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(54) **ASSEMBLY FOR SEALING A JUNCTURE OF A CABLE IN A WALL**

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(Continued)

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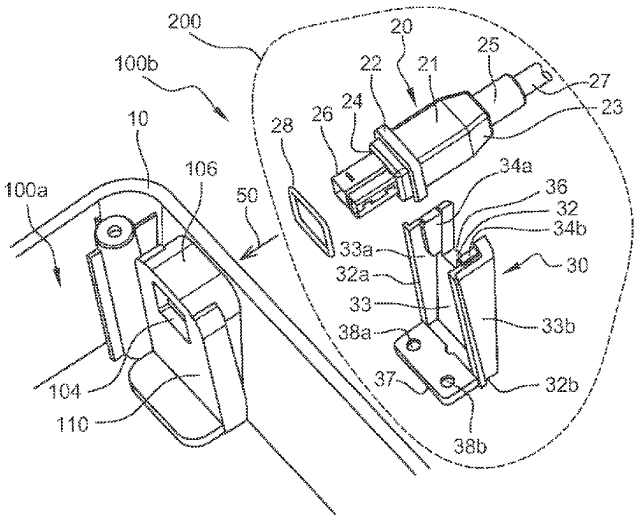
Primary Examiner — Angel R Estrada

(57) **ABSTRACT**

Provides is an assembly for sealing a juncture of a cable in a wall. The wall includes at least one aperture. The aperture is used for coupling a connector comprised in the cable. A cable end is provided with at least one flange. The flange surrounds at least in part the cable end. The assembly includes at least one strain relief element. The strain relief element is configured, once in a position to cooperate with the wall and the flange, to press, directly or indirectly, the flange against the wall when the connector is coupled while the strain relief element remains attached to the wall, so that the flange surrounds, directly or indirectly, the aperture and prevents, directly or indirectly, any foreign matter from passing the juncture of the cable at the aperture.

9 Claims, 5 Drawing Sheets



(51) **Int. Cl.**
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H02G 15/06 (2006.01)

(58) **Field of Classification Search**
CPC F16J 15/06; H01R 13/74; H01R 13/58; H01R 13/639; H01R 13/746; H01R 13/5804; H01R 13/5202; H01R 13/6395
USPC 174/668, 650, 669, 659, 665; 220/3.2, 220/3.5, 3.6
See application file for complete search history.

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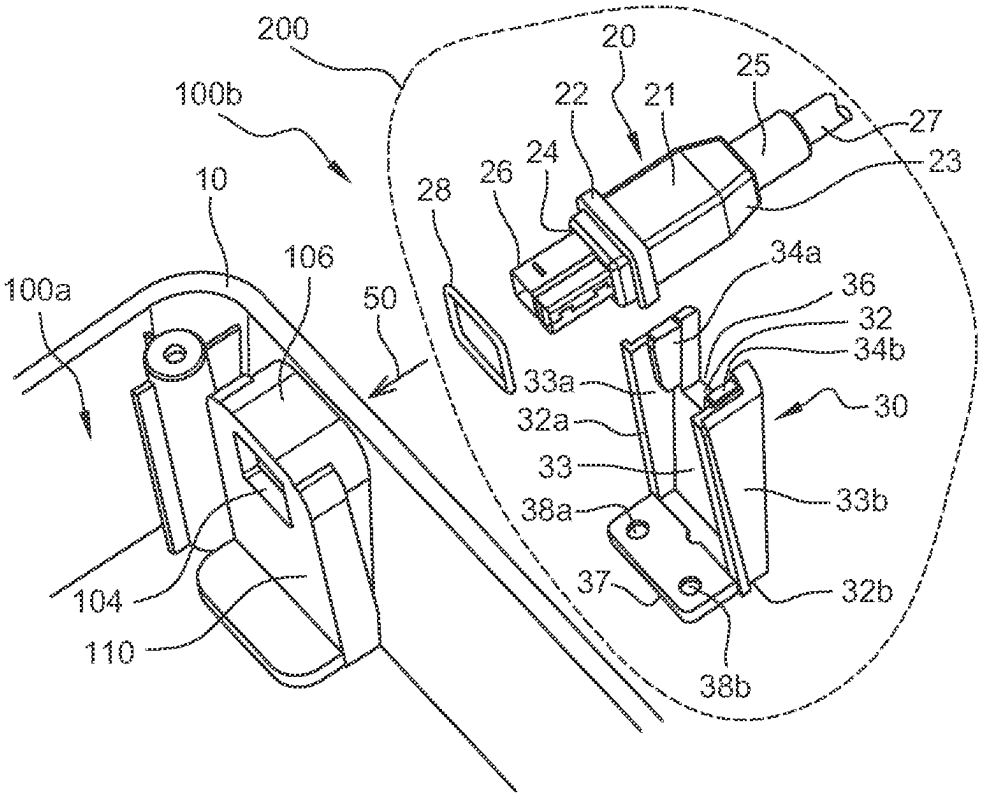
Fig. 1


200
100b
10
100a
106
50
20
22
21
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27
23
24
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33a
30
32a
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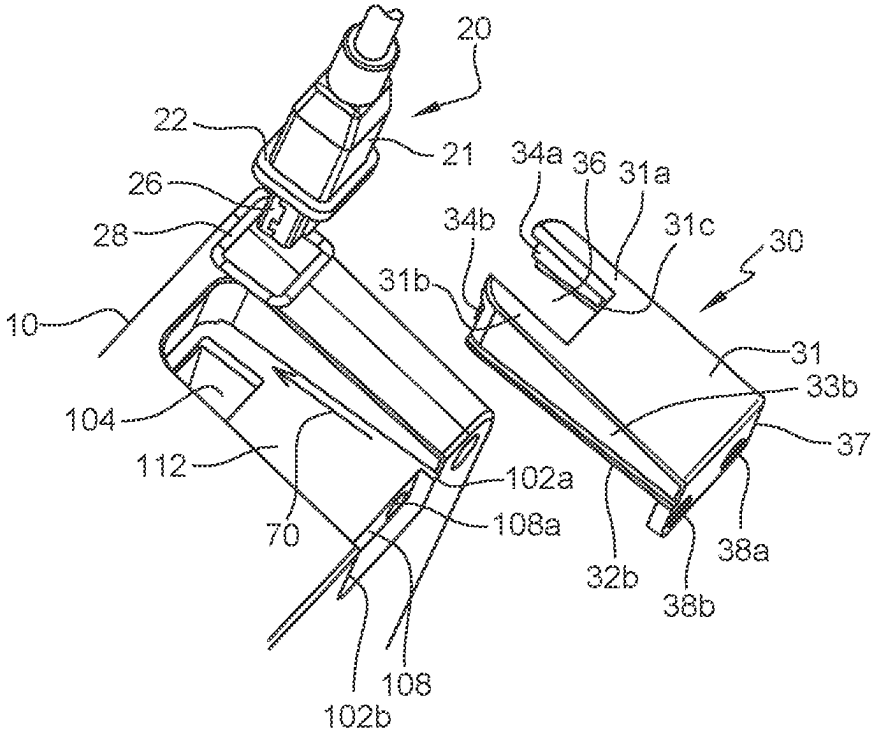
33b
38a
37
32b
38b
104
110

Fig. 2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22
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34a
36
31a
26
34b
31c
28
30
31b
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33b
104
37
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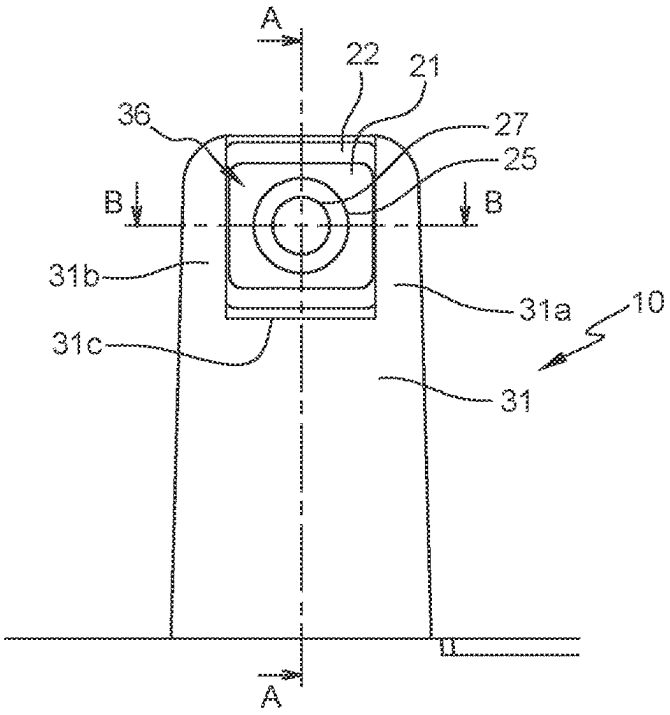
108a
70
38a
32b
38b
108
102b

Fig. 3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21
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27
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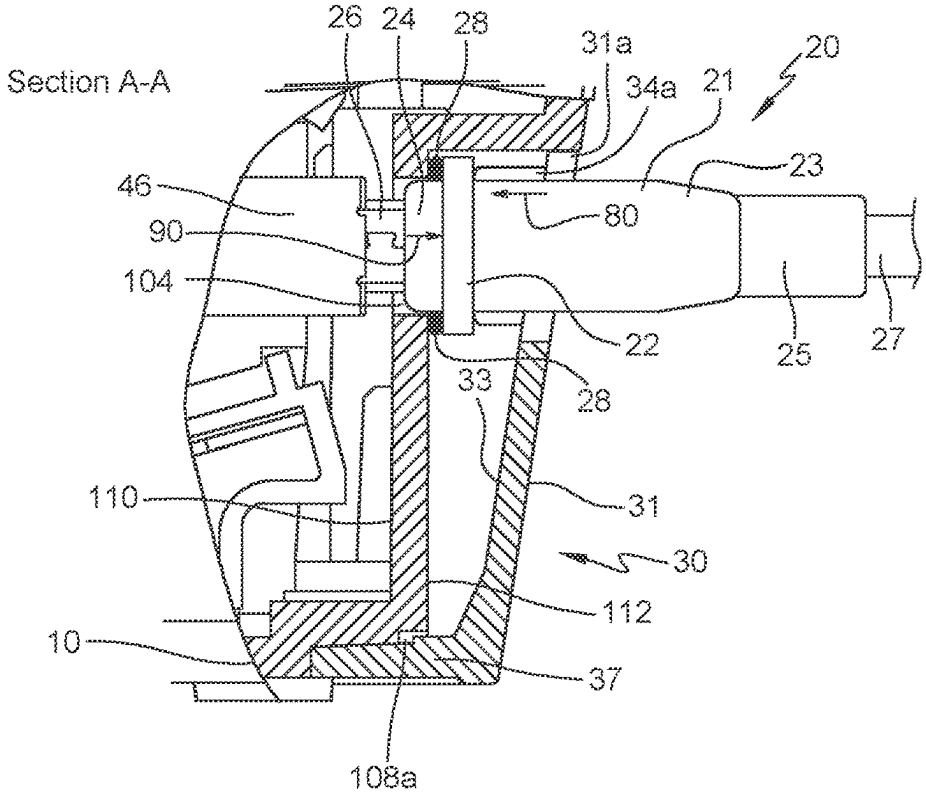
B
B
31b
31a
10
31c
31
A

Fig. 4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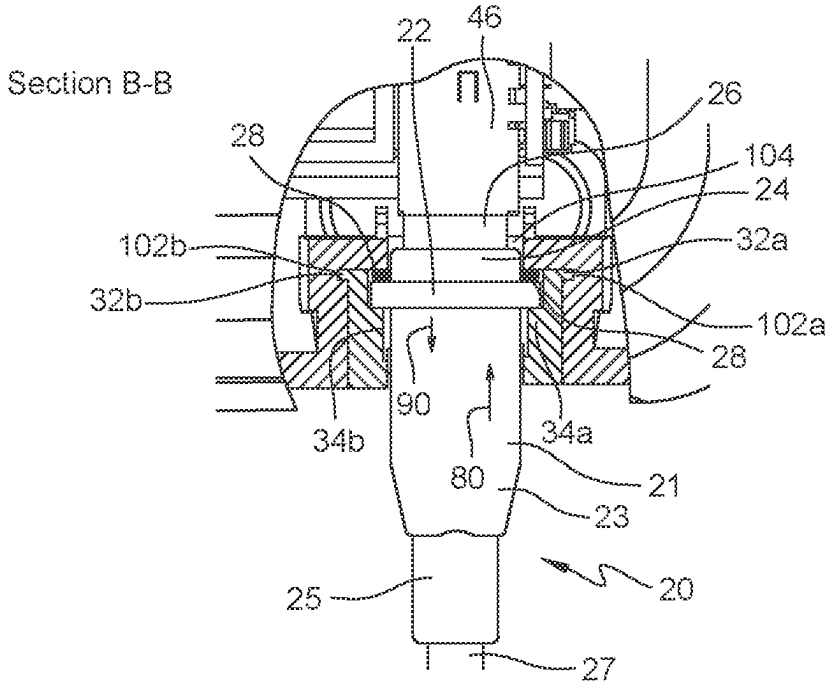
24
28
31a
34a
21
20
23
46
80
90
104
22
25
27
33
28
110
31
30
112
10
37
108a

Fig. 5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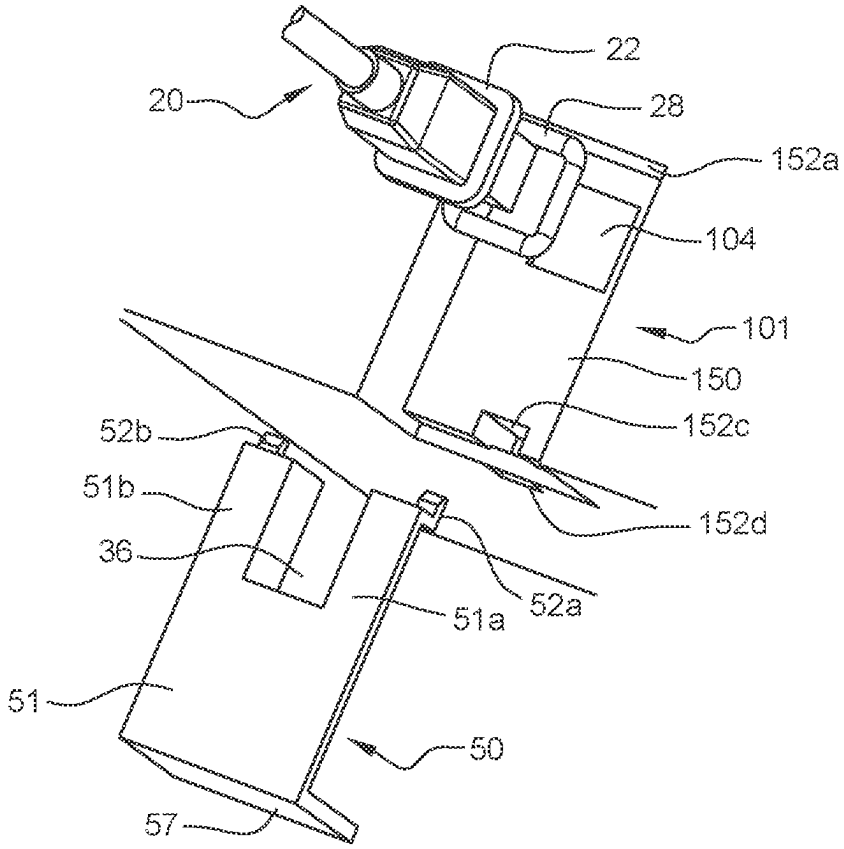
21
23
25
20
27

Fig. 6


22
20
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152a
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101
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52b
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152d
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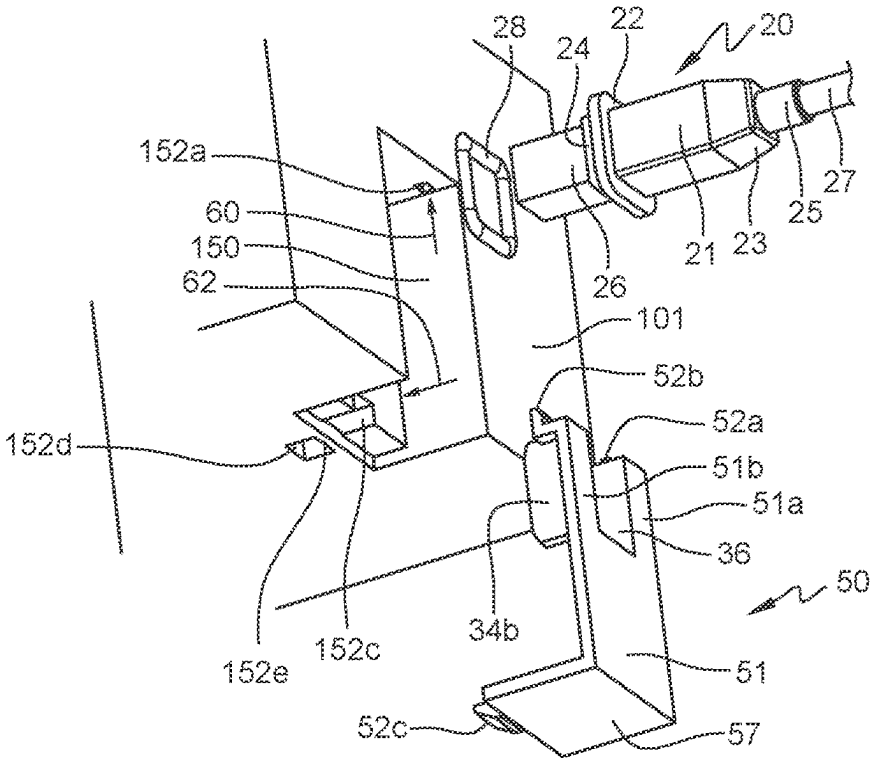
51
50
57

Fig. 7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23
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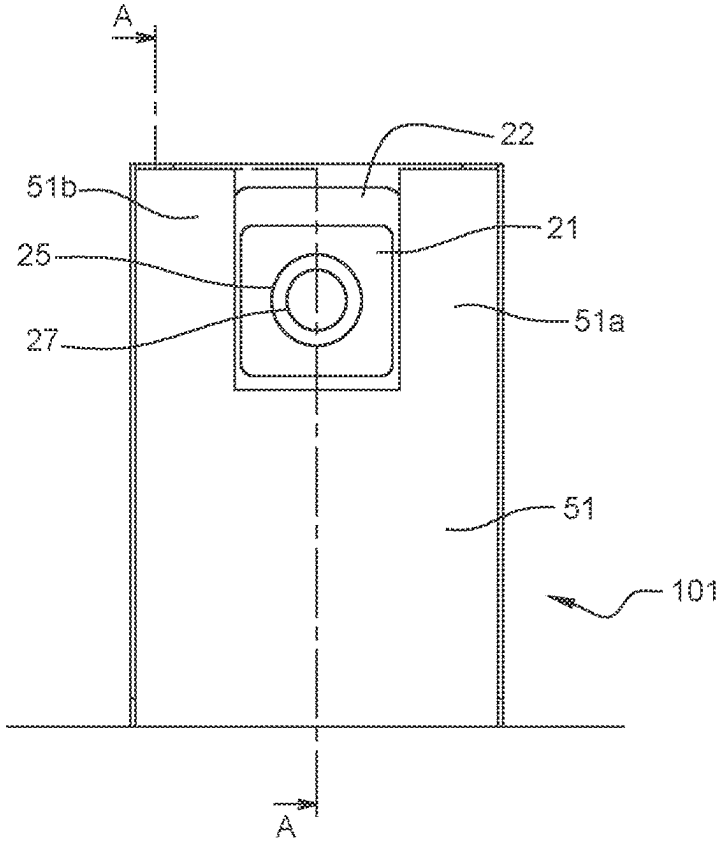
50
34b
152c
152e
51
52c
57

Fig. 8


A
22
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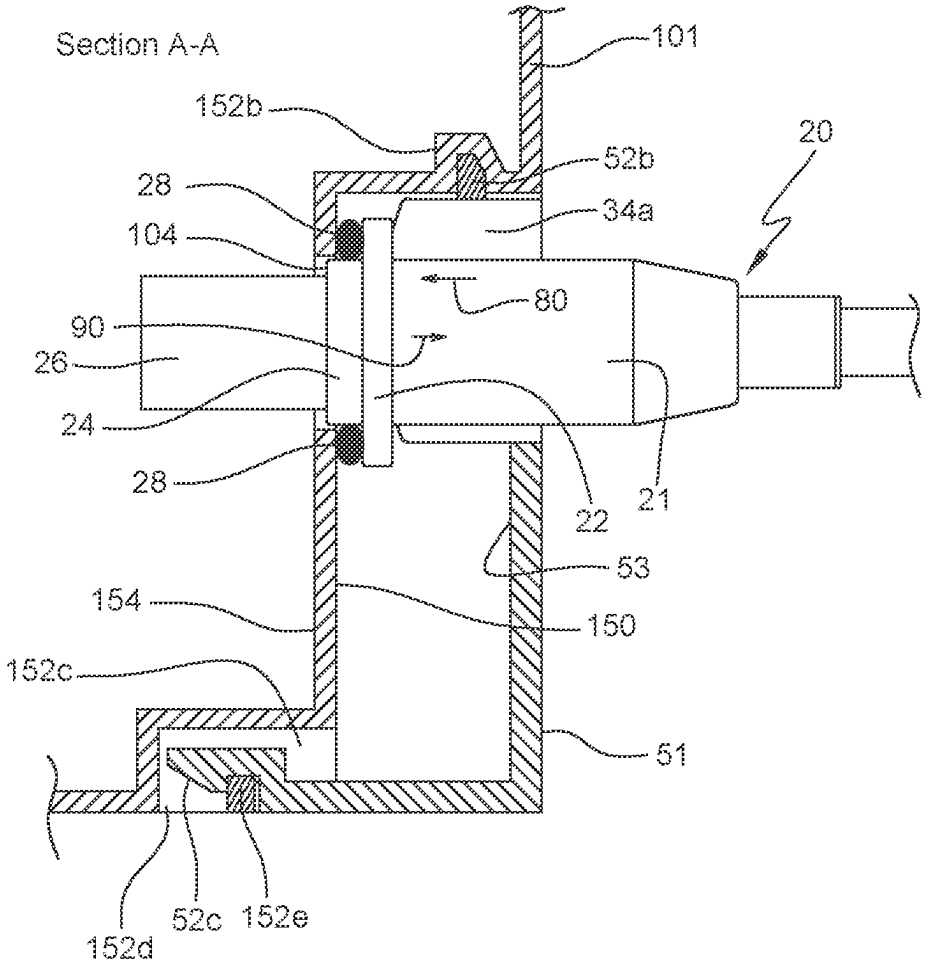
51a
51
101
A

Fig. 9


Section A-A
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152b
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52b
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104
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22
21
53
154
150
152c
51
152d
52c
152e

ASSEMBLY FOR SEALING A JUNCTURE OF A CABLE IN A WALL

FIELD

The invention relates to an assembly for sealing a juncture of a cable in a wall.

The wall may be comprised in a casing of an (electronic) appliance.

The appliance includes, among other devices, a fingerprint sensor type device, a fingerprint scanner type device, a Hardware Security Module (or HSM) type device, a terminal, a mobile (tele) phone type device, a Personal Digital Assistant (or PDA), a laptop, a Personal Computer (or PC) type device, a tablet, a desktop computer, a media-player, a game console, a netbook, a handset, a user terminal and/or a set-up box type device.

BACKGROUND

It is known to connect a cable of a Universal Serial Bus (or USB) type, to a fingerprint scanner, as an appliance. The cable allows supplying power to and communicating with a circuitry comprised in the appliance.

However, such a cable connection does not prevent, at a juncture of the cable in an appliance casing wall, a dust and water ingress into the appliance casing.

There is a need of a solution that allows protecting notably, at a juncture of a cable in a casing wall, from any penetration of any foreign matter into the casing.

SUMMARY

Provided is a solution for satisfying the just herein above specified need by providing an assembly for sealing a juncture of a cable in a wall.

According to the invention, the wall includes at least one aperture. The aperture is used for coupling a connector comprised within the cable. A cable end is provided with at least one flange. The flange surrounds at least in part the cable end. The assembly includes at least one strain relief element. The strain relief element is configured, once in a position to cooperate with the wall and the flange, to press, directly or indirectly, the flange against the wall when the connector is coupled while the strain relief element remains attached to the wall, so that the flange surrounds, directly or indirectly, the aperture and prevents, directly or indirectly, any foreign matter from passing the juncture of the cable at the aperture.

In a further aspect, the invention also provides an assembly for sealing a juncture of a cable in a wall, wherein, the wall including at least one aperture, the aperture being used for coupling a connector comprised within the cable, a cable end being provided with at least one flange, the flange surrounding at least in part the cable end, the assembly including at least one strain relief element, the strain relief element comprising:

- a main wall comprising a slot on an edge in the form of a cut-out, the slot being configured to receive a portion of the cable smaller than the portion provided with the flange,
- at least one pillar protruding from the main wall, wherein each of the at least one pillar is configured to push the flange against the wall when the connector is coupled while the strain relief element remains attached to the wall,

so that the flange surrounds, directly or indirectly, the aperture and seals, directly or indirectly, the juncture of the cable at the aperture. This entails preventing, directly or indirectly, any foreign matter such as dust and/or water from passing the juncture of the cable at the aperture.

The principle of the invention consists in providing, on one hand, a flange(s) on a cable end and, on another hand, a strain relief element(s). The strain relief element is designed, once positioned to cooperate with a wall and the flange, to urge, directly or indirectly, the flange against the wall, while the strain relief element is fixedly retained by the wall and the connector is coupled through a wall aperture. The wall aperture is thus hermetically shrouded, by or thanks to the flange that is urged by the strain relief element, at one side of the wall. No foreign matter is thus able to cross the wall, i.e. from one side to the other side of the wall, at the juncture of the cable at the wall aperture.

In the present description, the adverb "directly" means without using any external additional element while the adverb "indirectly" means using one or several external additional elements, such as e.g., one or several gaskets.

The invention solution allows preventing from any passage of any foreign matter, such as dust and/or water, at the wall aperture.

The invention solution therefore renders a juncture of a cable in a wall dustproof and waterproof.

Moreover, the invention solution is robust in time while retaining the sealing capacity of the assembly thanks to the used strain relief element(s).

The invention solution is technically simple and efficient against a passage of any foreign matter through a wall aperture used for connecting the cable.

According to a first embodiment, the assembly further includes at least one external elastic element. The at least one elastic element is placed, prior to coupling the connector, around the cable at the front of the flange, so that the strain relief element presses the flange and the at least one elastic element together against the wall when the connector is coupled while the strain relief element remains attached to the wall.

According to a second embodiment, the flange is at least in part constituted by at least one elastic material, so that the strain relief element presses the flange and the flange elastic part together against the wall when the connector is coupled while the strain relief element remains attached to the wall.

Preferably, the strain relief element further includes at least one pillar. Each of the at least one pillar allows pushing, directly or indirectly, the flange, to the wall.

Preferably, the strain relief element further includes at least one protruding extension. Each of the at least one protruding extension allows, on one hand, coupling the strain relief element to the wall and, on another hand, retaining the strain relief element coupled to the wall.

According to a first embodiment, the at least one protruding extension forms, each, a sliding guide that allows guiding the strain relief element during an insertion of the strain relief element into a corresponding gutter comprised within the wall.

According to a second embodiment, the at least one protruding extension allows, each, attaching the strain relief element to the wall during a coupling of the strain relief element with a corresponding recess comprised within the wall.

Advantageously, the strain relief element includes at least one rib. The at least one rib allows avoiding a shrinking of the strain relief element and/or a warpage of the strain relief element after having been molded. The at least one rib is

configured to add robustness to the strain relief element in use, that is, making the strain relief element more robust for use.

In a preferred embodiment, the cable includes the connector, as a first connector. The wall is included within a casing. The casing includes a second connector. The second connector faces, within the casing, the aperture. The first connector and the second connector are connected to each other.

Preferably, the strain relief element is outside the casing.

BRIEF DESCRIPTION OF THE DRAWINGS

Additional features and advantages of the invention will be apparent from a detailed description of two preferred invention embodiments, given as indicative and non-limitative examples, in conjunction with the following drawings:

FIG. **1** is a perspective view of an interior of an appliance casing with a wall aperture used for coupling a connector at a cable end provided with a releasable elastic element and an integrated flange to be pressed by a detachable strain relief element, as external elements, according to a first embodiment of the strain relief element;

FIG. **2** is a perspective view of an exterior of the appliance casing with the wall aperture by using the external elements of FIG. **1**;

FIG. **3** is a front view of the wall aperture sealed by using the external elements of FIG. **1** when the external elements cooperate with each other to seal a juncture of the cable end in the wall by using the strain relief element;

FIG. **4** is a side view along the section A-A line of FIG. **3**;

FIG. **5** is a top view along the section B-B line of FIG. **3**;

FIG. **6** is a perspective view of an exterior of an appliance casing with a wall aperture used for coupling a connector at a cable end provided with a releasable elastic element and an integrated flange to be pressed by a detachable strain relief element, as external elements, according to a second invention embodiment of the strain relief element;

FIG. **7** is another perspective view of the elements of FIG. **6**;

FIG. **8** is a front view of the wall aperture sealed by using the external elements of FIG. **7** when the external elements cooperate with each other to seal a juncture of the cable end in the wall by using the strain relief element; and

FIG. **9** is a side view along the section A-A line of FIG. **8**.

DETAILED DESCRIPTION

Herein under is considered a case in which the invention assembly is used for sealing a juncture of a cable of a USB type in a wall.

However, the invention assembly may be used for sealing a juncture of any type of cable in a wall.

The cable may include, among others, a mechanical type cable, a non-electrical type cable, an electrical type cable, a power supply type cable and a communication type cable. The aforementioned cable type set is not exhaustive.

Naturally, the herein below described embodiments are only for exemplifying purposes and are not considered to reduce the scope of the invention.

The same references that are present in different figures refer to one and the same elements.

FIG. **1** presents schematically a wall **10** with an aperture **104** and an exploded view of an assembly **200** for sealing a juncture of a cable **20** in the wall **10** in a rear and top view.

The wall **10** may be included within a housing or casing (represented in part).

The casing may include several walls including the wall **10**, as a first wall.

For a sake of simplicity, only the first wall **10** of the casing has been represented.

The casing may include a Printed Circuit Board (or PCB) (not represented) that comprises one or several (electrical and/or electronic) circuits.

The wall **10** may be made of e.g., a hard plastic type material. Alternatively, the wall **10** is made of metal, wood, a combination or mixture thereof or (an) other material(s).

The wall **10** includes one or several apertures **104** (only one being represented).

The aperture **104** constitutes a through hole, as a passage.

The aperture **104** is used for coupling a connector **26**. The connector **26** is provided at a cable end **24**.

The connector **26** includes one or several terminations of conductors comprised within the cable **20**.

The PCB may be connected, through another connector, to the connector **26**, that is connected, at the other end of the cable **20**, to an external device, such as a PC, so as to exchange data with each other and/or to supply in power the PCB or the external device.

The connector **26** includes e.g., a USB 3.0 B type plug.

The aperture **104** may have a substantially rectangular form. Alternatively, the aperture **104** may have a form that is substantially circular, oval, square, hexagonal or any other form. The aperture **104** form conforms to the form of the cross-section of the cable end **24** that has to cross the wall **10** at the aperture **104**.

The wall **10** divides a space in two sub-spaces, namely, at a first side of the wall **10**, an interior **100***a* of the casing and, at a second side of the wall **10**, an exterior **100***b* of the casing.

The aperture **104** allows accessing from the casing exterior **100***b* into the casing interior **100***a* and/or conversely, i.e. from the casing interior **100***a* into the casing exterior **100***b*.

The aperture **104** may allow, when at least partially open, dust, gas, a liquid(s) and/or any foreign material, to flow from the casing exterior **100***b* to the casing interior **100***a* and/or conversely, i.e. from the casing interior **100***a* to the casing exterior **100***b*.

The wall **10** has, at the aperture **104**, a rear face **110** that is opposite to a front face that faces the connector **26** to be engaged or inserted into the aperture **104**.

The wall **10** may have a recess **106**. The recess **106** is preferably completely molded with the wall **10**, so as to form one and the same element with the wall **10**.

The cable **20** includes a main body **27** that is preferably relatively flexible.

The main body **27** is made of e.g., a plastic type material. The main body **27** may be substantially cylindrical or any other form, such as a substantially parallelepiped shape.

The main body **27** has, when cylindrical, a radius of the external circle of e.g., about a few mm and may be comprised in a range from about 2 mm to about 8 mm.

The main body **27** may be overlaid, at the cable end **24**, with an additional layer **25**, so as to rigidify and reinforce the cable end **24** for its manipulation by a user to connect or disconnect the connector **26**.

The additional layer **25** may be made of e.g., a plastic type material. The additional layer **25** is preferably overmolded about the main body **27**. The additional layer **25** may be substantially cylindrical or have any other form, such as a substantially parallelepiped shape.

The additional layer **25** is used for avoiding a tight curvature of the cable **20** that may damage a possible internal wire(s) and therefore a connection.

The additional layer **25** has, when cylindrical, a diameter of the external circle of e.g., about a few mm with respect to the main body **27** and may be comprised in a range from about 1 mm to about 11 mm.

The additional layer **25** and/or the main body **27** may be overlaid, at the cable end **24**, with a transition layer **23**, so as to make a transition or a bridge between the main body **27** and/or the additional layer **25** and a gripping layer **21**.

The transition layer **23** may be made of e.g., a plastic type material. The transition layer **23** is preferably overmolded about the main body **27** and/or the additional layer **25**. The transition layer **23** may have a form that is substantially e.g., a truncated pyramid, any other form, such as a substantially parallelepiped shape, or a truncated cylindrical cone. The smallest base of the truncated pyramid (or the like) of the transition layer **23** is preferably prolonged by the main body **27** and/or the additional layer **25** while the largest base of the truncated pyramid (or the like) of the transition layer **23** is preferably prolonged by the gripping layer **21**. The cross-section of the transition layer is e.g., rectangular.

The length of the largest side of the smallest base of the truncated pyramid (or the like) of the transition layer **23** may be e.g., about 9 mm and is preferably at least as wide as the diameter of the additional layer **25**, when present, or the diameter of the main body **27**, if the additional layer **25** is not present.

The length of the largest side of the largest base of the truncated pyramid (or the like) of the transition layer **23** may be e.g., about 12 mm and is preferably as wide as the lateral side of the gripping layer **21**.

The length of the smallest side of the smallest base of the truncated pyramid (or the like) of the transition layer **23** may be e.g., about 7 mm and is preferably at least as wide as the diameter of the additional layer **25**, when present, or the diameter of the main body **27**, if the additional layer **25** is not present.

The length of the smallest side of the largest base of the truncated pyramid (or the like) of the transition layer **23** may be e.g., about 11 mm and is preferably at least as wide as the diameter of the additional layer **25**, when present, or the diameter of the main body **27**, if the additional layer **25** is not present.

The gripping layer **21** is provided at the front of the cable end **24** for its grip between fingers of the user who manipulates at the gripping layer **21** the cable end **24** to be plugged into or unplugged from the wall **10**. The gripping layer **21** constitutes at least in part a gripping area that is suitable for a user manipulation.

The gripping layer **21** may be made of e.g., a plastic type material that is preferably harder than the main body **27** material, when also made of a plastic type material. The gripping layer **21** is preferably molded with the main body **27**, the additional layer **25** and/or the transition layer **23**, so as to form one and the same element with the concerned cable portions or elements. The gripping layer **21** may have a substantially parallelepiped form. Alternatively or additionally, the gripping layer **21** is substantially cylindrical or has any other form.

The gripping layer **21** includes preferably one or several flat surfaces that may be, two by two, parallel with each other. Such a flat surface(s) allow(s) facilitating the grip of the cable end **24** by the user to plug the cable end **24** into the wall **10** or unplug the cable end **24** from the wall **10**.

The length of the gripping layer **21** may be e.g., about 1.5 cm and may be comprised in a range from about 10 mm to about 60 mm.

The length of the cable end **24** may be e.g., about 4 mm and may be comprised in a range from about 1 mm to about 5 mm.

According to an essential feature, the cable **20** is provided, at the cable end **24**, with one or several flanges **22** (only one being represented).

The (or each) flange **22** is preferably integrally molded with the cable end **24**, so as to form one and the same element with the cable **20**.

The thickness of the flange **22** may be e.g., about a few mm and may be comprised in a range from about 1 mm to about 5 mm.

Alternatively, i.e. instead of being a flange incorporated in the cable **20**, as an internal flange, the (or each) flange **22**, as an external flange, consists of one or several external additional elements that are fixed using, e.g., a glue(s) or welding any other fixing means, around the cable end **24**.

The cross-section of the flange **22** may be substantially rectangular while being preferably rounded at the external corners.

The (or each) flange **22** is preferably made of e.g., a hard plastic type material and/or the like, at least at the back of the flange **22**, so as to be pushed from the back of the flange **22** in a direction **50** towards the rear face of the wall **10**, as the push direction **50**.

The (or each) flange **22** forms or constitutes preferably one or several shoulders. Such a shoulder(s) (formed by the flange **22**) is (are) substantially perpendicular to an axis that is defined by the cable **20** at the cable end **24**. Such a shoulder(s) allow(s) applying a force that is substantially parallel to the cable **20** at the cable end **24** and that points in the push direction **50**.

The (or each) flange **22** may have an external form that is substantially e.g., rectangular that may be rounded on its external corners, or any other form.

The length of the largest side of the external rectangular of the flange **22** may be e.g., about 1.7 cm and may be comprised in a range from about 1 cm to about 4 cm.

The length of the smallest side of the external rectangular of the flange **22** may be e.g., about 1.5 cm and may be comprised in a range from about 1 cm to about 4 cm.

The (or each) flange **22** surrounds in part, such as e.g., in a discontinued manner, or totally the cable end **24**, so that, when the (or each) flange **22** is pushed, the (or each) flange **22** seals, directly or indirectly, a juncture of the cable **20** at the aperture **104**.

In a preferred embodiment, the flange **22** surrounds completely the cable end **24**.

Such a flange **22** surrounding is preferably present at the front of the gripping layer **21**, so as to facilitate an insertion of the cable end **24** into the aperture **104** while using the flange **22** as one or several stops for notably a user finger(s) or a detachable strain relief element(s) **30** to push the cable end **24** in the push direction **50**.

The (or each) flange **22** is used so that the detachable (or attached) strain relief element(s) **30** is (are) in capacity to press, directly or indirectly, the flange **22** against the wall **10** from the exterior **100***b*.

The (or each) flange **22**, once in cooperation with the wall **10** and the strain relief element **30**, is able to surround, directly or indirectly, the aperture **104** and prevents, directly or indirectly, any foreign matter, like e.g., dust and/or water, from passing the juncture of the cable **20** at the aperture **104**, as described infra.

The assembly **200** may include one or several gaskets **28**, as an external releasable (or attached) elastic element(s).

Alternately or additionally, instead of using a gasket **28**, the rear face of the wall **10** is provided, around the aperture **24**, with an elastic element that is either integrated in the wall **10** or fixed to the wall **10** while protruding from the rear face of the wall **10**.

The (or each) gasket **28** may be made of e.g., rubber, and/or any other elastic material.

The (or each) gasket **28** is elastically deformable.

The (or each) gasket **28** has, in the middle, a through hole, so as to form a ring.

The (or each) gasket **28** has preferably substantially the form of the flange **22**. The flange **22** thus enters in physical contact with the periphery of the gasket **28** preferably all around the periphery of the flange **22**.

The cross-section of the gasket **28** may be substantially circular, oval, rectangular, square or have any other form.

The thickness of the gasket **28** may be e.g., about 1 mm and may be comprised in a range from about 0.8 mm to about 4 mm.

The (or each) gasket **28** is able to penetrate and/or be penetrated by, through its hole, the cable end **24**.

The (or each) gasket **28** (when present) is preferably used for being placed around the cable **20** and preferably at the front of the flange **22**, prior to coupling the connector **26**.

Additionally or alternately, i.e. instead of using the gasket (s) **28** and/or an elastic element integrated in or fixed to the rear face of the wall **10**, as an external elastic element(s), the flange **22** is overmolded (or overlaid), at the front of the flange **22**, by an elastic or elastomeric material, as an internal elastic element.

The flange **22** is at least in part constituted by at least one elastic or elastomeric material, at least at the front of the flange **22**.

The internal elastic or elastomeric layer of the flange **22** is elastically deformable at least at a sealing area with the wall **10**. The internal elastic layer of the flange **22**, as an elastic element internal to the flange **22**, or the gasket **28**, as an elastic element external to the flange **22**, is used for sealing a juncture of the cable end **24** in the wall **10** at the aperture **104**.

The wall recess **106** is preferably arranged, so as to accommodate the flange(s) **22**, the strain relief element(s) **30** and possibly the gasket(s) **28**, as external elements.

The strain relief element **30** is preferably made of e.g., a hard plastic type material or the like.

The strain relief element **30** includes a main wall **32**.

The main wall **32** has a rear face **33** that is opposite to a front face **31**.

The strain relief element **30** includes two side walls **33***a* and **33***b* that extend to the main wall **32**. The side walls **33***a* and **33***b* have, each, substantially e.g., a form of a perpendicular triangle that is truncated e.g., at the bottom of the main wall **32** and the truncated side is parallel to the opposite side e.g., at the top of the main wall **32** while its largest side constitutes the lateral limit of the main wall **32**.

Optionally, the strain relief element **30** includes a plate **37**. The plate **37** is situated at the bottom of the main wall **32**. The plate **37** forms a foot for the strain relief element **30** when seen laterally.

The plate **37** may have e.g., a rectangular form, when seen from the top or the bottom of the strain relief element **30**.

The external corners of the plate **37** may be rounded.

The smallest side of the plate **37** may be e.g., about 1 cm and may be comprised in a range from about 0.5 mm to about 50 mm.

The largest side of the plate **37** may be e.g., about 2.3 cm and may be comprised in a range from about 1.5 cm to about 4.5 cm.

The thickness of the plate **37** may be e.g., about a few mm and may be comprised in a range from about 0.3 mm to about 4 mm.

Optionally, the strain relief element **30** has e.g., at the plate **37**, one or several through holes **38***a* and **38***b*. Each hole **38***a* or **38***b* is used for passing a fastening element (not represented), such as a screw. The fastening element(s) allow(s) fastening the strain relief element **30** to the wall **10** or another wall that may be comprised in the casing.

The main wall **32** comprises preferably a slot **36**.

The slot being arranged on an edge of the main wall **32** in the form of a cut-out.

The slot being configured to receive a portion of the cable smaller than the portion provided with the flange.

The slot **36** is defined by a through hole that is laterally bordered by two pillars **31***a* and **31***b* which are connected by a beam **31***c*.

The slot **36** allows a passage of the gripping area **21** through the strain relief element **30**.

The main wall **32** of the strain relief element **30** is inclined backwards, i.e. in the opposite direction of the push direction **50**, to align the shape of the rear face of the main wall **32** with the shape of the rear face of the wall **10**. Thus, the strain relief element **30** may be perfectly integrated in the rear face of the wall **10**.

The slot **36** has a form that conforms to the form of the cross-section of a part of the cable **20**, like e.g., the gripping area **21**.

The side walls **33***a* and **33***b* are e.g., symmetric with respect to a row that crosses the middle of the slot **36** termed middle row hereafter.

Optionally, the strain relief element **30** includes one or several ribs (not represented). When there are an even number of ribs, the ribs are preferably symmetric with respect to the middle row. The rib(s) is (are) placed under the slot **36** and provided preferably on the rear face **33** of the main wall **32**. The rib(s) allow(s) avoiding a shrinking of the strain relief element **30** and/or a warpage of the strain relief element **30** (just) after having been molded. The rib(s) allow(s) making the strain relief element **30** more robust for use and retaining the strain relief element **30** with the time and allow(s) avoiding affecting the external form or design of the strain relief element **30**.

The strain relief element **30** includes preferably one or several pillars **34***a* and **34***b*.

The pillar(s) **34***a* and **34***b* protrude(s) from the rear face **33** of the main wall **32**. The pillar(s) **34***a* and **34***b* border(s) preferably the slot **36**. The pillar(s) **34***a* and **34***b* may, each, lean against its respective side wall **33***a* and **33***b*. The pillar(s) **34***a* and **34***b* has (have), each, preferably its (their) front side that has a form that conforms to the form of the lateral sides of the flange **22**.

The pillar(s) **34***a* and **34***b* allow(s) sliding, prior to or after having possibly installed the (or each) gasket **28** around the front of the flange **22**, the flange **22** along the front of the pillar(s) **34***a* and **34***b*.

The front face of the pillar(s) **34***a* and **34***b* is preferably parallel to the rear face of the lateral sides of the flange **22**, so as to apply a continuous contact with the rear face of the lateral sides of the flange **22**.

Each of the pillars **34***a* and **34***b* allows thus pushing or pressing, directly or indirectly, the flange **22** to the rear face of the wall **10**.

Each of the pillars **34***a* and **34***b* is designed to push and maintain a push or pressure, directly or indirectly, of the flange **22** towards the rear face of the wall **10**.

The thickness of each of the pillars **34***a* and **34***b* of the slot **36** may be e.g., about 2 mm and may be comprised in a range from about 1 mm to about 5 mm.

The length of each of the pillars **34***a* and **34***b* of the slot **36** may be e.g., about 1.3 cm and may be comprised in a range from about 1 cm to about 4 cm.

The strain relief element **30** includes preferably one, two or more protruding extensions **32***a* and **32***b*. The protruding extension(s) **32***a* and/or **32***b* allow(s), each, on one hand, coupling the strain relief element **30** to the wall **10**, and more exactly the rear face of the wall **10**, and, on another hand, retaining the strain relief element **30** coupled to the wall **10**, as further explained infra.

The lateral inclination of the main wall **32** with respect to the lateral protruding portion of the protruding extension **32***a* or **32***b* may be e.g., about 9 degrees and may be comprised in a range from about 1 degree to about 20 degrees.

According to a first embodiment of the strain relief element **30** represented on FIGS. **1-5**, the protruding extensions **32***a* and/or **32***b* form(s), each, a sliding guide that allows guiding the strain relief element **30** during an insertion of the strain relief element **30** into a corresponding gutter **102***a* and **102***b* respectively (not visible on FIG. **1**) comprised within the wall **10**.

A protruding portion of the protruding extensions **32***a* and **32***b* borders laterally the strain relief element **30**.

The protruding extensions **32***a* and **32***b* may be, each, perpendicular to the plate **37**, when seen from a lateral side of the strain relief element **30**.

The protruding extensions **32***a* and **32***b* are e.g., symmetric with respect to the middle row.

The protruding extensions **32***a* and **32***b* have, each, when seen from the rear, substantially e.g., a form of a perpendicular triangle that is slightly truncated at the opposite side of the right angle.

The length of the smallest side that is adjacent to the right angle of the protruding extension(s) **32***a* and/or **32***b* may be e.g., about 3 mm and may be comprised in a range from about 1 mm to about 15 mm.

The length of the largest side that is adjacent to the right angle of the protruding extension(s) **32***a* and/or **32***b* may be e.g., about 4.3 cm and may be comprised in a range from about 1 mm to about 15 mm.

The largest side of the corresponding perpendicular triangle constitutes the outer edge of the concerned protruding extension **32***a* or **32***b* and also constitutes, in part, the outer edge of the strain relief element **30**, e.g., at the lateral side of the strain relief element **30**.

The truncated side constitutes the outer edge of the concerned protruding extension **32***a* or **32***b* and also constitutes, in part, the outer edge of the strain relief element **30**, e.g., at the top of the strain relief element **30**.

The protruding extensions **32***a* and **32***b* are connected, from their front, to the plate **37** and, from their rear, to their respective side walls **33***a* and **33***b*. Each protruding extension **32***a* or **32***b* protrudes, on one hand, from its respective side wall **33***a* or **33***b* and, on another hand, laterally from the plate **37**.

The protruding extensions **32***a* and **32***b* protrude, each, from its respective side wall **33***a* and **33***b* respectively toward the outside of the strain relief element **30**.

The thickness of the protruding extension(s) **32***a* and/or **32***b* may be e.g., about 1 mm and may be comprised in a range from about 0.8 mm to about 3 mm.

The protruding portion of each of the protruding extensions **32***a* and **32***b* is designed to conform substantially to the form of the corresponding gutter **102***a* or **102***b* comprised within the wall **10**, according to a first embodiment.

FIG. **2** shows schematically, in a front and bottom view, the wall **10** and the assembly **200** for sealing a juncture of the cable **20** in the wall **10** by using the strain relief element **30** according to the first embodiment.

Each of the gutters **102***a* and **102***b* constitutes a cut-out area on the inside of a corresponding lateral side of the recess **106**.

The thickness of the gutters **102***a* and/or **102***b* may be e.g., about 2 mm and may be comprised in a range from about 1 mm to about 3.5 mm.

Each of the gutters **102***a* and **102***b* allows accommodating a corresponding protruding extension **32***a* or **32***b*, and more exactly the protruding portion of the protruding extension **32***a* or **32***b*.

The cable **20** is to be connected to the wall aperture **104** by using the external elements of the assembly **200** to assemble all together.

According to a first embodiment, the assembly **200** includes the external elements, namely the flange **22**, the strain relief element **30** and the gasket **28**.

The form and the size of the slot **36** are configured to accommodate the gripping layer **21** of the cable **20**.

The length of each of the pillars **31***a* and **31***b* that borders the slot **36** is e.g., about 1.6 cm and may be comprised in a range from about 1.5 cm to about 5 cm.

The length of the beam **31***c* of that borders slot **36** may be e.g., about 1.4 cm and may be comprised in a range from about 1 cm to about 5 cm.

The thickness of the pillars **31***a* and **31***b* and the beam **31***c* that border the slot **36** may be e.g., about 2 mm and may be comprised in a range from about 1 mm to about 4 mm.

According to the first embodiment of the strain relief element **30**, the protruding extension(s) **32***a* and/or **32***b* form, each, a sliding guide and allows guiding the strain relief element **30** during an insertion of the strain relief element **30** into a corresponding gutter **102***a* and/or **102***b* respectively comprised within the wall **10**.

According to the first embodiment of the strain relief element **30**, the protruding extension(s) **32***a* and **32***b* form, each, a rail that allows coupling the strain relief element **30** to the wall **10**, and more exactly to the front face **112** of the wall **10**.

Prior to connecting the cable **20** to the wall **10**, the user firstly installs, e.g., with one hand, the gasket **28** around the cable end **24** that is held with e.g., another hand.

The gasket **28**, when used, and the strain relief element **30** are preferably, each, e.g., outside the casing that includes the wall **10**.

After the user has installed the gasket **28** around the cable end **24**, the user inserts the connector **26** into the aperture **104** by holding with fingers the gripping area **21** and pushing the cable **20** toward the wall **10**. Such a connector insertion is e.g., used for connecting the connector **26** to another connector **46** (visible on FIG. **4**).

Once the connector **26** is inserted in the aperture **104**, the gasket **28** is blocked, at the recess **106**, between the front face **112** of the wall **10** and the flange **22**.

The user inserts and slides, in a sliding direction **70**, the protruding extension(s) **32***a* and/or **32***b* in the corresponding gutter(s) **102***a* and/or **102***b* (which appears slightly) of the

wall **10** until the pillars **31***a* and **31***b* bordering the slot **36** are stopped by the upper border of the recess **106**. Optionally, the user slides, in the sliding direction **70**, the protruding extension(s) **32***a* and/or **32***b* in the corresponding gutter(s) **102***a* and/or **102***b* of the wall **10** until the plate **37** reaches, simultaneously to the stopping of the pillars **31***a* and **31***b*, the upper border of another recess **108** comprised possibly in another wall comprised preferably in the casing.

Each of the protruding extensions **32***a* and **32***b* allows, on one hand, coupling the strain relief element **30** to the wall **10** and, on another hand, retaining the strain relief element **30** coupled to the wall **10**.

Once the strain relief element **30** is coupled to the wall **30**, the user may furthermore insert each of one or two (or more) screws (not represented) through the hole **38***a* or **38***b* of the strain relief element **30** and a corresponding non-through hole **108***a* or **108***b* of another wall (or the wall **10**). Then, the user turns the screw(s) in the concerned hole(s) **38***a* and/or **38***b* and the concerned non-through hole(s) **108***a* and/or **108***b*, so as to fasten the strain relief element **30** to the wall **10** or another wall that is preferably included in the casing.

To unplug or unconnect the cable **20** from the wall **10** or the casing, the user may firstly remove the retaining screw(s) or any other fastening element(s) from the concerned non-through hole(s) **108***a* and/or **108***b* and hole(s) **38***a* and/or **38***b*.

The user slides, in a direction opposite to the sliding direction **70**, the protruding extension(s) **32***a* and/or **32***b* in the corresponding gutter(s) **102***a* and/or **102***b* of the wall **10** by pushing with e.g., a finger, on the beam **31***c* of the slot **36** until the strain relief element **30** is released from the wall **10**.

The strain relief element **30** is thus decoupled and detached from the wall **10**.

Then, the user takes the cable end **24** away from the aperture **104** by holding with fingers the gripping area **21** and pulling the cable **20** from the wall **10**.

The user may remove the gasket **28** from the cable end **24**, so as to disassemble the assembly **200**.

FIG. **3** shows schematically from a rear view the connector **26** inserted in the wall **10** with two cross-section lines, a cross-section line A-A and a cross-section line B-B.

The cross-section line A-A vertically crosses the cable **20** along its diameter and the slot **30** at the middle row.

The cross-section line B-B is perpendicular to the first cross-section line A-A. The cross-section line B-B horizontally crosses the cable **20** along its diameter.

The strain relief element **30** is configured, once in a position to cooperate with wall **10** and the flange **22**, to press, directly or indirectly, the flange **22** against the wall **10** when the connector **26** is coupled while the strain relief element **30** remains attached to the wall **10**.

Thus, the flange **22** surrounds, directly or indirectly, the aperture **104** and prevents, directly or indirectly, any foreign matter from passing the juncture of the cable **20** at the aperture **104**.

The strain relief element **30** presses the lateral sides of the flange **22** through the pillars **34***a* and **34***b* (hidden on FIG. **3**) which extend respectively the pillars **31***a* and **31***b* which border the slot **36**.

The aperture **104** is closed with the cable end **24** provided with the flange **22** that seals, through either the gasket **28**, as an external elastic element in a first embodiment that is further described infra, or an elastic portion of the flange **22**, as an internal elastic element, thanks to the strain relief element **30**.

Once positioned to cooperate with the wall **10** and the flange **22**, the rear face **31** of the strain relief element **30** may be completely integrated in the wall **10**, i.e. no part of the strain relief element **30** protrudes from the wall **10**.

The strain relief element **30** is coupled to the wall **10** that may be comprised within a casing.

FIG. **4** shows schematically, along the cross-section line A-A, the cable end **24** inserted in the wall **10**, the gasket **28** pressed by the flange **22** and the strain relief element **30** that presses the flange **22**.

The casing includes e.g., the connector **46**, as a first connector. The first connector **46** is fixed within the casing. The first connector **46** faces, within the casing, the aperture **104** of the wall **10** (represented with a first hatched area).

The cable **20** includes a corresponding connector **26**, as a second connector.

The first connector **46** and the second connector **26** are connected to each other. The first connector **46** is e.g., a female connector while the second connector **26** is e.g., a male connector or the reverse, namely the first connector **46** is e.g., a male connector while the second connector **26** is e.g., a female connector.

The strain relief element **30** presses the flange **22** and an elastic element, namely the gasket **28**, as an external elastic element, or an elastic part of the flange **22**, as an internal elastic element (not represented), together against the wall **10** when the connector **26** is coupled to another connector **46** while the strain relief element **30** remains attached to the wall **10**.

According to the alternative embodiment, the strain relief element **30** presses the flange **22** and the flange elastic part, so that the strain relief element **30** presses the flange **22** and the flange elastic part together against the wall **10** when the connector **26** is coupled to another connector **46** while the strain relief element **30** remains attached to the wall **10**.

The pillar **34***a* (represented with a non-hatched area) and the pillar **34***b* (not visible on FIG. **4**) of the strain relief element **30** (represented with a second hatched area) exert, each, a pressure force, in a pressure direction **80**, on the flange **22** toward the wall **10**.

The flange **22** exerts, in turn, the same pressure force, in the pressure direction **80**, on the gasket **28** (represented with a blackened area) toward the wall **10**.

The gasket **28** which is blocked or stopped, on one side, by the rear face **112** of the wall **10** and pushed, on another side, through the front face of the flange **22**, by the pillars **34***a* and **34***b* of the strain relief element **30**, deforms elastically.

The gasket **28**, as an external elastic element, is thus compressed against the wall **10** and surrounds the aperture **104**. The gasket **28** seals the juncture of the cable **20** in the wall **10**.

In reaction to the pressure force exerted on the stopped gasket **28** by the flange **22**, the gasket **28** exerts a reaction force toward the flange **22**, in a direction opposite to the pressure direction **80**, as a reaction direction **90**.

The first connector **46** and the second connector **26** are connected to each other, so that a power supply of the internal circuits is possible and the internal circuits are able to communicate with an external device, such as a PC.

Once the first connector **46** and the second connector **26** are connected to each other, the corresponding appliance is able to operate.

FIG. **5** shows schematically, along the cross-section line B-B, the cable end **24** inserted in the wall **10**, the gasket **28** pressed by the flange **22** and the strain relief element **30** that presses the flange **22**.

According to the first embodiment of the strain relief element **30**, the protruding portion of each of the protruding

extensions **32***a* and **32***b* of the strain relief element **30** is blocked within the corresponding gutter **102***a* and **102***b* included within the wall **10**.

Each of the gutter **102***a* and **102***b* has e.g., a U-shaped with a first lateral side that is proximate to the rear face **112** of the wall **10** and a second lateral side that is remote from the rear face **112** of the wall **10**.

Each of the gutter **102***a* and **102***b* is designed to accommodate the protruding portion of the protruding extension(s) **32***a* and **32***b* of the strain relief element **30**.

Each of the protruding extensions **32***a* and **32***b* of the strain relief element **30** that is stopped by the remote side (from the rear face **112** of the wall **10**) of the corresponding gutter **102***a* or **102***b* allows opposing to the reaction force **90** exerted, via an elastic element, namely the gasket **28**, as an external elastic element, or an elastic part of the flange **22**, as an internal elastic element (not represented), from the wall **10** (and more exactly its front face **112**), through the flange **22**, to the strain relief element **30**.

Each of the protruding extensions **32***a* and **32***b* of the strain relief element **30** allows retaining the strain relief element **30** coupled to the wall **10**.

FIG. **6** shows schematically, in a front and bottom view, a wall **101**, according to a second embodiment, and the assembly **200** for sealing a juncture of the cable **20** in the wall **101**, by using a strain relief element **50** according to a second embodiment.

The wall **101** includes a recess **150**.

The wall **101** comprises a plurality of coupling/decoupling recesses **152***a*, **152***b* (not visible on FIG. **6**), **152***c* and **152***d*.

Each of the coupling/decoupling recesses **152***a*, **152***b*, **152***c* and **152***d* constitutes either a non-through hole or a through hole on the inside of the recess **150** of the wall **101** or another wall.

Each of the coupling/decoupling recesses **152***a*, **152***b*, **152***c* and **152***d* allows coupling and decoupling a corresponding protruding extension **52***a*, **52***b* or **52***c* (not visible on FIG. **6**) of the strain relief element **50**.

The thickness of the coupling/decoupling recesses **152***a*, **152***b*, **152***c* and **152***d* may be e.g., about 2 mm and may be comprised in a range from about 1 mm to about 5 mm.

Each of the coupling/decoupling recesses **152***a*, **152***b*, **152***c* and **152***d* allows accommodating at least in part the corresponding protruding extension **52***a*, **52***b* or **52***c* of the strain relief element **50**, and more exactly its protruding portion.

The strain relief element **50** according to the second embodiment is identical to the strain relief element **30** according to the first embodiment, except for the form (or design) of its protruding extension(s). Each of the protruding extension(s) of the first and second embodiments of the strain relief element allows coupling the strain relief element to the wall and retaining the strain relief element coupled to the wall.

According to the second embodiment of the strain relief element **50**, each of the three protruding extensions **52***a*, **52***b* and **52***c* (not visible on FIG. **6**) forms a lug. The lug is used for coupling the strain relief element **50** to the wall **101** and retaining the strain relief element **50** coupled to the wall **101**.

Two protruding extensions **52***a* and **52***b* prolong pillars **51***a* and **51***b* respectively that border the slot **36**.

Each of the protruding extensions **52***a*, **52***b* and **52***c* allows attaching the strain relief element **50** to the wall **101** during a coupling of the strain relief element **50** with a corresponding coupling/decoupling recess **152***a*, **152***b* and **152***c* respectively comprised within the wall **101** or another wall that is possibly comprised in the casing that comprises the wall **101**.

FIG. **7** shows schematically, in a bottom and lateral view, the wall **101**, and the assembly **200** for sealing a juncture of the cable **20** in the wall **101**, by using the strain relief element **50**.

Prior to connecting the cable **20** to the wall **101**, the user firstly installs, e.g., with one hand, the gasket **28** around the cable end **24** that is held with e.g., another hand.

The gasket **28**, when used, and the strain relief element **50** are preferably, each, e.g., outside the casing that includes the wall **101**.

After the user has installed the gasket **28** around the cable end **24**, the user inserts the cable end **24** into the aperture **104** by holding with fingers the gripping area **21** and pushing the cable **20** toward the wall **101**. Such a cable end insertion is e.g., used for connecting the connector **26** to another connector (not visible).

Once the cable end **24** is inserted in the aperture **104**, the gasket **28** is blocked, at the recess **150**, between the front face of the wall **101** and the flange **22**.

The user inserts, in a first insertion direction **60**, the two protruding extensions **52***a* and **52***b* in the corresponding coupling/decoupling recesses **152***a* and **152***b* (not visible on FIG. **7**) of the wall **101**, so as to retain the strain relief element **50** at its upper side.

Then, the user inserts, in a second insertion direction **62**, the third protruding extension **52***c* in a corresponding coupling/decoupling recess **152***c* of the wall **101** until the third protruding extension **52***c* is locked in a coupling/decoupling recess **152***d* comprised possibly in another wall comprised preferably in the casing. Thus, the strain relief element **50** is attached and coupled to the wall **10**

Each of the protruding extensions **52***a*, **52***b* and **52***c* allows, on one hand, coupling the strain relief element **50** to the wall **101** and, on another hand, retaining the strain relief element **50** coupled to the wall **101**.

To unplug or unconnect the cable **20** from the wall **101** or the casing, the user firstly pushes, in the coupling/decoupling recess **152***d*, with a pen, a screwdriver or the like, the third protruding extension **52***c*, so as to unlock the third protruding extension **52***c* from the coupling/decoupling recess **152***d* and remove, in a direction opposite to the second insertion direction **62**, the third protruding extension **52***c* from the coupling/decoupling recess **152***c*.

The user removes, in a direction opposite to the first insertion direction **60**, the protruding extensions **52***a* and **52***b* from the corresponding coupling/decoupling recesses **152***a* and **152***b* of the wall **101** by pulling with e.g., a finger, on the beam **31***c* of the slot **36** until the strain relief element **50** is released from the wall **101**.

The strain relief element **50** is thus decoupled and detached from the wall **101**.

Then, the user takes the cable end **24** away from the aperture **104** by holding with fingers the gripping area **21** and pulling the cable **20** from the wall **101**.

The user may remove the gasket **28** from the cable end **24**, so as to disassemble the assembly **200**.

FIG. **8** shows schematically from a rear view the cable end **24** inserted in the wall **101** with a cross-section line A-A.

The cross-section line A-A vertically crosses the cable **20** along its diameter and the slot **36** at the middle row.

The strain relief element **50** is configured, once in a position to cooperate with wall **101** and the flange **22**, to press, directly or indirectly, the flange **22** against the wall

101 when the connector 26 is coupled while the strain relief element 50 remains attached to the wall 101.

Thus, the flange 22 surrounds, directly or indirectly, the aperture 104 and prevents, directly or indirectly, any foreign matter, such as dust and/or water, from passing the juncture of the cable 20 at the aperture 104.

The strain relief element 50 presses the lateral sides of the flange 22 through the pillars 34*a* and 34*b* (hidden on FIG. 8) which extend respectively the pillars 51*a* and 51*b* which border the slot 36.

The aperture 104 is almost closed with the cable end 24 provided with the flange 22 that seals, through either the gasket 28, as an external elastic element in a first embodiment that is further described infra, or an elastic (or elastomeric) portion of the flange 22, as an internal elastic element, thanks to the strain relief element 50.

Once positioned to cooperate with the wall 101 and the flange 22, the rear face 51 of the strain relief element 50 may be completely integrated in the wall 101, i.e. no part of the strain relief element 50 protrudes from the wall 101.

The strain relief element 50 is coupled to the wall 101 that may be comprised within a casing.

The recess 150 and the strain relief element 50 are preferably designed in a complementary way, so that, once the strain relief element 50 is in position of cooperation with the recess 150, the form of the strain relief element 50 is substantially integrated within the form of the wall 101. Thus, the external face 51 of the strain relief element 50 does not protrude from the external face of the wall 101.

FIG. 9 shows schematically, along the cross-section line A-A, the cable end 24 inserted in the wall 101, the gasket 28 pressed by the flange 22 and the strain relief element 50 that presses the flange 22.

The two protruding extensions 52*b* and 52*a* (not visible on FIG. 9) are lodged in their corresponding coupling/decoupling recesses 152*b* and 152*a* (not visible on FIG. 9) of the wall 101, so as to retain the strain relief element 50 at its upper side.

The third protruding extension 52*c* is engaged in the coupling/decoupling recess 152*c* of the wall 101 while emerging from the coupling/decoupling recess 152*d*, so as to be accessible from the outside of the wall 101.

The strain relief element 50 presses the flange 22 and an elastic element, namely the gasket 28, as an external elastic element, or an elastic part of the flange 22, as an internal elastic (or elastomeric) element (not represented), together against the wall 101 when the connector 26 is coupled while the strain relief element 50 remains attached to the wall 101.

According to the alternative embodiment, the strain relief element 50 presses the flange 22 and the flange elastic part, so that the strain relief element 50 presses the flange 22 and the flange elastic part together against the wall 101 when the connector 26 is coupled while the strain relief element 50 remains attached to the wall 101.

The pillar 34*a* (represented with a non-hatched area) and the pillar 34*b* (not visible on FIG. 9) of the strain relief element 50 (represented with a second hatched area) exert, each, a pressure force, in a pressure direction 80, on the flange 22 toward the wall 101.

The flange 22 exerts, in turn, the same pressure force, in the pressure direction 80, on the gasket 28 (represented with a third hatched area) toward the wall 101.

The gasket 28 which is blocked or stopped, on one side, by the rear face of the wall 101 and pushed, on another side, through the front face of the flange 22, by the pillars 34*a* and 34*b* of the strain relief element 50, deforms elastically.

The gasket 28, as an external elastic element, is thus compressed against the wall 101 and surrounds the aperture 104. The gasket 28 seals the juncture of the cable 20 in the wall 101.

In reaction to the pressure force exerted on the stopped gasket 28 by the flange 22, the gasket 28 exerts a reaction force toward the flange 22, in a direction opposite to the pressure direction 80, as a reaction direction 90.

The three protruding extensions 52*a*, 52*b* and 52*c* are coupled to the wall 101 and allow retaining the strain relief element 50 coupled to the wall 101 despite the presence of the reaction force.

The invention solution allows using notably a standard and cheap connector to a PCB.

The invention solution allows keeping the electronic architecture without modifying it, when present in the appliance.

The invention solution uses a strain relief element(s) that is (are) simple and cheap to manufacture.

The invention solution uses an assembly that allows sealing a juncture of a cable in a wall while avoiding any passage of foreign matter through a wall aperture.

The invention claimed is:

1. An assembly (200) for sealing a juncture of a cable (20) in a wall (10), wherein, the wall including at least one aperture (104), the aperture being used for coupling a connector comprised within the cable, a cable end being provided with a flange (22), the flange surrounding at least in part the cable end, the assembly including a strain relief element (30), the strain relief element comprising:

- a main wall (32) comprising a slot (36) having a form that conforms to the form of cross-section of a part of the cable (20) allowing a passage of this part of the cable through the strain relief element (30),
- at least one pillar (34*a*, 34*b*) protruding from the main wall (32) and laterally bordering the slot (36), wherein each of the at least one pillar is configured to push the flange against the wall when the connector is coupled while the strain relief element remains attached to the wall, so that the flange surrounds, directly or indirectly, the aperture and seals, directly or indirectly, the juncture of the cable (20) at the aperture thus preventing, directly or indirectly, any foreign matter such as dust and/or water from passing the juncture of the cable at the aperture.

2. The assembly according to claim 1, wherein the assembly further includes at least one external elastic element (28), the at least one elastic element being placed, prior to coupling the connector, around the cable at the front of the flange, so that the strain relief element presses the flange and the at least one elastic element together against the wall when the connector is coupled while the strain relief element remains attached to the wall.

3. The assembly according to claim 1, wherein the flange is at least in part constituted by at least one elastic material, so that the strain relief element presses the flange and the flange elastic part together against the wall when the connector is coupled while the strain relief element remains attached to the wall.

4. The assembly according to claim 3, wherein the strain relief element further includes at least one protruding extension, each of the at least one protruding extension allowing, on one hand, coupling the strain relief element to the wall and, on another hand, retaining the strain relief element coupled to the wall.

5. The assembly according to claim 4, wherein the at least one protruding extension (32*a*, 32*b*) forms, each, a sliding

guide that allows guiding the strain relief element during an insertion of the strain relief element into a corresponding gutter (**102***a*) comprised within the wall.

6. The assembly according to claim **5**, wherein the at least one protruding extension (**52***a*, **52***b*, **52***c*) allows, each, attaching the strain relief element to the wall during a coupling of the strain relief element with a corresponding recess (**152***a*, **152***b*, **152***c*) comprised within the wall.

7. The assembly according to claim **6**, wherein the strain relief element includes at least one rib, the at least one rib being configured to add robustness to the strain relief element.

8. The assembly according claim **7**, wherein, the cable includes the connector, as a first connector (**26**), the wall being included within a casing, the casing including a second connector (**46**), the second connector facing, within the casing, the aperture, the first connector and the second connector being connected to each other.

9. The assembly according to claim **8**, wherein the strain relief element is outside the casing.

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