



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 512 811 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.03.2005 Bulletin 2005/10

(51) Int Cl.7: **E04H 12/08**

(21) Application number: **04021035.3**

(22) Date of filing: **03.09.2004**

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

(72) Inventors:
• **Bonetti, Andrea**
42100 Reggio Emilia (IT)
• **Martinelli, Daniele**
42100 Reggio Emilia (IT)
• **Nannini, Osvaldo**
20146 Milano (IT)

(30) Priority: **05.09.2003 IT BO20030518**

(71) Applicant: **CONCHIGLIA S.P.A.**
I-42100 Reggio Emilia (IT)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano & Associati,
Via Meravigli, 16
20123 Milano (IT)

(54) **Pole access door**

(57) An access door for a pole, particularly for lighting, of the type that is suitable to close hermetically an opening (5) provided in the pole (2) in order to allow fitting and maintenance of components (4) for supplying power, controlling and protecting the lighting fixture, which are accommodated in the cavity (3) of the pole (2), comprising a detachable panel (6) for closing the

opening (5), with which a perimetric frame (7) is associated, and screw-type fixing means (8), which are suitable to press the frame (7) hermetically against the internal surface of the cavity (3) of the pole (2) at the perimetric edge of the opening (5), the panel (6) being arranged, within the opening (5), substantially flush with the outer surface of the pole (2) without protruding parts.

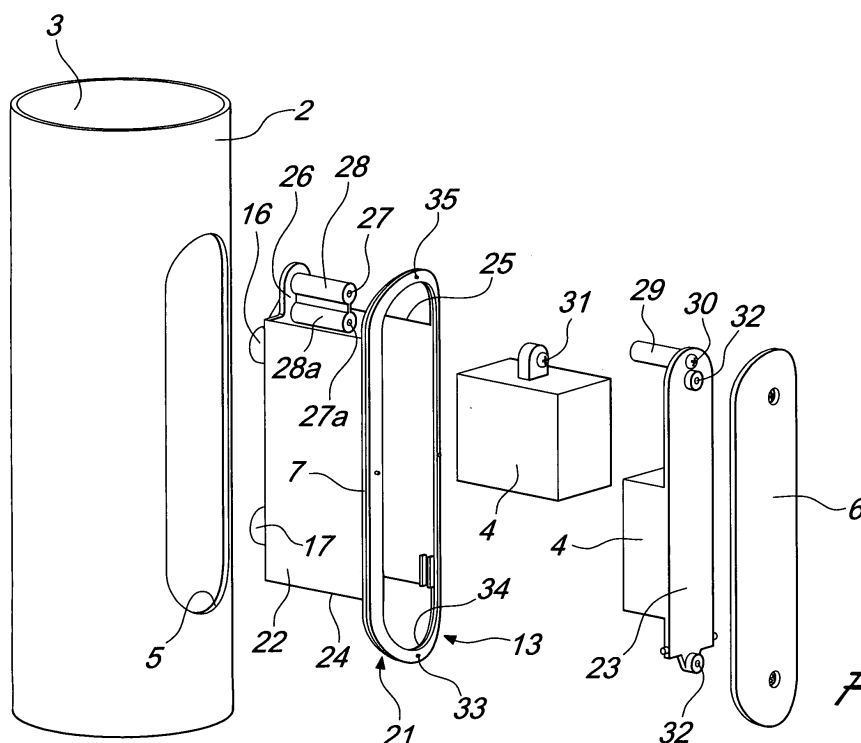


Fig. 7

EP 1 512 811 A2

Description

[0001] The present invention relates to a pole access door, particularly for street lighting poles.

[0002] The poles that support lighting fixtures for street lighting and the like are generally provided internally with a terminal strip for connecting the buried electric cables, from which two cables can branch off and rise along the pole up to the lighting fixture; the terminal strip is further associated with control and protection elements, such as for example fuses.

[0003] In order to perform the correct installation of the pole, of the terminal strip and of the other components for supplying power to the lighting fixture, and in order to perform periodic maintenance operations, said pole, which is internally hollow, is usually affected by at least one preferably oval or elliptical opening, which is substantially arranged at eye level and is protected and closed by a removable access door so as to allow inspection by assigned workers.

[0004] The access door is currently generally fixed, by means of screws, directly to the outer surface of the pole or to brackets provided inside it; it adheres to the outer edge of the opening and thus provides a conspicuous protrusion that affects the smooth outer surface of the pole.

[0005] In order to attempt to obviate this drawback, removable access doors have been provided which are obtained from the oval portion of metal plate produced by cutting the opening in the pole; said portion can be fixed to said pole by way of screws and brackets so as to fit snugly within said opening, substantially flush with the outer surface. The described solution, however, is particularly onerous and disadvantageous from the economic standpoint, since its execution requires pole manufacturers to set up diversified production lines for conventional access doors or for access doors that are flush with the pole; moreover, it is not capable of ensuring effective protection against the penetration of foreign objects (for example water, dust, impurities).

[0006] The aim of the present invention is to provide a pole access door that is capable of closing the opening flush with the pole effectively, ensuring adequate protection against the penetration of foreign objects and external agents, at the same time allowing to support reliably the terminal strip or other components inside said pole at the slot.

[0007] Within this aim, an object of the present invention is to provide a pole access door that is simple and versatile to apply, i.e., for poles having the most disparate geometries and dimensions.

[0008] Another object of the present invention is to provide a pole access door that has a simple structure, is relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0009] This aim and these and other objects that will become better apparent hereinafter are achieved by the present access door for a pole, particularly for lighting,

of the type that is suitable to close hermetically an opening provided in the pole in order to allow fitting and maintenance of the components for supplying power, controlling and protecting the lighting fixture accommodated in the cavity of the pole, characterized in that it comprises a detachable panel for closing said opening, with which a perimetric frame is associated, and screw-type fixing means, which are suitable to press said frame hermetically against the internal surface of said cavity of the pole at the perimetric edge of said opening, said panel being arranged, within said opening, substantially flush with the outer surface of the pole without protruding parts.

[0010] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred but not exclusive embodiment of a pole access door according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a partially sectional side elevation view of a first embodiment of the access door according to the invention, during fitting at the pole opening; Figure 2 is a partially sectional side elevation view of the access door of Figure 1, fixed flush with the pole at the opening;

Figure 3 is a partially sectional perspective view of the access door of Figures 1 and 2, fixed flush with the pole at the opening;

Figure 4 is a partially sectional side elevation view of a second embodiment of the access door according to the invention, fixed flush with the pole at the opening;

Figure 5 is a partially sectional perspective view of the access door of Figure 4, associated with components for supplying power, controlling and protecting the lighting fixture of the pole;

Figure 6 is a partially sectional side elevation view of a third embodiment of the access door according to the invention, fixed flush with the pole at the opening;

Figure 7 is an exploded perspective view of a fourth embodiment of the access door according to the invention;

Figure 8 is a transverse sectional view of the pole, with the access door of Figure 7 fixed at the opening;

Figure 9 is an exploded perspective view of a fifth embodiment of the access door according to the invention, fixed at the pole opening;

Figure 10 is a partially sectional side elevation view of the access door of Figure 9;

Figure 11 is a partially sectional side elevation view of a sixth embodiment of the access door according to the invention, fixed to the pole at the opening;

Figures 11a, 11b, 11c are respectively partially sectional side elevation views of successive steps of the assembly of the access door of Figure 11 at the

opening;

Figure 12 is a transverse sectional view of the pole of Figure 11b;

Figure 13 is a partially sectional side elevation view of constructive details of the access door of Figure 11;

Figure 14 is a perspective view of the details of Figure 13;

Figures 15 and 16 are partially sectional side elevation views of a seventh embodiment of the access door according to the invention, in two successive steps of assembly.

[0011] In the embodiments that follow, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other embodiments.

[0012] 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.

[0013] With reference to the figures, the reference numeral 1 generally designates a pole access door according to the invention, particularly for street lighting or other equivalent applications. Consider, in the specific case, an ordinary pole 2 that has a cylindrical cross-section and is affected by an internal cavity 3 that is designed to accommodate, preferably at eye level, the power supply, control and protection components 4 of the lighting fixture of the pole (said fixture not being shown in the figures): the components 4 are typically constituted, for example, by one or more terminal strips for connecting cables to the mains and to the lighting fixture, fuses and other components. In order to be able to fit and periodically maintain said components correctly, in the pole there is an opening 5, which is usually oval or elliptical and through which the operators can access manually the inside of the cavity 3, the access door according to the invention being associated with said opening: the access door is suitable to close the opening 5 hermetically, preventing the penetration of foreign objects, interference caused by external agents, and any break-in attempts.

[0014] According to the invention, the access door comprises a panel 6 for closing the opening 5, whose geometry and dimensions are substantially complementary to those of said opening and whose thickness is comparable to the thickness of the pole 2; said panel is associated with a perimetric frame 7, which has a uniform width and surrounds it; there are also screw-type fixing means 8, which are suitable to press hermetically, in a substantially centrifugal direction, the frame 7 against the internal surface of the cavity 3 of the pole 2 at the perimetric edge of the opening 5. In this manner, the panel 6 closes said opening effectively, preventing the penetration of foreign objects and arranging itself substantially flush with the outer surface of the pole 2, without having protruding parts.

[0015] In a first embodiment of the access door according to the invention, shown in particular in Figures 1, 2 and 3, the frame 7 is rigidly coupled perimetrically to the closure panel 6 (they are preferably provided monolithically). The panel 6 forms at the front a substantially hemispherical recess 9, which is divided into two parts by a diametrical partition 10, so that it is possible to insert one's fingers therein and remove the panel 6 by gripping the partition 10, accordingly being able to access the power supply, control and protection components 4, which are not shown in Figures 1, 2 and 3 but are substantially of a known type. The screw-type fixing means 8 are constituted by a pin 11, which is at least as long as the diameter of the pole 2, has a threaded end portion 11a with a larger diameter and has, at the opposite end, a retention ring 11b to prevent extraction; the threaded end 11a is engaged in a respective through female thread 12 provided in the panel 6 substantially in a central position. The pole-side end of the pin 11, with the threaded end portion 11a fully screwed into the female thread 12, abuts against an appropriately provided abutment surface, which in the specific case is constituted by said internal surface of the cavity 3 of the pole 2, in a diametrically opposite position with respect to where the opening 5 is provided.

[0016] Advantageously, an annular gasket 13 made of a synthetic material such as elastomer is fixed on the frame 7 and is suitable to ensure an effective seal of the frame 7 against the internal surface of the cavity 3.

[0017] The method of use of the access door according to the invention is, in view of the above, as follows. After performing, through the opening 5, the operations for fitting or maintaining the components 4, the panel 6 is inserted transversely in the cavity 3 and then centered in the opening 5, so that the frame 7 is in contact with the internal surface of the cavity 3. Then the pin 11 is engaged in the female thread 12 until the end of the stem abuts against the internal surface of the cavity 3: the tightening torque applied to the pin 11 allows to determine a substantially centrifugal fitting pressure of the frame 7 against the internal surface of the cavity 3 of the pole 2 at the perimetric edge of the opening 5, thus closing said opening hermetically. The panel 6 for closing the opening 5 is, once fitting of the access door has been completed, substantially flush with the outer surface of the pole 2 without its thickness protruding from it and affecting its continuity.

[0018] It has thus been shown that the invention achieves the intended aim and objects.

[0019] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0020] A second embodiment of the access door according to the invention is shown in Figures 4 and 5. The screw-type fixing means 8 are advantageously constituted, in this case, by two screws, an upper screw 14 and a lower screw 15, which are engaged in respective upper and lower female threads 16 and 17 provided in

the panel 6. The ends of the stems of the upper and lower screws 14 and 15 abut respectively against an upper abutment surface 18 and a lower abutment surface 19, which can be provided in different positions so as to meet the installation and fitting requirements of the power supply, control and protection components 4 of the lighting fixture, and to allow the passage of cables. In the case of Figures 4 and 5, the upper and lower abutment surfaces 18 and 19 are simply constituted by the internal surface of the cavity 3 of the pole 2, in a position that is diametrically opposite with respect to the position in which the opening 5 is provided.

[0021] The embodiment described here advantageously allows to fix the power supply, control and protection components 4 of the lighting fixture to the inner face of the panel 6 simply by way of one or more internal screws 20 or by way of other equivalent means, so as to further facilitate their fitting and maintenance.

[0022] Figure 6 relates to a third embodiment of the access door according to the invention, in which the upper and lower abutment surfaces 18 and 19, respectively for the upper and lower screws 14 and 15, are advantageously constituted by substantially Z-shaped brackets, which are fixed to the internal surface of the cavity 3 of the pole 2 and are mutually opposite and arranged proximate to the perimetric edge of the opening 5 (preferably, the two brackets are arranged respectively above and below the opening 5). The upper and lower screws 14 and 15 are accordingly shorter than in the previously described embodiments. This embodiment of the access door ensures more space inside the cavity 3, which is thus free from the bulk of the stems of the screws 14 and 15, for fitting and installing the power supply, control and protection components 4 of the lighting fixture.

[0023] Figure 7 (in an exploded view) and Figure 8 (in a transverse sectional view) illustrate a fourth embodiment of the access door according to the invention, which is particularly advantageous since the access door combines, in extremely versatile manners, the fitting and installation of the power supply, control and protection components 4 of the lighting fixture.

[0024] The embodiment described here provides for a frame 7, which is rigidly coupled to a support 21 for fitting the power supply, control and protection components 4 of the lighting fixture; the panel 6 for closing the opening 5 is detachably fixed to the support 21 and is thus arranged flush with the outer surface of the pole 2 without protruding parts (Figure 8).

[0025] The support 21, as shown in Figure 7, is constituted by a first element 22 and a second element 23, which are coupled detachably and form a receptacle for the power supply, control and protection components 4 of the lighting fixture. The first element 22 is substantially box-like and is open at the front, at the lower side 24 and optionally at the upper side 25, in order to allow the passage of cables; the frame 7 is rigidly coupled to the edge of the front opening of the first element 22 of the

support 21. A first threaded hole 27 and a second threaded hole 27a are provided in the back wall 26 of the first element 22 and are provided respectively in a first cylindrical extension 28 and in a second cylindrical extension 28a, which are perpendicular to the wall 26. The screw-type fixing means 8 are provided in the support 21 and are constituted by the upper and lower screws 14 and 15, which are engaged respectively in the upper and lower female threads 16 and 17 provided in the back wall 26 of the first element 22. The ends of the stems of the upper screw 14 and of the lower screw 15 abut against respective upper and lower abutment surfaces 18 and 19, which are constituted by the internal surface of the cavity 3 of the pole 2: the tightening torque applied to the upper and lower screws 14 and 15 is suitable to produce a substantially centrifugal fitting pressure of the frame 7 against the internal surface of the cavity 3 at the perimetric edge of the opening 5.

[0026] The second element 23 of the support 21 is substantially plate-like, and a cylindrical portion 29 protrudes from its inner face; said portion is affected by a through hole, and some of the power supply, control and protection components 4 of the lighting fixture (for example fuses) are fixed thereto. The second element 23 can be coupled to the first element 22 by way of an upper screw 30, which is inserted in the through hole and is engaged in the first threaded hole 27. Some of the elements 4 (for example a terminal strip) are instead fixed directly to the first element 22 of the support 21, for example by means of a lower screw 31, which is engaged in the second threaded hole 28a. The outer face of the second element 23 is affected by threaded holes 32, which are arranged at the opposite ends for fixing the panel 6 by means of small screws.

[0027] Advantageously, the frame 7 is constituted by an outer perimetric portion 33 for abutment against the internal surface of the cavity 3 of the pole 2 at the edge of the opening 5 and by an inner perimetric portion 34, on which the perimetric edge of the inner face of the panel 6 is designed to abut. A plurality of raised surface portions 35 are provided on the frame (particularly on the gasket 13) and are distributed so that they are interposed between the outer perimetric portion 33 and the inner perimetric portion 34, and allow to center the frame 7 with respect to the perimetric edge of the opening 5. In this embodiment, it is also possible to use the pole portion 2 removed by the manufacturers to provide the opening 5, which if machined suitably (providing two holes for fixing on the threaded holes 32 by way of screws) would constitute the closure panel 6 of the cavity 3.

[0028] A fifth embodiment of the access door according to the invention is described in Figures 9 and 10; in this constructive solution, the access door advantageously has a simpler and more versatile structure than described above, therefore allowing to accommodate components 4 having various dimensions and architectures. The support 21 is in fact constituted by two ele-

ments 36 and 37, which are substantially C-shaped and whose ends are connected on opposite sides to the frame 7, the central portion being rigidly coupled to a vertical plate 38. The screw-type fixing means 8 of the support 21 are constituted by the upper and lower screws 14 and 15, which are engaged in respective female threads 16 and 17 provided in the plate 38, in which the ends of the stem abut against abutment surfaces constituted, in this case also, by the internal surface of the cavity 3 of the pole 2.

[0029] The two C-shaped elements 36 and 37 can be mutually parallel, and therefore the screws 14 and 15 that are used are advantageously two, arranged at the ends 39 of the plate 38, or can converge: with this last solution, only one of the screws 14 and 15, engaged at the center of the plate 38, is used.

[0030] The embodiment described here provides for a frame 7 that has a sort of perimetric surface lip 40 (which is preferably formed by the gasket 13), which is substantially interposed between the outer perimetric portion 33 and the inner perimetric portion 34 and is suitable to allow correct and easy centering, during fitting, of the frame 7 with respect to the perimetric edge of the opening 5. The frame 7 further forms, at the inner perimetric portion 34, a sort of semicircular tab 41, which forms a respective through female thread 42.

[0031] The panel 6 for closing the opening 5 is fixed so that its perimetric edge presses against the inner perimetric portion 34 and is locked by a flush-head screw 43, which is engaged in the female thread 42. The panel 6 is further provided, in a lower region, with a sort of tooth 44, which is rigidly coupled to the inner face for reference, during assembly, on the lower portion of the frame 7. In this case also (as in the embodiment shown in Figure 7), it is possible to use the portion of pole 2 that was removed by the manufacturers in order to provide the opening 5; by being machined adequately (provision of two holes for fixing on the threaded holes 32 by means of small screws), it would constitute the closure portion 6 for the cavity 3.

[0032] Figures 11 onward describe a sixth embodiment of the access door according to the invention (Figure 11, in particular, illustrates the panel once fitting has been completed). The panel 6 is rigidly coupled to the frame 7 and is provided with screw-type fixing means 8, which are constituted by an upper screw 14 and a lower screw 15, as shown in Figures 4, 5 and 6, in abutment against respective upper and lower abutment surfaces 18 and 19. According to the present solution, the access door advantageously comprises a receptacle 45 for the power supply, control and protection components 4 of the lighting fixture, which is fixed detachably inside the cavity 3 at the opening 5 by way of screw-type locking elements 46.

[0033] The receptacle 45 is substantially C-shaped and forms a central portion 47, an upper end portion 48, and a lower end portion 49, which are substantially parallel and mutually opposite; the lower end portion 49 is

affected by an opening 50 which allows the passage of cables. The screw-type elements 46 for locking the receptacle 45 inside the cavity 3 of the pole 2 are constituted by a first upper grub screw 51 and a second lower grub screw 52, which are engaged respectively in a first upper female thread 53 and in a second lower female thread 54, which are provided in the central portion 47 of the receptacle 45. The first and second grub screws 51 and 52 have respective ends that abut against the inner surface of the cavity 3; the tightening torque applied to the grub screws 51 and 52 during fitting is suitable to produce a consequent substantially centrifugal pressure of the upper and lower end portions 48 and 49 against the inner surface of the cavity 3 above and below the perimetric edge of the opening 5 (Figure 12), said pressure ensuring the stable arrangement of the receptacle 45 at the chosen level.

[0034] The central portion 47 of the receptacle, along which it is possible to fix the power supply, control and protection components 4 of the lighting fixture, is affected in an upper region by a circular through opening 55; the lower end portion 49 forms two thin extensions 56, which converge in a cylindrical element 57. Each one of the thin extensions 56 in turn forms a respective elongated narrow pin 58, which is substantially parallel to the lower end portion 49.

[0035] The access door is installed at the opening 5 as described hereinafter. The receptacle 45 is first inserted in the cavity 3 of the pole 2 through the opening 5 (Figure 11a), so that the pins 58 rest on the lower part of the perimetric edge thereof, so as to ensure stable support and centering (Figure 11b). Then the first grub screw 51 and the second grub screw 52 are tightened in abutment against the internal surface of the cavity 3; and then the pins 58, which at this point are no longer necessary, are broken. After installing and fixing the components 4 inside the receptacle 45, the panel 6 is inserted in the opening 5, arranging it so that the frame 7 adheres to the internal surface of the cavity 3 at the edge of the opening 5 (Figure 11c). Finally, the panel 6 is fixed by way of the upper screw 14, which passes through the circular opening 55 and whose stem end abuts against the respective upper abutment surface 18 constituted by said internal surface of the cavity 3, and the lower screw 15, which is shorter, abuts against the respective lower abutment surface 19, which is preferably constituted by a small metallic insert fixed on the cylindrical element 57.

[0036] Figures 15 and 16 are views of a seventh embodiment of the pole access door according to the invention. In this embodiment, the access door advantageously comprises a receptacle, designated by the same reference numeral 45, for the power supply, control and protection components of the lighting fixture inside the cavity 3 of the pole 2, said components being likewise designated by the reference numeral 4. The receptacle 45 is conveniently provided with push-operated fixing means, generally designated by the reference

numeral 59, which are suitable to support the receptacle 45 inside the cavity 3 at the opening 5; the support of the receptacle 45 is thus provided absolutely autonomously, i.e., independently of any other mechanical supporting elements.

[0037] The receptacle 45 is substantially C-shaped and forms, as already described earlier, a central portion 47, an upper end portion 48, and a lower end portion 49, which are mutually opposite and substantially parallel. The lower end portion 49 is affected by an opening 50, which allows the passage of power supply cables.

[0038] The push-operated fixing means 5 comprise screw-type locking elements 46, which are fully equivalent to the ones already described earlier, and at least one spring 60, which is suitable to apply an appropriate pressure to the internal surface of the cavity 3, so as to support the receptacle 45 temporarily while the operator positions it correctly at the opening 5. The spring 60, which is substantially constituted by an elastically flexible lamina, is fixed to the rear of the central portion 47 of the receptacle 45.

[0039] The screw-type locking elements are conveniently constituted by a first upper grub screw 51 and by a second lower grub screw 52, which are engaged respectively in a first upper female thread 53 and in a second lower female thread 54, which are provided in the central portion 47 of the receptacle 45. The first and second grub screws 51 and 52 have respective ends in abutment against the internal surface of the cavity 3. A suitable tightening torque applied to the grub screws 51 and 52 during fitting and adjustment is suitable to produce a consequent substantially centrifugal pressure of the upper and lower end portions 48, 49 against the internal surface of the cavity 3, above and below the perimetric edge of the opening 5 and at eye level.

[0040] The upper end portion 48 of the receptacle 45 is extended at the front by means of a reference tab 61, which is substantially suitable to allow correct placement of the receptacle 45 with respect to the opening 5, as shown in Figure 16.

[0041] The receptacle 45 can be provided advantageously with a protective cover 62, which is pivoted frontally to the central portion 47 of the receptacle.

[0042] The receptacle 45 described here is obviously particularly suitable to be associated with any type of access door 1, i.e., with access doors of any size associated with poles of various kinds: the receptacle can in fact also be associated with access doors that are fixed externally and are not flush with the outer surface of the pole 2.

[0043] The receptacle 45 is fitted inside the cavity 3 of the pole 2 as follows. Initially, the receptacle 45 is inserted in the cavity 3 through the opening 5, as shown in Figure 15; the spring 60 applies a pressure to the internal surface of the cavity 3, producing a friction that prevents the receptacle 45 from falling inside the cavity 3, thus allowing to perform the subsequent operations. The reference tab 61 is then made to mate with the up-

per end of the opening 5, so as to provide the correct positioning of the receptacle 45 inside the pole 2.

[0044] The first grub screw 51 and the second grub screw 52 are then tightened with an appropriate torque, placing their ends firmly in abutment against the internal surface of the cavity 3; accordingly, on the diametrically opposite side, the upper end portion 48 and the lower end portion 49 press against said internal surface above and below the opening 5, providing by friction the locking and self-support of the receptacle 45 in the correct position inside the cavity 3. The reference tab 61, which at this point is no longer necessary, can now be simply cut off.

[0045] The various electrical components 4 are then installed inside the receptacle 45, and the protective cover 62 is optionally applied; finally, the access door 1 is fitted, either flush or so that it protrudes. The access door can be of the simple type, suitable to merely protect the electrical components 4, or of the type provided with watertight gaskets.

[0046] The embodiments described are extremely versatile to apply and use for poles 2 and openings 5 of any shape and size: the closure panel 6 is always positioned inside the opening 5 flush with the outer surface of the pole 2, without unsightly and unwanted protruding parts.

[0047] All the details may be replaced with other technically equivalent ones.

[0048] In practice, the materials used, as well as the shapes and dimensions, may be any according to requirements without thereby abandoning the protective scope of the appended claims.

[0049] The disclosures in Italian Patent Application No. BO2003A000518, from which this application claims priority, are incorporated herein by reference.

[0050] 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 access door for a pole, particularly for lighting, of the type that is suitable to close hermetically an opening (5) provided in the pole (2) in order to allow fitting and maintenance of the components (4) for supplying power, controlling and protecting the lighting fixture, which are accommodated in the cavity (3) of the pole (2), **characterized in that** it comprises a detachable panel (6) for closing said opening (5), with which a perimetric frame (7) is associated, and screw-type fixing means (8), which are suitable to press said frame (7) hermetically against the internal surface of said cavity (3) of the pole (2)

at the perimetric edge of said opening (5), said panel (6) being arranged, within said opening (5), substantially flush with the outer surface of the pole (2) without protruding parts.

2. The access door according to claim 1, **characterized in that** said panel (6) for closing said opening (5) is perimetrically rigidly coupled to said frame (7).
3. The access door according to one or more of the preceding claims, **characterized in that** said screw-type fixing means (8) are constituted by at least one pin (11), which is provided with a threaded end portion (11a), which is engaged in a respective female thread (12) provided in said panel (6) and whose end abuts against a respective abutment surface provided inside said cavity (3) of the pole (2), so that the tightening torque applied to said pin (11) in said female thread (12) is suitable to produce a consequent substantially centrifugal fitting pressure of said frame (7) against the internal surface of said cavity (3) of the pole (2) at the perimetric edge of said opening (5), providing its hermetic closure.
4. The access door according to one or more of the preceding claims, **characterized in that** said female thread (12) is arranged substantially at the center of said panel (6).
5. The access door according to one or more of the preceding claims, **characterized in that** said screw-type fixing means (8) comprise two of said screws, an upper screw (14) and a lower screw (15), which are engaged in respective upper and lower female threads (16, 17) provided in said panel (6), the ends of their stems abutting against respective upper and lower abutment surfaces (18, 19) provided in said cavity (3) of the pole (2).
6. The access door according to one or more of the preceding claims, **characterized in that** said power supply, control and protection components (4) of the lighting fixture are fixed detachably to the inner face of said panel (6).
7. The access door according to claim 1, **characterized in that** said perimetric frame (7) is rigidly coupled to a support (21) for said power supply, control and protection components (4) of the lighting fixture, to which said panel (6) is fixed detachably, said panel being thus arranged, within said opening (5), substantially flush with the outer surface of the pole (2), without protruding parts.
8. The access door according to one or more of the preceding claims, **characterized in that** said screw-type fixing means (8) are constituted by said

upper and lower screws (14, 15), which are engaged in respective upper and lower female threads (16, 17) provided in said support (21), said screws (14, 15) having stem ends in abutment against respective upper and lower abutment surfaces (18, 19) provided in said cavity (3) of the pole (2), so that the locking torque applied to said screws (14, 15) is suitable to generate a consequent centrifugal fitting pressure of said frame (7) against the internal surface of said cavity (3) of the pole (2) at the perimetric edge of said opening (5), closing it hermetically.

9. The access door according to one or more of the preceding claims, **characterized in that** said support (21) has a substantially box-like open configuration in order to allow the passage of cables for connection to the mains and to the lighting fixture, respectively.
10. The pole access door according to one or more of the preceding claims, **characterized in that** said support (21) is constituted by at least one substantially C-shaped element (36), whose ends are connected to said frame (7) and whose central portion is rigidly coupled to a plate (38) for engaging at least one of said screws (14, 15).
11. The access door according to one or more of the preceding claims, **characterized in that** said support (21) comprises two of said C-shaped elements (36, 37), which are mutually substantially parallel and are fixed respectively to the ends of said frame (7) and to the ends (39) of said plate (38).
12. The access door according to one or more of the preceding claims, **characterized in that** said support comprises two of said C-shaped elements (36, 37), which are arranged so as to substantially converge and are fixed respectively to the ends of said frame (7) and to the center of said plate (38).
13. The access door according to one or more of the preceding claims, **characterized in that** said frame (7) has an outer perimetric portion (33) for hermetic abutment against the internal surface of said cavity (3) of the pole (2) at the perimetric edge of said opening (5), and an inner perimetric portion (34), on which the perimetric edge of said panel (6) abuts hermetically.
14. The access door according to one or more of the preceding claims, **characterized in that** said frame (7) has a plurality of raised surface portions (35), which are interposed between said outer perimetric portion (33) and said inner perimetric portion (34) and allow to center said frame (7) with respect to the perimetric edge of said opening (5).

15. The access door according to one or more of the preceding claims, **characterized in that** said frame (7) has a sort of perimetric surface lip (40), which is interposed between said outer perimetric portion (33) and said inner perimetric portion (34) and is suitable to allow to center said frame (7) with respect to the perimetric edge of said opening (5).
16. The access door according to one or more of the preceding claims, **characterized in that** said inner perimetric portion (34) of said frame forms at least one tab (41), which forms a respective female thread (42) for fixing said panel by means of a screw (43).
17. The access door according to claim 1, **characterized in that** it comprises a receptacle (45) for said power supply, control and protection components (4) of the lighting fixture, which is fixed detachably inside said cavity (3) of the pole (2), at said opening (5), by way of screw-type locking elements (46).
18. The access door according to one or more of the preceding claims, **characterized in that** said receptacle (45) is substantially C-shaped, forms two mutually opposite end portions (48, 49), and is provided with a lower opening (59) for the passage of power supply cables.
19. The access door according to one or more of the preceding claims, **characterized in that** said screw-type locking elements (46) comprise at least one first grub screw (51) and one second grub screw (52), which are engaged respectively in a first female thread (53) and in a second female thread (54) provided in said receptacle (45), said grub screws (51, 52) having ends in abutment against the internal surface of said cavity (3), so that a tightening torque applied to said grub screws (51, 52) is suitable to produce a consequent substantially centrifugal fitting pressure of said end portions (48, 49) against the internal surface of said cavity (3), respectively above and below the perimetric edge of said opening (5).
20. The access door according to one or more of the preceding claims, **characterized in that** an annular gasket (13) made of a synthetic material such as an elastomer is fixed on said frame (7) and is suitable to provide the seal of said frame (7) against the internal surface of said cavity (3) at the perimetric edge of said opening (5).
21. The access door according to one or more of the preceding claims, **characterized in that** said lower abutment surface (19) is constituted by a metallic insert provided at the lower end portion (49) of said receptacle (45).
22. The access door according to one or more of the preceding claims, **characterized in that** said lower and upper abutment surfaces (18, 19) are constituted by the internal surface of said cavity (3) in a substantially diametrically opposite position with respect to said opening (5).
23. The access door according to one or more of the preceding claims, **characterized in that** said upper and lower abutment surfaces (18, 19) are constituted by two brackets, which are fixed to the internal surface of said cavity (3), are mutually opposite, and are arranged proximate to the perimetric edge of said opening (5).
24. A receptacle suitable to support electric power supply, protection, indication and control components (4) of a lighting fixture inside a cavity (3) of a lighting pole (2), **characterized in that** it comprises push-operated fixing means (59), which are suitable to support said receptacle (45) inside said cavity (3) at an access opening (5).
25. The receptacle according to claim 24, **characterized in that** said push-operated fixing means (59) comprise screw-type locking elements (46), which are suitable to support said receptacle (45) along the internal surface of said cavity (3).
26. The receptacle according to claim 24, **characterized in that** said screw-type locking elements (46) are suitable to support said receptacle (45) by friction against the internal surface of said cavity (3) by applying a tightening torque.
27. The receptacle according to claims 24 and 25, **characterized in that** said push-operated fixing means (59) comprise at least one spring (60), which is suitable to apply an appropriate pressure to the internal surface of said cavity (3), so as to support temporarily said receptacle (45) in order to position it correctly at said opening (5).
28. The receptacle according to one or more of claims 24 to 27, **characterized in that** said screw-type locking elements (46) comprise at least one first grub screw (51) and one second grub screw (52), which are engaged respectively in a first female thread (53) and in a second female thread (54), which are provided in said receptacle (45), said grub screws (51, 52) having ends that abut against the internal surface of said cavity (3), so that a tightening torque applied to said grub screws (51, 52) is suitable to produce a consequent substantially centrifugal fitting pressure of said receptacle against the internal surface of said cavity (3).
29. The receptacle according to one or more of claims

24 to 28, **characterized in that** it is substantially C-shaped, forms two mutually opposite end portions (48, 49), and has a lower opening (50) for the passage of power supply cables, said end portions (48, 49) being suitable to abut, by way of the action of said screw-type locking elements (46), against the internal surface of said cavity (3) above and below said opening (5), providing the support of said receptacle by friction.

10

30. The receptacle according to one or more of claims 24 to 29, **characterized in that** it comprises at least one perimetric frame (7), which is suitable to abut against the internal surface of said cavity (3) around said opening (5), providing the support of said receptacle by friction.

20

25

30

35

40

45

50

55

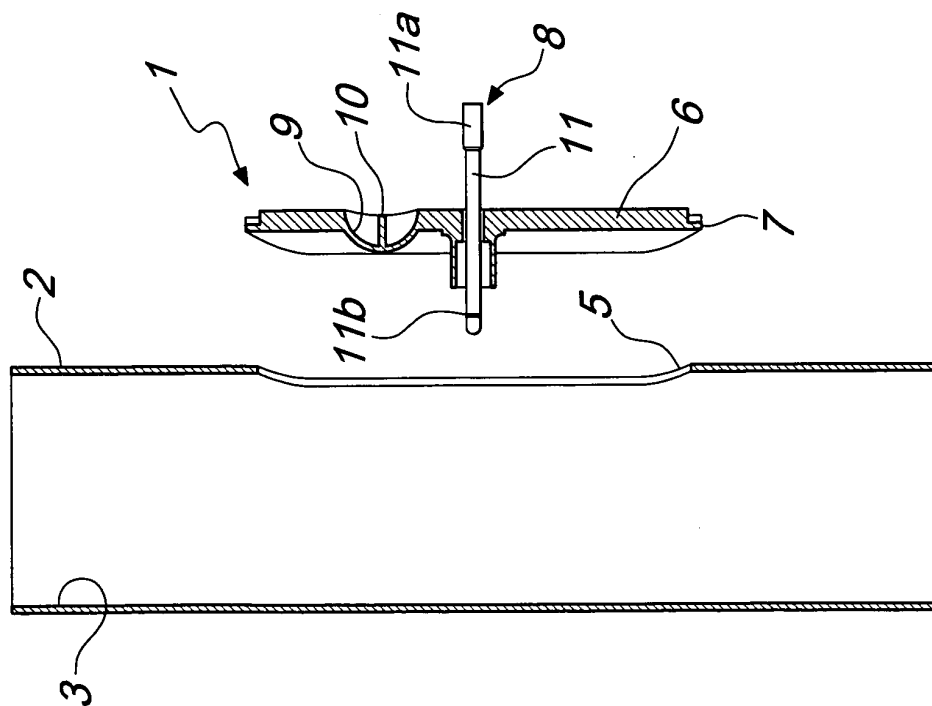


Fig. 1

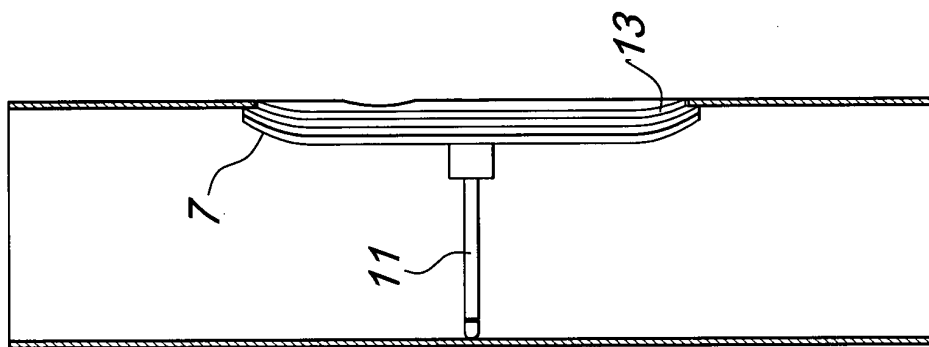


Fig. 2

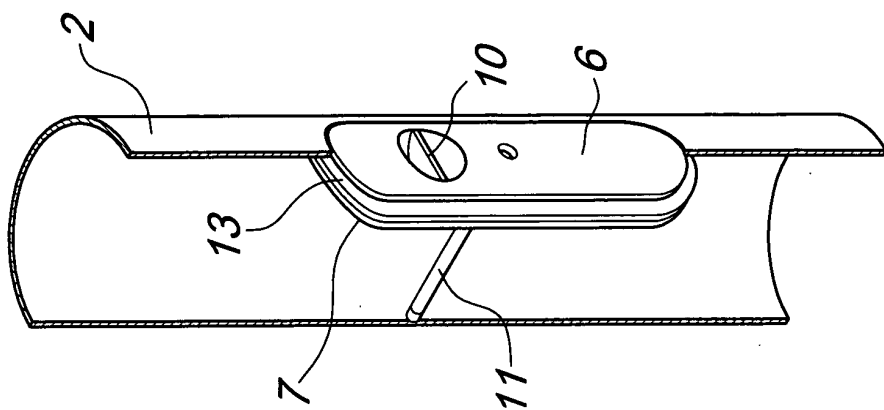


Fig. 3

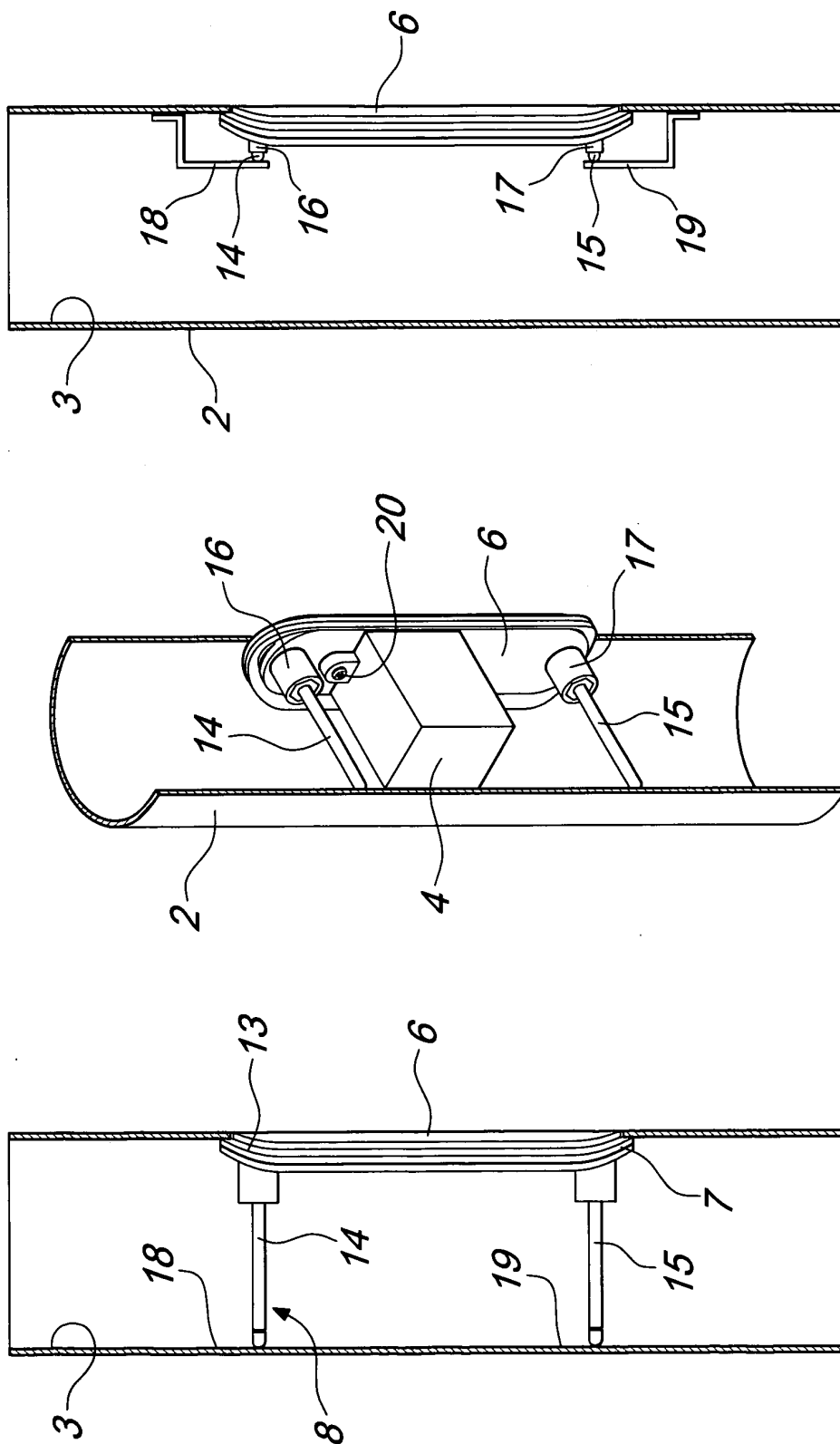
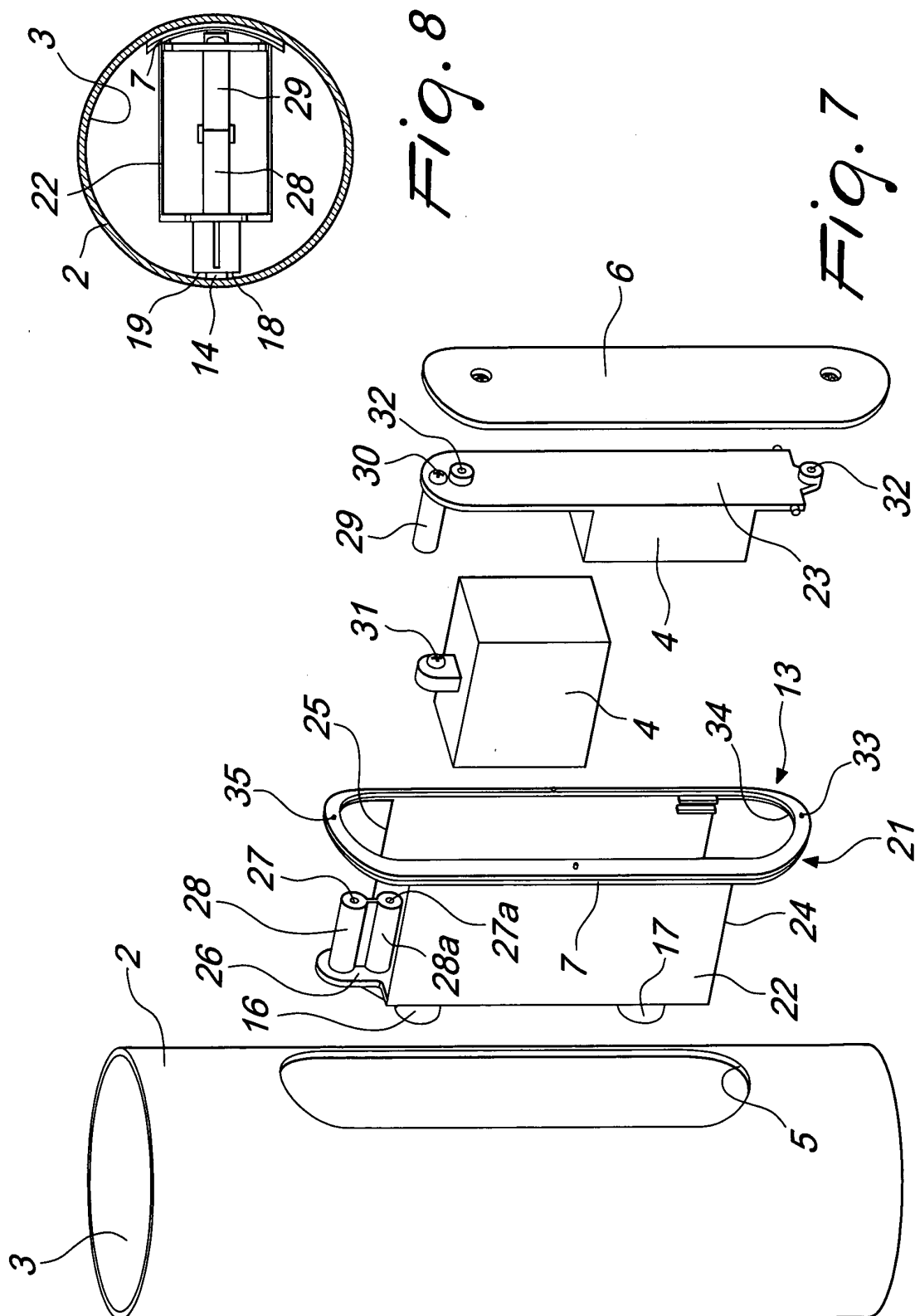
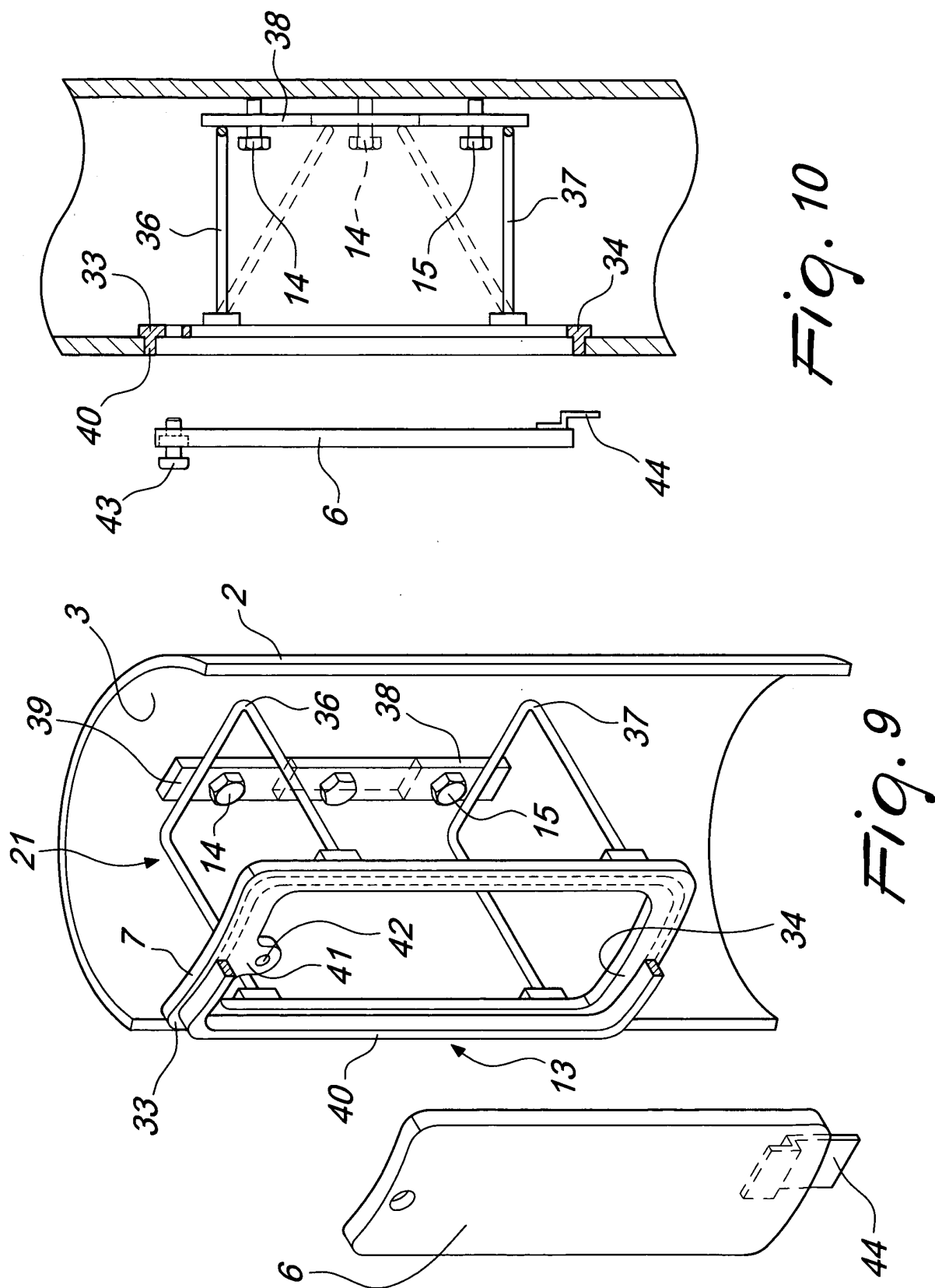


Fig. 6

Fig. 5

Fig. 4





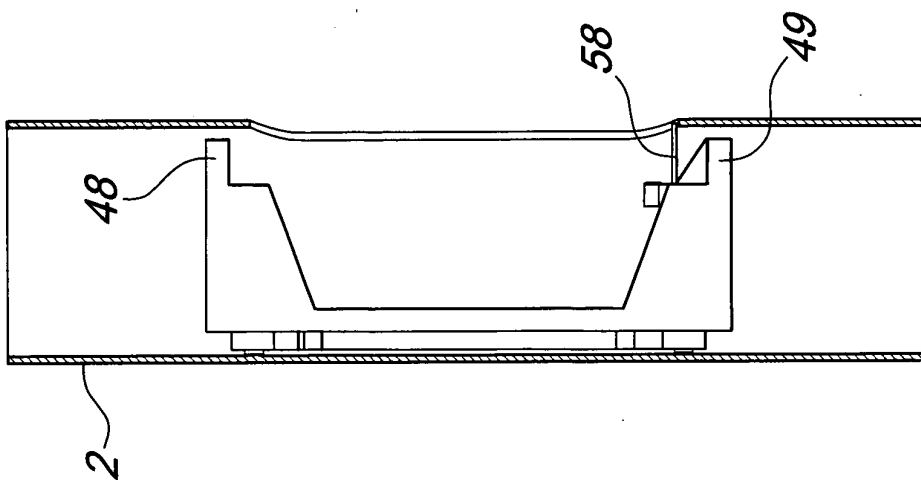


Fig. 11a

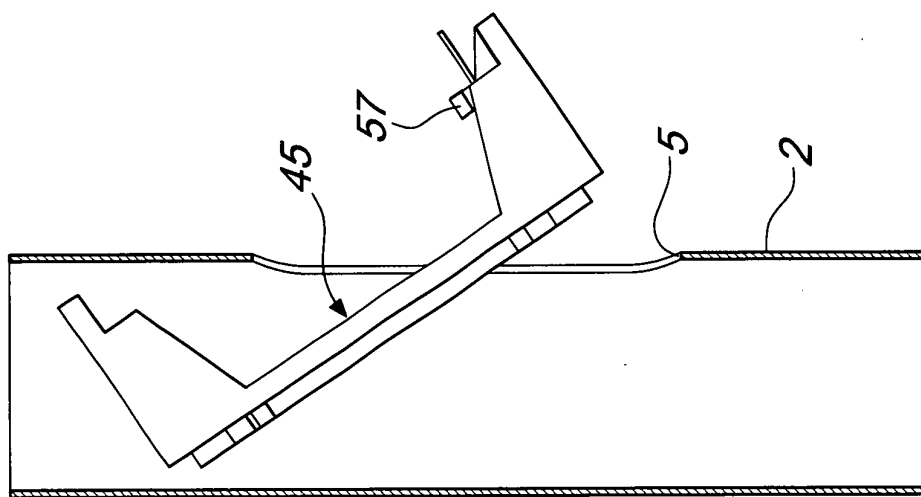


Fig. 11b

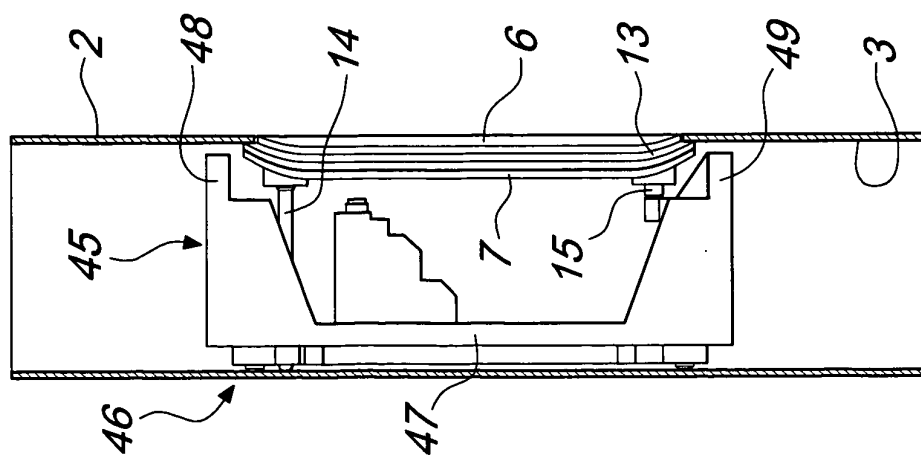


Fig. 11

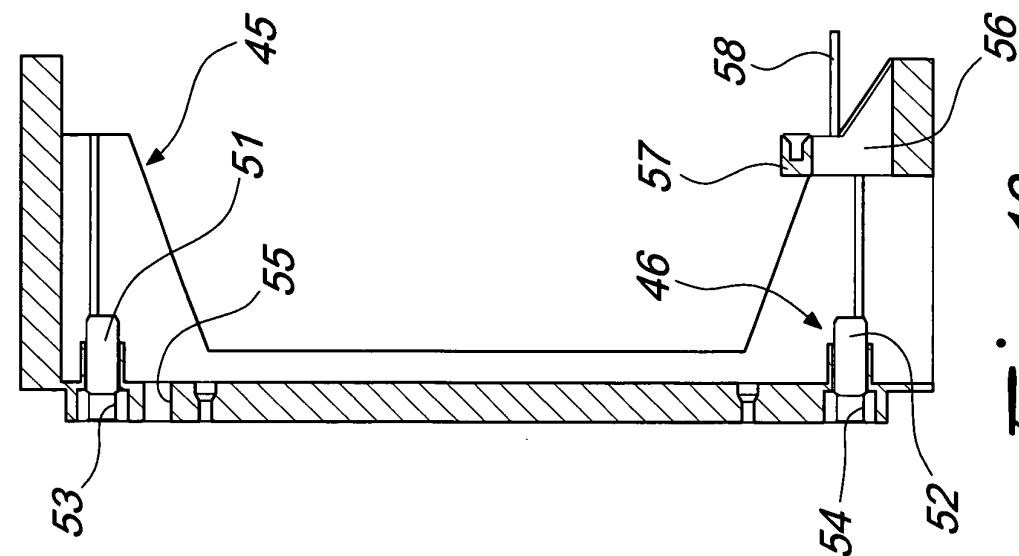


Fig. 13

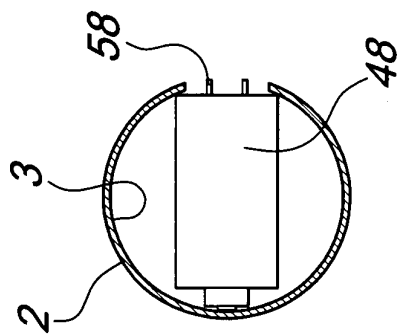


Fig. 12

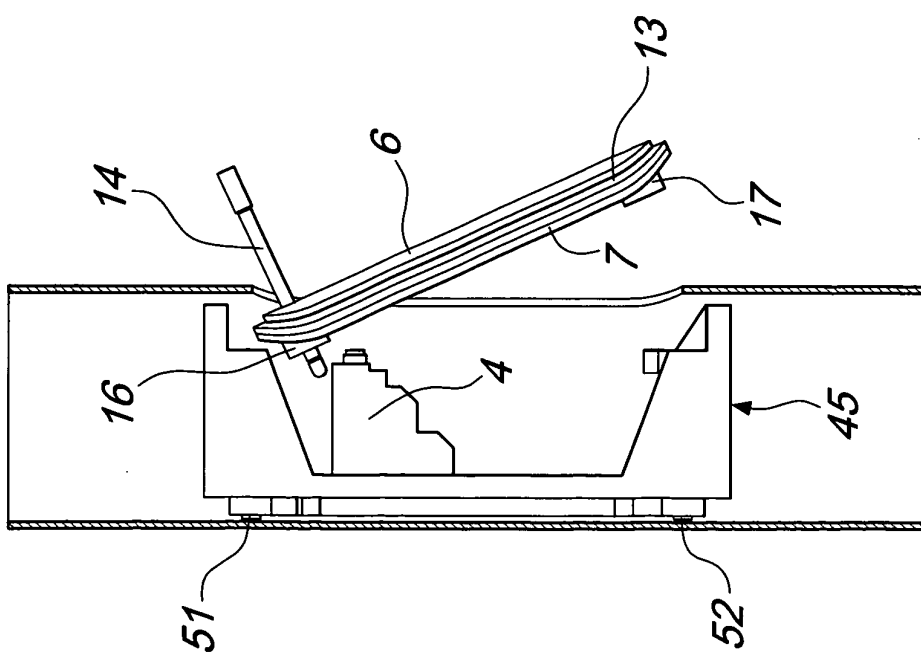
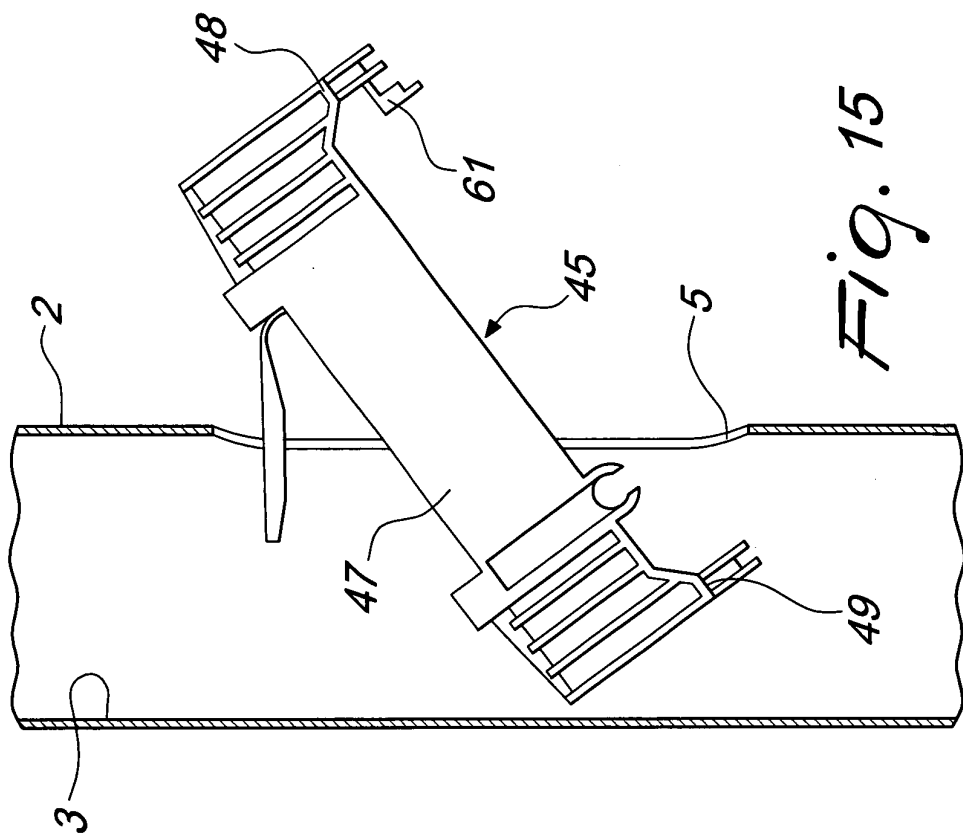
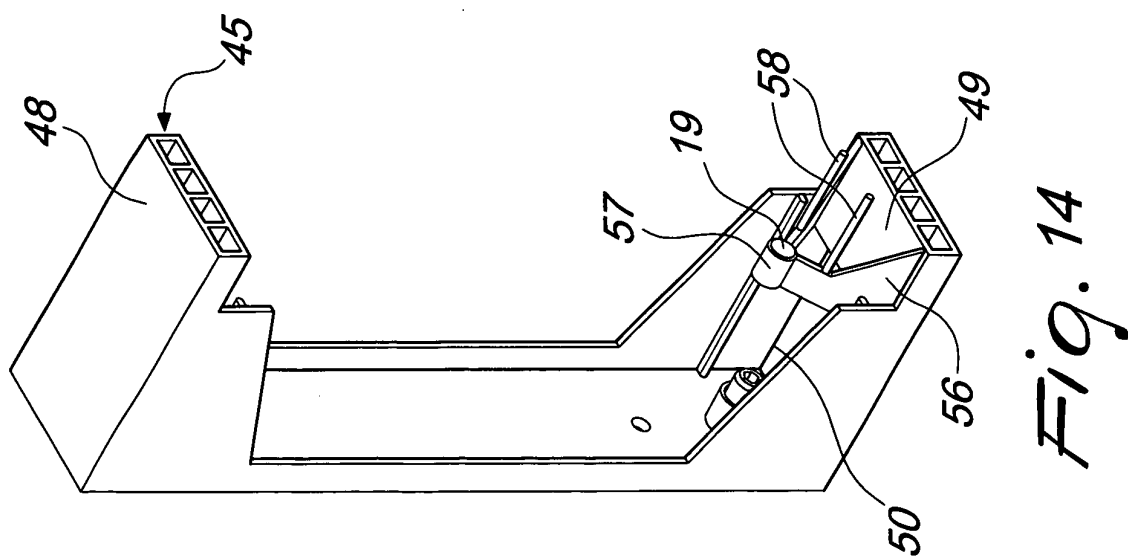


Fig. 11c



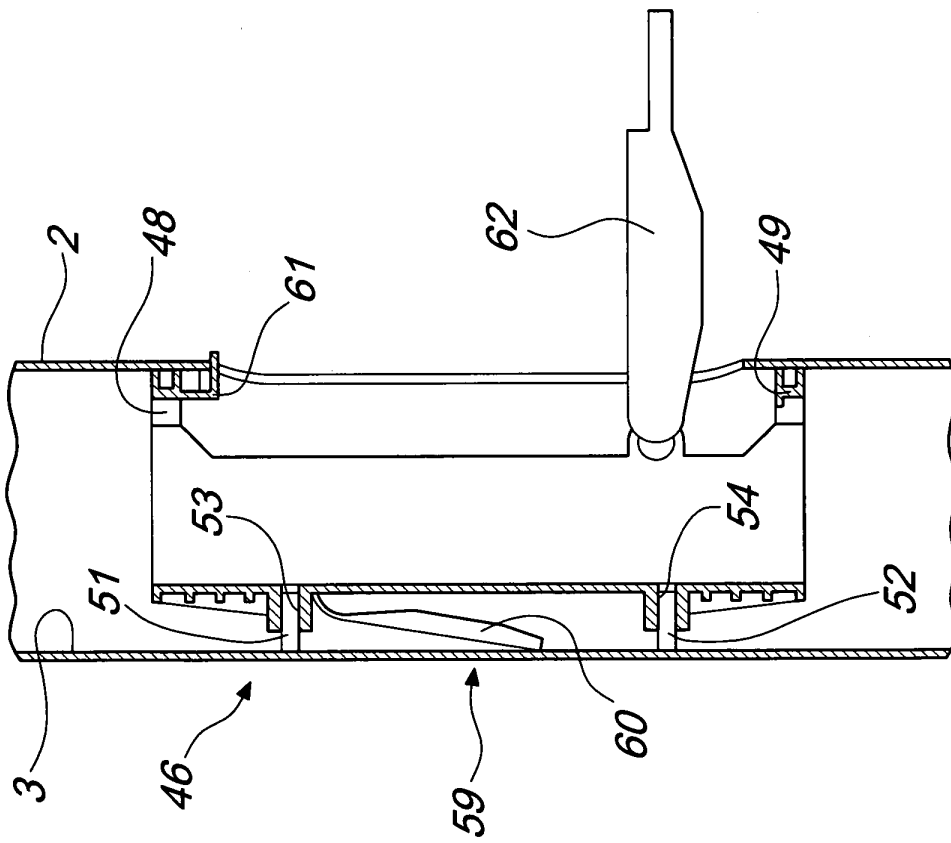


Fig. 16