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(54) Device for the screened connection of cables, in particular of coaxial cables, and method for connecting said cables

(57) The present invention relates to a device (10) for the screened connection of at least one cable (20), in particular of the coaxial type, comprising at last one conductor (22, 24) for carrying video and/or audio and/or data signals, said device (10) comprising:
- a body (30) having a first portion (30A) comprising a plurality of walls (31) so provided as to define at least one housing (32) adapted to receive one end of said cable (20);
- connector means (40, 41, 42, 43, 44) for connecting the cable (20) electrically to said device (10);

According to the invention, said device (10) comprises a clamping element or lid (60) adapted to change its own configuration by adjusting itself to said cable (20) in order to clamp the cable (20) inside the housing (32).

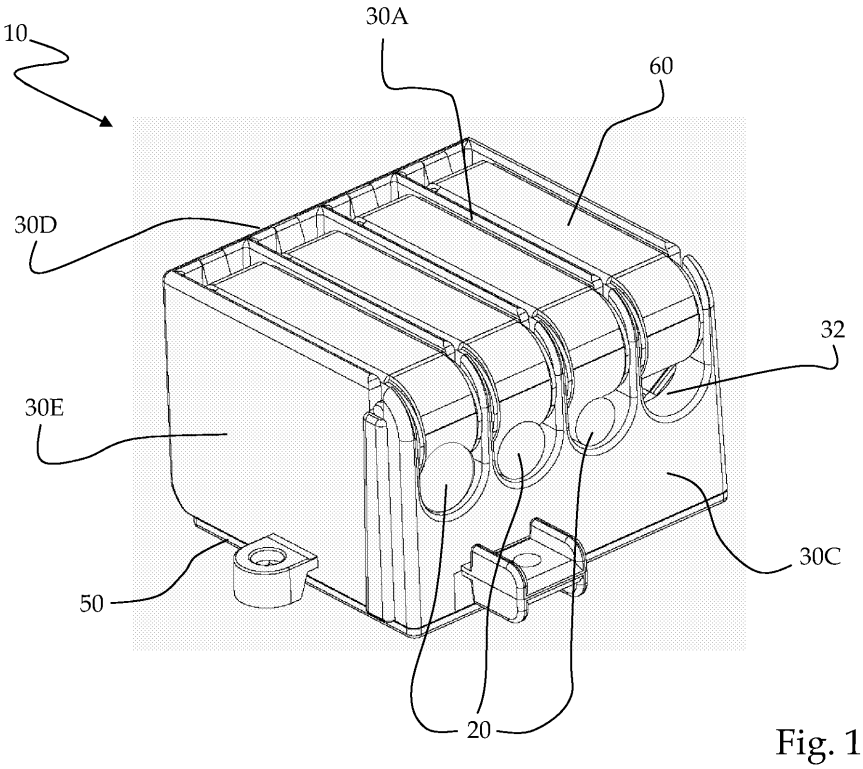

Fig. 1

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Description

[0001] The present invention relates to a device for the screened connection of cables, in particular of coaxial cables, according to the preamble of claim 1, and to a method for providing a screened connection of said cables.

[0002] At present, sockets for satellite television signals are becoming increasingly widespread in addition to the common sockets for terrestrial television signals. Considering the remarkable advantages offered by digital television, it is likely that in the future there will be a rapid increase in the distribution of digital signals in private houses.

[0003] The modulations used in digital television, e.g. QPSK (Quadrature Phase Shift Keying), QAM (Quadrature Amplitude Modulation) and OFDM (Orthogonal Frequency Division Multiplexing), imply the need for more care in the manufacturing of the devices used for the screened connection of cables, in particular of coaxial cables, compared to the traditional analog television.

[0004] Screening and impedance matching, which were already important for analog signals, become essential for satellite, cable or terrestrial digital signals. In fact, a good screening is absolutely necessary to prevent external noise from being overlapped on the signal, thus causing malfunctioning of the receiver of said signals.

[0005] This is independent of the type of information contained in the signal, and therefore the above consideration applies not only to television signals (video plus audio), but also to audio-only signals and data signals.

[0006] It is also known that the devices for the screened connection of cables, in particular of coaxial cables, may be of various types depending on their function.

[0007] In particular, said devices may be shunts, which are installed in the line of a coaxial cable to distribute at least one signal to various cables and/or sockets, or dividers, which are installed in an end portion of a coaxial cable to distribute at least one signal to various cables and/or sockets.

[0008] The cable connection devices of any kind known in the art, whether they are used for receiving analog or digital signals, are normally of the embedded type, i.e. they are enclosed in a walled-in box.

[0009] During the installation work, each coaxial cable to be connected to the shunt or divider device is extracted from its walled-in box and is "unsheathed", i.e. a few centimeters of the sheath protecting its ground mesh and of the insulating material (or dielectric) protecting the central conductor are removed.

[0010] The cable is then connected to the connection device, typically by securing the central conductor with a screw and the ground mesh with a screw U-bolt; in this regard, it should be noted that, according to the known art, it is necessary to use screws in order to ensure both the electric connection and the mechanic solidity of the latching between the cable and the device.

[0011] Said operations for connecting the cable to the connection device may cause electric troubles, such as poor screening of the connection of the central conductor, or impedance mismatching due to cable deformation, i.e. loss of coaxiality, if the ground U-bolt is tightened too much.

[0012] The situation becomes even worse when, once the connections have been carried out, the connection device is inserted into the box; since the room available therein is very limited, the cable usually undergoes further deformation due to short-radius curving and squeezing, thus increasing impedance mismatching and causing an often unacceptable deterioration of the signal, whether analog or digital.

[0013] Connection devices for the screened connection of cables, in particular of coaxial cables, are also known in the art which comprise a body wherein a housing is obtained for receiving one or two cables at a time; said devices are also fitted with a lid, typically made of a conducting material, which is pivoted to the body portion opposite to the one where the cable is inserted, and which can be moved by tightening a central clamping screw. Said one or two cables are clamped by tightening the central clamping screw, which causes the lid to move, thus closing the housing.

[0014] Connection devices adopting the above-described solution suffer from some drawbacks as well.

[0015] A first drawback is the fact that the connection of the cable to the connection device may cause electric troubles, such as poor screening of the connection of the central conductor, or impedance mismatching due to cable deformation, i.e. loss of coaxiality, if the central clamping screw is tightened too much.

[0016] Another drawback of the above-described solution and of any other solutions known in the art is that connection procedures are complex and difficult, in particular when using devices housing two cables, which are to be clamped simultaneously through the same lid.

[0017] Moreover, such a solution generally suffers from poor flexibility, since it requires that the cables to be connected are essentially equal in diameter. In fact, if cables having different cross sections are used, the following problems will arise when tightening the lid through the central clamping screw:

- possible risks of unthreading of the smaller cable from the device body, in the event that the cable is pulled accidentally, or
- mechanic deformation of the mesh and of the outer sheath of the bigger cable, if the central clamping screw is tightened as necessary to clamp the smaller cable.

[0018] From this viewpoint, therefore, these solutions cannot be used with cables having different cross sections.

[0019] A further drawback is that the mesh and the outer sheath of the cable to be connected are subj ected to mechanic deformation under the pressure exerted by

the lid, induced by tightening the central clamping screw; this normally occurs especially because this operation is difficult to control by the installer.

[0020] In this frame, the main object of the present invention is to provide a device for the screened connection of cables, in particular of coaxial cables, which allows to carry out a mechanic and/or electric connection quickly, comfortably and reliably, without requiring the use of any U-bolts and minimizing the number of tightening operations, in order to ensure an effective screening and to avoid any risks of impedance mismatching.

[0021] It is another object of the present invention to provide a connection device as aforementioned wherein no substantial mechanic deformation of the cable takes place when it is secured mechanically and electrically.

[0022] It is another object of the present invention to provide a connection device as aforementioned which can be used without distinction for cables dedicated to analog or digital signals.

[0023] It is another object of the present invention to provide a connection device as aforementioned which reduces the risks of unlatching and disconnection due to undesired pulling of the cable.

[0024] It is another object of the present invention to provide a connection device as aforementioned which can be used for many types of cables, also having different cross sections.

[0025] In order to attain these objects, the present invention provides a device for the screened connection of cables, in particular of coaxial cables, incorporating the features set out in the appended claims, which are intended as an integral part of the present description.

[0026] Further objects, features and advantages of the present invention will become apparent from the following detailed description and from the annexed drawings, which are supplied by way of non-limiting example, wherein:

- Fig. 1 is a perspective view of a device for the screened connection of cables, in particular of coaxial cables, incorporating the features of the present invention;
- Fig. 2 shows a cable portion, in particular of the coaxial type, suitable for being connected to the device of Fig. 1;
- Figs. 3a, 3b, 3c, 3d show some perspective views of the components making up the device of Fig. 1;
- Fig. 4 is a sectional side view of a device for the screened connection of cables, in particular of coaxial cables, incorporating the features of the present invention.

[0027] In Fig. 1, reference number 10 designates as a whole a screened connection device according to the teachings of the present invention.

[0028] Preferably, device 10 is of the embedded type, i.e. intended for being housed in a suitable walled-in box of a known type; in this specific case, device 10 is of the screened, modular type, i.e. it is made up of a plurality of components coupled to one another.

[0029] Reference number 20 designates a plurality of cables, in particular of coaxial cables, having different sizes and suitable for being coupled electrically and mechanically to device 10 in order to provide a screened connection according to the present invention.

[0030] Fig. 2 shows cable 20, in particular of the coaxial type, which comprises:

- an outer sheath 21,
- an outer conductor 22, in particular a ground mesh 22,
- an inner sheath 23, in particular made of dielectric material,
- a central conductor 24.

[0031] Cable 20, being in particular of the coaxial type, may possibly be of the kind comprising an aluminium strip (not shown in the drawings) between ground mesh 22 and dielectric 23, or else it may be of other types known in the art.

[0032] For its connection to device 10, cable 20 is suitably prepared as follows.

[0033] First of all, the installer must take a portion of cable 20 out of the cable channel wherein it has been inserted (not shown for simplicity's sake).

[0034] Cable 20 is then unsheathed at its end portion, which comprises a first part X and a second part Y, for a length of approximately two centimeters, by removing a portion of its outer sheath 21; subsequently, in the part X of cable 20, a portion of central conductor 24 is exposed for about 1 cm, by removing a corresponding portion of ground mesh 22 and of dielectric material 23 (and of aluminium strip, if present).

[0035] The remaining exposed part of ground mesh 22, with any aluminium strip, thus remains present on most of the portion of the remaining dielectric material 23, which is comprised in the part Y of cable 20. However, it is clear that the installer may turn over ground mesh 22 onto outer sheath 21 of cable 20.

[0036] Figs. 3a, 3b, 3c and 3d show some perspective views of the components making up device 10.

[0037] In Figs. 1 and 3a, it can be noticed that device 10 comprises a main body or screening body, designated as a whole by reference number 30.

[0038] Body 30 comprises a first portion 30A, a second portion 30B, a third portion 30C, a fourth portion 30D and fifth portions 30E.

[0039] Preferably, body 30 is made of an electricity conducting material, e.g. aluminium or pressure die-cast zama (Zn+Al+Mg alloy).

[0040] As shown in particular in Fig. 3a, said first portion 30A of said body 30 comprises a plurality of walls 31 so provided as to define at least one housing 32 adapted to receive at least one end of said cable 20.

[0041] Said walls 31 also comprise connection means, in particular a plurality of openings 31A, the function of

which will be explained later.

[0042] As shown in the annexed drawings, body 30 comprises a plurality of housings 32, each being adapted to receive just one cable 20 and substantially extending from third portion 30C to fourth portion 30D of body 30.

[0043] Each housing 32 comprises a plurality of ribs 33, which are preferably provided crosswise to the plane wherein cable 20 lies in housing 32; said plurality of ribs 33 allows to exert friction onto at least a portion of cable 20, preferably onto outer sheath 21, thereby improving the retention of cable 20 by device 10.

[0044] Device 10 for the screened connection of cables comprises connector means 40, 41, 42, 43, 44 for the electric connection between cable 20 and device 10; in particular, said connector means comprise a terminal 40 and a printed circuit 41, shown in Fig. 3b.

[0045] Said housing 32 comprises a seat 34 adapted to accommodate terminal 40 for connecting central conductor 24 of cable 20 to printed circuit 41; said seat 34 is substantially located near fourth portion 30D of body 30 and is delimited laterally by two walls 31 and on top by a plane 35, which has an aperture 36.

[0046] Fig. 3b shows a perspective view of the printed circuit 41 inserted in the body 30, whereon a plurality of terminals 40 is mounted. In said figure, it is possible to see a plurality of cables 20, whose central conductor 24 has already been inserted into a hole 40F and secured to terminal 40. Preferably, according to the present invention, central conductor 24 is secured to terminal 40 by using a screw 42; it is however clear that said securing operation may also be carried out through other systems known in the art.

[0047] When device 10 has been assembled, every terminal 40 is inserted into seat 34, in particular with screw 42 located under aperture 36; said aperture 36 allows a work tool, e.g. a screwdriver, to pass through and facilitates the operations for securing central conductor 24 to terminal 40, since screw 42 goes through the body of terminal 40 so as to allow for the mechanic and/or electric connection between said central conductor 24 and said terminal 40.

[0048] Preferably, terminals 40 and screws 42 are made of a plastic, both for preventing any short circuit between central conductor 24 and body 30 of device 10 and for obtaining adequate impedance matching of device 10; moreover, it should be pointed out that plane 35, being located higher than terminal 40, prevents screws 42 from coming too far out of terminal 40 and allows to obtain an optimal screening of terminal 40 and, consequently, of device 10.

[0049] Fig. 3c shows a plate or cover 50 adapted to close the second portion 30B of body 30 once printed circuit 41, whereon the plurality of terminals 40 has already been mounted, has been inserted into said second portion 30B; in particular, said second portion 30B is closed with plate or cover 50 by using fastening means, e.g. screws 51.

[0050] Fig. 3d shows a perspective view from below of a clamping element or lid 60 adapted to change its own configuration by adjusting itself to said cable 20, in order to clamp cable 20 inside housing 32 and to allow for the mechanic and/or electric connection between cable 20 and device 10.

[0051] Said lid 60 is preferably made of an electricity conducting material, e.g. steel, aluminium or pressure die-cast zama (Zn+Al+Mg alloy).

[0052] As shown also in Fig. 4, which is a sectional side view of device 10, a first end 61 of said lid 60 comprises connection means 61A which allow said lid 60 to be pivoted to first portion 30A of said body 30, in particular in the proximity of third portion 30C of body 30, so that said lid 60 can rotate relative to body 30 and can switch from a first closed position of housing 32 to a second open position of said housing 32, and vice versa.

[0053] Said connection means comprise a passage 61A which is aligned with openings 31A of walls 31 when lid 60 is inserted in housing 32; therefore, lid 60 can be pivoted to first portion 30A of said body 30, for example by inserting an element (e.g. a peg or a pin, not shown) into openings 31A and passages 61A.

[0054] Said first end 61 of said lid 60 also comprises a flexible element 61B adapted to allow cable 20 to be clamped after having been inserted into housing 32.

[0055] Said flexible element 61B is adapted to change its own configuration due to interference with a first zone 21 of cable 20, in particular with the outer sheath 21; in fact, flexible element 61B takes on a shape complementary to that of cable 20 and exerts elastic pressure onto first zone 21 of cable 20, so as to ensure the necessary solidity of the mechanic connection between said cable 20 and device 10. Furthermore, since the pressure applied to the circumference of first zone 21 by the flexible element 61B is uniform, any significant deformation of cable 20 is avoided and its coaxiality is preserved.

[0056] It should be noted that, if cable 20 is prepared by the installer with ground mesh 22 turned over on outer sheath 21, the elastic pressure exerted by flexible element 61B onto said first zone 21 of cable 20 is also used to provide the electric connection between said cable 20 and device 10.

[0057] A second end 62 of said lid 60 has latching means 62A, which comprise a tongue 62A adapted to be engaged with retaining means 37 of said body 30. In particular, said retaining means comprise a tooth 37 located in the fourth portion 30D of said body 30.

[0058] Thus, tongue 62A cooperates with tooth 37 to ensure a stable and secure closing of lid 60 on body 30 once cable 20 has been inserted into housing 32. It is clear that said stable and secure closing can be attained by an installer simply by applying pressure to lid 60.

[0059] Advantageously, said tongue 62A and said tooth 37 may be fitted with respective holes F adapted for the insertion of a work tool, e.g. a screwdriver, so as to allow the installer to apply pressure to tongue 62A in order to facilitate its disengagement from tooth 37.

[0060] An intermediate portion 63 of said lid 60 com-

prises elastic means 63A, in particular at least one pair of elastic lugs 63A, adapted to change their own configuration due to interference with a second zone 22 of cable 20, thus providing a latching with said cable 20.

[0061] Said elastic lugs 63A exert elastic pressure onto ground mesh 22, thereby providing the ground contact between said ground mesh 22 and screening body 30.

[0062] It is clear that the use of the elastic lugs 63A and of flexible element 61B allows the clamping element or lid 60 to change its own configuration by adjusting itself to said cable 20, in order to clamp cable 20 inside housing 32 and to allow for the mechanic and/or electric connection between cable 20 and device 10. Furthermore, te elastic lugs 63A and flexible element 61B allow to obtain a device 10 which is particularly suited to the connection of a plurality of cables 20 having different diameters, wherein said connection can be so provided as to avoid any significant deformation and to preserve the coaxiality of cable 20.

[0063] Figs. 3d and 4 also show that said lid 60 comprises a plurality of protrusions 64; in a closed condition of lid 60, e.g. as shown in Fig. 4, said protrusions 64 abut on first portion 30A of said body 30 and allow to improve the ground contact between lid 60 and body 30, in particular for the purpose of ensuring an optimal screening of device 10.

[0064] Fig. 4 shows that terminal 40 comprises a metal insert 43 which allows to connect central conductor 24 of cable 20 to printed circuit 41, said metal insert 43 being located on a support 44, preferably made of a plastic.

[0065] Said printed circuit 41 is secured in a respective seat obtained in the second portion 30B of said body 30, in particular by using the screws 51, which allow to close cover 50 in such a way as to accurately calibrate the tightening torque and to take up any construction tolerances of device 10 and/or of printed circuit 41 without damaging said printed circuit 41.

[0066] Additionally, Fig. 4 also shows that cover 50 comprises a perimetric collar 52 which allows to provide contact points between printed circuit 41 and body 30. The presence of perimetric collar 52 eliminates the need of subjecting body 30 to a tin-plating or galvanic treatment or of using additional inserts, such as screws or elastic pins, adapted to provide contact points between printed circuit 41 and body 30.

[0067] The operation of device 10 according to the present invention will now be described with reference to its preparation and installation steps.

[0068] For this purpose, it is first of all necessary to prepare the cable as previously described, i.e. the end X+Y of cable 20 must be unsheathed by removing a portion of its outer sheath 21; subsequently, a portion of central conductor 24 is exposed for about 1 cm in the part X of cable 20, by removing a corresponding portion of mesh 22 and of dielectric material 23 (and of aluminium strip, if present).

[0069] The remaining exposed part of ground mesh 22, with any aluminium strip, thus remains present on most of the portion of the remaining dielectric material 23, which is comprised in the part Y of cable 20. However, it is clear that said exposed part of ground mesh 22 may also be turned over onto outer sheath 21.

[0070] Note that at this point the installer will have a preassembled device 10 available, e.g. a device preassembled by the manufacturer.

[0071] Said preassembling of device 10 in particular comprises:

- the plurality of terminals 40 mounted to printed circuit 41;
- terminals 40 - printed circuit 41 assembly secured in the second portion 30B of said body 30, in particular by using cover 50 and screws 51, so that each terminal 40 is inserted in a seat 34 of body 30;
- a first end 61 of said plurality of lids 60 pivoted to body 30, in particular in the proximity of the third portion 30C of body 30.

[0072] The mechanic and electric connection between said device 10 and said cable 20, previously unsheathed as described, is accomplished first by verifying that one clamping element or lid 60 can move relative to a housing 32 obtained in a first portion 30A of said body 30, so that said lid 60 can switch from a first closed position of housing 32 to a second open position of said housing 32, in particular said lid 60 having a first end 61 pivoted to a first portion 30A of said body 30 near a third portion 30C.

[0073] For this purpose, the installer must exert pressure onto the latching means, in particular a tongue 62A, obtained on a second end 62 of said lid 60, so as to disengage said latching means 62A from retaining means 37 located in a fourth portion 30D of said body 30. In particular, said pressure may be applied by introducing a work tool, e.g. a screwdriver, into suitable holes F being present in said latching means 62A and in said retaining means 37.

[0074] A second step is carried out by inserting cable 20 all the way into housing 32, so that a first conductor or central conductor 24 of cable 20 can be inserted and clamped inside a terminal 40 housed in housing 32. In particular, said clamping of central conductor 24 may be accomplished by tightening a screw 42 through the body of terminal 40.

[0075] It should be pointed out that the insertion of cable 20 into housing 32 will tend to make it easier to open lid 60, in particular due to friction between cable 20 and a flexible element 61B of first end 61 of lid 60.

[0076] Finally, the installer has to provide the mechanic and electric connection between said device 10 and said cable 20 by closing housing 32 with lid 60. In particular, lid 60 may be closed through mutual engagement of said latching means 62A and said retaining means 37.

[0077] The closing of lid 60 causes a change in the configuration of said clamping element or lid 60, which adjusts itself to said cable 20, thus clamping cable 20.

[0078] In particular, the closing of lid 60 causes pro-

gressive interference between a flexible element 61B of the first end 61 of lid 60 and a first zone 21, in particular outer sheath 21, of cable 20. Said flexible element 61B exerts uniform elastic pressure onto outer sheath 21 of cable 20, so as to ensure the necessary solidity of the mechanic connection between said cable 20 and device 10.

[0079] The closing of lid 60 also determines progressive interference between elastic means 63A located in an intermediate part 63 of lid 60, in particular lugs 63A, and a second zone of cable 20, in particular ground mesh 22. Said lugs 63A are then bent or deflected outwards so that pressure is applied to ground mesh 22, thus providing the ground contact between said ground mesh 22 and screening body 30.

[0080] If cable 20 is prepared by the installer with ground mesh 22 turned over on outer sheath 21, the elastic pressure will be exerted onto said first zone 21 of cable 20 by flexible element 61B, thus ensuring also the electric connection between said cable 20 and device 10.

[0081] The features and advantages of the present invention are apparent from the above description.

[0082] In particular, it should be pointed out that the pressure of flexible element 61B and of lugs 63A is applied in a uniform way to the outer circumference of cable 20, thus preventing cable 20 from suffering any significant deformation and preserving its coaxiality; in fact, according to the present invention, it is the clamping element or lid 60 that changes its own configuration by adjusting itself to cable 20, not vice versa.

[0083] A further advantage of the present invention lies in the fact that by carrying out a simple step for inserting cable 20, by tightening screw 42 just once and by closing a clamping element or lid 60 it is possible to attain both a strong mechanic connection between device 10 and cable 20 and an adequate electric connection between ground mesh 22 and screening body 30, thanks to the elastic pressure exerted by flexible element 6 1 B and by lugs 63A.

[0084] It is clear from the above description that the invention does not require the use of any ground U-bolt and eliminates any risks of squeezing cable 20, which might result in impedance mismatching due to loss of coaxiality of said cable 20.

[0085] Also, the firm connection between cable 20 and device 10 is attained through very simple steps, without having to handle several components simultaneously or having to subject to mechanic deformation any parts of cable 20, such as its ground mesh 22 or its outer sheath 21; therefore, the installer's task is made much easier.

[0086] Since there is no need of using any U-bolts, and since the only tightening step required is very easy to carry out, the connection between cable 20 and device 10 according to the invention may take place by extracting only a minimal length of cable 20 from its cable channel or conduit; as a result, the risks of bending and/or squeezing cable 20 when device 10 is inserted in the respective box are further reduced.

[0087] It also follows from the above description that the quality of the connection between cable 20 and device 10 is always ensured, since it is practically independent of the installer's skill. Likewise, the invention also ensures at all times a proper screening of the connection of central conductor 24 of cable 20 by means of screening body 30 and of clamping element or lid 60, which are preferably made of a conducting material and which envelop all electric parts entirely.

[0088] It is equally clear that the deformation of clamping element or lid 60, in particular of flexible element 61B and of lugs 63A, allows to use cables 20 having different outside diameters.

[0089] Another advantage of the above-described solution lies in the fact that it facilitates and simplifies the steps for connecting cable 20 to device 10, in that said device 10 has a dedicated housing 32 for each cable 10, and each cable 10 can be clamped in housing 32 through its own lid 60.

[0090] It can be easily understood that the present invention is not limited to the device for the screened connection of cables, in particular of coaxial cables, as described above in all its various components and to the related method for connecting said cables, but may be subject to many modifications, improvements or replacements of equivalent parts and elements without departing from the inventive idea, as clearly specified in the following claims.

[0091] Among the many possible changes, housing 32 of body 30 may be so provided as to comprise a flexible element being essentially similar to the one being present on the first end 61 of lid 60, which may cooperate with flexible element 61B in order to improve even further the solidity of the mechanic connection between said cable 20 and device 10.

[0092] Another possible change may consist in providing connection means 61A of first end 61 of lid 60 with pins adapted to be inserted into openings 31A of walls 31, so that lid 60 can be pivoted to first portion 30A of said body 30, in particular in the proximity of said third portion 30C of body 30.

[0093] It is clear that many other changes are possible for those skilled in the art without departing from the novelty spirit of the invention; likewise, it is also clear that in the practical implementation of the invention the various components may have different shapes and dimensions or be replaced with other technically equivalent elements.

Claims

1. Device (10) for the screened connection of at least one cable (20), in particular of the coaxial type, comprising at least one conductor (22, 24) for carrying video and/or audio and/or data signals, said device (10) comprising:

   - a body (30) having a first portion (30A) com-

prising a plurality of walls (31) so provided as to define at least one housing (32) adapted to receive one end of said cable (20);
- connector means (40, 41, 42, 43, 44) for connecting the cable (20) electrically to said device (10);

characterized by comprising a clamping element or lid (60) adapted to change its own configuration by adjusting itself to said cable (20) in order to clamp the cable (20) inside the housing (32).

2. Device (10) according to claim 1, **characterized in that** a first end (61) of said lid (60) comprises a flexible element (61B) adapted to change its own configuration due to interference with a first zone (21) of the cable (20).

3. Device (10) according to the preceding claim, **characterized in that** said flexible element (61B) is adapted to take on a shape complementary to that of the cable (20) and exerts elastic pressure onto said first zone (21) of the cable (20), so as to facilitate the mechanic and/or electric connection between said cable (20) and the device (10).

4. Device (10) according to one or more of the preceding claims 1 to 3, **characterized in that** said first zone (21) of the cable (20) is an outer sheath (21).

5. Device (10) according to claim 1, **characterized in that** an intermediate part (63) of said lid (60) comprises elastic means (63A) adapted to change their own configuration due to interference with a second zone (22) of the cable (20) in order to provide a latching between said cable (20) and the device (10).

6. Device (10) according to the preceding claim, **characterized in that** said elastic means comprise at least one pair of elastic lugs (63A).

7. Device (10) according to the preceding claim, **characterized in that** said second zone (22) of the cable (20) is a ground mesh (22) and that said at least one pair of elastic lugs (63A) exerts elastic pressure onto the ground mesh (22), thereby providing the ground contact between said ground mesh (22) and the body (30).

8. Device (10) according to the preceding claim, **characterized in that** said lid (60) comprises a plurality of protrusions (64) which, by abutting on the first portion (30A) of said body (30), allows to improve said ground contact.

9. Device (10) according to claim 2, **characterized in that** said first end (61) of said lid (60) comprises connection means (61A) which allow to pivot said lid (60) to the first portion (30A) of said body (30), in particular in the proximity of a third portion (30C) of the body (30).

10. Device (10) according to the preceding claim, **characterized in that** said connection means (61A) allow said lid (60) to move relative to the body (30) and to switch from a first closed position of the housing (32) to a second open position of said housing (32) and vice versa.

11. Device (10) according to claims 9 and 10, **characterized in that** said connection means comprise a passage (61A) adapted to be connected to an opening (31A) of said walls (31).

12. Device (10) according to claims 9 and 10, **characterized in that** said connection means comprise a pin adapted to be inserted into an opening (31A) of said walls (31).

13. Device (10) according to claim 1, **characterized in that** a second end (62) of said lid (60) is fitted with latching means (62A) adapted to ensure a stable and secure closing of the lid (60) on the body (30).

14. Device (10) according to the preceding claim, **characterized in that** said latching means comprise a tongue (62A) adapted to be engaged with retaining means (37) of said body (30).

15. Device (10) according to the preceding claim, **characterized in that** said retaining means comprise a tooth (37) located in a fourth portion (30D) of said body (30).

16. Device (10) according to claims 14 and 15, **characterized in that** said tongue (62A) and said tooth (37) have respective holes (F) adapted to allow the insertion of a work tool.

17. Device (10) according to claim 1, **characterized in that** said housing (32) comprises a plurality of ribs (33), which are preferably provided crosswise to the plane wherein the cable (20) lies in the housing (32).

18. Device (10) according to claim 1, **characterized in that** said connector means (40, 41, 42, 43, 44) for the electric connection between the cable (20) and said device (10) comprise at least one terminal (40) and one printed circuit (41).

19. Device (10) according to the preceding claim, **characterized in that** said housing (32) comprises a seat (34) adapted to accommodate said at least one terminal (40) for connecting the cable (20), in particular a central conductor (24) of said cable (20), to the printed circuit (41).

20. Device (10) according to the preceding claim, **characterized in that** said at least one terminal (40) comprises a metal insert (43) located on a support (44), said terminal (40) and said support (44) being preferably made of a plastic material.

21. Device (10) according to claim 19, **characterized in that** said seat (34) is substantially located near a fourth portion (30D) of the body (30) and is delimited laterally by two of said walls (31) and on top by a plane (35) having an aperture (36).

22. Device (10) according to claim 18, **characterized by** comprising a plate or cover (50) adapted to close a second portion (30B) of the body (30), in particular once said printed circuit (41) has been inserted into said second portion (30B).

23. Device (10) according to the preceding claim, **characterized in that** said cover (50) comprises a perimetric collar (52) which allows to provide contact points between the printed circuit (41) and the body (30).

24. Device (10) according to any of the preceding claims, **characterized in that** said housing (32) comprises a flexible element adapted to take on a shape complementary to that of the cable (20), so as to improve the solidity of the mechanic connection between said cable (20) and the device (10).

25. Device (10) according to any of the preceding claims, **characterized in that** said body (30) and/or said clamping element or lid (60) are preferably made of an electricity conducting material, in particular steel, aluminium or pressure die-cast zama (Zn+Al+Mg alloy).

26. Method for connecting a cable (20), in particular of the coaxial type, to a connection device (10), wherein the connection between the cable (20) and the device (10) is accomplished through the following steps:

a) a portion of a first insulator (21) is removed from an end portion (X+Y) of the cable (20), thus exposing a first conductor (22) of said cable (20);
b) a portion of the first conductor (22) and a portion of a second insulator (23) are then removed from a part (X) of said end portion (X+Y) of the cable (20), thus exposing a second conductor (24) of said cable (20);
c) the two conductors (22, 24) are connected electrically to the device (10), and the cable (20) is connected mechanically to the device (10),

characterized in that the mechanic connection between said cable (20) and said device (10) is provided by:

- verifying that a clamping element (60) can move relative to a housing (32) obtained in a first portion (30A) of a body (30) of said device (10), so that said clamping element (60) can switch from a first closed position of the housing (32) to a second open position of said housing (32);
- inserting the cable (20) into the housing (32), so that said second conductor (24) can be inserted and clamped inside a terminal (40);
- bringing said clamping element (60) back from said second open position of said housing (32) to said first closed position of said housing (32) and causing a change in the configuration of said clamping element (60), which adjusts itself to said cable (20), thus retaining said cable (20) mechanically in the housing (32).

27. Method according to claim 26, **characterized in that** the change in the configuration of said clamping element (60) occurs on a first zone (21) of said cable (20) being different from said end portion (X+Y), in particular on said first insulator (21).

28. Method according to claim 26, **characterized in that** the change in the configuration of said clamping element (60) is adapted to provide also an electric connection between said first conductor (22) and said device (10).

29. Method according to the preceding claim, **characterized in that** said mechanic and/or electric connection is accomplished by means of a flexible element (61B) obtained on a first end (61) of the clamping element (60).

30. Method according to claim 28, **characterized in that** said electric connection is achieved through elastic means, in particular lugs (63A), obtained on an intermediate part (63) of the clamping element (60).

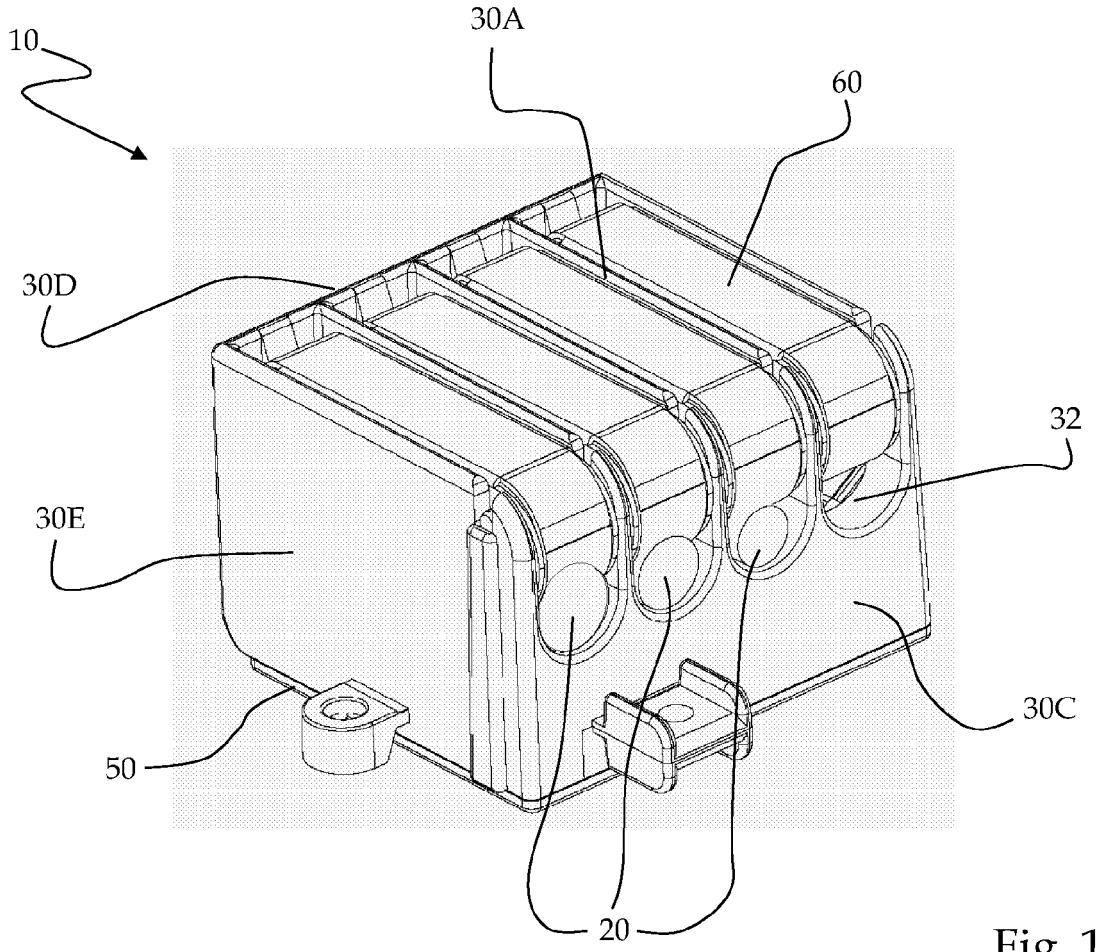

Fig. 1

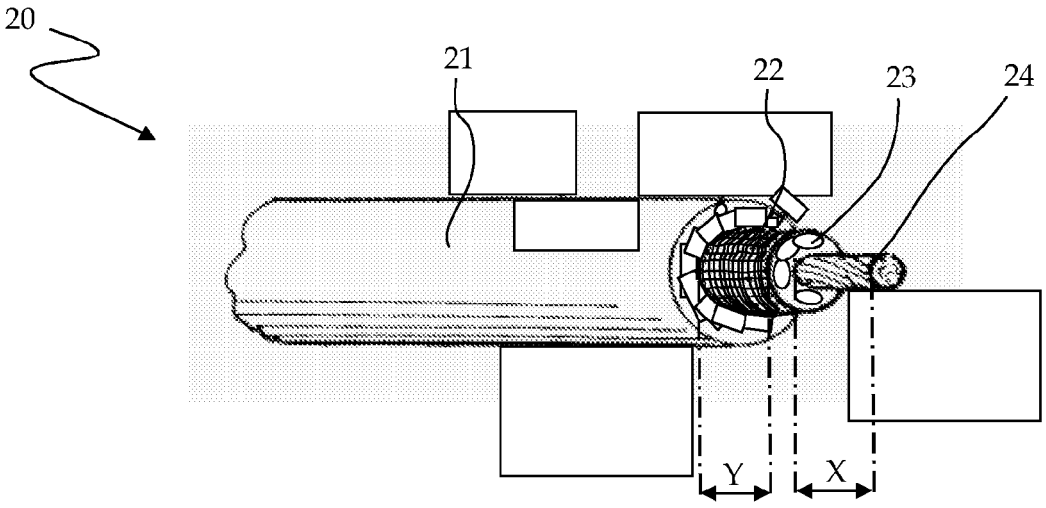

Fig. 2

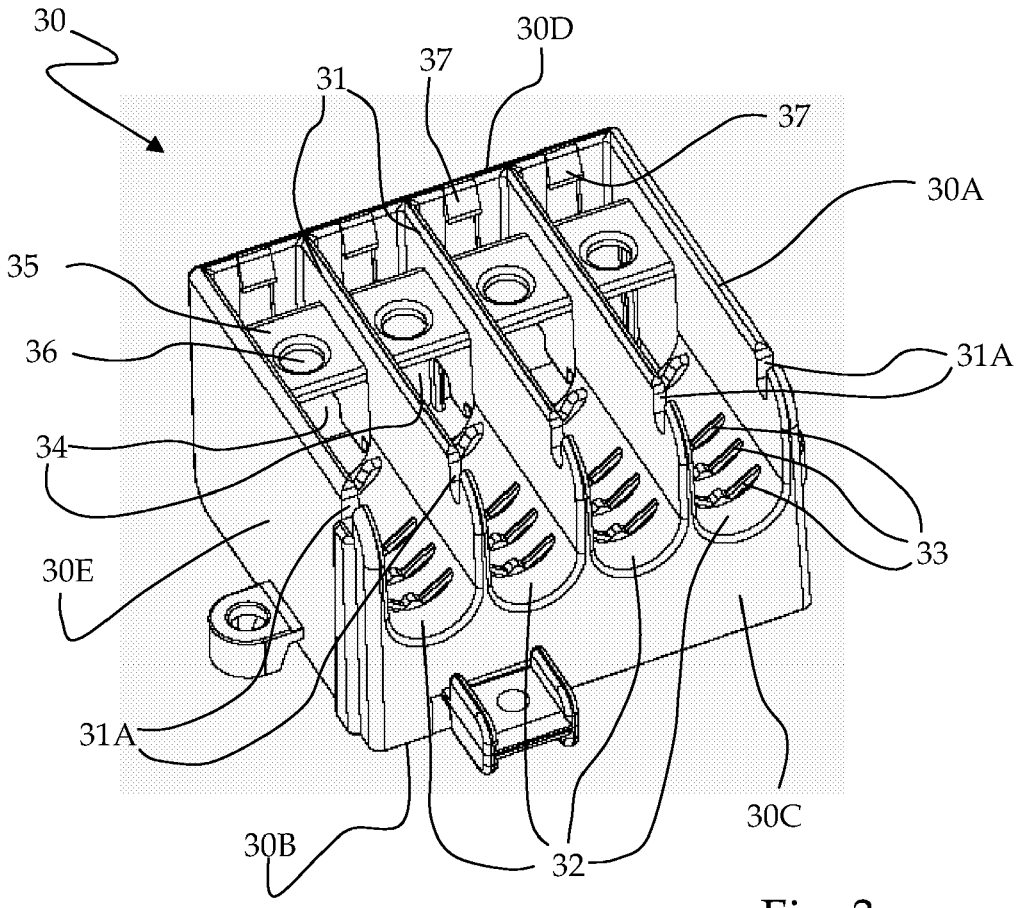
30
30D
37
31
37
30A
35
36
31A
34
33
30E
31A
30C
30B
32

Fig. 3a

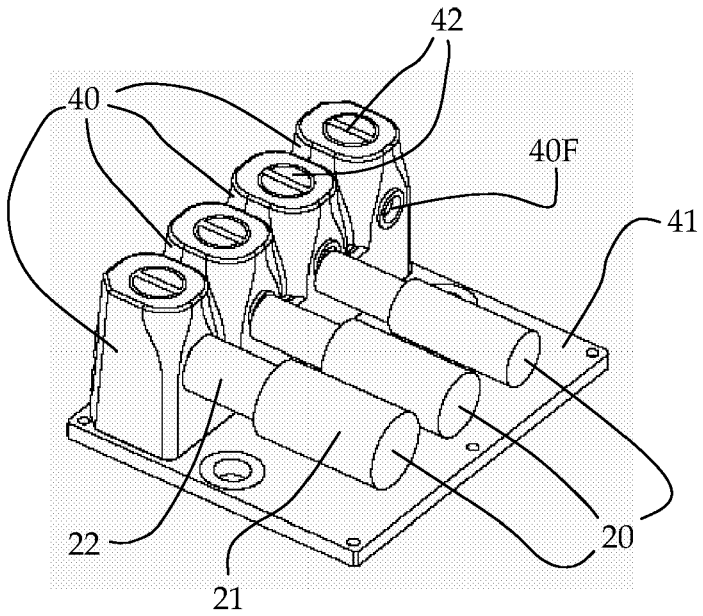
42
40
40F
41
22
20
21

Fig. 3b

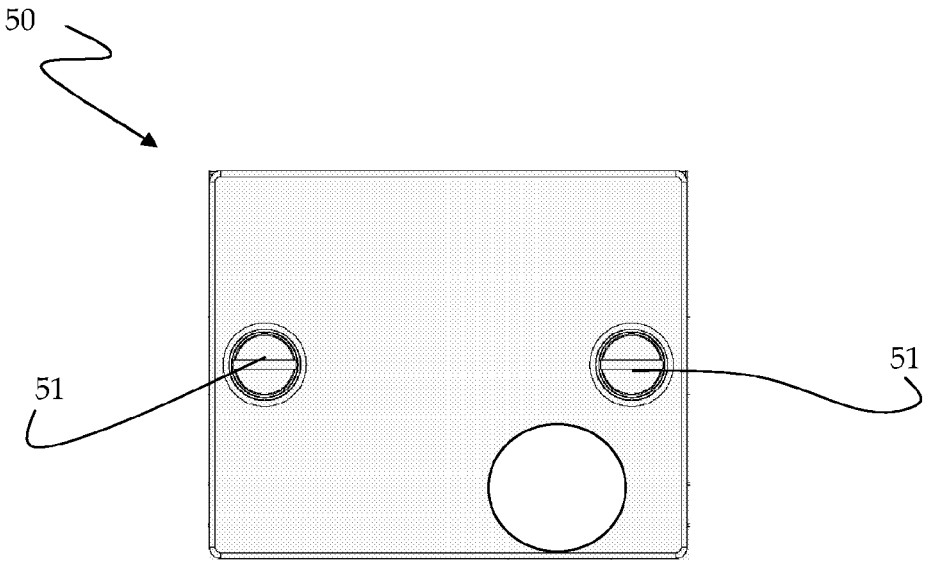

Fig. 3c

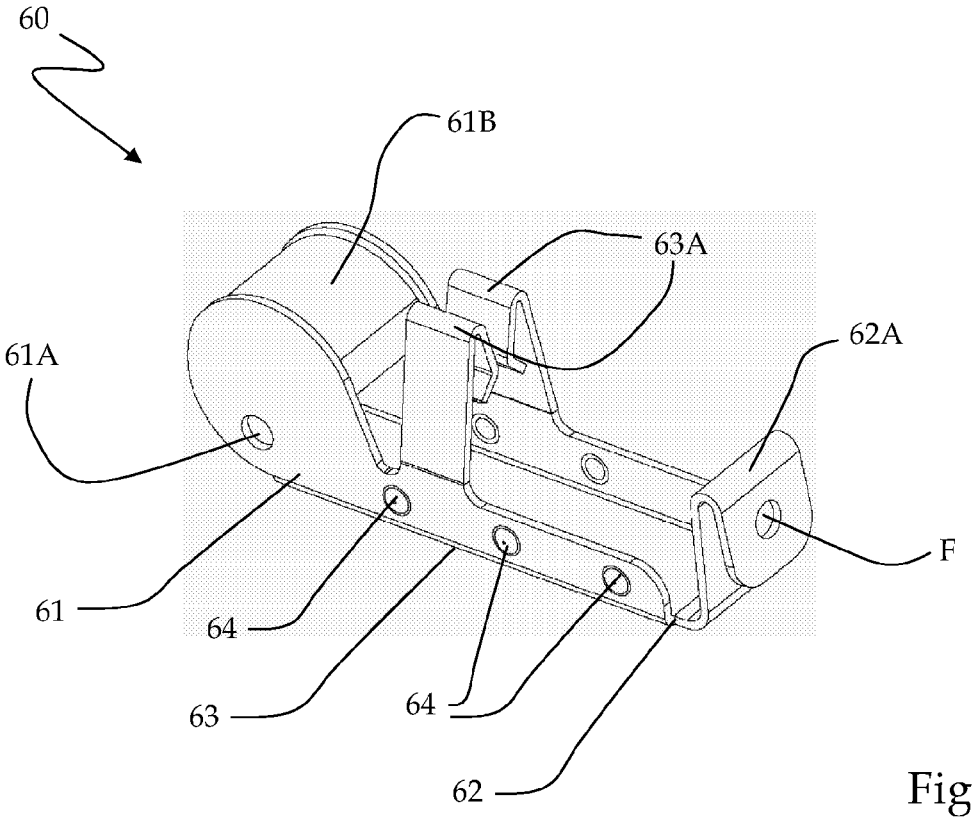

Fig. 3d

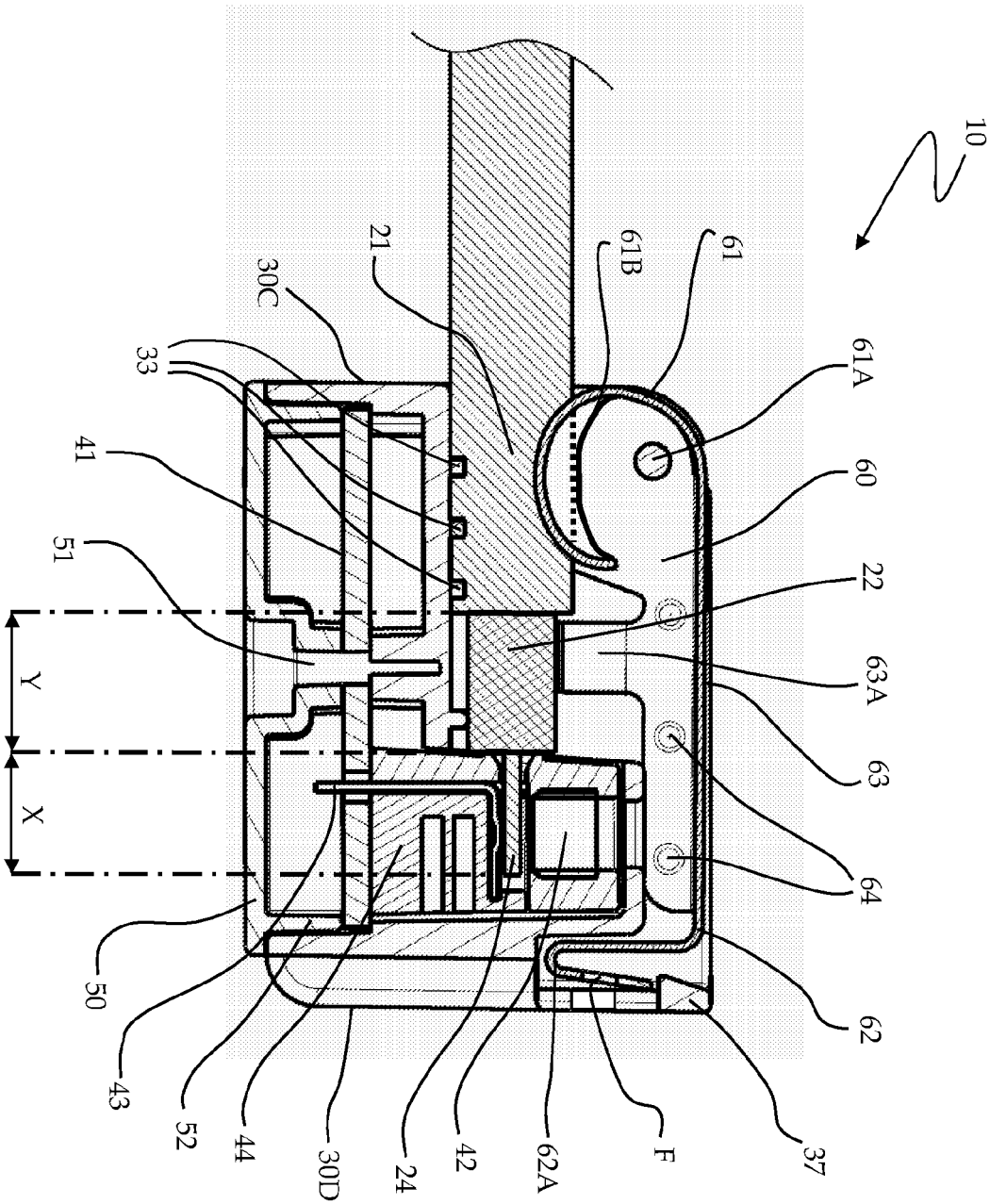
10
61
61B
21
30C
33
61A
41
60
51
22
Y
63A
X
63
64
50
62
43
52
44
30D
24
42
62A
F
37

Fig. 4