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(54) **FOLDING BANNER SUPPORT ASSEMBLY**

(57) A folding banner support assembly (100) comprises a banner (1), comprising a flexible body (10) provided with a slot (11, 12), a rod (8) disposed inside said slot (11, 12) of the body (10) of the banner, and fixing means (2) fixed to the banner (1) in order to attach the banner (1) to a support (P); the rod (8) is a flexible and/or a folding rod.

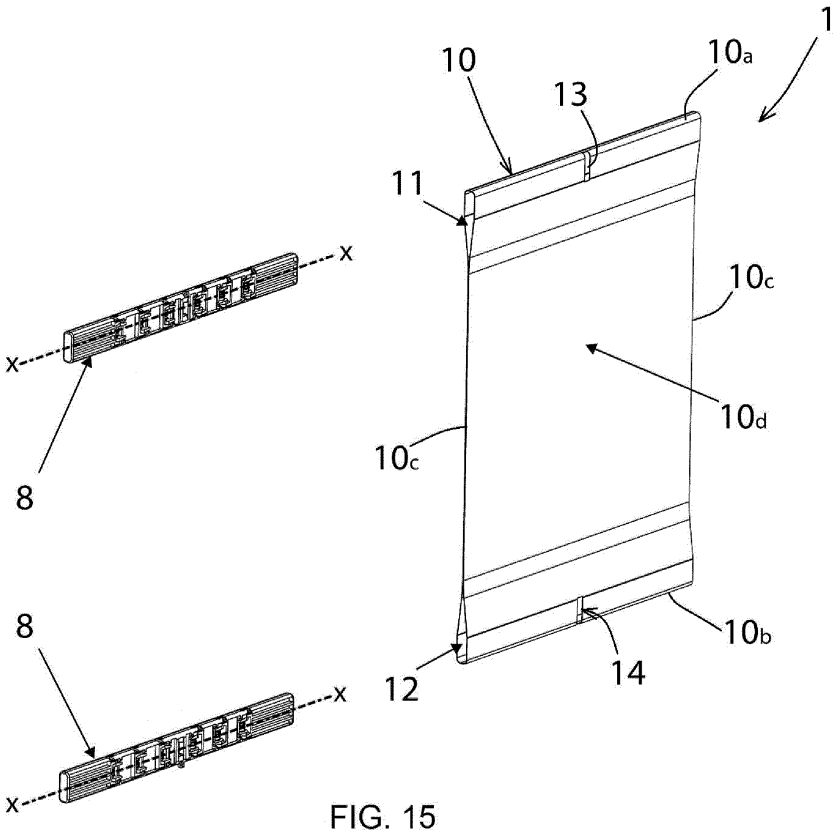

FIG. 15

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Description

[0001] The present patent application for industrial invention relates to a folding banner support assembly. The reference sector is the advertising sector, with special reference to the installation of advertising bills attached to a support, such as for example a pole.

[0002] Banners are known, which are usually made of flexible plastics and provided with a front side and/or a back side whereon an advertising message is printed.

[0003] The banner is usually provided with two slots, which are respectively obtained on the lower edge and on the upper edge. Each slot houses a rigid rod in order to support the banner.

[0004] The banners are usually positioned on a support, such as for example a pole, in order to increase the visibility of the banner. In particular, the banner is connected to the support by means of connection means, in such manner that the banner is tensioned and visible.

[0005] More precisely, said connection means generally comprise two metal brackets with circular shape, which are tightened around the support and fixed to the rods of the banner in such a way to fix the banner to the support.

[0006] The banner of the prior art and the fixing means that are currently used to fix the banner to a support are impaired by some drawbacks.

[0007] A first drawback consists in the fact that, when similar banners are exposed to a very strong wind, they tend to act as a "sail" and discharge the wind force on the support, making the support fall, in the worst cases, with the risk of causing personal injuries or damage to properties situated under the banner.

[0008] In fact, when the banners are hit by the wind, they are susceptible to a force that tends to deform them. However, being tensioned, the banners cannot deform and consequently tend to discharge the force on the support, which may be inclined and fall.

[0009] The force applied to the banner because of the wind is in direct proportion to the area of the banner exposed to the wind. In other words, the worst condition is when the wind hits the front or the back side of the banner.

[0010] Moreover, the larger the area of the banner, the higher the impact of the wind on the banner will be.

[0011] A second drawback consists in the fact that the brackets used to fix the banner to the support are made of a non-deformable material and, therefore, they are not suitable for fixing the banner to all kinds of support. In fact, such brackets can be exclusively attached to suitable supports.

[0012] Moreover, such brackets must be mounted and dismounted every time the banner needs to be replaced, i.e. an operator needs to be lifted to reach the brackets in order to remove them, then the banner has to be replaced and fixed again to the support by means of the brackets.

[0013] It must be noted that such banners are usually mounted in a very high position with respect to the ground, and consequently lifting baskets must be used in order for the operator to reach the brackets. Otherwise said, the replacement of the banner is a time-consuming, complicated, expensive and risky operations for the operator.

[0014] US2005/184206 A1 discloses a banner fixed to a supporting member. Such banner comprises a body having flexible rods disposed into slots obtained in upper and lower position in the body. Such rods are made in one piece and only permit a slight deformation of the banner body when the banner is hit by the wind. In view of the above, in spite of the bending of the rods, the impact surface of the banner with the wind is large, reducing the resistance and the stability of the banner.

[0015] The purpose of the present invention is to overcome the drawbacks of the prior art by providing a folding banner support assembly that is capable of withstanding the impact of the wind and guarantees the stability of the supporting member, thus preventing any harmful stress for the supporting member.

[0016] Another purpose is to disclose a folding banner support assembly that can be used with supporting members of any shape and allows for fixing or replacing a banner on the supporting member rapidly and easily.

[0017] The folding banner support assembly according to the invention comprises a banner, comprising a flexible body with a slot, and a flexible and/or folding rod disposed inside said slot.

[0018] The folding banner support assembly comprises fixing means that are fixed to the banner in order to fix the banner to a supporting member.

[0019] The peculiarity of the folding banner support assembly according to the invention consists in the fact that the rod is made of multiple mobile parts. The rod comprises:

- a fixed portion with a longitudinal axis;
- at least one mobile portion movably fixed to the fixed portion; and
- hinging means that hinge the mobile portion to the fixed portion, in such a way to let the mobile portion rotate with respect to the fixed portion around a hinging axis that is orthogonal to said longitudinal axis of the fixed portion.

[0020] The advantages of the folding banner support assembly according to the present invention are evident: because of the provision of the folding and/or flexible rod that is made of multiple mobile parts, the impact surface of the banner with the wind can be reduced when the banner is exposed to the strength of the wind. In this way, the banner does not cause the fall of the supporting member.

[0021] For the sake of clarity, the description of the folding banner support assembly according to the invention continues with reference to the attached drawings, which have a merely illustrative, not limiting value, wherein:

Fig. 1 is an axonometric view of the folding banner support assembly according to the invention, disposed on a supporting member;
Fig. 2 is a partial exploded axonometric view of the folding banner support assembly of Fig. 1 and of the supporting member;
Fig. 3 is an axonometric view of the back of the folding banner support assembly of Fig. 1;
Fig. 4 is an axonometric view of fixing means of the folding banner support assembly of Fig. 1, fixed to a support;
Fig. 5 is an axonometric view of a fixing device of the fixing means of Fig. 4;
Fig. 6 is an axonometric view of the back of the fixing device of Fig. 5;
Fig. 7 is an exploded axonometric view of the fixing device of Fig. 6;
Fig. 8 is a partial exploded axonometric view of moving means and of supporting means of the folding banner support assembly of Fig. 1;
Fig. 9 is a longitudinal section of the moving means and of the supporting means of the folding banner support assembly according to the invention, in assembled condition, cut along the plane IX-IX of Fig. 8;
Fig. 10 is an exploded axonometric view of the supporting means of Fig. 8;
Fig. 11 is an exploded axonometric view of the moving means of Fig. 8;
Fig. 12 is an axonometric view of a moving device of the moving means of Fig. 8;
Fig. 13 is an axonometric view of a supporting device of the moving means of Fig. 8;
Fig. 14 is an axonometric view of the back of a banner of the folding banner support assembly of Fig. 1;
Fig. 15 is the same view as of Fig. 14, except for it shows the banner in an exploded view;
Fig. 16 is an axonometric view of a rod of the banner of Fig. 15;
Fig. 17 is the same view as of Fig. 16, except for it shows the rod in a partial exploded view;
Fig. 18 is an axonometric view of a fixed portion of the rod of Fig. 16;
Fig. 19 is an exploded axonometric view of a mobile portion and of retention means of the rod of Fig. 16;
Fig. 20 is an exploded axonometric view of an ending portion and of retention means of the rod of Fig. 16;
Fig. 21 is an exploded axonometric view of retention means of Fig. 19;
Fig. 22 is an axonometric view of a fixed portion and of a mobile portion of the rod of Fig. 16, in assembled condition;
Fig. 23 is the same view as of Fig. 22, wherein the mobile portion is rotated with respect to the fixed portion;
Fig. 24 is an axonometric view of a detail of the folding banner support assembly of Fig. 1;
Fig. 25 is an axonometric view of the detail of Fig. 24 seen from a different angle;
Fig. 26 is an axonometric view of the folding banner support assembly according to the invention, during a lifting step of the banner;
Figs. 27 to 32 are axonometric views of the folding banner support assembly according to the invention, wherein the rods of the banner are bent by the strength of the wind along a direction indicated by the arrow;
Fig. 27A is an enlarged view of the detail enclosed in the circle A of Fig. 27;
Fig. 33 is a top view of the folding banner support assembly according to the invention, wherein the rods of the banner are not bent by the action of the wind;
Figs. 34 to 40 are the same as Fig. 33, except for the fact that they show the rods bent by the strength of the wind along a direction indicated by the arrow.

[0022] With reference to Figs. 1, 2 and 3, a folding banner support assembly according to the invention is disclosed, which is generally indicated with reference numeral 100.

[0023] The folding banner support assembly (100) is intended to be mounted on a vertical supporting member (P), such as for example a pole.

[0024] With reference to Figs. 1, 2, 3, 14 and 15, the folding banner support assembly (100) comprises a banner (1) comprising a flexible body (10) obtained with a rectangular sheet.

[0025] The body (10) comprises an upper edge (10a), a lower edge (10b) and two side edges (10c). Moreover, the body (10) comprises a first side (10d), intended to face the vertical support (P) and a second side (10e) opposite to the first side (10d). Advantageously, one or more sides (10d 10e) of the body (10) of the banner (1) has an advertising message.

[0026] The body (10) comprises a first slot (11) obtained on the upper edge (10a) of the body (10) and a second slot (12) obtained on the lower bottom (10b) of the body (10).

[0027] The body (10) comprises a first transverse hole (13) obtained in the proximity of the upper edge (10a) of the body (10) in communication with the first slot (11) and a second transverse hole (14) obtained in the proximity of the lower edge (10b) of the body (10) in communication with the second slot (12). The transverse holes (13, 14) are equidistant from the side edges (10c) of the body (10). Advantageously, the transverse holes (13, 14) are obtained on the back side (10d) of the body (10).

[0028] With reference to Fig. 15, the banner (1) comprises two rods (8), each of them being disposed inside one of the slots (11, 12) of the body (10) and having a substantially horizontal direction.

[0029] With reference to Figs. 16 and 17, the rods (8) are flexible and/or folding rods. In particular, each rod (8) comprises a fixed portion (80) and one or more mobile portions (81) removably fixed to the fixed portion (80). The fixed portion (80) has a longitudinal axis (X). The

fixed portion (80) is disposed in correspondence of the transverse hole (13, 14) of the body (10), and one or more mobile portions (81) is fixed to the fixed portion (80).

[0030] Each rod (8) comprises two rows of mobile portions (81); the mobile portions (81) of each row are mutually connected. Each row of mobile portions (81) comprises a first ending section that is laterally fixed to the fixed portion (80), in such a way that the fixed portion (80) is situated in central position with respect to the two rows of mobile portions (81), and a second ending section connected to an ending portion (82) of the rod (8).

[0031] With reference to Figs. 16 and 17, hinging means (9) connect the mobile portions (81) together, and the mobile portions (81) to the fixed portion (80). In view of the above, the mobile portions (81) can rotate with respect to the fixed portion (80) and with respect to the adjacent mobile portions (81) around a hinging axis that is orthogonal to said longitudinal axis (X) of the fixed portion.

[0032] As shown in Figs. 18 and 19, the hinging means (9) comprise:

- two shelves (80a) protruding from one side of the fixed portion,
- two shelves (81 b) protruding from one side of the mobile portion, and
- a pin (90) inserted in holes obtained in the shelves (80a) of the fixed portion and in the shelves (81 b) of the mobile portion.

[0033] The axis of the pin (90) corresponds to the axis of the hinge that is orthogonal to the longitudinal axis (X) of the fixed portion.

[0034] Although the figure shows this specific example of the hinging means (9), the hinging means (9) can be made in any way that is known to an expert of the field, as long as the hinge axis of the hinging means is vertical and orthogonal to the longitudinal axis (X) of the fixed portion. Obviously, the hinging means can provide for only one shelf with a pin joined to the mobile portion (81) or to the fixed portion (80) and only one shelf with hole joined to the mobile portion (81) or to the fixed portion (80), or they may provide for pin-sleeve rotation systems or bearings rotation systems.

[0035] With reference to Fig. 19, for each side, each mobile portion (81) comprises two shelves (81 a, 81 b) that protrude from the mobile portion (81).

[0036] In particular, the shelves (81 a) that protrude from a first side of the mobile portion (81) are identical to the shelves (80a) of the fixed portion (80).

[0037] The shelves (81 b) that protrude from a second side of the mobile portion (81) are spaced by a distance that is lower than the distance between the shelves (81 a) that protrude from the first side of the mobile portion (81). In this way, the shelves (81 b) that protrude from a second side of the mobile portion (81) can be inserted between the shelves (80a) of the fixed portion (80) or between the shelves (81 a) of the first side of the mobile portion (81). Each shelf (81 b) of the second side of the mobile portion (81) has an internal side (81 c) directed towards the internal side (81 c) of the other shelf (81 b) of the second side of the mobile portion (81).

[0038] With reference to Fig. 20, the hinging means (9) also hinge the mobile portions (81) to the ending portions (82) of the rod, in such a way that the mobile portions (81) can rotate both with respect to the fixed portion (80) and to the ending sections (82) of the rod.

[0039] In particular, the hinging means (9) also comprise shelves (82a) that protrude only from one side of each ending section (82) of the rod and revolvingly connected to the second ending section of the two rows of mobile portions (81) by means of the pins (90). More precisely, the pins (90) are inserted in holes obtained on the shelves (82a) of the ending portions (82) and on the shelves (81 a) of the first side of the mobile portions (81) at the ends of the rod, in such a way to revolvingly connect the mobile ending portions (81) to the ending portions (82) of the rod. Said shelves (82a) of the ending portions (82) are identical to the shelves (81 b) of the second side of the mobile portion (81), in such manner to be inserted between the shelves (81 a) of the first side of the mobile ending portion (81). Each shelf (82a) of the ending portion (82) has an internal side (82c) directed towards the internal side (82c) of the other shelf (82a) of the ending portion (82).

[0040] With reference to Fig. 17, the axes of rotation of the pins (90) of the hinging means are parallel and orthogonal to the longitudinal axis (X) of the fixed portion of the rod. The pins (90) are disposed in holes obtained in the shelves (80a, 81 a, 81 b, 82a) of the portions (80, 81, 82) of the rod (8), in such a way to revolvingly connect the portions (80, 81, 82) of the rod (8). It must be noted that the pins (90) are prevented from coming out of the holes of the shelves (80a, 81 a, 81 b, 82a) of the portions (80, 81, 82) of the rod (8) by caps (92) inserted in the holes of the shelves (80a, 81 a, 81 b, 82a), and by screws (91) screwed in the pins (90).

[0041] Advantageously, the pins (90) let the portions (80, 81, 82) rotate by approximately 90°.

[0042] As shown in Figs. 16, 17, 19, 20, 21, 22 and 23, each rod (8) comprises retention means (R), each of them being disposed between adjacent portions and comprising a retention member (R1), such as for example a spring, and a pair of cam devices (R2) disposed at the ends of the retention means (R1). The pin (90) is disposed inside the retention member (R1) and inside holes of the cam devices (R2).

[0043] The cam devices (R2) are inserted between the shelves (81 b) of the second side of the mobile portion (81) and between the shelves (82a) of the ending portion (82) of the rod (8) and comprise a fork that protrudes laterally and is provided with an inlet that houses a section of the fixed portion (80) or of the adjacent mobile portion (81).

[0044] The cam devices (R2) are free to slide along a direction parallel to the axis of rotation of the pin (90), but

cannot rotate together with the pin (90) because the fork prevents the rotation of the cam device (R2).

[0045] An external side (R2a) of each cam device (R2) is interfaced with the internal side (81 c, 82c) of one of the shelves (81 b, 82a) of the second side of the mobile portion (81) or of the ending portion (82). In particular, the external side (R2a) of each cam device (R2) is provided with inlets and/or projections and the internal side (82c, 81 c) of the shelves (82a, 81 b) of the ending portion (82) and of the second side of the mobile portion (81) is provided with projections and/or inlets, which cooperate with the inlets and/or projections of the external side (R2a) of the cam device (R2), in such a way to move the cam devices (R2) closer when the mobile portion (81) or the ending portion (82) rotate. The movement of the cam devices (R2) loads the retention member (R1).

[0046] The external side (R2a) of each cam device (R2) and the internal side (82c, 81 c) of the shelves (82a, 81 b) of the ending portion (82) and of the second side of the mobile portion (81) are complementary and coupled together.

[0047] In particular, when the portions (80, 81, 82) are aligned, the retention member (R1) is preloaded. The initial preloading of the retention member (R1) permits to keep the portions (80, 81, 82) of the rod (8) of the banner (1) in aligned position, until they are susceptible to such a force that they can overcome the initial preloading of the retention member (R1) and can rotate mutually. This avoids the deformation of the banner (1) also in case of a very weak wind. The retention member (R1) is loaded further when the mobile portions (81) or the ending portions (82) rotate. In fact, during the rotation of the mobile portion (81) or of the ending portion (82), the cam devices (R2) cannot rotate because they are blocked by the fork. Simultaneously, during the rotation, the internal side (82c, 81 c) of the shelves (82a, 81 b) cooperates with the external side (R2a) of the cam device (R2). The inlets and/or projections provided on the external side (R2a) of the cam device (R2) and on the internal side (82c, 81 c) of the shelves (82a, 81 b) of the ending portion (82) and of the second side of the mobile portion (81) will move the two cam devices (R2) closer. Such a movement causes a compression of the retention member (R1). Otherwise said, a rotatory movement of a mobile portion (81) or of an ending portion (82) is converted into a sliding movement of the cam device (R2) along an axis parallel to the axis of rotation of the pin (90), which causes the compression of the retention member (R1).

[0048] It must be noted that the shelves (80a) of the fixed portion (80) and the shelves (81 a) of the first side of the mobile portion (81) have a planar internal side.

[0049] When the banner (1) is susceptible to an external force, such as for example the wind that hits the body (10), the mobile portions (81) and the ending portions (82) of the rod (8) rotate around the pins (90) with respect to the fixed portion (80), thus reducing the impact surface of the banner with the wind, as shown in Figs. 27 to 32 and Figs. 34 to 40, and preventing the support (P) from falling.

[0050] When a mobile portion (81) or an ending portion (82) rotates, the cam devices (R2) are moved closer and load the retention member (R1). When the force of the wind is stopped or reduced, the spring is unloaded, moving the cam devices (R2) away and aligning the mobile portion (81) and the ending portion (82) to the fixed portion (80).

[0051] Therefore, because of the special configuration of the rods (8) made of mobile portions (81) that are mutually hinged, when the banner (1) is hit by the wind, the banner (1) can be in a configuration in which the impact surface with the wind is very small.

[0052] With reference to Figs. 1 to 7, the banner support assembly (100) comprises fixing means (2) intended to be fixed to a support (P), and supporting means (B), shown in Figs. 8, 9 and 10, fixed to the fixing means (2) and to the banner (1) to attach the banner (1) to the fixing means (2).

[0053] The fixing means (2) comprise at least one fixing belt (20) intended to be disposed around the support (P). As shown in Fig. 3, the fixing means (2) comprise two identical belts fixed to the support (P).

[0054] The fixing means (2) also comprise an adjustment pawl (23) fixed to each fixing belt (20) in order to tighten or enlarge the fixing belt (20) with respect to the support (P). Advantageously, the adjustment pawl (23) is embedded in the fixing belt (20).

[0055] The fixing means (2) comprise two fixing devices (21), each of them being fixed to a fixing belt (20). In particular, each fixing device (21) comprises first lock pins (24), disposed in lateral position on the fixing device (21) in order to fix the fixing belt (20) to the fixing device (21).

[0056] As shown in Figs. 5 and 7, optionally, the fixing device (21) has a rubber side (21 c) intended to be disposed in contact with the support (P). Such a rubber side (21 c) prevents the fixing device (21) from sliding on the support (P). The rubber side (21 c) is fixed to the fixing device (21) by means of screws (21 d), as shown in Figs. 5 and 7. Optionally, the rubber side (21 c) is adhered to the fixing device (21) or made in one piece with the fixing device (21).

[0057] With reference to Figs. 8, 9 and 10, the supporting means (B) comprise a bar (6) attached to the fixing devices (21) in such a way that the bar (6) is parallel to the support (P). In particular, as shown in Figs. 5, 6 and 7, each fixing device (21) comprises a housing (21 a) that houses one end of a hook (65), disposed in correspondence of a first upper ending section (63) and of a second lower ending section (64) of the bar (6).

[0058] Moreover, as shown in Figs. 4, 5, 6, 7 and 24, the fixing device (21) comprises a through hole (21 b) in communication with the housing (21 a) of the fixing device (21). As shown in Fig. 9, the hooks (65) of the supporting means (B) comprise a hole (66) aligned with the through hole (21 b) of the fixing device (21), when the hooks (65) of the supporting means (B) are inserted in the housing

(21 a) of the fixing device (21).

[0059] As shown in Fig. 24, the fixing means (2) comprise a second lock pin (25) intended to be inserted in the hole (66) of the hooks (65) and in the through hole (21 b) of the fixing device (21) in order to fix the bar (6) to the fixing device (21).

[0060] As shown in Figs. 8 to 10, the bar (6) advantageously has a quadrangular section and comprises a perimeter wall (60), a longitudinal cavity (61) defined by the perimeter wall (60), and a longitudinal notch (62) providing access to the longitudinal cavity (61), which is obtained on one side of the perimeter wall (60) of the bar (6).

[0061] The supporting means (B) comprise a cover (67) that closes the top of the longitudinal cavity (61) of the bar (6). The cover (67) is fixed to the bar with screws (67c), as shown in Fig. 10.

[0062] With reference to Figs. 8, 9 and 11, the banner support assembly (100) comprises moving means (3) fixed to the banner (1) and to the supporting means (B) in order to move the banner (1) with respect to the supporting means (B).

[0063] The moving means (3) comprise a mobile hook (30) fixed to said banner (1) in order to support said banner (1);

[0064] In particular, the mobile hook (30) is slidingly disposed inside the longitudinal notch (62) of the bar (6), in such manner to protrude externally from the bar (6).

[0065] One end of the mobile hook (30) is inserted in the first transverse hole (13) of the banner (1), which is obtained in correspondence of the upper edge (10a) of the body (10) of the banner (1). The fixed portion (80) of the rod (8) of the banner (1), which is disposed in the first slot (11), is fixed to the mobile hook (30).

[0066] The moving means (3) comprise a moving device (4) fixed to the mobile hook (30) and to the bar (6) in order to move the mobile hook (30) with respect to the supporting means (B).

[0067] In particular, the moving device (4) is inserted in the longitudinal cavity (61) of the bar (6) and is fixed to the second ending section (64) of the bar (6), in such a way to close the bottom of the longitudinal cavity (61) of the bar (6).

[0068] As shown in Fig. 12, the moving device (4) comprises a body (40) that is fixed to the supporting means (B), and a pulling pulley (41) that is fixed to the body (40) by means of a pin (41 b) with axis of rotation perpendicular to the longitudinal axis of the bar (6).

[0069] The pulling pulley (41) is inserted in the longitudinal cavity (61) of the bar (6) and comprises a plurality of through holes (41 a), shown in Fig. 9, with axes parallel to the axis of rotation of the pulling pulley (41). The through holes (41 a) are disposed near the perimeter edge of the pulling pulley (41). As shown in Fig. 25, the moving means (3) comprise a lock pin (34) intended to be exactly inserted into one of the through holes (41 a) of the pulling pulley (41) in order to prevent the pulling pulley from rotating (41).

[0070] The moving device (4) comprises moving means (42) fixed to the drive pulley (41) in order to actuate the drive pulley (41) with respect to the body (40) of the moving device (4). In particular, as shown in Fig. 24, the moving means (42) comprise a crank (42a) intended to pass through an opening (68) that provides access to the pulling pulley (41), obtained on the perimeter wall (60) of the bar (6) to cooperate with the pin (41 b) of the pulling pulley (41) and rotate the pulling pulley (41).

[0071] Alternately, the moving means (42) can comprise an electrical actuator, intended to move the pulling pulley (41) automatically.

[0072] As shown in Fig. 12, the moving device (4) comprises a fixed hook (43) that protrudes from the body (40) of the moving device (4) and is fixed to the banner (1) in order to support the banner (1). The fixed hook (43) protrudes from the longitudinal notch (62) of the bar (6) and is inserted in the second transverse hole (14) of the body (10) of the banner (1). The fixed hook (43) is fixed to the fixed portion (80) of the rod (8) that is disposed in the second slot (12) of the banner (1).

[0073] The moving means (3) comprise a transmission member (33), shown in Fig. 11, revolvingly connected to the drive pulley (41) of the moving device (4) and to the mobile hook (30) in order to transmit the motion from the moving device (4) to the mobile hook (30).

[0074] The transmission member (33) is an annular cable disposed in the longitudinal cavity (61) of the bar (6). The transmission member (33) is disposed in contact with the pulling pulley (41) of the moving device (4), in such manner that the pulling pulley (41) rotates the transmission member (33). The transmission member (33) is fixed to the mobile hook (30), in such manner to permit the ascending and descending travels of the mobile hook (30), with respect to the bar (6).

[0075] As shown in Figs. 11 and 13, the moving means (3) comprise a supporting device (5) that is fixed to the transmission member (33) and to the supporting means (B) in order to support and tension said transmission member (33).

[0076] In particular, the supporting device (5) is disposed in correspondence of the first ending section (63) of the bar (6). The supporting device (5) comprises a body (50) that is fixed to the cover (67) of the supporting means (B), and a pulling pulley (51) that is fixed to the body (50) by means of a pin (51 b) with axis of rotation perpendicular to the longitudinal axis of the bar (6).

[0077] The idle pulley (51) is disposed in contact with the transmission member (33), in such manner to support and tension the transmission member (33). By rotating, the transmission member (33) moves the idle pulley (51).

[0078] As shown in Figs. 8 and 9, the banner support assembly (100) comprises an adjustment screw (7) in order to fix the supporting device (5) to the first ending section (63) of the bar (6) in such manner that, by screwing the adjustment screw (7), the supporting device (5) is moved away from the moving device (4) and is moved closer to the cover (67) of the supporting means (B), thus tensioning the transmission member (33).

[0079] In particular, the cover (67) of the supporting means (B) comprises a hole (67a) and the body (50) of the supporting device (5) comprises a threaded hole (52) aligned with the hole (67a) of the cover (67). The adjustment screw (7) is inserted in the hole (67a) of the cover (67) and is screwed in the threaded hole (52) of the body (50) of the supporting device (5), in such manner that by screwing the adjustment screw (7) in the threaded hole (52) of the body (50) of the supporting device (5), the supporting device (5) is moved closer to the cover (67), tensioning the transmission member (33). By unscrewing the adjustment screw (7), the supporting device (7) is moved away from the cover (67), loosening the transmission member (33).

[0080] Advantageously, the moving means (3) comprise a spring (35), s shown in Figs. 9 and 11, disposed on the transmission member (33) in order to tension the body (10) of the banner (1) further. In fact, when the banner (1) is extended and attached to the mobile hook (30) and to the fixed hook (43), a rotation of the moving means (42) determines a compression of the spring (35), consequently tensioning the body (10) of the banner (1).

[0081] Advantageously, the moving means (3) comprise a locking bracket (36) fixed to the transmission member (33) to lock the rotation of the transmission member (33).

[0082] As shown in Fig. 25, the banner support assembly (100) comprises a safety device (S) that is fixed to the rods (8) in order to prevent the rods (8) from being released accidentally.

[0083] In order to install the banner support assembly (100) to a support (P), it is necessary to fix the fixing belts (20) of the fixing means (2) to the support (P) and tighten the fixing belts (20) to the support (P) by means of the adjustment pawl (23).

[0084] The transmission member (33) is disposed in contact with the pulleys (41, 51) of the moving device (4) and of the supporting device (5).

[0085] The moving means (3) are fixed to the supporting means (B). In particular, the moving device (4) is fixed to the bar (6) in lower position and the supporting device (5) is fixed to the bar (6) in upper position. The transmission member (33) is inserted in the longitudinal cavity (61) of the bar (6), in such manner that the mobile hook (30) protrudes from the longitudinal notch (62) of the bar (6).

[0086] The adjustment screw (7) is inserted in the hole (67a) of the cover (67) and is screwed in the threaded hole (52) of the supporting device (5), in such manner to tension the transmission member (33).

[0087] The supporting means (B) are attached to the fixing devices (21) of the fixing means (2).

[0088] The banner (1) is fixed to the moving means (3). In particular, the mobile hook (30) is fixed to the fixed portion (80) of the rod (8) inserted in the first slot (11) of the banner (1).

[0089] The pulling pulley (41) is actuated by means of the moving means (42) in such manner to rotate the transmission member (33). Consequently, the mobile hook (30) slides upwards, pulling the banner (1) along, as shown in Fig. 26.

[0090] The rotation of the pulling pulley (41) ends when the rod (8) disposed in the second slot (12) of the banner (1) is situated in correspondence of the fixed hook (43) of the moving device (4).

[0091] The fixed hook (43) is fixed to the fixed portion (80) of the rod (8) that is disposed in the second slot (12) of the banner (1).

[0092] By rotating the moving means (42) further, the spring (35) of the moving means (3) is loaded and the banner (1) is tensioned.

[0093] The rotation of the pulling pulley (41) is locked by inserting the lock pin (34) in the through holes (41 a) of the pulling pulley (41).

[0094] Therefore, because of the provision of the moving means (3) of the banner support assembly (100), the banner (1) can be replaced easily and rapidly, without having to dismount the supporting means (B) and without requiring the operator to reach the fixing means (2).

[0095] Moreover, said fixing means (2) can be attached to supports (P) with any sectional shape.

[0096] Although reference is made to a banner support assembly comprising a banner attached to the moving means in a central position of the rods, the rods may be projection rods. Moreover, only one rod may be provided.

Claims

1. Banner support assembly (100) comprising:

- a banner (1) comprising a flexible body (10) provided with a slot (11, 12) and a flexible and/or folding rod (8) having a longitudinal axis (X) and disposed inside said slot (11, 12);
- fixing means (2) fixed to the banner (1) in order to attach the banner (1) to a support (P);

characterized in that
said rod (8) is made of multiple portions and comprises:

- a fixed portion (80) with a longitudinal axis (X);
- at least one mobile portion (81) movably fixed to the fixed portion (80); and
- hinging means (9) that hinge the mobile portion (81) to the fixed portion (80), in such a way to let the mobile portion (81) rotate with respect to the fixed portion (80) around a hinging axis that is orthogonal to said longitudinal axis (X) of the fixed portion.

2. The banner support assembly (100) of claim 1, wherein the hinging means (9) comprise:

- two shelves (80a) protruding from one side of

the fixed portion,
- two shelves (81 b) protruding from one side of the mobile portion, and
- a pin (90) inserted in holes obtained in the shelves (80a) of the fixed portion and in the shelves (81 b) of the mobile portion.

3. The banner support assembly (100) of claim 2, wherein said fixed portion (80) comprises at least two shelves (80a) that protrude from one side of the fixed portion (80) and are connected to the mobile portion (81);
said mobile portion (81) comprises a first side and a second side and at least two shelves (81 b) that protrude from the second side of the mobile portion (81);
said shelves (81 b) of the second side of the mobile portion (81) being spaced by a distance that is lower than the distance between the shelves (80a) of the fixed portion (81), in such manner that said shelves (81 b) of the second side of the mobile portion (81) are inserted between the shelves (80a) of the fixed portion (80).

4. The banner support assembly (100) of claim 3, wherein each rod (8) comprises retentions means (R) comprising:

- a retention member (R1);
- a pair of cam devices (R2) disposed at the ends of the retention member (R1); said pair of cam devices (R2) being inserted between the shelves (81 b) of the second side of the mobile portion (81) of the rod (8).

5. The banner support assembly (100) of claim 4, wherein
each shelf (81 b) of the second side of the mobile portion (81) has an internal side (81 c) facing the internal side (81 c) of the other shelf (81 b) of the second side of the mobile portion (81);
each cam device (R2) comprises an external side (R2a) in contact with the internal side (81 c) of one of the shelves (81 b) of the second side of the mobile portion (81);
said external side (R2a) of each cam device (R2) having inlets and/or projections; said internal side (81 c) of each shelf (81) of the second side of the mobile portion (81) being provided with projections and/or inlets, which cooperate with the inlets and/or projections of the external side (R2a) of the cam device (R2), in such a way to move the cam devices (R2) closer and compress the retention member (Ra) when the mobile portion (81) rotates.

6. The banner support assembly (100) of any one of the preceding claims, wherein the hinging means (9) comprise said pin (90) with axis of rotation orthogonal to said longitudinal axis (X) of the fixed portion; said pin (90) of the hinging means (9) permitting a rotation of the mobile portion (81) with respect to the fixed portion (80) of approximately 90°.

7. The banner support assembly (100) of any one of the preceding claims, wherein said rod (8) comprises at least one row of mobile portions (81); said mobile portions (81) being mutually connected; said row of mobile portions (81) comprising a first ending section laterally fixed to the fixed portion (80).

8. The banner support assembly (100) of any one of the preceding claims, comprising:

- supporting means (B) fixed to the fixing means (2), and
- moving means (3) fixed to the banner (1) and to the supporting means (B) in order to move the banner (1) with respect to the supporting means (B);

said moving means (3) comprising:

- a mobile hook (30) fixed to said banner (1) in order to support said banner (1); and
- a moving device (4) that is fixed to said mobile hook (30) and to said supporting means (B) in order to move said mobile hook (30) with respect to the supporting means (B).

9. The banner support assembly (100) of claim 8, wherein said moving means (3) comprise:

- a transmission member (33) revolvingly connected to said moving device (4) and to said mobile hook (30) in order to transmit the motion from said moving device (4) to said mobile hook (30); and
- a supporting device (5) connected to said transmission member (33) and to said supporting means (B) in order to support and tension said transmission member (33).

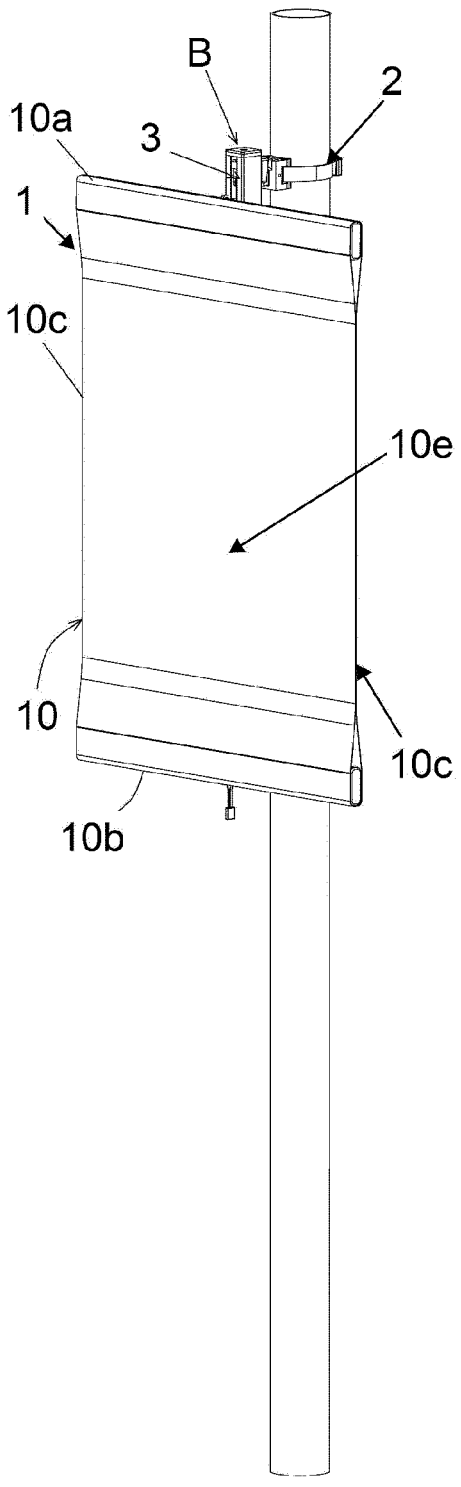


FIG. 1

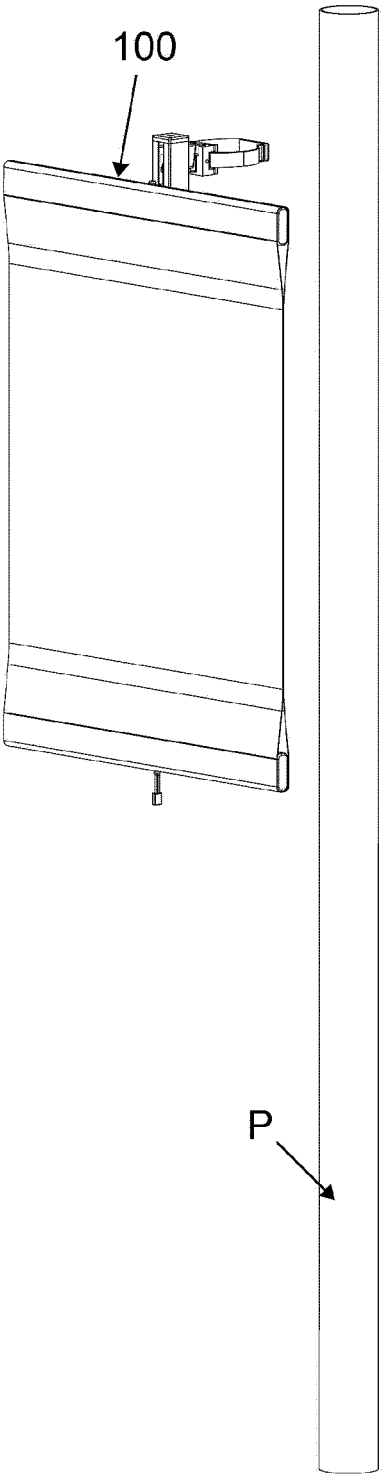


FIG. 2

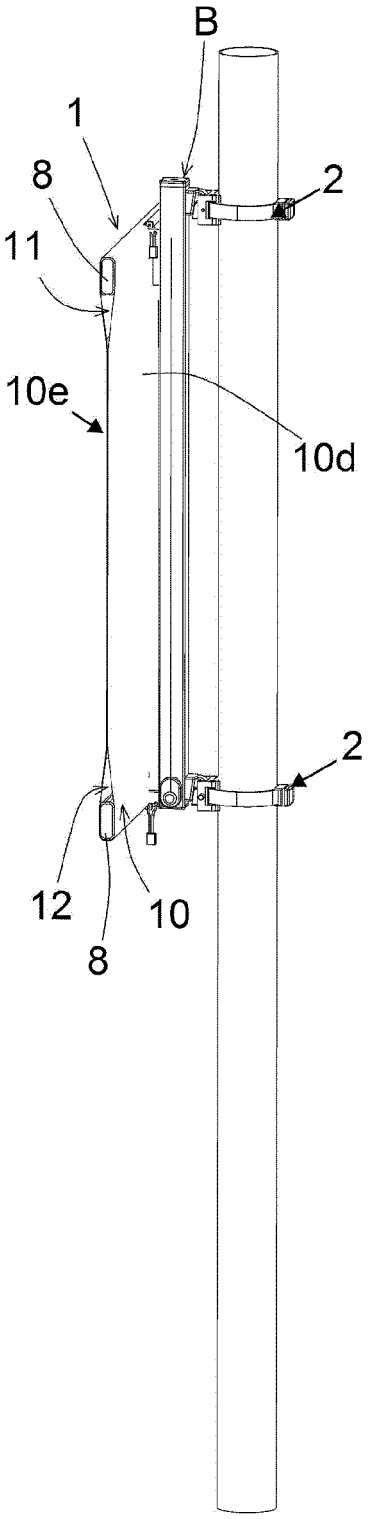


FIG. 3

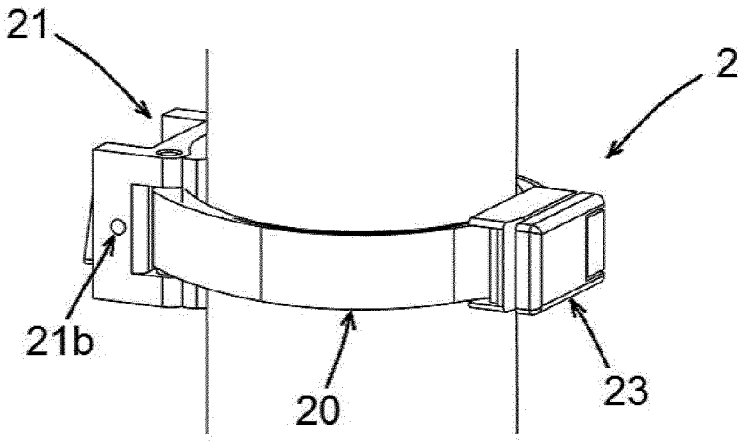


FIG. 4

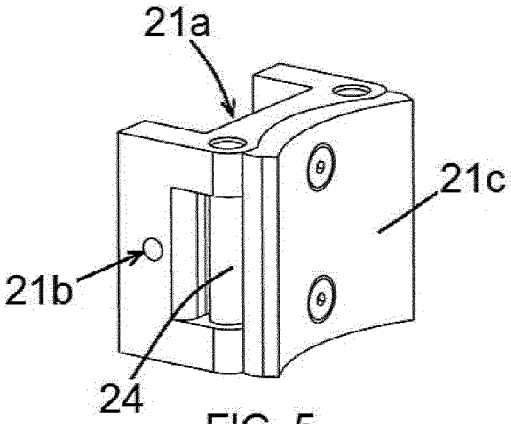


FIG. 5

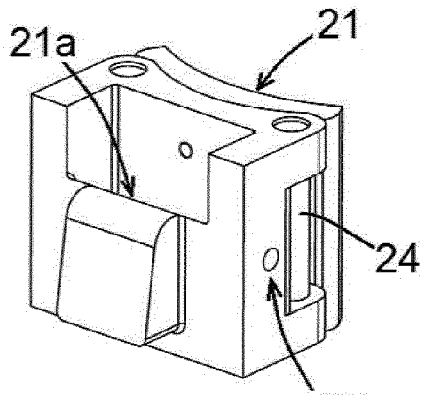


FIG. 6

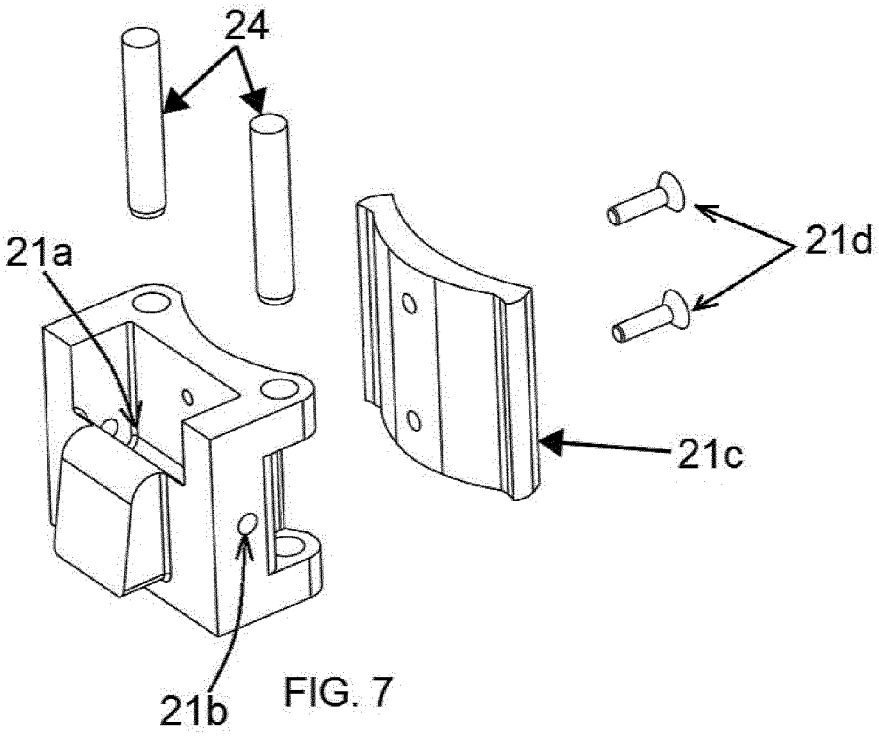


FIG. 7

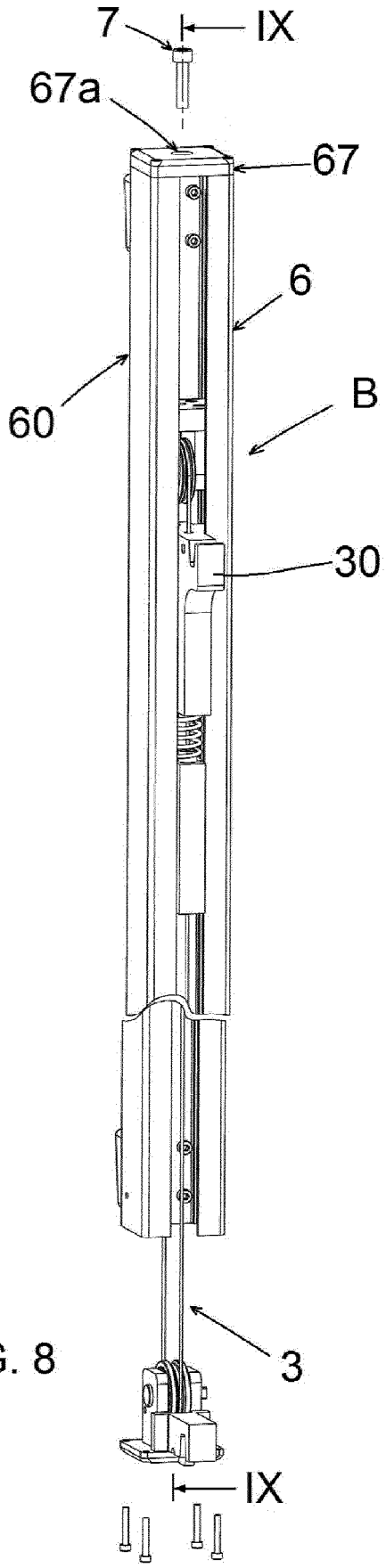


FIG. 8

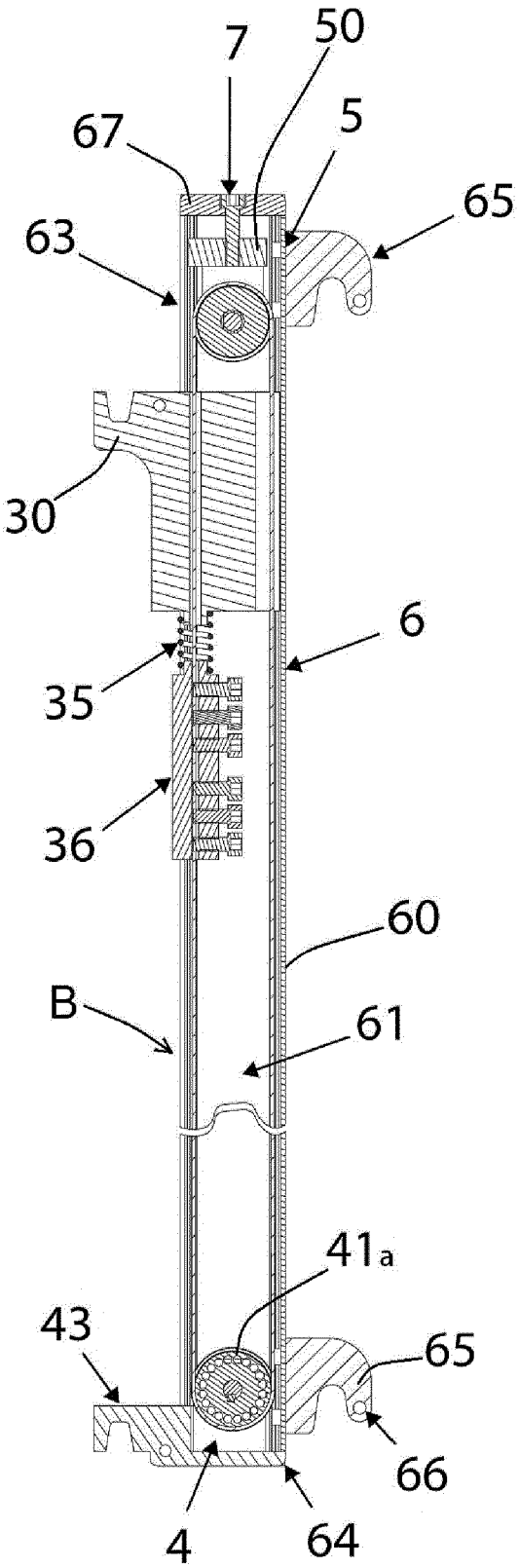


FIG. 9

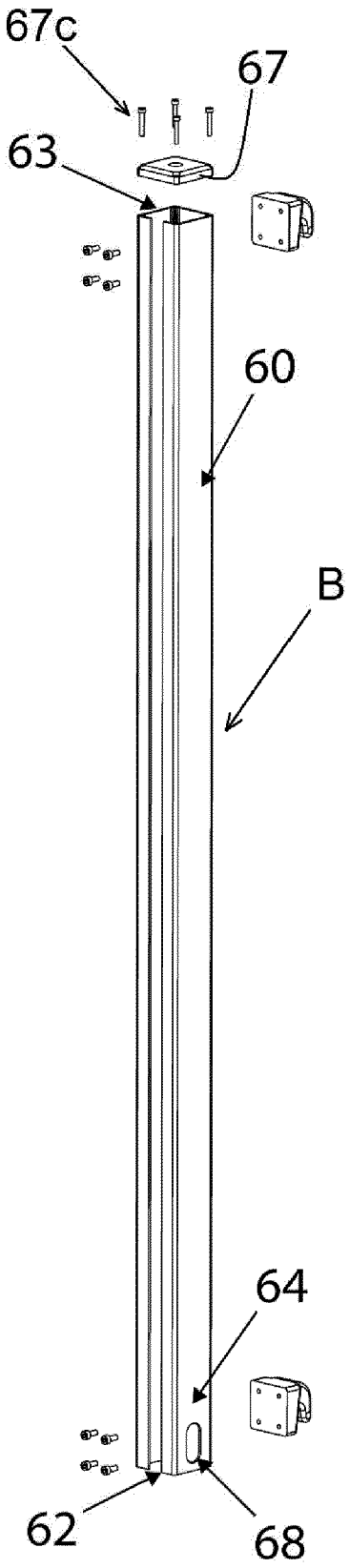
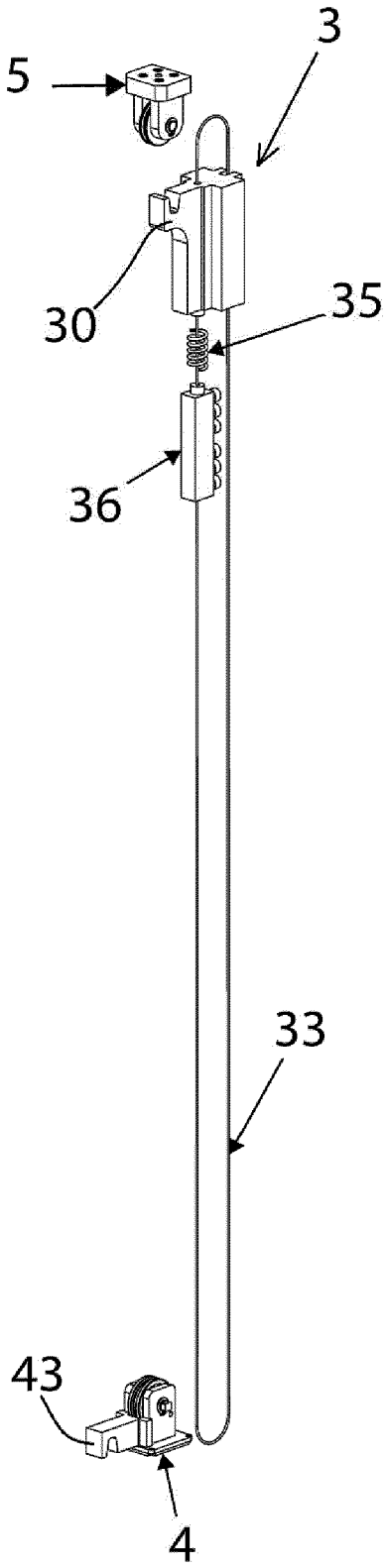


FIG. 10



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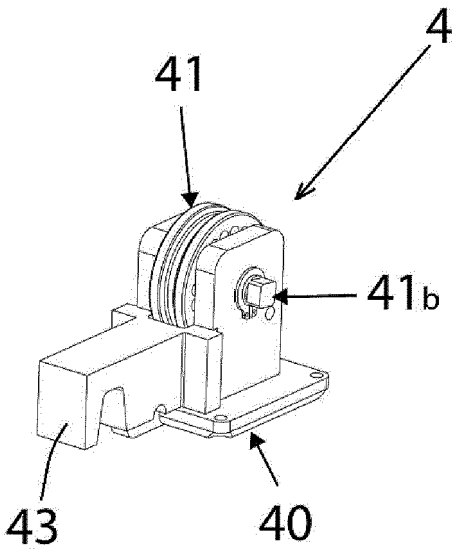

FIG. 12

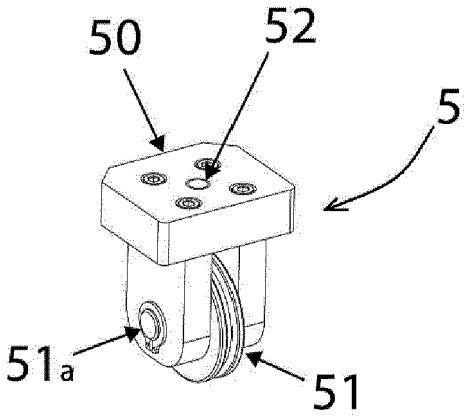

FIG. 13

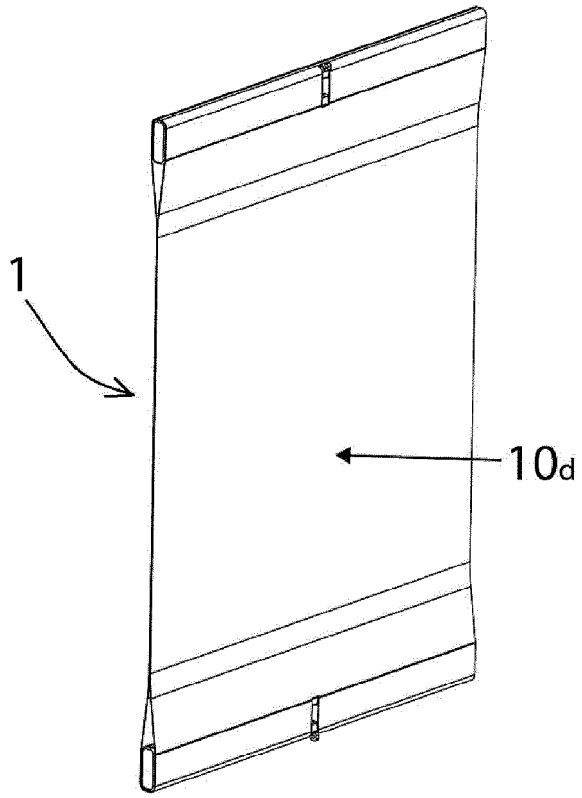

FIG. 14

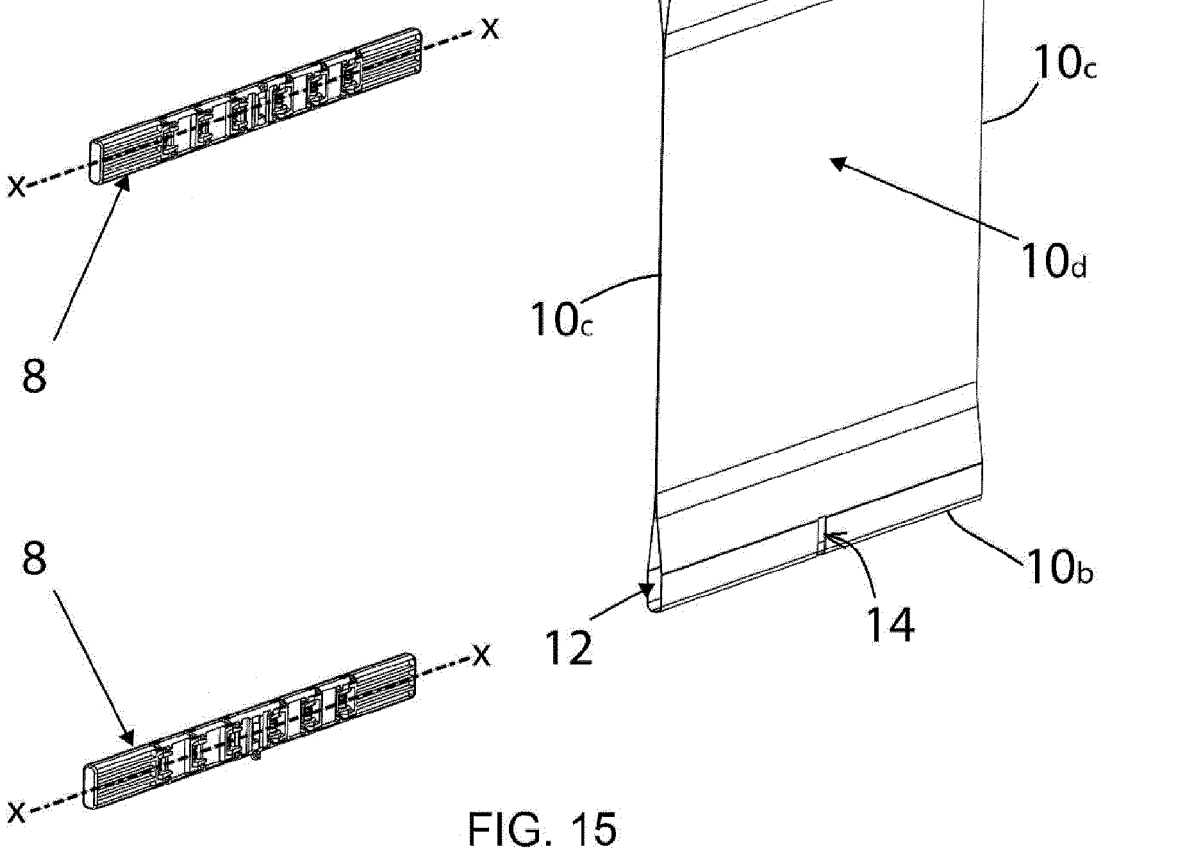

FIG. 15

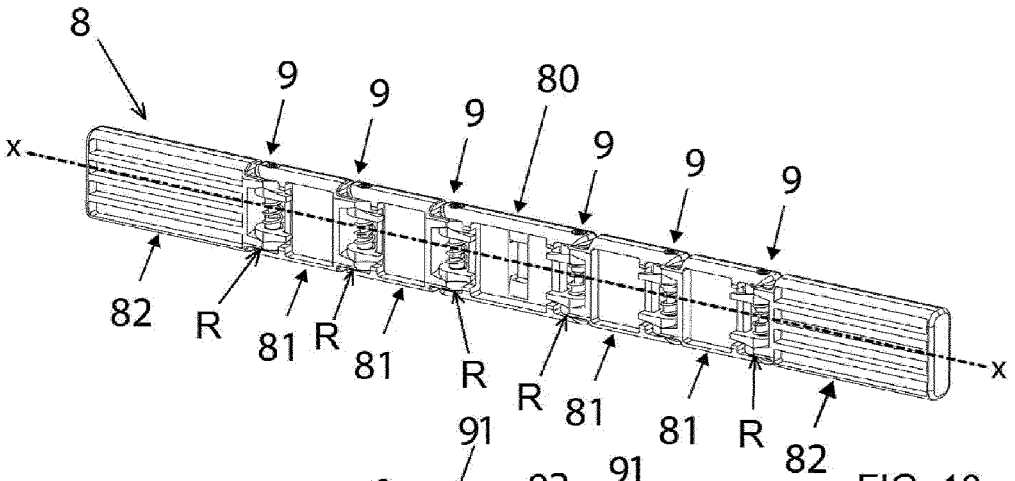

FIG. 16

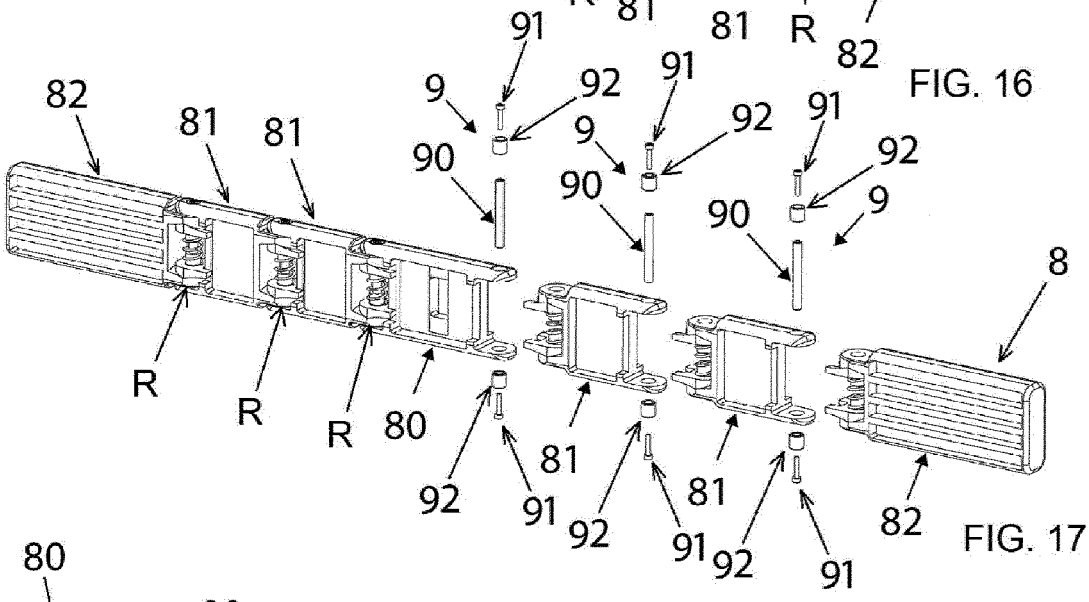

FIG. 17

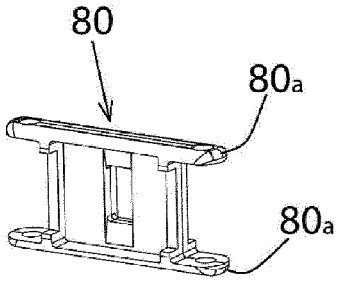

FIG. 18

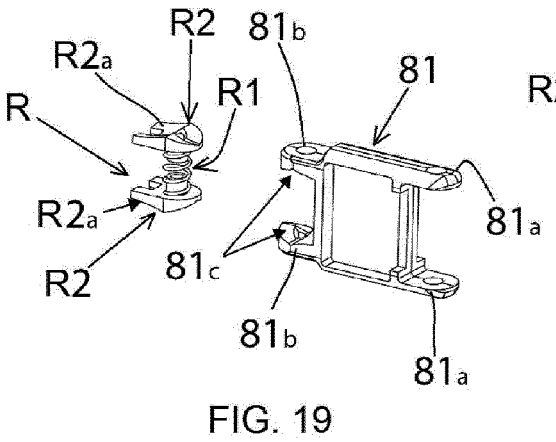

FIG. 19

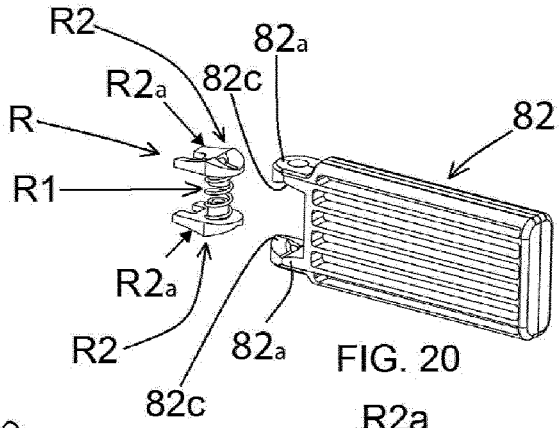

FIG. 20

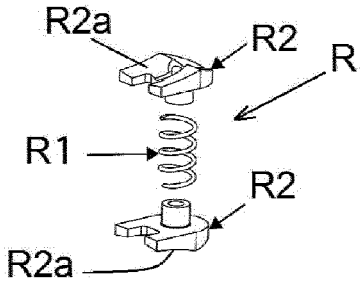

FIG. 21

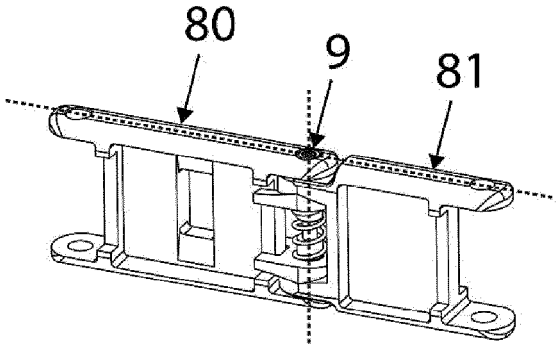

FIG. 22

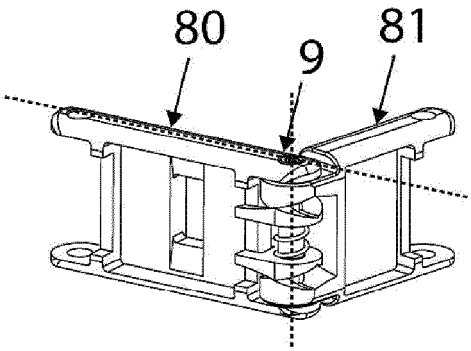

FIG. 23

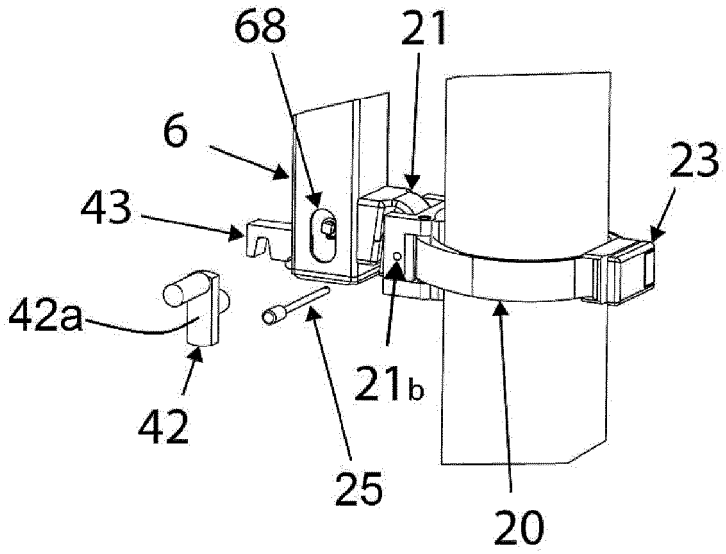

FIG. 24

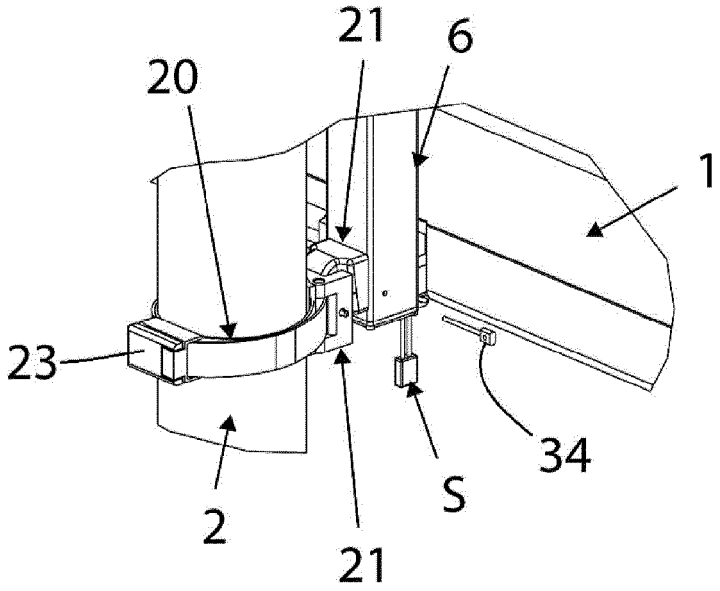

FIG. 25

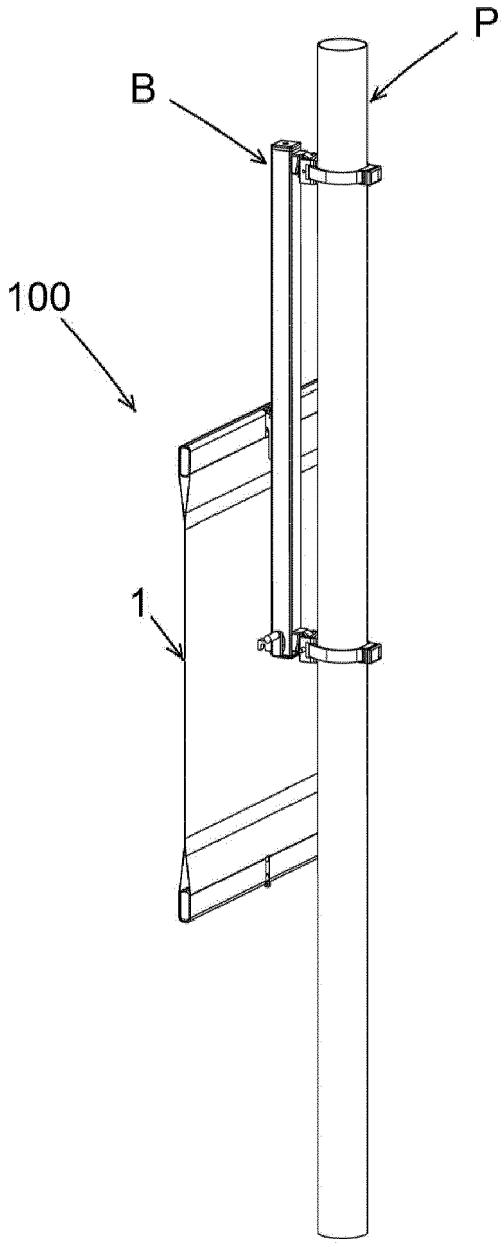

FIG. 26

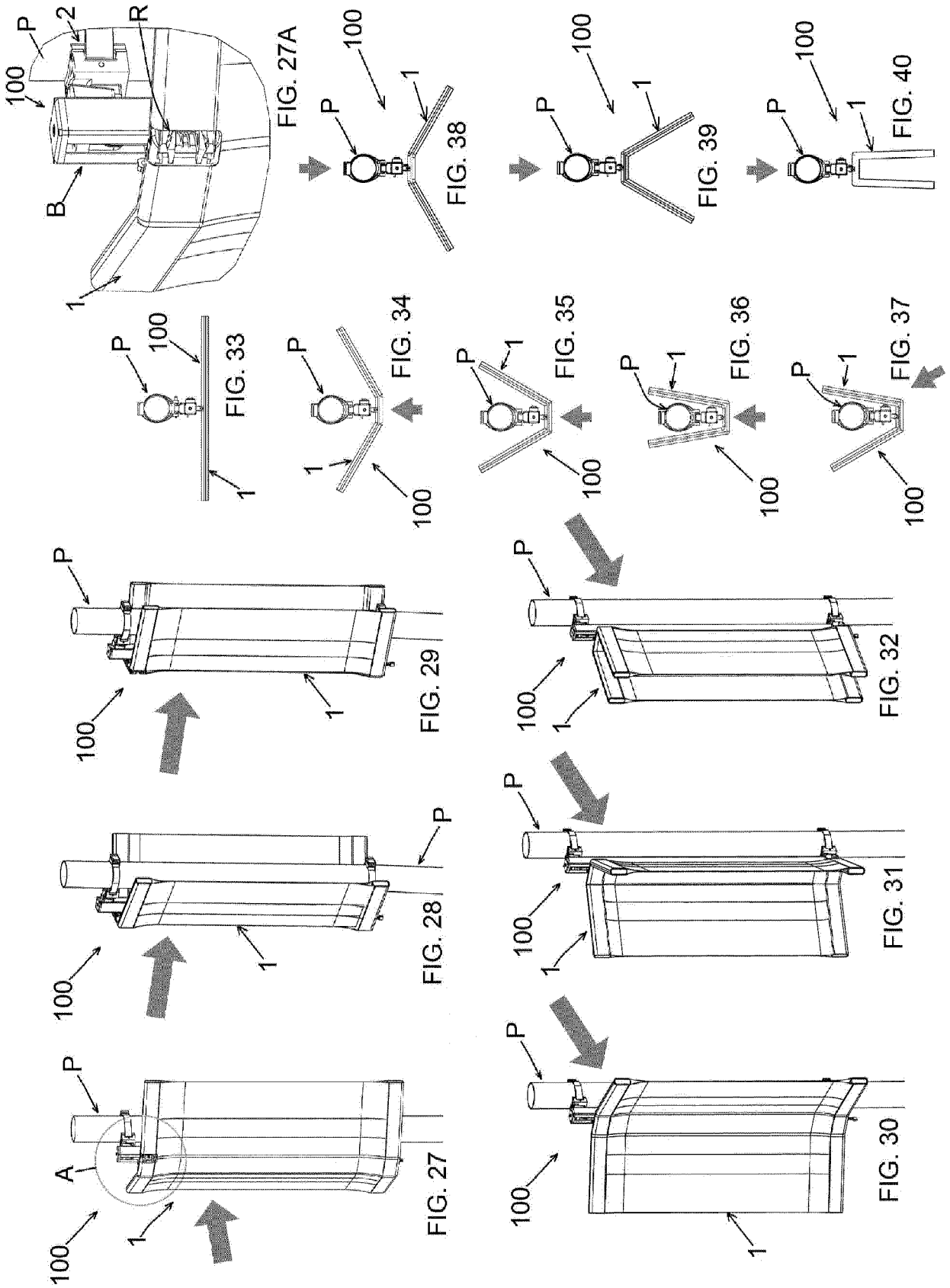
100
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FIG. 27A
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FIG. 38
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FIG. 30

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EUROPEAN SEARCH REPORT

Application Number
EP 17 18 7027

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	US 2005/184206 A1 (LEPLEY ROGER M [US] ET AL) 25 August 2005 (2005-08-25) * paragraphs [0031], [0035], [0042]; figures * -----	1-9	INV. G09F17/00
A	WO 2007/022596 A1 (CHALLANGILA PTY LTD [AU]; MCCUDDEN LACHLAN ARTHUR DEAN [AU]; MCCUDDEN) 1 March 2007 (2007-03-01) * abstract; figure 1 * -----	1-9	
A	EP 2 395 498 A1 (TOMACELLI DOMENICO [IT]) 14 December 2011 (2011-12-14) * abstract; figures 1,2,5,7-9 * -----	1-9	

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G09F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 December 2017	Demoor, Kristoffel

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08-12-2017

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