière amovible au siège de la bande supérieure (3) qui est formé entre la courbure (5) et sa paroi d'appui correspondante (6) à l'extrémité de la bande supérieure (3); le profil de la bande arrière (16, 20) étant un bras long dont l'extrémité inférieure est pourvue d'une rainure (17) ayant un bord partagé avec une rainure en forme de T (18), cette dernière étant la pointe du bras de la bande arrière (16, 20) avec l'extrémité supérieure ayant une déviation (19, 20) qui est dirigée vers l'extérieur et est destinée à être reliée de manière amovible au siège de la bande supérieure (3) qui est formé entre la courbure (5) et sa paroi d'appui correspondante (6) à la seconde extrémité de la bande supérieure (3); l'élément adaptateur (24) ayant une rainure (25) en forme de U en section transversale et étant pourvue d'une déviation (26) qui est dirigée vers l'extérieur et est destinée à être reliée de manière amovible au siège de la bande supérieure (3) qui est formé entre la courbure (5) et sa paroi d'appui correspondante (6) à la seconde extrémité de la bande supérieure (3).
2. Coffre de store et ou volet roulant selon la revendication 1, **caractérisé en ce que** les éléments de loquet (8, 9) sont en forme de L.
3. Coffre de store et ou volet roulant selon la revendication 1, **caractérisé en ce que** la saillie (7) a une forme d'un trapézoïde.
4. Coffre de store et ou volet roulant selon la revendication 1, **caractérisé en ce que** la rainure (17) a une forme d'un cercle.
5. Coffre de store et ou volet roulant selon la revendication 1, **caractérisé en ce que** le profil du bras de la bande arrière (16) est en forme d'arc.
6. Coffre de store et ou volet roulant selon la revendication 1, **caractérisé en ce que** le profil du bras de la bande arrière (20) est en forme de L.
7. Coffre de store et ou volet roulant selon la revendication 1, **caractérisé en ce que** la partie supérieure du bras de la bande arrière (20) est formée par un rebord (21) en retrait par rapport au bras (20) et ayant une déviation (22) vers l'extérieur.
8. Coffre de store et ou volet roulant selon la revendication 1, **caractérisé en ce que** le bras (11) de la bande derrière (10) est incliné à angle $\alpha = 45^\circ$.

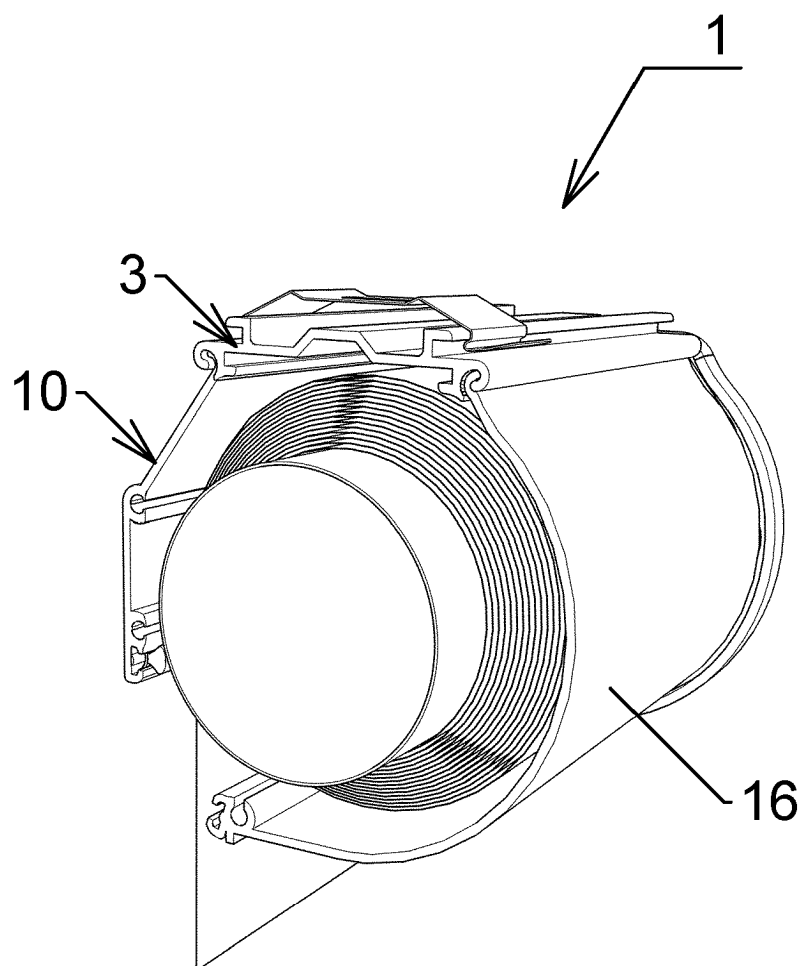


Fig. 1

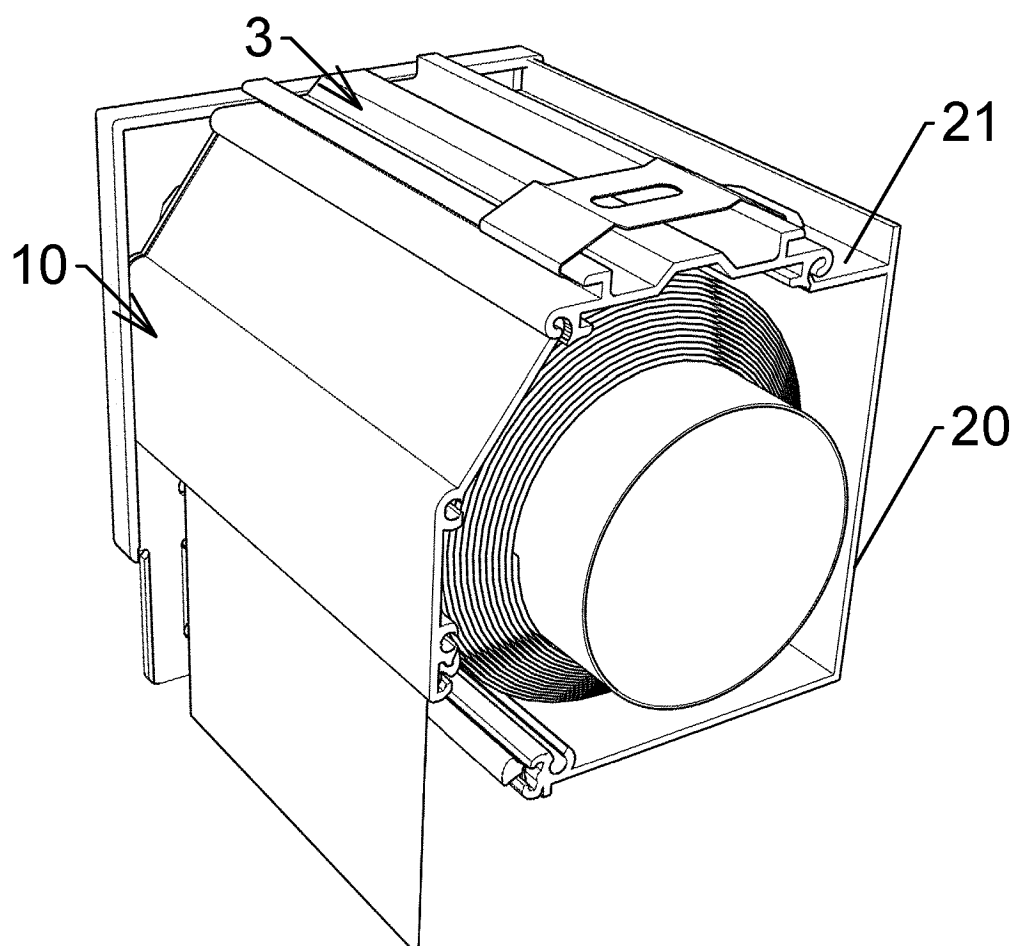


Fig. 2

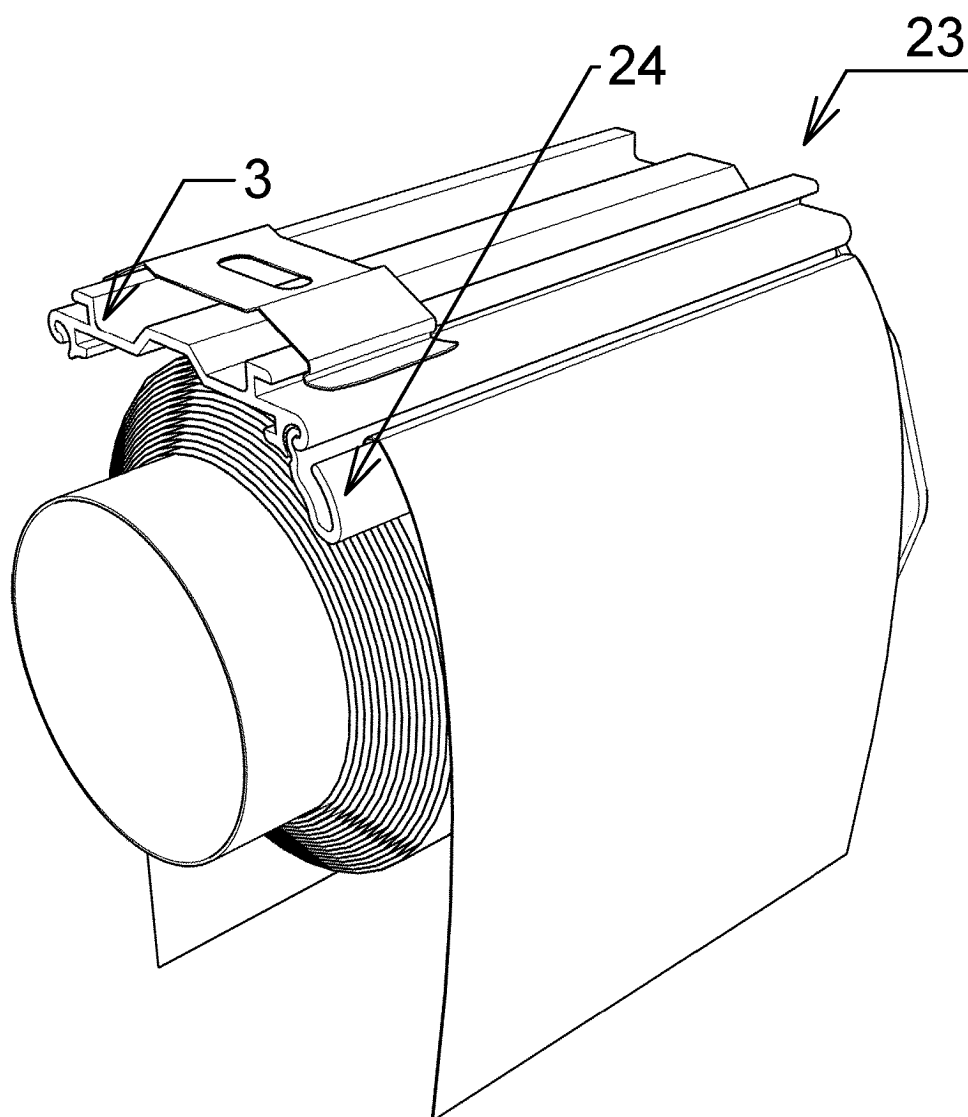


Fig. 3

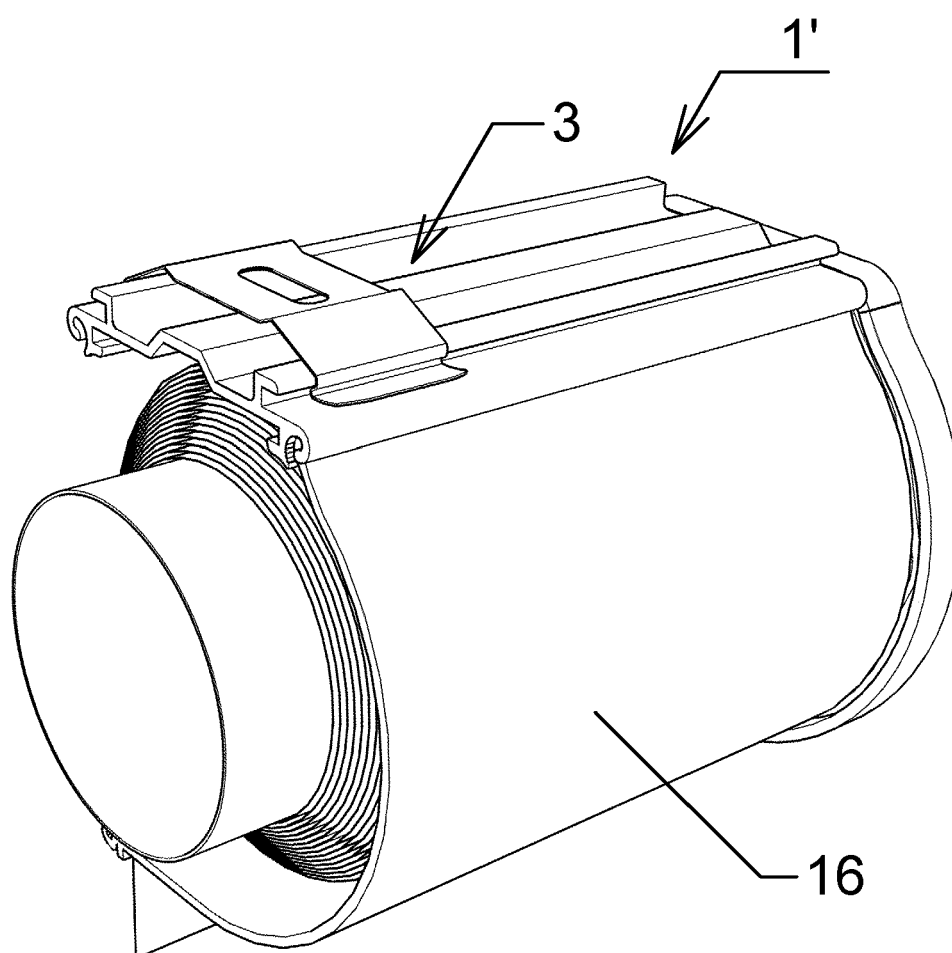


Fig. 4

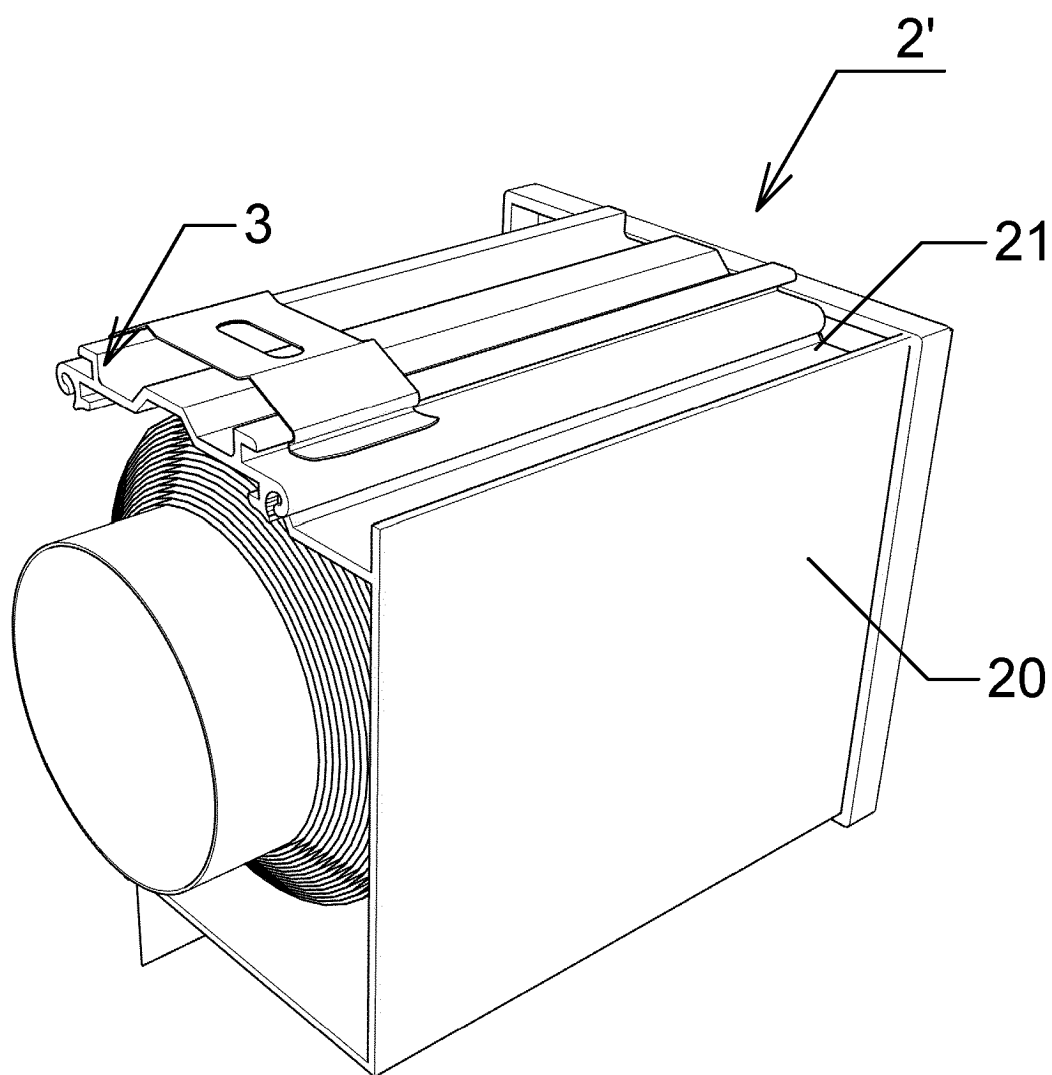


Fig. 5

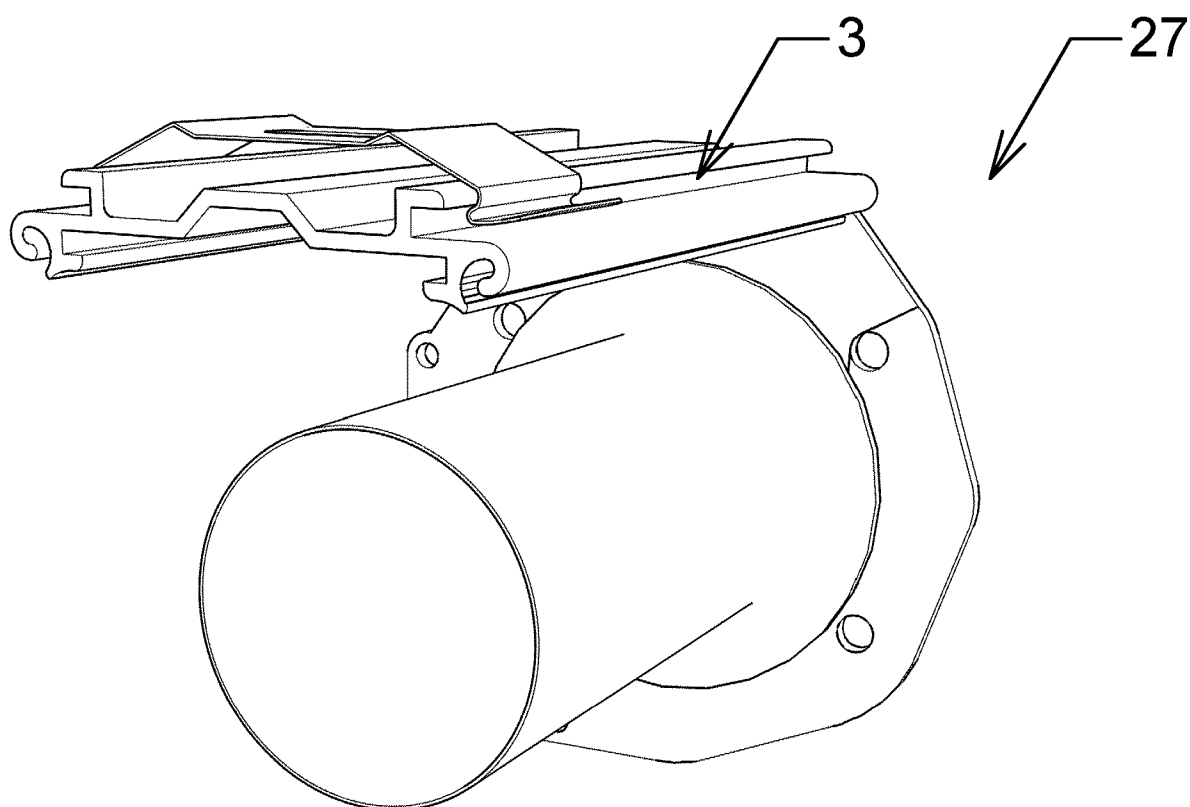


Fig. 6

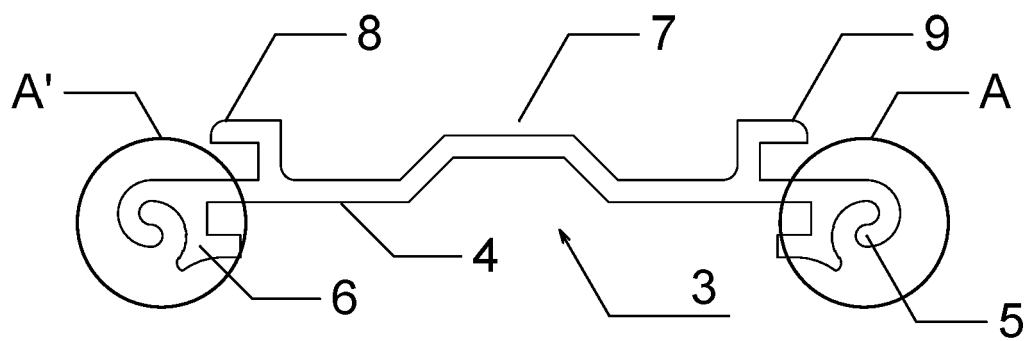


Fig. 7

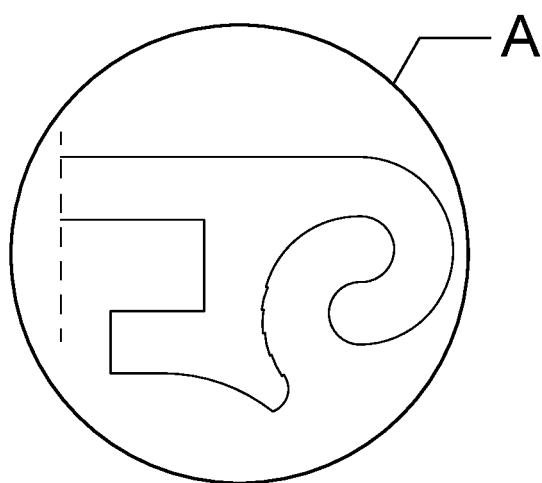


Fig. 7a

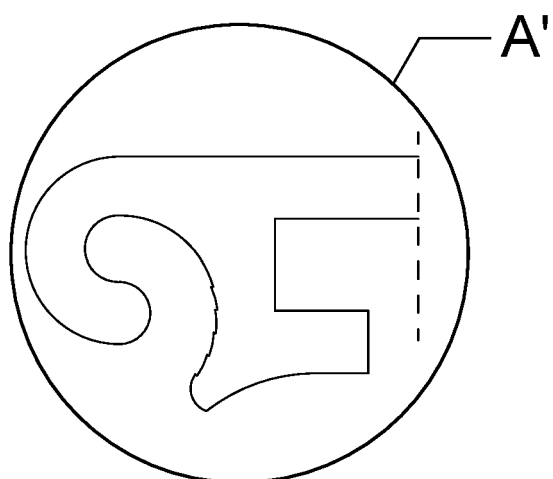


Fig. 7b

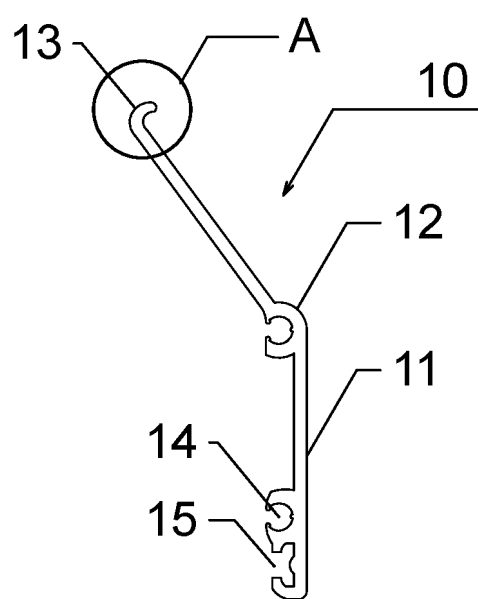


Fig. 8

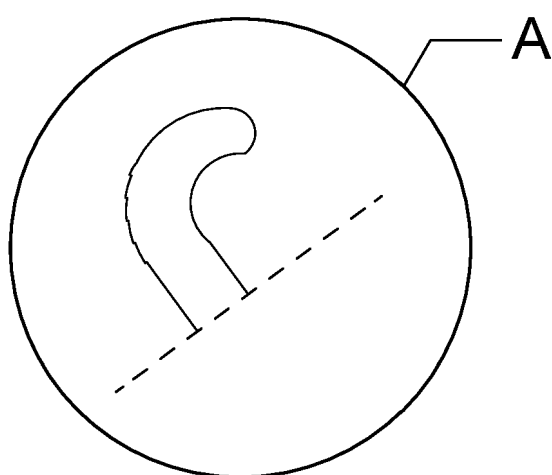


Fig. 8a

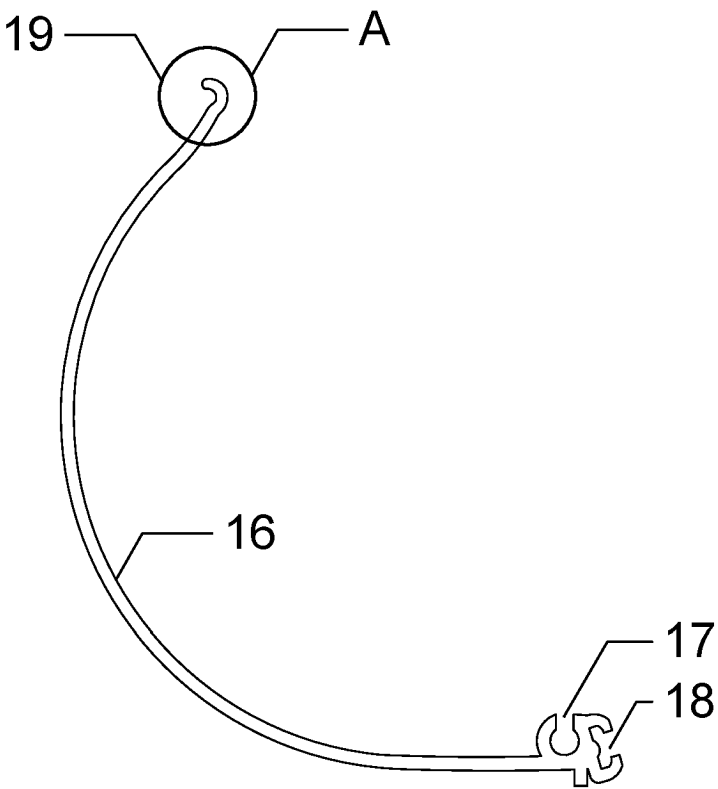


Fig. 9

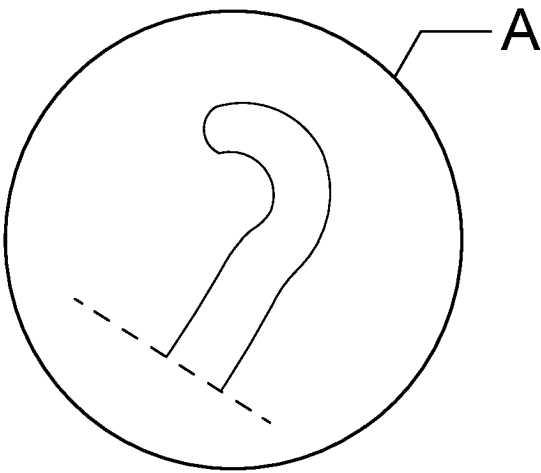


Fig. 9a

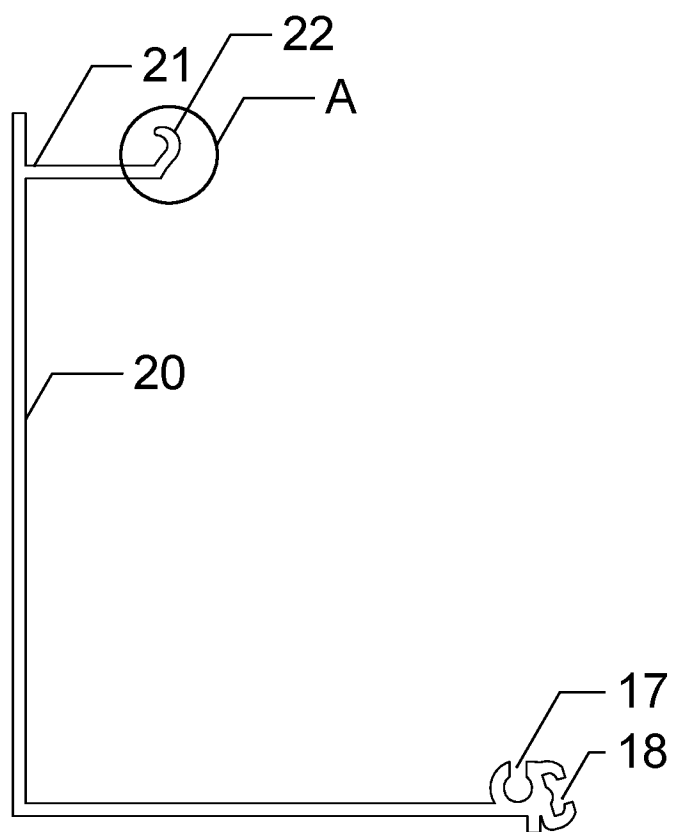


Fig. 10

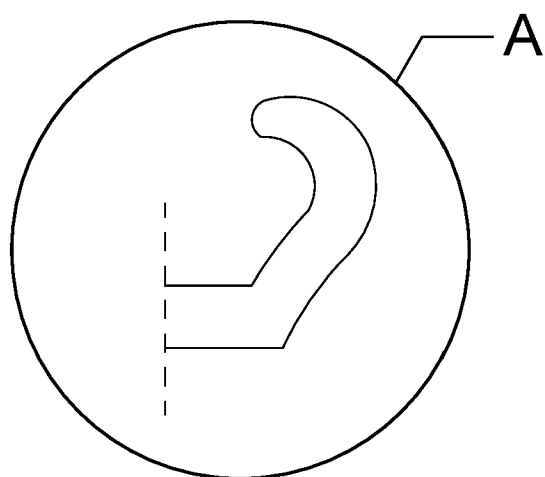


Fig. 10a

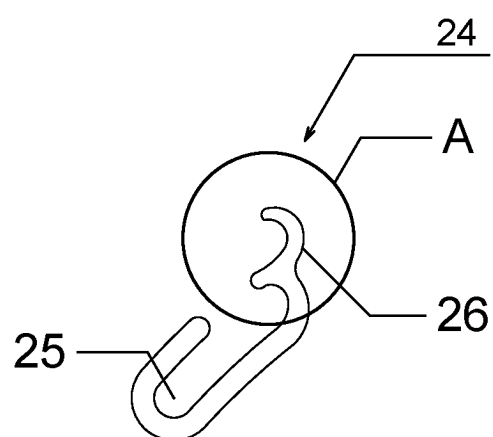


Fig. 11

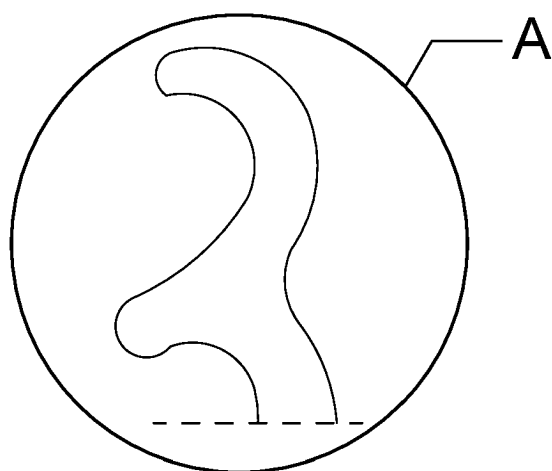


Fig. 11a

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 2374982 B1 [0003]
- PL 181164 B1 [0004]
- EP 2828461 B1 [0005]
- EP 0841460 B1 [0006]
- DE 3844171 A1 [0007]
- US 10544621 B2 [0008]
- EP 3453823 A1 [0009]