(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 749 963 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
07.02.2007 Bulletin 2007/06

(51) Int Cl.:
E06B 9/40 *(2006.01)*

(21) Application number: **06118155.8**

(22) Date of filing: **31.07.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(30) Priority: **04.08.2005 IT TV20050116**
21.10.2005 IT TV20050163

(71) Applicant: **Antoniazzi, Diego**
31051 Follina (TV) (IT)

(72) Inventor: **Antoniazzi, Diego**
31051 Follina (TV) (IT)

(74) Representative: **Modiano, Micaela Nadia et al**
Dr. Modiano & Associati SpA
Via Meravigli 16
20123 Milano (IT)

(54) Awning roll-up device

(57) An awning roll-up device (1), comprising a frame (2) provided with first and second rotary support means (11a, 11b) for at least one first drum (9) and at least one second drum (10), which are arranged so as to approximately face each other horizontally and divide each of the drums into mutually contiguous regions, on each of which a first awning (21) and a second awning (22) are wound alternately for at least one of the at least one first drum (9) or at least one second drum (10), the awnings (21, 22) being guided on at least one first bar (23) and at least one second bar (24), which are mutually adjacent and arranged on the same side of the first and second drums, partially surmounting each other laterally. As an alternative, only the first awnings (21, 22) are guided on at least one first bar (23) arranged approximately parallel to the second drum (10), on the opposite side with respect to the first drum (9), while the second awnings (22) descend directly when they unwind from the respective second drum (10).

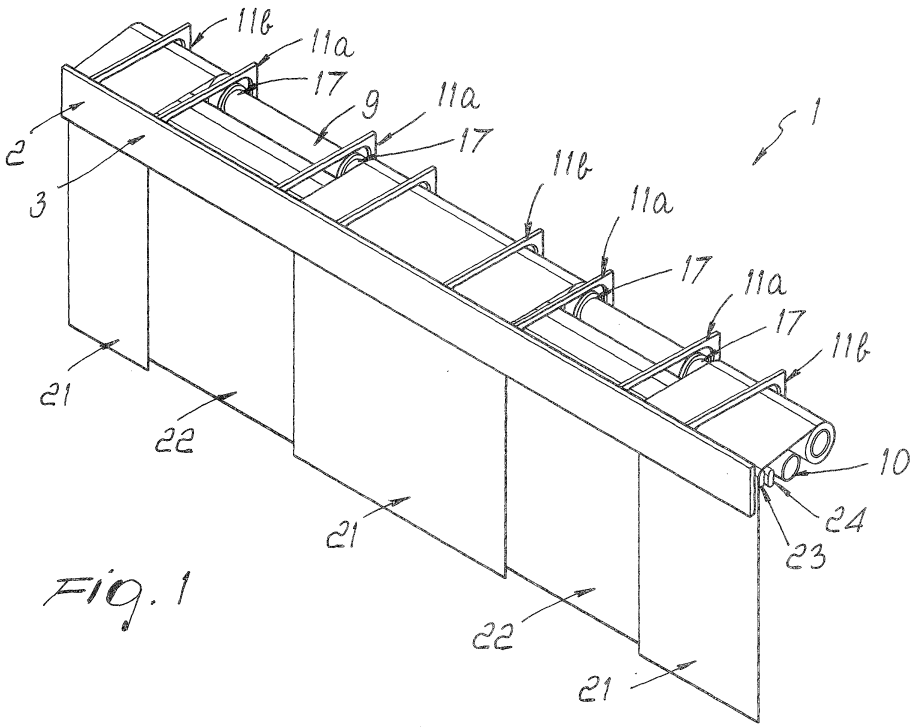

Fig. 1

EP 1 749 963 A2

Description

[0001] The present invention relates to an awning roll-up device.

[0002] Awning roll-up devices are currently used which comprise a hollow box-like body, which is typically shaped like a parallelepiped and is elongated longitudinally in horizontal direction; a drum is rotatably supported at its transverse ends, and an awning can be rolled up and unrolled on said drum, for example by means of the action of an electric motor keyed axially to the drum or of a crank which can be operated manually.

[0003] The awning exits from the box-like body typically through a longitudinal slot formed in the bottom of such body.

[0004] Such known type of awning roll-up device is typically fixed to a wall of a building above an opening to be covered with the awning, such as for example a window or a French window.

[0005] By unrolling the awning from the drum, the awning descends toward the floor of the building, thus covering the opening.

[0006] The main drawback of these known types of awning roll-up device is that the longitudinal dimensions of the drum cannot be excessive, in order to avoid problems related to its flexing; therefore, these known types of device are poorly suited for use to cover horizontally large openings, such as for example glass building faces.

[0007] As a partial solution to this drawback, in order to allow to cover with a roll-up awning openings that have a large horizontal extension, it is known to provide awning roll-up devices whose drum is very long and, in order to better withstand flexural stresses, also has a large diameter; however, this solution entails a great weight for the drum, with the consequent need to provide very strong supports for it, which are bulky and expensive and require suitable installations with trained personnel.

[0008] Moreover, in order to cover openings that are large in a horizontal direction it is also known to position, above said openings and along the same axis, a plurality of awning roll-up devices of a known type, arranged side by side and with several aligned individual drums.

[0009] By unrolling simultaneously from the respective drums the awnings of all the devices arranged mutually side by side, most of the opening to be covered is blocked; however, the lateral edges of the awnings arranged mutually side by side that protrude from the various awning roll-up devices do not match up perfectly, and therefore a gap through which light can pass can remain between them.

[0010] The aim of the present invention is to solve the above-mentioned problems, eliminating the drawbacks of the cited background art, by providing an awning roll-up device that covers even an opening that has a large horizontal extension.

[0011] Within this aim, an object of the invention is to provide a device that has low weights and is easy to install.

[0012] Another object is to provide an awning roll-up device that allows to affect even a space that is horizontally very large and at the same time allows to block all the light that affects said space.

[0013] Another object is to provide a device that is structurally simple and has low manufacturing costs.

[0014] This aim and these and other objects, which will become better apparent hereinafter, are achieved by an awning roll-up device, characterized in that it comprises a frame provided with first and second rotary support means for at least one first drum and at least one second drum, which are arranged so as to approximately face each other horizontally, said first and second rotary support means dividing each of said at least one first drum and at least one second drum into mutually contiguous regions, on each of which a first awning and a second awning are wound alternately for at least one of said at least one first drum or at least one second drum, said awnings being guided on at least one first bar and at least one second bar, which are mutually adjacent and arranged on the same side of said at least one first drum and at least one second drum, partially surmounting each other laterally.

[0015] This aim and these and other objects, which will become better apparent hereinafter, are further achieved by an awning roll-up device, characterized in that it comprises a frame provided with first and second rotary support means for at least one first drum and at least one second drum, which are arranged so as to approximately face each other horizontally, said first and second rotary support means dividing each one said at least one first drum and at least one second drum into mutually contiguous regions, on each of which a first awning and a second awning is wound alternately for said at least one first drum and at least one second drum, said first awning being guided on at least one first bar, which is arranged approximately parallel to said second drum, on the opposite side with respect to said first drum, and said second awning descending directly when it unrolls from said second drum.

[0016] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular but not exclusive embodiment thereof, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a front perspective view of part of an awning roll-up device according to the invention;

Figure 2 is a rear perspective view of part of an awning roll-up device according to the invention;

Figure 3 is a plan view of an awning roll-up device according to the invention;

Figure 4 is a plan view of a different embodiment of an awning roll-up device according to the invention;

Figure 5 is a sectional view, taken along the line V-V of Figure 3;

Figure 6 is a side view of intermediate rotary support means for the second drum of an awning roll-up de-

vice according to the invention;
Figure 7 is a side view of the rotary intermediate support means for the first drum of an awning roll-up device according to the invention;
Figure 8 is a side view of the front element of an awning roll-up device according to the invention;
Figure 9 is a side view of a first bar of an awning roll-up device according to the invention;
Figure 10 is a sectional view, taken along the line X-X of Figure 4;
Figure 11 is a front perspective view of part of another embodiment of an awning roll-up device according to the invention;
Figure 12 is a rear perspective view of the awning roll-up device of Figure 11;
Figure 13 is a side view of the awning roll-up device of Figure 11, in which the cross-members have not been shown for the sake of clarity;
Figure 14 is a plan view of an awning roll-up device according to the invention;
Figure 15 is a plan view of another embodiment of an awning roll-up device according to the invention;
Figure 16 is a sectional view, taken along the line XVI-XVI of Figure 15.

[0017] In the exemplary embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0018] Moreover, it is noted that anything found to be already known during the patenting process is understood not to be claimed and to be the subject of a disclaimer.

[0019] With reference to Figures 1 to 3, 5 to 9, and 11 to 14, the reference numeral 1 designates two embodiments of an awning roll-up device, each of which comprises a frame 2 constituted by a front element 3, which is obtained advantageously by extrusion, is preferably but not necessarily made of aluminum and has an approximately rectangular transverse cross-section.

[0020] One or more separate wings 4 protrude from a same side of the front element 3; each wing has a C-shaped cross-section, so that each one forms first longitudinal guides 5, which advantageously have an approximately T-shaped transverse cross-section, so as to form a first access opening 6 and two first longitudinal abutments, designated by the reference numerals 7a and 7b, which affect the first guides 5 along their entire length.

[0021] Two cross-members, respectively designated by the reference numerals 8a and 8b, protrude at right angles at least proximate to the lateral ends of the front element 3, are preferably shaped approximately like a parallelepiped, and are fixed preferably to the front element 3 by means of suitable screws or rivets, not shown in the accompanying figures.

[0022] At the cross-members 8a and 8b there are receptacles for the rotary interconnection and support of the first ends of at least one first drum 9 and for the first ends of at least one second drum 10, which are arranged approximately parallel to each other on a plane which is preferably horizontal or slightly inclined with respect to the perpendicular to the front element 3.

[0023] The first and second drums may have an identical or different longitudinal extension, as long as they lie, starting from the first ends, longitudinally and oppositely until their respective second ends at least mutually overlap.

[0024] Advantageously but not necessarily, the longitudinal central axis of the second drum 10, arranged closer to the front element 3, is arranged at a lower height than the plane of arrangement of the longitudinal central axis of the first drum 9.

[0025] One or more first and second rotary support means, for the second ends of said at least one first drum 9 and at least one second drum 10, are associated or associable with the frame 2.

[0026] Said first and second means are advantageously constituted respectively by one or more members 11a and 11b, which are shaped approximately like an inverted letter U, from a first prong 12 of which teeth 13 protrude which are shaped complementarily to the first guides 5.

[0027] The first prong 12 of each U-shaped member is followed by a base 14, which protrudes opposite the front element 3, and by a second prong 15, from the end of which first and second arms, respectively designated by the reference numerals 16 and 16', protrude toward the front element 3, said arms being adapted to support rotatably the first drum 9 and the second drum 10 and being advantageously shorter than the base 14.

[0028] The U-shaped members 11a and 11b can therefore be fixed to the front element 3 by arranging the teeth 13 in the first guides 5 and/or by fixing suitable screws or rivets, not shown in the accompanying figures.

[0029] At least one first support 17 protrudes from the first arm 16 of the U-shaped member 11 a, approximately at right angles thereto and toward the base 14, and is provided with at least one first hole 18, which accommodates the second ends of the first drum 9 or the first drum 9.

[0030] The second rotary support means for the second ends of the second drum 10 or for the second drum 10 are similar to said first means, except for the fact that the second arm 16' is longer than the first arm 16 and a second support 19 protrudes therefrom and is provided with a second hole 20, which accommodates said second ends of the second drum 10 or the second drum 10.

[0031] The first and second supports and the corresponding first and second holes formed therein are respectively aligned axially with the receptacles formed on the cross-members 8a and 8b.

[0032] In a preferred embodiment, the first and second drums have approximately the same length; further, the cross-members 8a and 8b may be replaced with a pair of first supports 18 and second supports 19.

[0033] In this case, in order to support conveniently the first and second drums, if such drums have a chosen length and in order to prevent their flexing, one or more U-shaped members 11a and 11b are used which are provided with the first and second supports 17 and 19 arranged in intermediate regions, or with the chosen spacing, of said first and second drums.

[0034] In the embodiment shown in Figure 3, three U-shaped members 11a are associated on the first drum 9 and are provided with first supports 17, which devide the first drum 9 into various mutually contiguous regions, on each of which a first awning 21 is wound alternatively (and therefore in one region but not in the adjacent one).

[0035] In the case shown, merely by way of example, two first awnings 21 are wound.

[0036] Likewise, the second drum 10 is supported rotatably by three other U-shaped members 11b, provided with the second supports 19, arranged advantageously in a region adjacent to the first support 17 for the first drum 9.

[0037] The arrangement of the U-shaped members 11b and of the cross-members 8a and 8b is such that at least one U-shaped member 11b (and therefore a second support 19) is interposed between the first two supports 17 of the first drum 9 with which the first awning 21 is associated.

[0038] At least one second awning 22 can be wound onto the second drum 10; in the embodiment shown in Figures 1, 2 and 3, it is possible to wind, merely by way of example, two second awnings 23 onto the second drum 10.

[0039] Each first awning 21 is thus at least partially superimposed laterally on each contiguous second awning 22.

[0040] With reference to the embodiment shown in Figures 1 to 3 and 5 to 9, the portions of the at least one first awning 21 and of the at least one second awning 22 that unwind respectively from the first drum 9 and from the second drum 10 are then made to pass slidingly at at least one first bar 23 and at least one second bar 24, which are parallel to each other adjacent to the front element 3 and are adapted to keep the portions of the first and second awnings approximately parallel to each other and at a chosen mutual distance once they have been lowered vertically.

[0041] The first and second bars are at least slightly longer than the respective first or second awnings that affect them.

[0042] The first and second bars preferably have an approximately rectangular transverse cross-section, in which the transverse ends are conveniently rounded in order to allow the sliding thereon respectively of the portions of the first awnings 21 and of the second awnings 22.

[0043] Preferably, the first and second bars are arranged inverted with respect to each other.

[0044] Advantageously, a second longitudinal guide 25a and a third longitudinal guide 25b are formed on the two lateral surfaces of the first and second bars, asymmetrically with respect to the central transverse axis, and are mutually mirror-symmetrical with respect to a central plane arranged longitudinally to the first and second bars.

[0045] Advantageously, the second guide 25a and the third guide 25b have an approximately T-shaped transverse cross-section, so as to form respectively a second access opening and a third access opening and second and third longitudinal abutments, which affect respectively the second and third guides 25a and 25b, along their entire length.

[0046] The first bar 23 is associable, at its ends, with the facing lateral surface of the front element 3 by means of two first brackets, designated respectively by the reference numerals 26a and 26b, which are approximately I-shaped and whose ends can be inserted in the first guide 5 of the front element 3 and in the third guide 25b of the first bar 23.

[0047] Likewise, the second bar 24 is associable with the adjacent first bar 23 by means of two second brackets, designated respectively by the reference numerals 27a and 27b, which are approximately I-shaped and whose ends can be inserted respectively in the second guide 25a of the first bar 23 and in the second guide 25a of the second bar 24.

[0048] The length of the pairs of first and second brackets can change depending on specific requirements; the user can thus preset or change the mutual distance between the first and second awnings.

[0049] Further, the adjustability of the position of the first brackets 26a and 26b with respect to the front element 3 and of the second brackets 27a and 27b with respect to the first brackets 26a and 26b allows the user to preset or change the extent of the overlap of the first and second awnings.

[0050] As an alternative, as shown in Figures 11 to 14, the awning roll-up device 1 can lack the second bars 24 and can comprise therefore only one or more first bars 23: in this case, only the portions of the awnings 21 that unwind from the first drum 9 are then made to pass slidingly at at least one first bar 23, while the second awning or awnings 22 descends or descend directly, as it unwinds or they unwind from the respective second drum 10, without the aid of any intermediate element (see Figure 13).

[0051] In the embodiment shown in Figures 11 to 14, the first bar 23 is arranged approximately parallel to the second drum 10, on the opposite side with respect to the first drum 9, and is adapted to keep said portions of the first awning 21, once they have been lowered vertically, at a chosen distance from the front element 3.

[0052] Operation is therefore as follows: the device 1 is fixed in an upper region with respect to a space to be covered with an awning; the first drum 9 and the second drum 10 can be turned by way of suitable known movement means, such as for example electric motors or a suitable and known manually-operated chain, which are not shown in the accompanying figures.

[0053] With reference to the embodiment shown in Fig-

ures 1, 2, 3 and 5, the first awning or awnings 21 and the second awning or awnings 23 are then made to descend vertically, sliding respectively on the first bar 23 and on the second bar 24; they are thus kept approximately parallel to each other and at a chosen mutual distance.

[0054] If instead, as shown in Figures 11 to 14, the device 1 does not comprise the second bars 24 but comprises only the first bars 23, the first awning or awnings 21 is or are conveyed, along an inclined plane, on the respective first bar 23, in order to be made to descend vertically, while the second awning or awnings 22 descends or descend directly, as they unwind from the respective second drum 10, without the aid of any intermediate element (see Figure 13).

[0055] Both in the embodiment shown in Figures 1, 2, 3 and 5 and in the embodiment shown in Figures 11 to 14, each of the first awnings 21 is further partially superimposed laterally with respect to the contiguous second awnings 22, achieving the complete coverage of the space without any discontinuity in a horizontal direction.

[0056] It has thus been found that the invention has achieved the intended aim and objects, an awning roll-up device having been devised which is capable of completely covering the opening even of a space that has a considerable horizontal extension.

[0057] Moreover, thanks to the presence of the first and second supporting means, it is possible to use drums that have a small diameter without subjecting them to intense flexing.

[0058] Moreover, the production costs of the device according to the invention remain low, since such device is constituted by components that are easily available or simple to manufacture and assemble.

[0059] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0060] Thus, for example, Figures 4, 10, 15 and 16 illustrate two additional embodiments of awning roll-up devices 101, each of which comprises a frame 102 constituted by a box-like body 128, which is advantageously approximately shaped like a parallelepiped and is hollow and is extended longitudinally in a horizontal direction.

[0061] The substantially flat bottom 129 is associable detachably with the box-like body 128; the longitudinal ends 132a and 132b of the bottom 129 are slidingly associable with complementarily shaped seats 133 and 134 formed at the lower ends of a front wall 130 and of a rear wall 131, which constitute the box-like body 128.

[0062] One or more first and second rotary support means are associated or associable with the frame 102 of the device 101 and support at least one first drum 109 and at least one second drum 110, which are arranged approximately parallel to each other on a plane which is preferably horizontal or slightly inclined with respect to the perpendicular to the front wall 130.

[0063] In this case also, the first and second drums may have an identical or different longitudinal extension, as long as they are arranged longitudinally, starting from the first ends, oppositely with respect to each other until the respective second ends thereof at least mutually overlap.

[0064] Advantageously but not necessarily, the longitudinal central axis of the second drum 110, arranged closer to the front wall 130, is arranged at a lower height than the plane of arrangement of the longitudinal central axis of the first drum 109.

[0065] The first and second rotary support means are constituted advantageously respectively by at least two third supports 135 and at least two fourth supports 136, which protrude approximately at right angles from the bottom 129 of the box-like body 128 and are provided respectively with a third hole 137 and a fourth hole 138, which accommodate respectively the first drum 109 and the second drum 110 or their ends.

[0066] The third supports 135 and the fourth supports 136 can be arranged in a chosen longitudinal position with respect to the first drum 109 and the second drum 110; at least one fourth support 136 of the second drum 110 is interposed in any case between two third supports 135 of the first drum 109.

[0067] If, as in the embodiment shown in Figure 4, the first drum 109 and the second drum 110 have the same length, the first supports 135 and the second supports 136 optionally located at the ends of said first and second drums can be constituted advantageously by a single body, in which the third and fourth holes are provided respectively.

[0068] In order to support appropriately the first and second drums, if they have a chosen length, and in order to avoid their flexing, one or more third and fourth supports arranged in intermediate regions or at the chosen spacing, of the first and second drums, are used.

[0069] With reference to the embodiment shown in Figure 4, three first supports 135 are associated with the first drum 109: two are arranged at the ends of the drum and are formed monolithically respectively with two fourth supports 136, and one is arranged approximately at the centerline of the drum 109; the third supports 135 divide said drum into two mutually contiguous regions, on each of which two first awnings 121 are wound along part of the length.

[0070] Likewise, the second drum 110 is supported rotatably by four second supports 136: two are arranged at the ends of the second drum 110 and are formed monolithically respectively with two first supports 135 located at the ends of the first drum 109, and two are interposed respectively between said supports and the third support 135 arranged approximately at the centerline of the first drum 109.

[0071] The arrangement of the fourth supports 136 is such that at least one of them is interposed between the two third supports 135 of the first drum 109 with which the first awning 121 is associated.

[0072] The fourth supports 136 divide the second drum 110 into three mutually contiguous regions; a single second awning 122 is wound only on the intermediate region

along part of the length and in any case so as to be partially superimposed on the sides of the first two awnings 121.

[0073] Each first awning 121 is thus at least partially superimposed laterally on the single second awning 122.

[0074] With reference to the embodiment shown in Figures 4 and 10, the portions of the first awnings 121 and of the second awning 122 that unwind respectively from the first drum 109 and from the second drum 110 are then made to pass slidingly at at least one first bar 123 and at least one second bar 124, which are parallel to each other and adjacent to the front wall 130 and are adapted to keep the portions of the first and second awnings approximately parallel to each other and at a chosen mutual distance once they have been lowered vertically.

[0075] Advantageously, the first and second bars are at least slightly longer than the respective first and second awnings that affect them.

[0076] Advantageously, the longitudinal central axis of the first bar 123 is arranged at a distance from the bottom 129 that is greater than the distance of the second bar 122 from it.

[0077] The first and second bars have a preferably substantially circular cross-section and are supported respectively by at least two first uprights and at least two second uprights, designated respectively by the reference numerals 139 and 140, which are substantially rod-like and protrude approximately at right angles from the bottom 129 of the box-like body 128.

[0078] First and second longitudinal slots, designated respectively by the reference numerals 141 and 142, are formed on the bottom 129 of the box-like body 128, respectively in the region comprised between each first bar 123 and the front wall 130 and in the region comprised between each second bar 124 and the first bars 123, and the first awning 121 and the second awning 122 protrude respectively through said slots; said first and second slots are slightly longer than the respective first and second awnings.

[0079] As an alternative, as shown in Figures 15 and 16, the device 101 may lack the second bars 124 and may therefore comprise only one or more first bars 123; in this case, the portions of the first awnings 121 that unwind from the first drum 109 are then made to pass slidingly at at least one first bar 123, while the second awning or awnings 122 descends or descend directly, as they unwind from the respective second drum 110, without the aid of any intermediate element (see Figure 16).

[0080] The first bar 123 is arranged approximately parallel to the second drum 110, on the opposite side with respect to the first drum 109, and is adapted to keep said portions of said first awning at a chosen distance from the front wall 130 once they have been lowered vertically.

[0081] In the embodiment shown in Figures 15 and 16, too, first and second longitudinal slots, designated respectively by the reference numerals 141 and 142, are formed in the bottom 129 of the box-like body 128; the first awning 121 and the second awning 122 exit respectively through said slots, which are formed respectively in the region comprised between the bar 123 and the front wall 130 and in the region comprised between the second drum 110 and the bar 123, and are slightly longer than the respective first and second awnings.

[0082] With reference both to the embodiment shown in Figures 4 and 10 and to the one shown in Figures 15 and 16, the device 101 is fixed in an upper region with respect to a space to be covered with an awning; the first drum 109 and the second drum 110 can be turned by means of suitable and known movement means, causing the descent of the first awning or awnings 121 and of the second awning or awnings 122.

[0083] In the embodiment shown in Figures 4 and 10, said one or more first and second awnings slide respectively on the first bar 123 and on the second bar 124, exiting respectively from the first slot 141 and from the second slot 142 approximately parallel to each other and at a chosen mutual distance.

[0084] If instead, as shown in Figures 15 and 16, the device 101 comprises only one or more first bars 123, said one or more first and second awnings exit respectively from the first slot 141 and from the second slot 142 approximately parallel to each other and at a mutual distance which is approximately equal to the mutual distance of said first and second slots.

[0085] With reference both to the embodiment shown in Figures 4 and 10 and to the embodiment shown in Figures 15 and 16, each one of the first awnings 121 further partially surmounts the contiguous second awning 122, achieving in this case also the complete covering of the space without discontinuity in the horizontal direction.

[0086] The materials used, as well as the dimensions that constitute individual components of the invention, may of course be more pertinent according to specific requirements.

[0087] The various means for performing certain different functions need not certainly coexist only in the embodiment shown, but may be present per se in many embodiments, including ones that are not shown.

[0088] The characteristics indicated as advantageous, convenient or the like may also be omitted or be replaced with equivalents.

[0089] The disclosures in Italian Patent Applications No. TV2005A000116 and No. TV2005A000163 from which this application claims priority are incorporated herein by reference.

[0090] 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. An awning roll-up device, **characterized in that** it comprises a frame provided with first and second rotary support means for at least one first drum and at least one second drum, which are arranged so as to approximately face each other horizontally, said first and second rotary support means dividing each of said at least one first drum and at least one second drum into mutually contiguous regions, on each of which a first awning and a second awning are wound alternately for said at least one first drum and at least one second drum, said awnings being guided on at least one first bar and at least one second bar, which are mutually adjacent and arranged on the same side of said at least one first drum and at least one second drum, partially surmounting each other laterally.

2. An awning roll-up device, **characterized in that** it comprises a frame provided with first and second rotary support means for at least one first drum and at least one second drum, which are arranged so as to approximately face each other horizontally, said first and second rotary support means dividing each of said at least one first drum and at least one second drum into mutually contiguous regions, on each of which a first awning and a second awning are wound alternately for at least one of said at least one first drum or at least one second drum, said awnings being guided on at least one first bar and at least one second bar, which are mutually adjacent and are arranged on the same side of said at least one first drum and at least one second drum, partially surmounting each other laterally.

3. An awning roll-up device, **characterized in that** it comprises a frame provided with first and second rotary support means for at least one first drum and at least one second drum, which are arranged so as to approximately face each other horizontally, said first and second rotary support means dividing each of said at least one first drum and at least one second drum into mutually contiguous regions, on each of which a first awning and a second awning are wound alternately for said at least one first drum and at least one second drum, said first awning being guided on at least one first bar, which is arranged approximately parallel to said second drum, on the opposite side with respect to said first drum, and said second awning descending directly when it unwinds from said second drum.

4. An awning roll-up device, **characterized in that** it comprises a frame provided with first and second rotary support means for at least one first drum and at least one second drum, which are arranged so as to approximately face each other horizontally, said first and second rotary support means dividing each of said at least one first drum and at least one second drum into mutually contiguous regions, on each of which a first awning and a second awning are wound alternately for at least one of said at least one first drum and at least one second drum, said first awning being guided on at least one bar, which is arranged approximately parallel to said second drum, on the opposite side with respect to said first drum, and said second awning descending directly when it unwinds from said second drum.

5. The device according to one or more of the preceding claims, **characterized in that** said frame is constituted by a front element having an approximately rectangular transverse cross-section, one or more separate wings protruding from a same side of said front element, each wing having a C-shaped cross-section so as to form first longitudinal guides, which have an approximately T-shaped transverse cross-section adapted to form a first access opening and two first longitudinal abutments, which affect said first guides along their entire length.

6. The device according to claim 5, **characterized in that** two cross-members protrude at right angles at least proximate to the lateral ends of said front element and are preferably approximately shaped like a parallelepiped, receptacles being provided thereat for the rotary connection and support of first ends of said at least one first drum and for first ends of said at least one second drum, which are arranged approximately parallel to each other on a plane which is preferably horizontal or slightly inclined with respect to the perpendicular to said front element.

7. The device according to claims 5 and 6, **characterized in that** the longitudinal central axis of said second drum, arranged closest to said front element, is arranged at a lower height than the plane of arrangement of the longitudinal central axis of said first drum.

8. The device according to one or more of the preceding claims, **characterized in that** said first and second drums have a longitudinal extension that is equal or different, as long as they are longitudinally elongated, starting from said first ends and in opposite directions, until the respective second ends at least mutually overlap.

9. The device according to one or more of the preceding claims, **characterized in that** one or more first and second rotary support means are associated or associable with said frame, for the second ends of said at least one first and at least one second drum, said first and second means being constituted respectively by one or more members shaped approximately like an inverted letter U, from a first wing of each of which there protrude teeth which are shaped com-

plementarily to said first guides, the first wing of each one of said U-shaped members being followed by a base, which protrudes in the opposite direction with respect to said front element, and then by a second wing, from the end of which first arms and second arms protrude toward said front element, said arms being adapted respectively to support rotatably said first and second drums, said arms being advantageously shorter than said base.

10. The device according to claims 5 and 9, **characterized in that** at least one first support protrudes from each one of said first arms of each one of said U-shaped members that interact with said first drum, approximately at right angles thereto and toward said base, and having at least one first hole which acts as a receptacle for said second ends of said first drum or for said first drum.

11. The device according to claims 5 and 10, **characterized in that** said second rotary support means for said second ends of said second drum or for said second drum are similar to said first means, except for the fact that said second arms are longer than said first arms, a second support protruding from each one of said second arms and being provided with a second hole, which acts as a receptacle for said second ends of said second drum or for said second drum.

12. The device according to claims 5 and 11, **characterized in that** said first and second supports and the corresponding first and second holes provided therein are respectively aligned axially with the receptacles formed in said cross-members.

13. The device according to claims 5 and 12, **characterized in that** said first and second drums have approximately the same length and said cross-members are constituted by two of said first and second supports.

14. The device according to claims 5 and 13, **characterized in that** it comprises one or more U-shaped members, provided with said first and second supports arranged in intermediate regions, or with the chosen spacing, of said first and second drums.

15. The device according to claims 5 and 14, **characterized in that** three U-shaped members are associated on said first drum and are provided with first supports which divide said first drum into various mutually contiguous regions, on each of which at least one first awning is rolled alternately and therefore in one region but not in the adjacent one.

16. The device according to claims 5 and 15, **characterized in that** three U-shaped members are associated on said second drum and are provided with second supports arranged in a region which is adjacent to one of said first supports for said first drum.

17. The device according to one or more of the preceding claims, **characterized in that** the arrangement of said U-shaped members that interact with said second drum and of said cross-members is such that at least one of said U-shaped members, and therefore at least one of said second supports, is interposed between the two first supports of said first drum with which said first awning is associated.

18. The device according to claims 5 and 17, **characterized in that** at least one second awning can be wound onto said second drum.

19. The device according to claims 5 and 18, **characterized in that** two second awnings can be wound onto said second drum.

20. The device according to one or more of the preceding claims, **characterized in that** each one of said first awnings is at least partially superimposed laterally on each contiguous second awning.

21. The device according to claims 1 or 2 and 20, **characterized in that** the portions of said at least one first awning and of said at least one second awning that unwind respectively from said first and second drums are then made to pass slidingly at at least one first bar and at least one second bar, which are arranged parallel to each other adjacent to said front element and are adapted to keep said portions of said first and second awnings approximately parallel to each other and at a chosen mutual distance once they have been lowered vertically.

22. The device according to claim 21, **characterized in that** said first and second bars are at least slightly longer than the respective first or second awning arranged thereon, said first and second bars having an approximately rectangular transverse cross-section, in which the transverse ends are conveniently rounded in order to allow the sliding thereon respectively of the portions of said first and second awnings, said first and second bars being arranged preferably inverted with respect to each other.

23. The device according to claims 21 and 22, **characterized in that** respectively a second longitudinal guide and a third longitudinal guide are formed on the two lateral surfaces of said first and second bars asymmetrically with respect to the transverse central axis and are mutually mirror-symmetrical with respect to a central plane that lies longitudinally to said first and second bars, said second and third guides having an approximately T-shaped transverse

cross-section, so as to form respectively a second access opening and a third access opening and second and third longitudinal abutments, which affect respectively said second and third guides along their entire length.

24. The device according to claims 21 and 23, **characterized in that** said first bar is associable, at its ends, with the facing lateral surface of said front element by means of two approximately I-shaped first brackets, the ends of which can be inserted in said first guide of said front element and in said third guide of said first bar.

25. The device according to claims 21 and 24, **characterized in that** said second bar is associable with the adjacent first bar by means of a pair of second brackets which are approximately I-shaped and the ends of which can be inserted respectively in said second guide of said first bar and in said second guide of said second bar.

26. The device according to claims 21 and 25, **characterized in that** said first and second brackets have a chosen length and their position is adjustable according to the longitudinal axis of said front element, and likewise the positioning of said second brackets is adjustable with respect to the positioning of said first brackets along an axis which is longitudinal with respect to said front element, so as to allow to preset or change the extent of the overlap of said first and second awnings.

27. The device according to claims 3 or 4 and 20, **characterized in that** the portions of said at least one first awning that unwind from said first drum are then made to pass slidingly at at least one first bar, which is arranged parallel to said second drum, on the opposite side with respect to said first drum, and is adapted to keep said portions at a chosen distance from said front element once they have been lowered vertically.

28. The device according to claim 27, **characterized in that** said first bar is at least slightly longer than said at least one first awning that lies thereon, said bar having a preferably approximately rectangular transverse cross-section, in which the transverse ends are conveniently rounded in order to allow the sliding of said at least one first awning.

29. The device according to claims 27 and 28, **characterized in that** a second longitudinal guide and a third longitudinal guide are provided respectively on the two lateral surfaces of said first bar, asymmetrically with respect to the transverse central axis, and are mutually mirror-symmetrical with respect to a central plane arranged longitudinally to said first bar, said second and third guides having an approximately T-shaped transverse cross-section so as to form respectively a second access opening and a third access opening and second and third longitudinal abutments, which affect respectively said second and third guides, along their entire length

30. The device according to claims 27 and 29, **characterized in that** said first bar is associable, at its ends, with the facing lateral surface of said front element by means of two first approximately I-shaped first brackets, the ends of which can be inserted in said first guide of said front element and in said third guide of said first bar.

31. The device according to claims 27 and 30, **characterized in that** said first brackets have a chosen length and their position is adjustable along the longitudinal axis of said front element so as to allow to preset or change the extent of the overlap of said first and second awnings.

32. The device according to one or more of the preceding claims, **characterized in that** it comprises a frame constituted by a hollow box-like body, which is advantageously approximately shaped like a parallelepiped which lies longitudinally in a horizontal direction, a substantially flat bottom being detachably associable in a lower region with said box-like body, the longitudinal ends of said bottom being slidingly associable with complementarily shaped seats formed at the lower ends of a front wall and of a rear wall which constitute said box-like body.

33. The device according to claim 32, **characterized in that** one or more first and second rotary support means for at least one first drum and at least one second drum are associated or associable with said frame, said drums being arranged approximately parallel to each other on a plane which is preferably horizontal or slightly inclined with respect to the perpendicular to said front wall, said first and second drums having the same or a different longitudinal extension, as long as they they protrude longitudinally, starting from the first ends, oppositely until the respective second ends at least mutually overlap.

34. The device according to claims 32 and 33, **characterized in that** the longitudinal central axis of said second drum, arranged closer to said front wall, is arranged at a lower height than the plane of arrangement of the longitudinal central axis of said first drum.

35. The device according to claims 32 and 34, **characterized in that** said first and second rotary support means are constituted respectively by at least two third supports and at least two fourth supports, which protrude approximately at right angles from said bot-

tom of said box-like body and respectively have a third hole and a fourth hole, which accommodate respectively said first and second drums or their ends.

36. The device according to claims 32 and 35, **characterized in that** said third and fourth supports are arranged in a chosen longitudinal position with respect to said first and second drums, at least one fourth support of said second drum being interposed between two third supports of said first drum.

37. The device according to claims 32 and 36, **characterized in that** if said first and second drums have the same length, said first and second supports arranged at the ends of said first and second drums are constituted by a single body in which said third and fourth holes are formed respectively.

38. The device according to one or more of the preceding claims, **characterized in that** it comprises, in order to support conveniently said first and second drums without flexing, one or more third and fourth supports arranged in intermediate regions, or with a chosen spacing, of said first and second drums.

39. The device according to claims 32 and 38, **characterized in that** three first supports are associated with said first drum, two arranged at the ends of said drum and provided monolithically respectively with two of said fourth supports, and one arranged approximately at the centerline of said first drum; said third supports dividing said first drum into two mutually contiguous regions, on each of which two first awnings are rolled along part of their length.

40. The device according to claims 32 and 39, **characterized in that** said second drum is supported rotatably by four second supports, two arranged at the ends of said second drum and provided monolithically respectively with two first supports arranged at the ends of said first drum, and two respectively interposed between them and said third support arranged approximately at the centerline of said first drum.

41. The device according to claims 32 and 40, **characterized in that** the arrangement of said fourth supports is such that at least one of them is interposed between the two third supports of said first drum with which said first awning is associated, said fourth supports dividing said second drum into three mutually contiguous regions, a single second awning being wound only on the intermediate region along part of its length and being in any case such as to be partially superimposed on the sides of said first two awnings, so that each one of said first awnings is at least partially superimposed laterally on said single second awning.

42. The device according to claims 1 or 2 and 41, **characterized in that** the portions of said first awnings and of said second awning that unwind respectively from said first and second drums are then made to pass slidingly at at least one first bar and at least one second bar, which are parallel to each other adjacent to said front wall, and are adapted to keep said portions of said first and second awnings approximately parallel to each other and at a chosen mutual distance once they have been lowered vertically.

43. The device according to claim 42, **characterized in that** said first and second bars are at least slightly longer than the respective first and second awnings that are arranged thereon.

44. The device according to claims 42 and 43, **characterized in that** the longitudinal central axis of said first bar is arranged at a distance from said bottom that is greater than the distance of said second bar from it.

45. The device according to claims 42 and 44, **characterized in that** said first and second bars have a preferably substantially circular transverse cross-section and are supported respectively by at least two first and at least two second substantially rod-like uprights, which protrude approximately at right angles from said bottom of said box-like body in which there are, respectively in the region comprised between each first bar and said front wall and in the region comprised between each second bar and said first bars, first and second longitudinal slots, through which said first and second awnings protrude respectively.

46. The device according to claims 3 or 4 and 41, **characterized in that** the portions of said first awnings that unwind from said first drum are then made to pass slidingly at at least one first bar, which is arranged parallel to said second drum, on the opposite side with respect to said first drum, said bar being adapted to keep said portions of said first awnings at a chosen mutual distance from said front portion once they have been lowered vertically.

47. The device according to claim 46, **characterized in that** said first bars are at least slightly longer than said first awnings arranged thereon.

48. The device according to claims 46 and 47, **characterized in that** the longitudinal central axis of said first bar is arranged at a distance from said bottom that is greater than the maximum distance therefrom of said second awning when it is completely wound onto said second drum.

49. The device according to claims 46 and 48, **charac-**

terized in that said first bars have a preferably substantially circular transverse cross-section and are supported by at least two first substantially rod-like uprights, which protrude approximately at right angles from said bottom of said box-like body in which there are, respectively in the region comprised between each first bar and said front wall and in the region comprised between said second drum and each of said first bars, first and second longitudinal slots, through which said first and second awnings exit respectively.

50. The device according to one or more of the preceding claims, **characterized in that** said first and second slots are slightly longer than the respective first and second awnings.

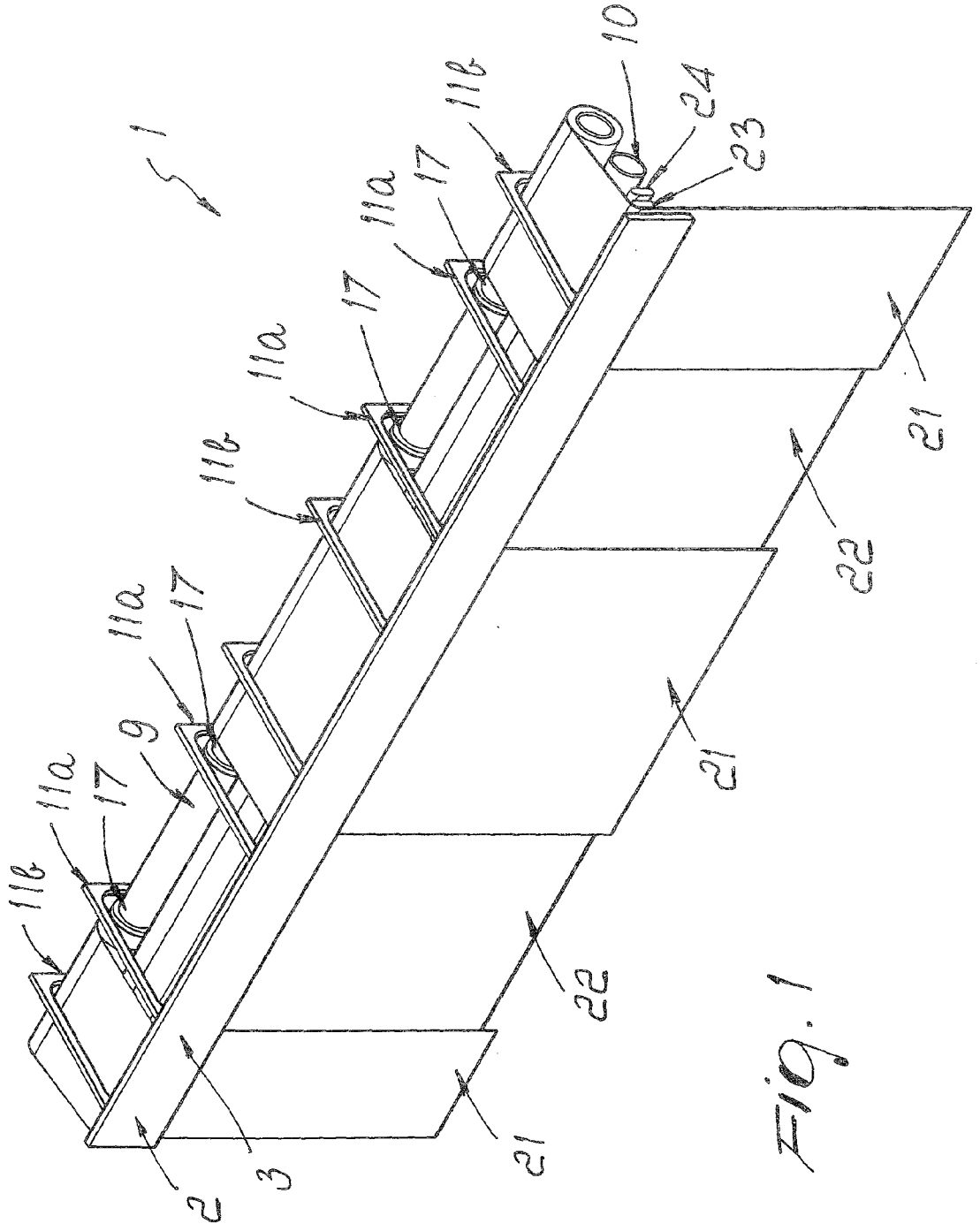

Fig. 1

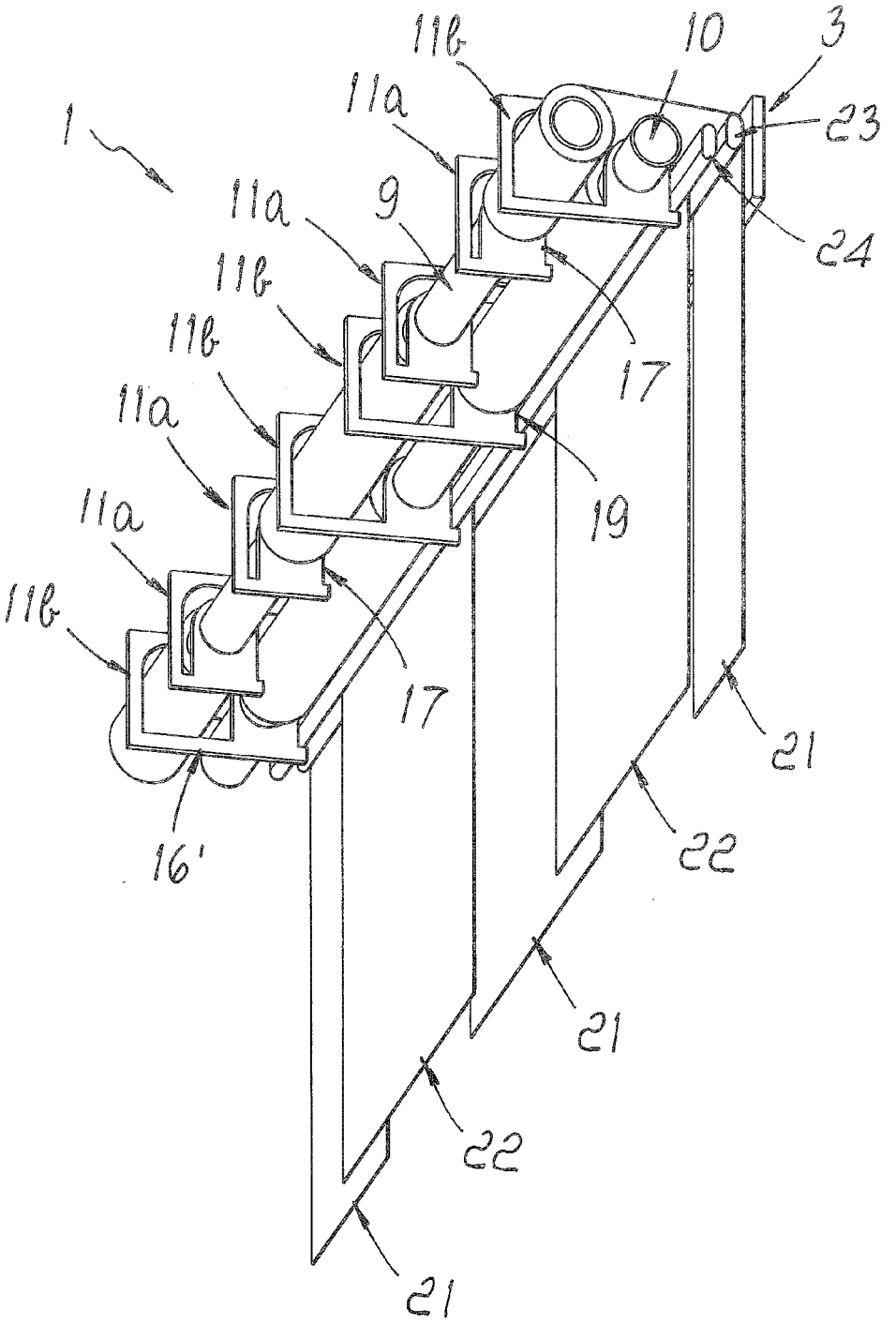
11b
10
3
11a
1
23
11a
9
24
11b
11b
17
11a
19
11a
11b
17
21
22
16'
21
22
21

Fig. 2

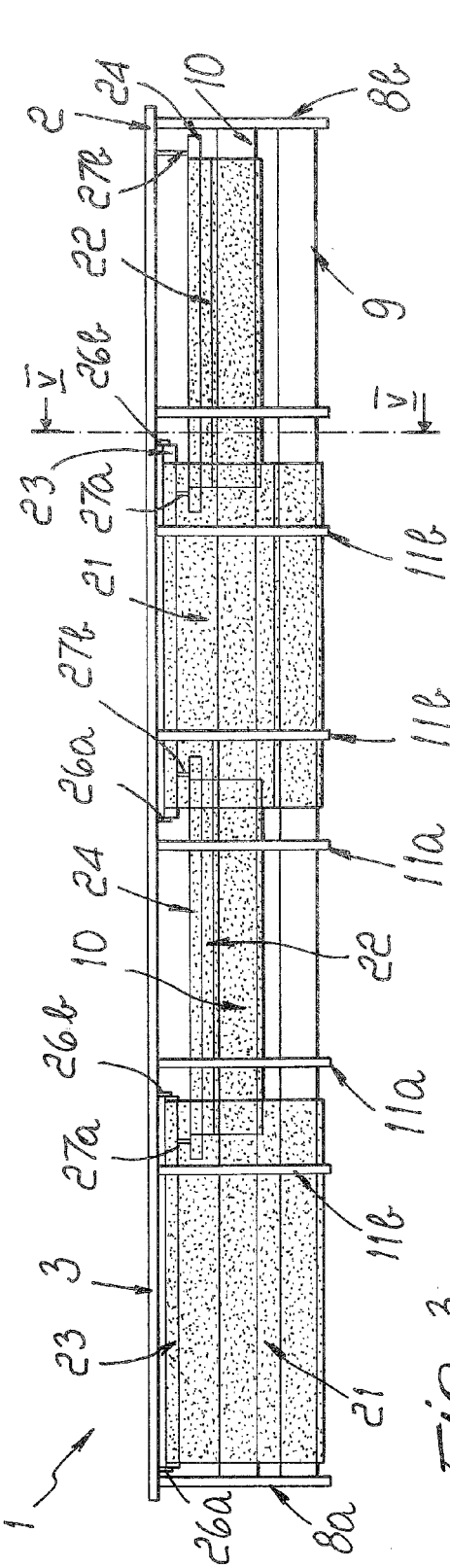
1
2
3
8a
8b
9
10
11a
11b
21
22
23
24
26a
26b
27a
27b
V
V

Fig. 3

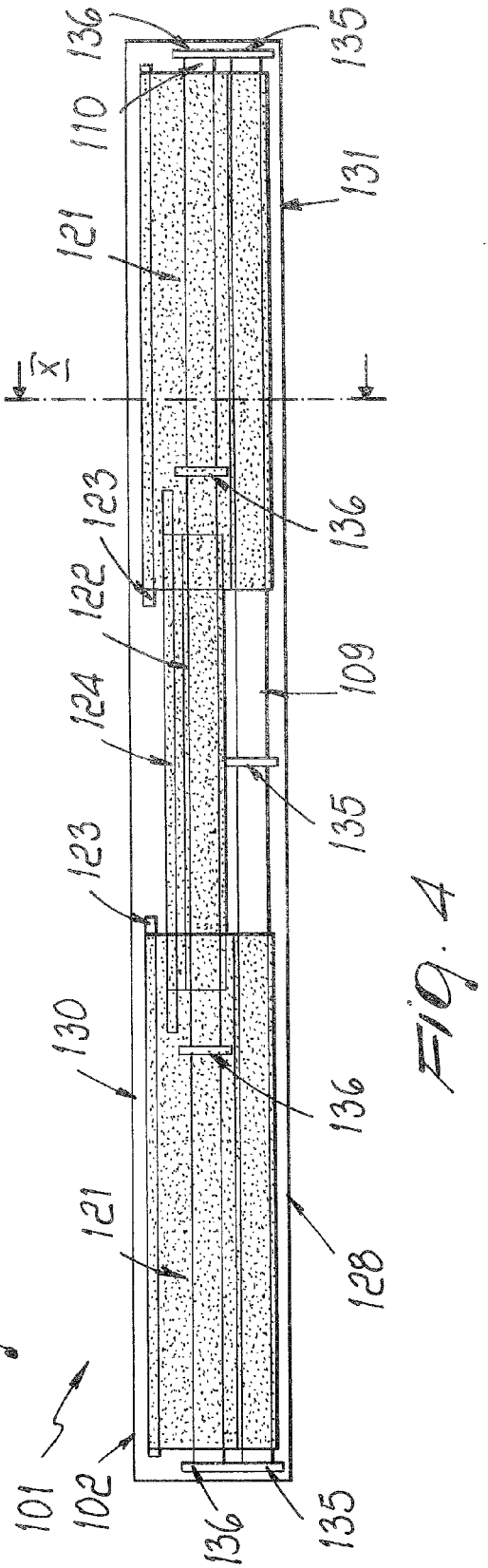
101
102
109
110
121
122
123
124
128
130
131
135
136
X
X

Fig. 4

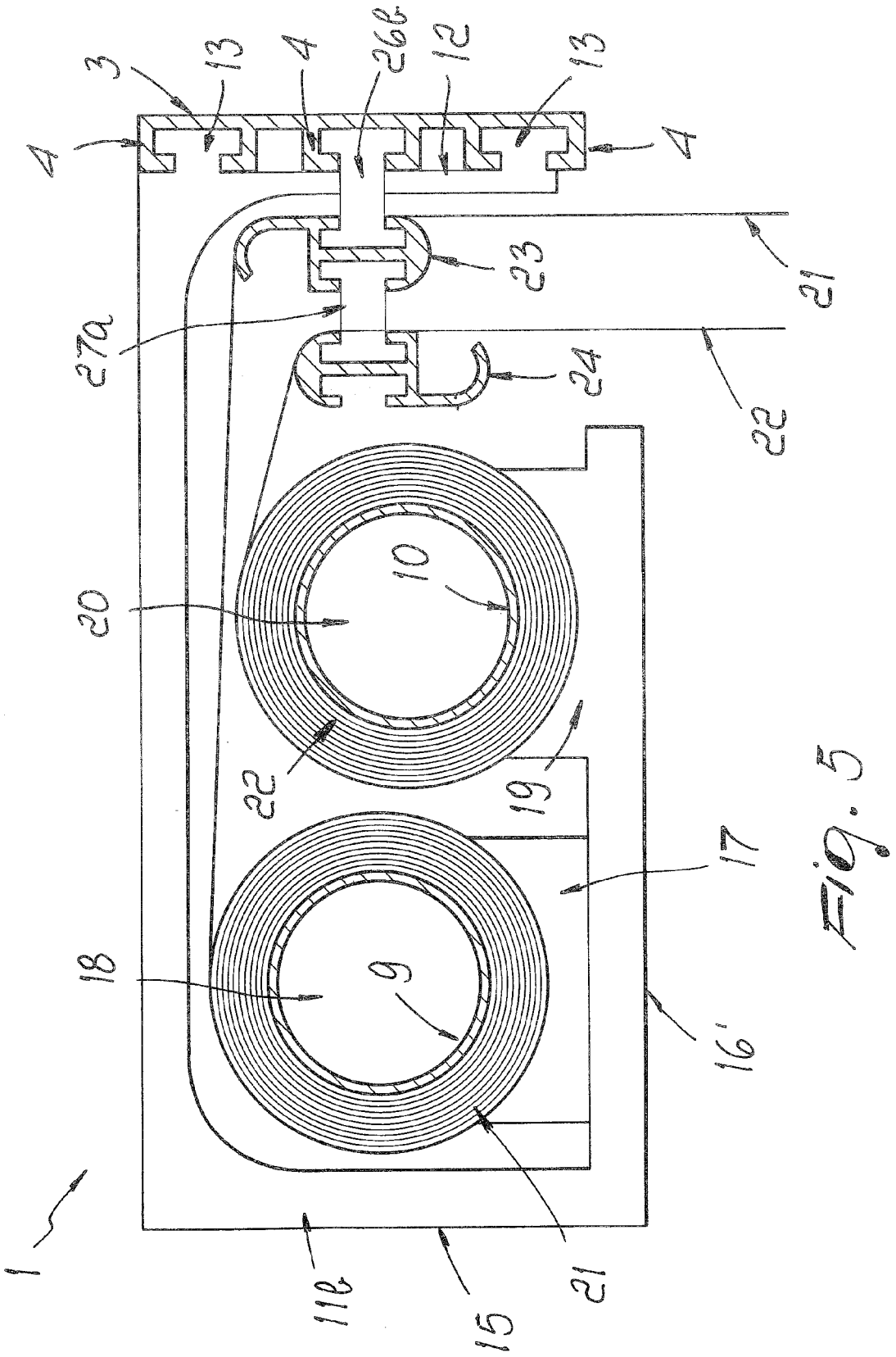

Fig. 5

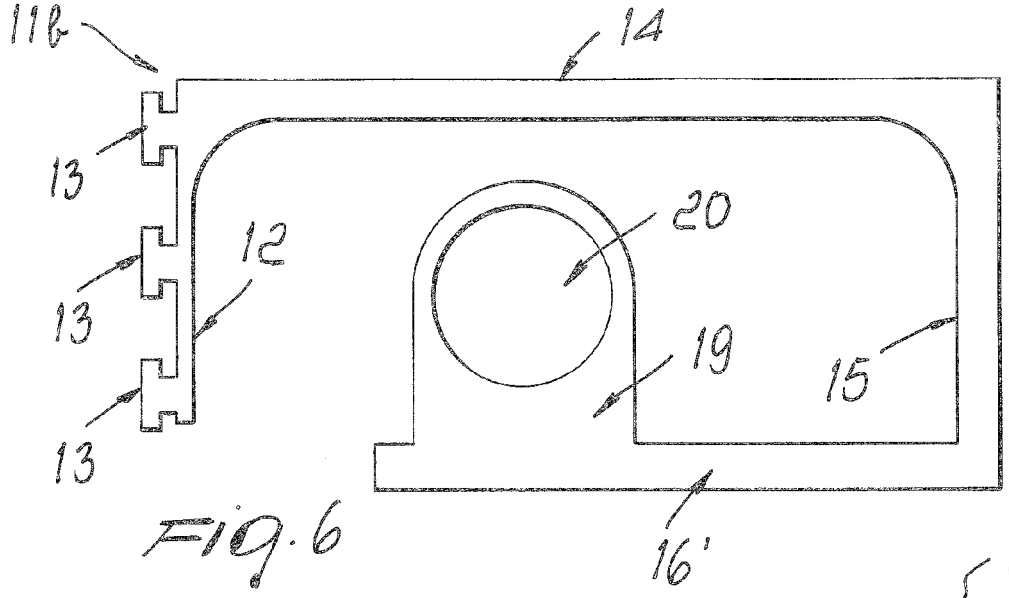

Fig. 6

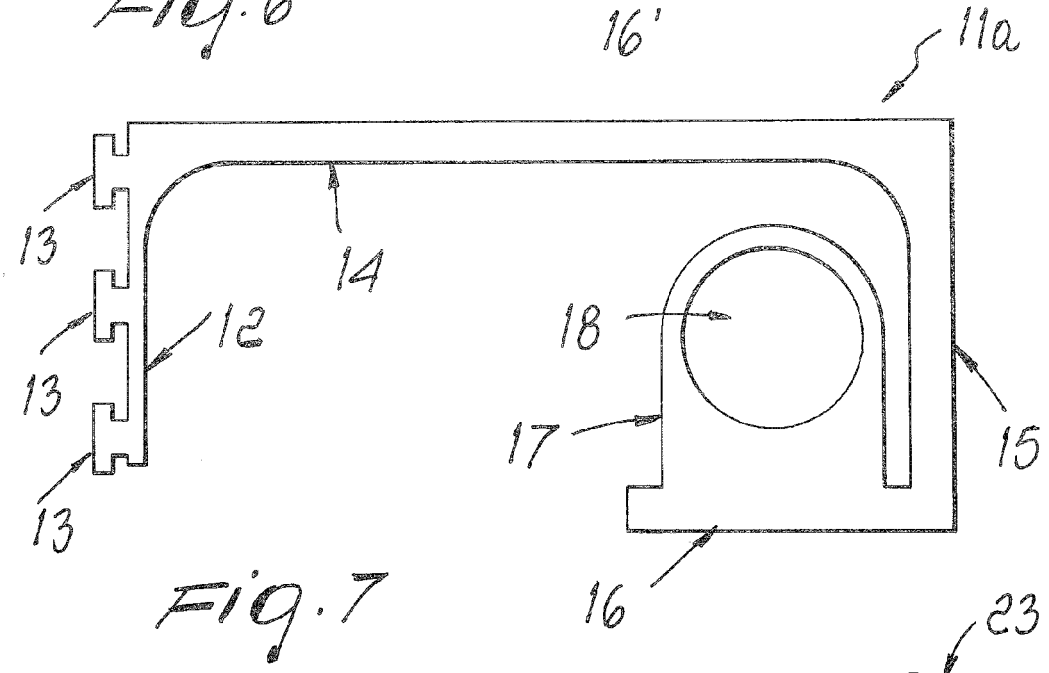

Fig. 7

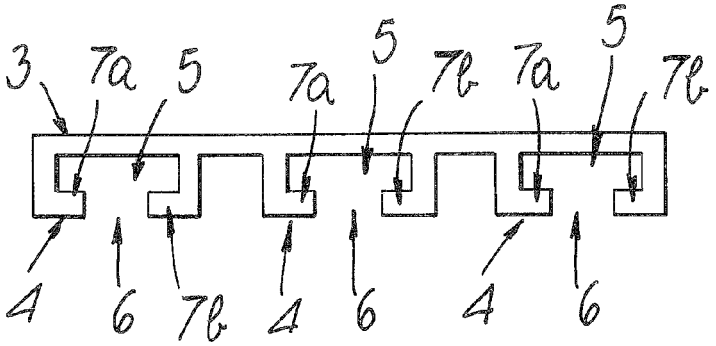

Fig. 8

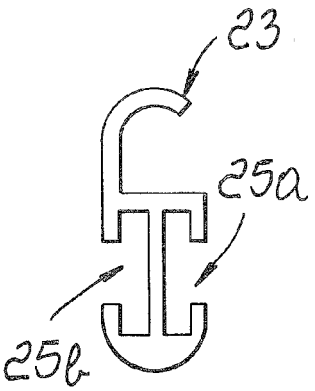

Fig. 9

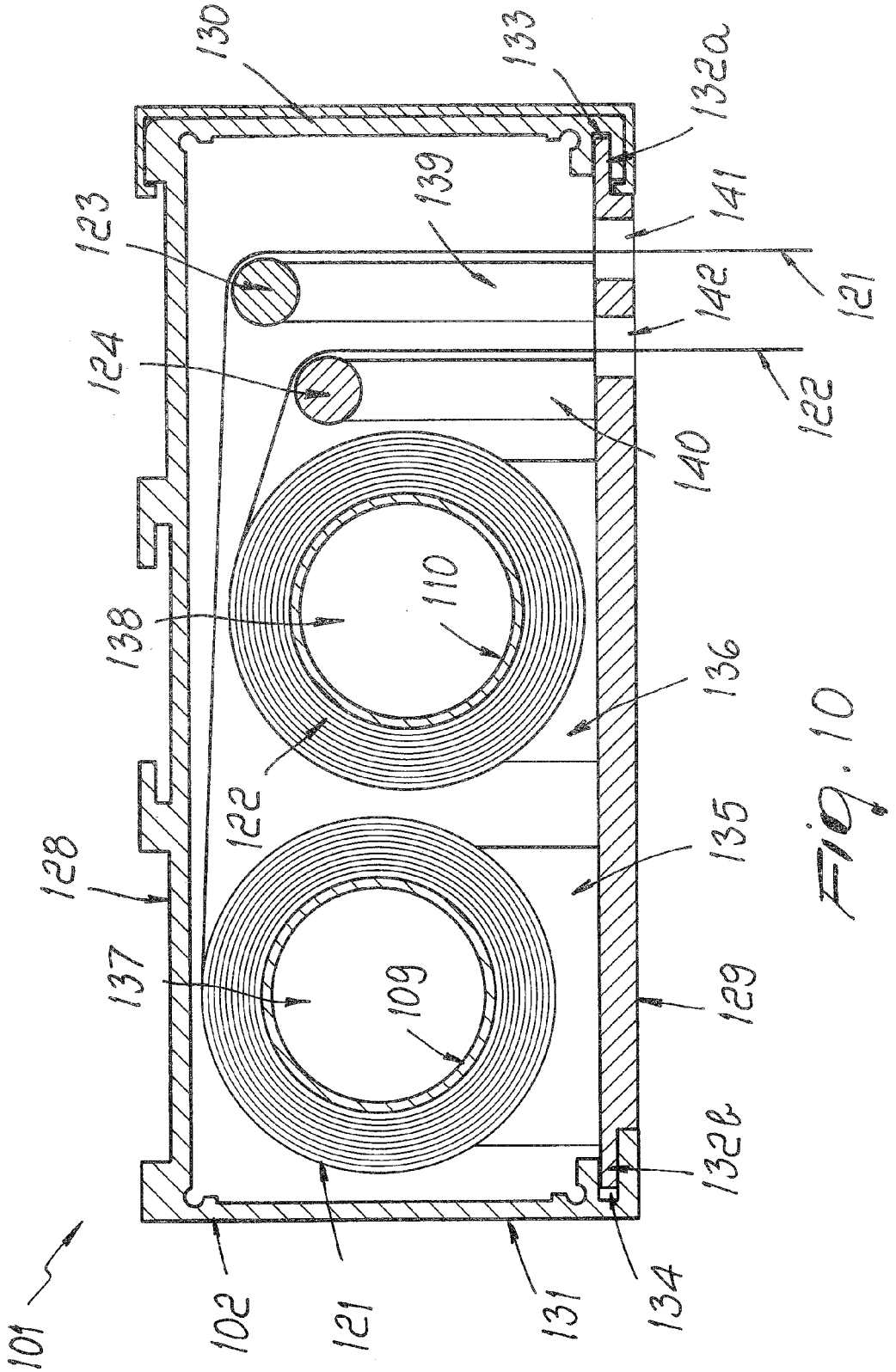
130
133
132a
139
141
123
142
121
124
122
140
110
138
136
122
135
128
137
109
129
132b
101
102
121
131
134

Fig. 10

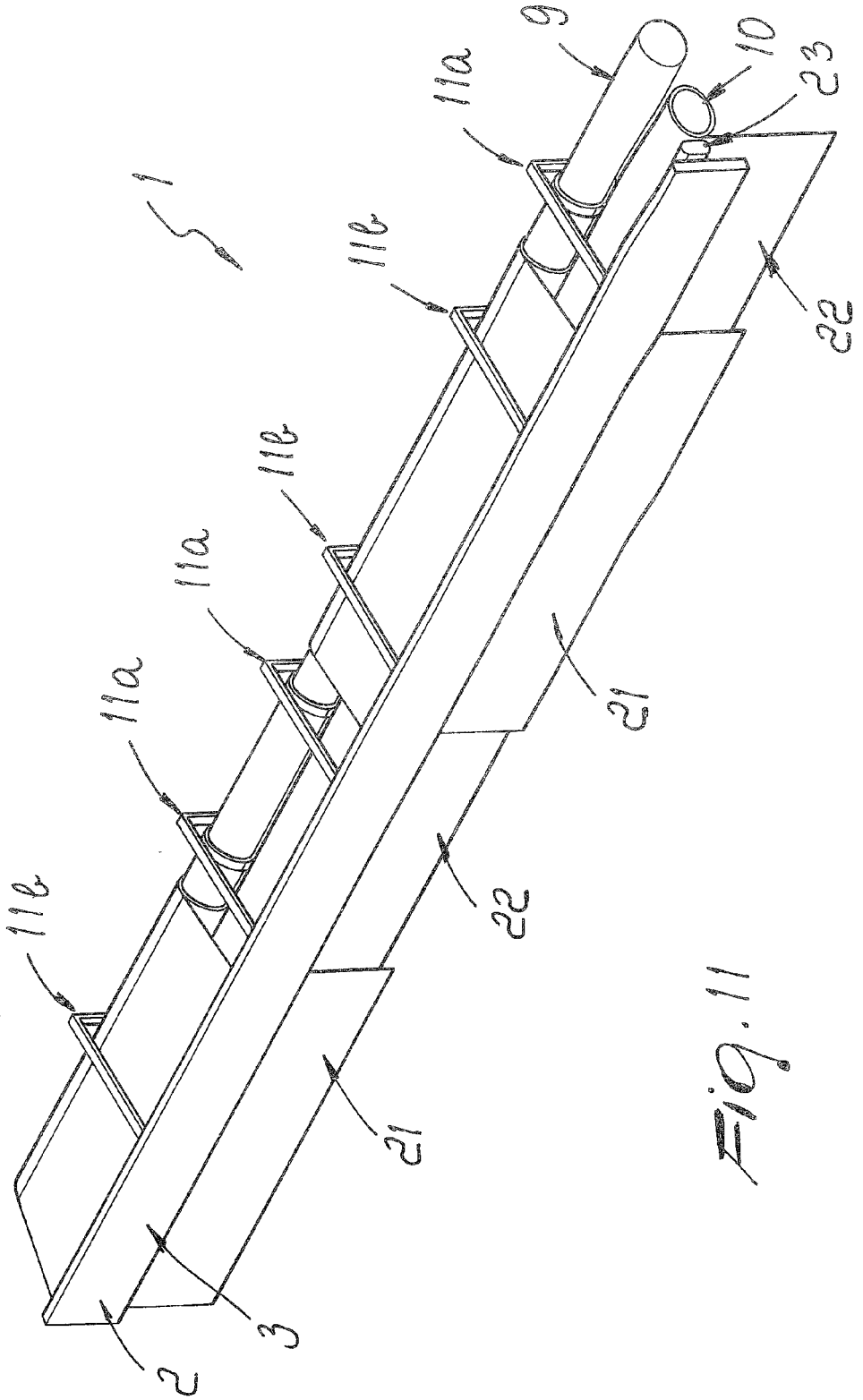

Fig. 11

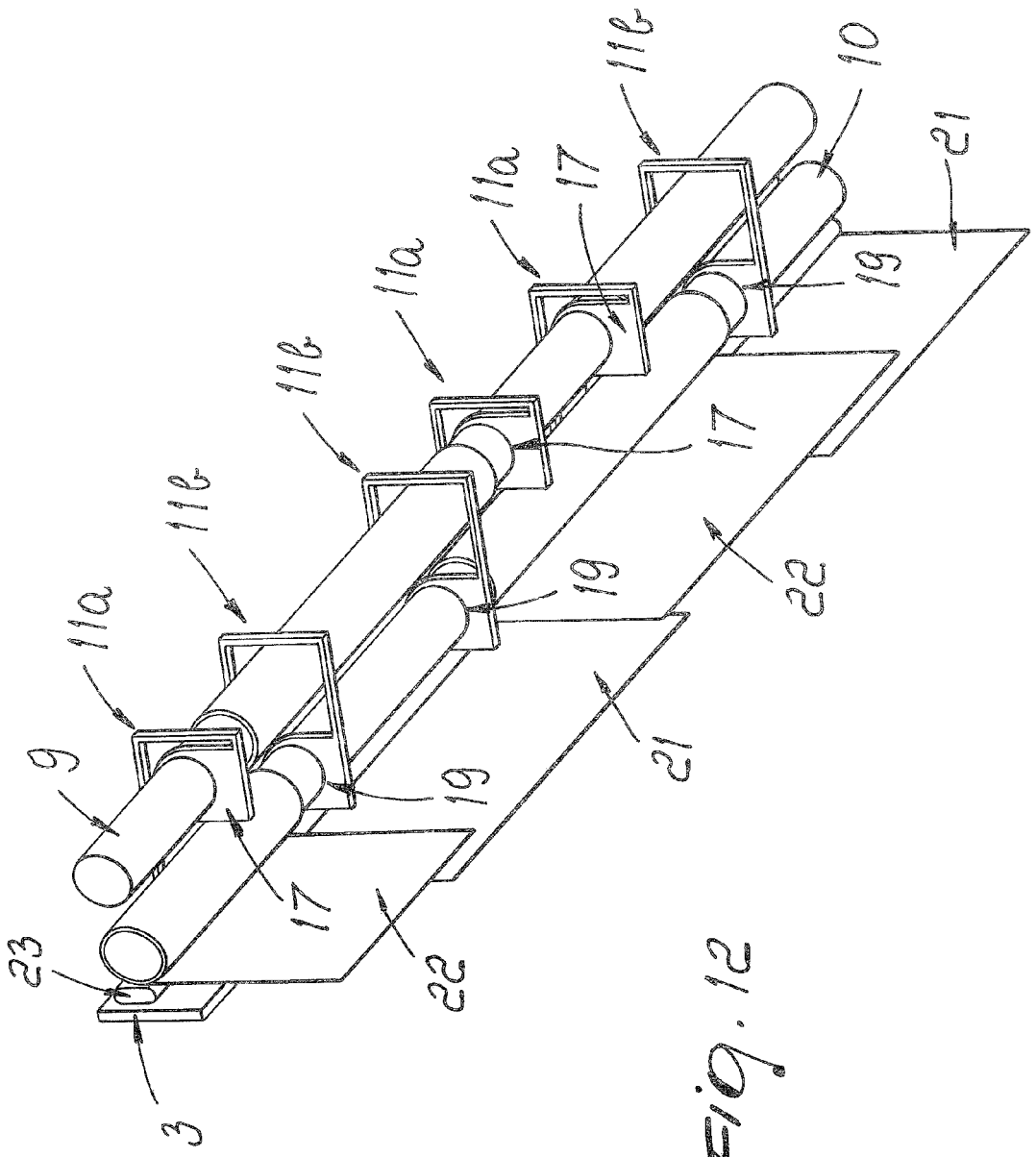

Fig. 12

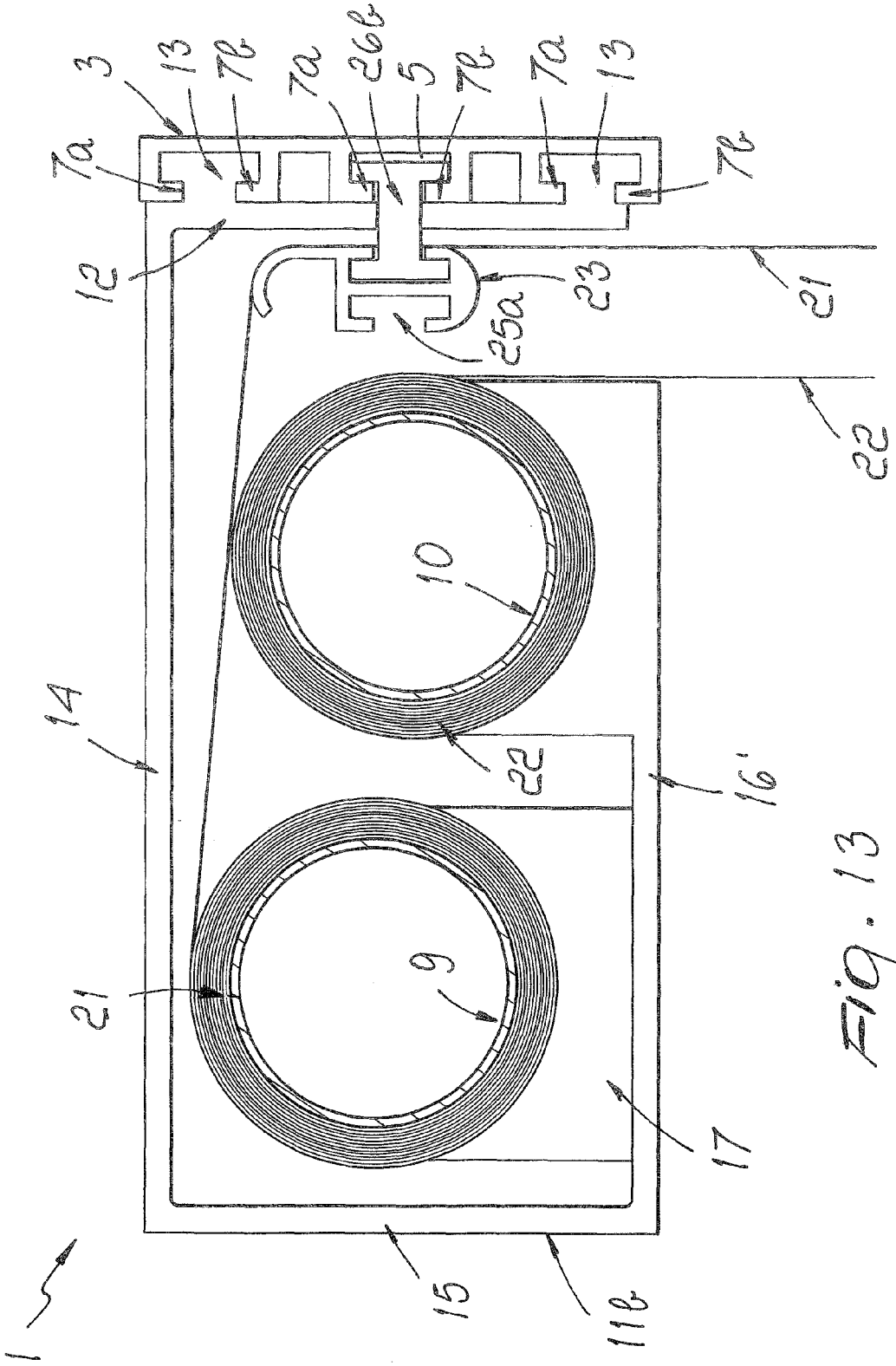
3
13
7b
7a
26b
5
7b
7a
13
7a
7b
12
23
21
25a
22
10
14
22
16'
21
9
17
1
15
11b

Fig. 13

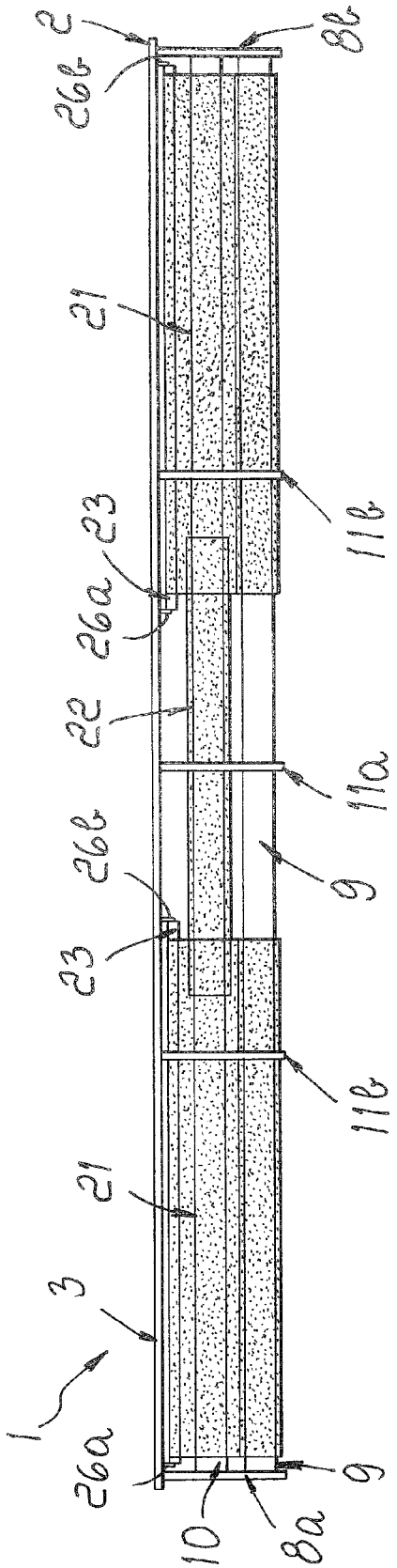
2
26b
8b
21
23
26a
22
11b
11a
9
26b
23
11b
21
3
1
26a
10
8a
9

Fig. 14

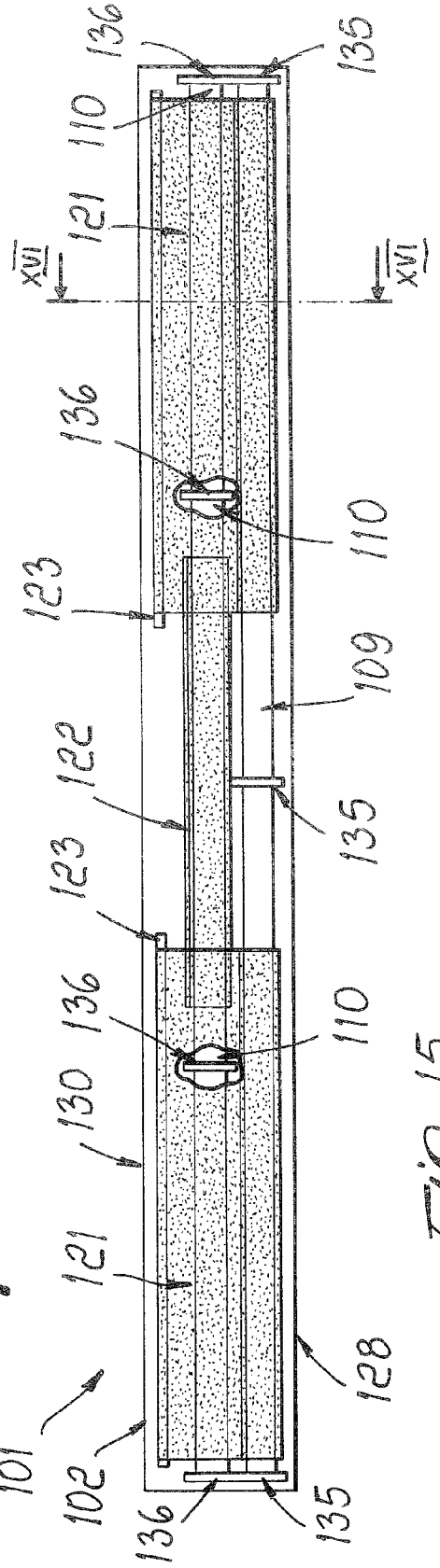
136
135
110
121
XVI
XVI
136
110
123
109
122
135
123
136
110
130
121
128
101
102
136
135

Fig. 15

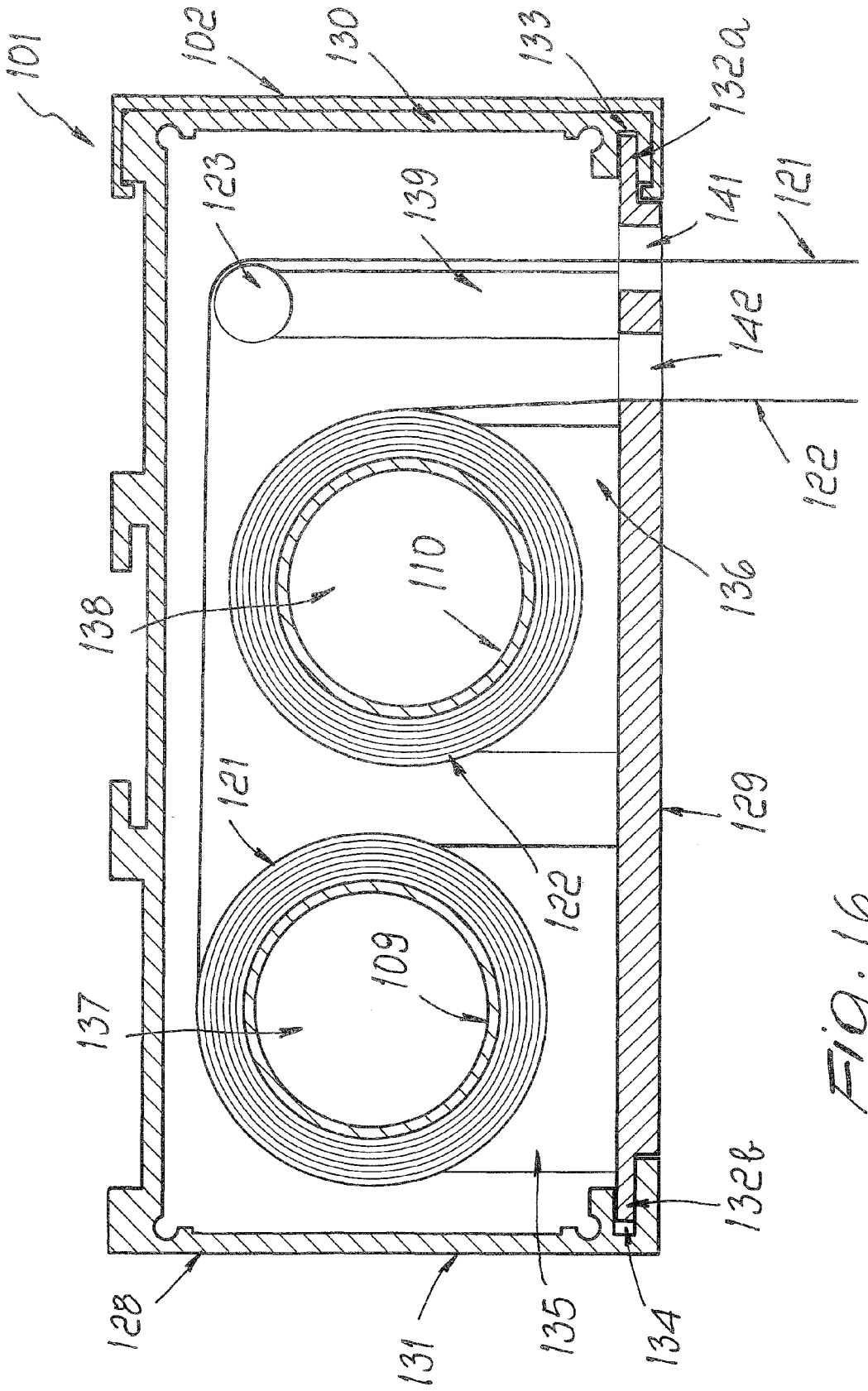
101
102
130
133
132a
123
139
141
121
142
122
136
110
138
121
129
122
109
137
132b
128
131
135
134

Fig. 16

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

- IT TV20050116 A **[0089]**
- IT TV20050163 A **[0089]**