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(54) **FITTING FOR A LUMINAIRE**

(57) The subject of the invention is a fitting designed for connecting components, such as channels, beams and similar support components with electrical functional or operating components, for example lighting fixtures. The fitting comprises of a first profile element (1) fixed in the profile of the supporting beam and the pivotally connected second moving profile element (2), and a cooperating mandrel die (4) with a head (41) on one side and

a latch (42) at the opposite end. The mandrel (4) is inserted in the opening (5) in the elongated part of the arm (12) of the first profile element (1) so that the mandrel head (41) is on the outer side of the arm (12), while the latch (42) at the opposite end of the mandrel (4) is in the opening (6) of the protrusion (211) in the web (21) of the second profile element (1) of the fitting.

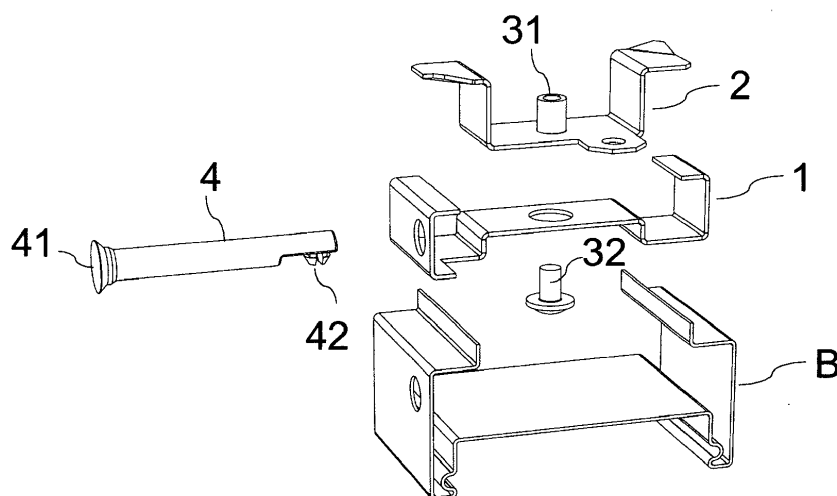


Fig. 1

Description

[0001] The subject of the invention is a fitting designed for connecting components, such as channels, beams and similar support components with electrical functional or operating components, for example lighting fixtures, having a cross sectional shape of the semi-closed profiles.

[0002] In known solutions, latch components made of resilient steel or latches made of appropriately shaped supporting components and the connected lighting components are used for connecting the supporting beam with the lighting components. Connections of this type are described by for example the Polish Patent PL203813 and the European Patent PL/EP2789906. In both solutions, the lighting fixture or the cover rail are fixed to the support rail by means of latches.

[0003] Repeated opening and closing of the connected parts may weaken fixing reliability. Hence, the purpose of the present invention was to design a fitting that allows easy, quick, and tool-free reliable connection of the functional component, for example a lighting fixture with a supporting component, for example a ceiling rail.

[0004] Polish patent description PL203813 reveals a solution in which the rotary selector of an electrical fitting is equipped with locking parts to ensure reliable connection of the contact component for connecting the transmission conductor rails for powering the lamps with the support rail. The fitting integrated with an electrical connection, however, requires an expensive system for energy transfer in the carrier beam.

[0005] The fitting according to the invention comprises of a first profile element fixed in the profile of the carrier beam, second moving profile element, and a cooperating mandrel die with a head on one side and a hook at the opposite end. The first profile element has a cross-sectional shape of a semi-closed C-section with a rectangular bending in the middle part of the web. One arm of the C-section is extended in relation to the web and the opposite arm and has an opening in the elongated part of the arm. The second, moving element of the fitting has a cross-sectional shape of a C-section, where the upper parts of the arms are bent outwards, and the web is pivotally connected with the web of the first profile element by means of a fastener. The web of the second rotary profile element has a projection with an opening located in such a way that with a parallel arrangement of webs of the profile elements, the elongated arm of the first profile element and the projection in the web of the second profile element are directed in the same direction and are located on the opposite pairs of arms of the first and the second profile element. Mandrel rod, forming the die of the fitting passes through the opening in the elongated part of the arm of the first profile element so that its head is located on the outer side of the arm, while the hook at the opposite end of the mandrel is inserted into the protrusion opening in the web of the second, moving profile element of the fitting.

[0006] When the profile elements of the fitting are parallel to each other, the edges of the connected elements are supported by the bent arms of the first and second moving part of the fitting. The supported part is released by the rotation of the moving part of the fitting and retraction of its arms supporting the connected element, outside the locking area.

[0007] Such designed fitting provides an effective connection of elements, regardless of the number of lock and open operations. In addition, the extent of mandrel protrusion provides information for the operator if the elements are effectively connected or not.

[0008] It is beneficial that each of the bent parts of arms of the second moving element of the fitting has at least one corner bent upwards.

[0009] It is beneficial that the free corners of each of the bent parts of the arms of the second moving element of the fitting are truncated.

[0010] It is beneficial that the connecting element comprises of an inside-threaded sleeve with a flange built in the web of the second profile element and a bolt screwed into the sleeve, which passes through an opening in the web of the first profile element.

[0011] The subject of this invention is described in detail on realization examples and on drawing in which fig. 1 shows the fitting in a perspective view, as dismantled, fig. 2 is a view of the first profile element of the fitting, fig. 3 is a view of the second profile element of the fitting, fig. 4 is a view of the fitting in cross-section, fig. 5 is a view of the fitting from above, fig. 6 shows a top view of the fitting in the supporting beam, in a locked position, fig. 7 shows a top view of the unlocked fitting in the supporting beam, fig. 8 to fig. 10 show views of the fitting and the connected parts in cross-section, at various stages of element connection. Fig. 8 is a view of the locked fitting and the connected components before being connection, fig. 9 is a view of the unlocked fitting and the connected components before being connection, and fig. 10 is a view of the connected components.

[0012] The fitting according to the invention, in the exemplary execution comprises of a first profile element **1**, which has a shape adapted to the shape of the profile of the supporting beam **B** and when put in the beam profile **B** is being fixed, the second, moving profile element **2** of the fitting, the fastener **3** connecting the first profile element **1** with the second profile element **2** and mandrel **4**, which is the fitting die. The first profile element **1** has a cross-sectional shape of a semi-closed C-section with a rectangular bending in the middle part of the web **11**. One of the arms **12** of the C-section is extended in respect to the web **11** and the opposite arm **13**. In the extension of the arm **12** there is an opening **5**. The second, moving element **2** of the fitting has a cross-sectional shape of a C-section, where the upper parts of the arms **21** and **22** are bent outwards, and the web **21** is pivotally connected with the web **11** of the first profile element **1** by means of a fastener **3**. The fastener **3** comprises of an inside-threaded sleeve with a flange **31** built in the web **21** of

the second profile element **2** and a bolt **32** screwed into the sleeve **31**, which passes through an opening **14** in the web **11** of the first profile element **1**. The web of the second profile element **21** has a protrusion **211** with an opening **6**. The protrusion **211** is located on the elongated part of the arm **13** of the first profile element **1**, adjacent to the distal arm **22** of the second profile element **2**. The moving element is set in motion by means of a die in the form of a mandrel **4** ended on one side with a head **41** and a latch **42** on the opposite end, which passes through an opening **5** arm of the fixed element **1** and a corresponding opening in the arm of the supporting beam so that its head **41** is located on the outer side of the beam **B**, and the latch **42** at the opposite end of the mandrel is located in the opening **6** of the protrusion **211** in the web **21** of the second moving profile element **2** of the fitting. When the mandrel is fully inserted into the beam, the edges of bent parts **221** and **231** of arms **22** and **23** of the second moving profile element **2** of the fitting are arranged parallel to the edge of the supporting beam **B** and the edges of the functional element **F** connected to it, for example a lighting fixture. Bent parts **221** and **231** of arms **22** and **23** of the second moving profile element **2** of the fitting are located then inside the functional element **F**, locking the connection of the supporting beam **B** and the functional element **F**, as shown in Fig. 6 and Fig. 10. To disconnect the functional element **F** from the beam **B**, pull the head **41** of the mandrel **4**, which will rotate the moving element **2** of the fitting and unlock the connection of the functional element **F** with the supporting beam **B**, as shown in Fig. 7 and Fig. 9. In the presented exemplary execution of the fitting, each surface of bent parts **221** and **231** of arms **22** and **23** of the second moving profile element **2** has free corners bent upwards **2210** and **2310**, at the friction edge while the connection is being locked.

List of symbols:

[0013]

B - beam,
 F - functional element,
 1 - first profile element of the fitting,
 11 - web of the first profile element,
 12 - extended arm of the first profile element of the fitting,
 13 - arm of the first profile element of the fitting,
 14 - opening in the web of the first profile element of the fitting,
 2 - second profile element of the fitting,
 21 - web of the second profile element of the fitting,
 211 - protrusion in the web of the second profile element of the fitting,
 22 and 23 - arms of the second profile element of the fitting,
 221 and 231 - bent parts of the arms of the second profile element,

2210 and 2310 - bent corners of bent parts of the arms of the second profile element,
 3 - fastener,
 31 - sleeve with flange of the fastener 3,
 32 - bolt of the fastener 3,
 4 - mandrel, being the die of the fitting,
 41 - mandrel head 4,
 42 - mandrel latch 4,
 5 - opening in the extension of the arm 12 of the first profile element,
 6 - opening in the protrusion 211 of the second profile element,

15 Claims

1. The fitting comprising of profile elements and the locking element, **characterised in that** it comprises the first, fixed in the profile of the supporting beam, profile element (1), the second moving profile element (2) and cooperating die in a form of a mandrel (4) ended on one side with a head (41) and a latch (42) at the opposite end, wherein the first profile element (1) has a cross-sectional shape of a semi-closed C-section with a rectangular bend in the middle part of the web (11), and one of the arms (12) of the first profile element 1 is longer than the opposite arm (13) and the web (11) and has an opening (5) in the extended part of the arm (12), and the second moving profile element (2) of the fitting has a cross-sectional shape of the C-section, the arms of which (22 and 23) have an outward bent upper parts (221, 231) and the web (21) is pivotally connected to the web (11) of the first profile element (1) by means of a fastener (3), and has a protrusion (211) with an opening (6) near the arm (23) located in such a manner that when the webs (11 and 21) of the profile elements (1 and 2) are parallel, the elongated arm (12) of the first profile element (1) and the protrusion (211) in the web of the second profile element (2) are directed in the same direction and are located at the opposite pairs of the arms (12 and 22) and (13 and 23) of the profile elements (1 and 2), and in the opening (5) in the elongated part of the arm (12) of the first profile element (1) there is a mandrel (4) located in such a manner that the head of the mandrel (41) is at the outer side of the arm (12), while the latch (42) at the opposite end of the mandrel (4) is inside the opening (6) of the protrusion (211) in the web (21) of the second profile element (1).
2. The fitting, according to claim 1, **characterised in that** each of the bent parts of the arms (221, 231) of the second profile element (2) of the fitting has at least one corner (2210, 2310) bent upwards.
3. The fitting, according to claim 1, **characterised in that** the free corners of each of the bent parts of the

arms (221, 231) of the second profile element (2) of the fitting are truncated.

4. The fitting, according to claim 1, **characterised in that** the fastener (3) comprises of an inside-threaded sleeve with a flange (31) built in the web (21) of the second profile element (2) and a bolt (32) screwed into the sleeve (31), which passes through an opening (14) in the web (11) of the first profile element (1).

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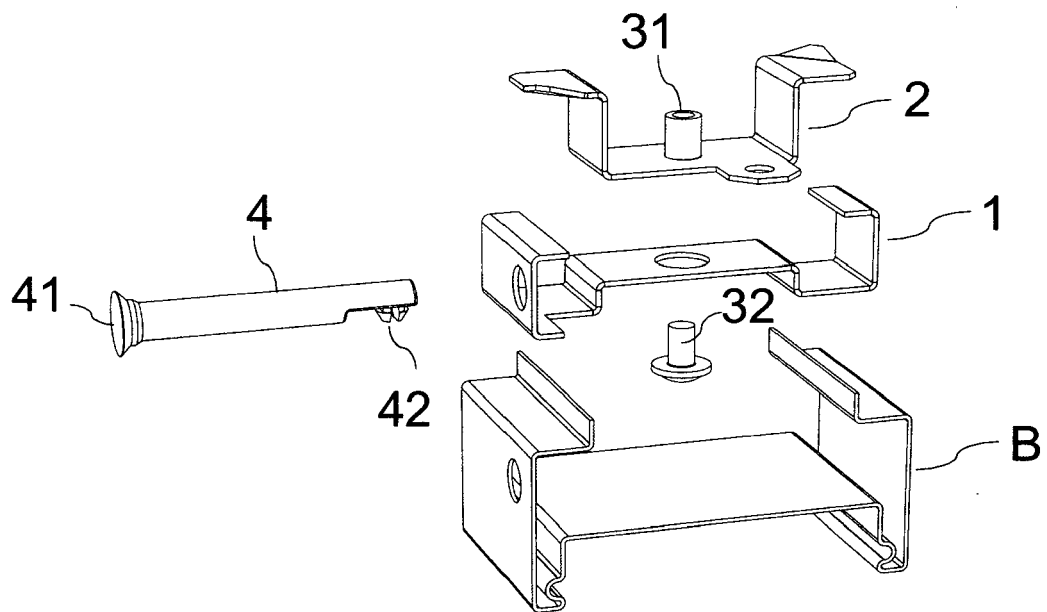


Fig. 1

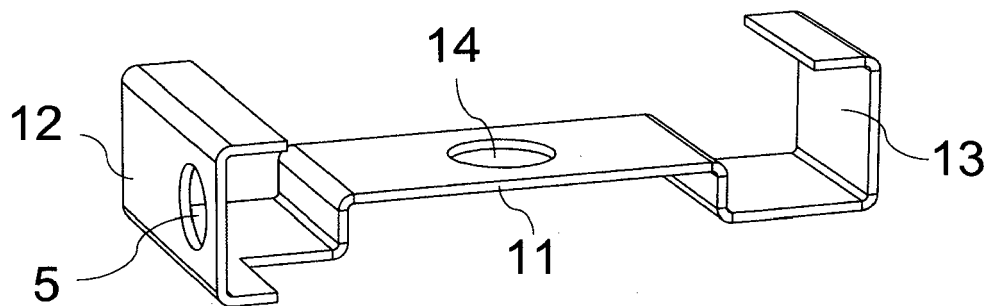


Fig. 2

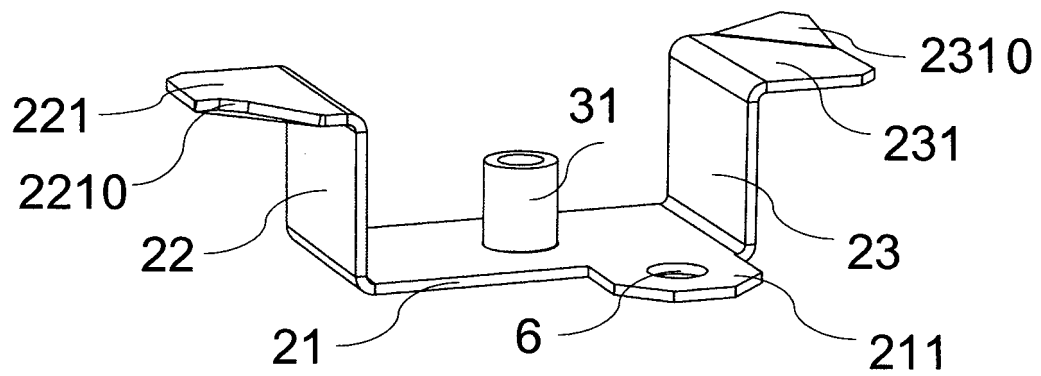


Fig. 3

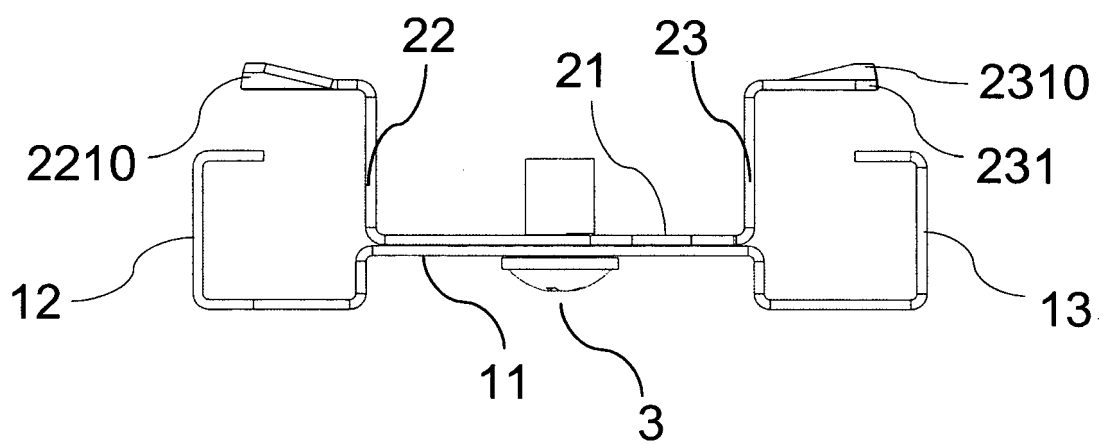


Fig. 4

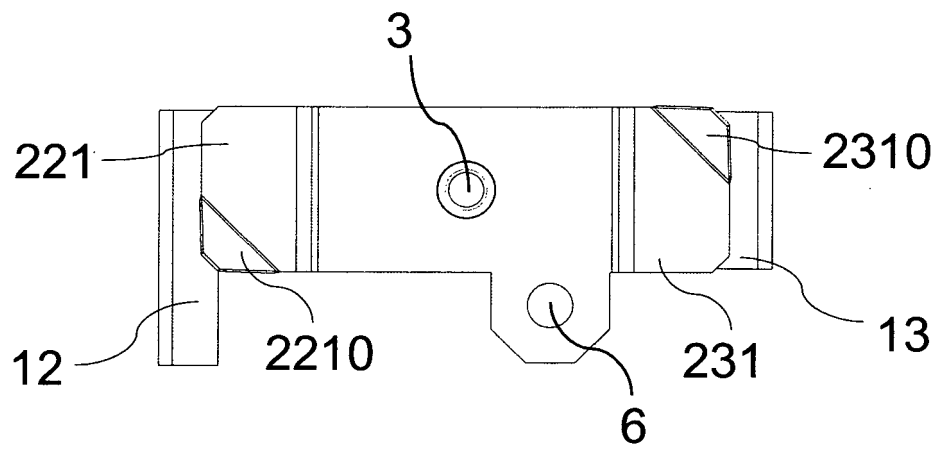


Fig. 5

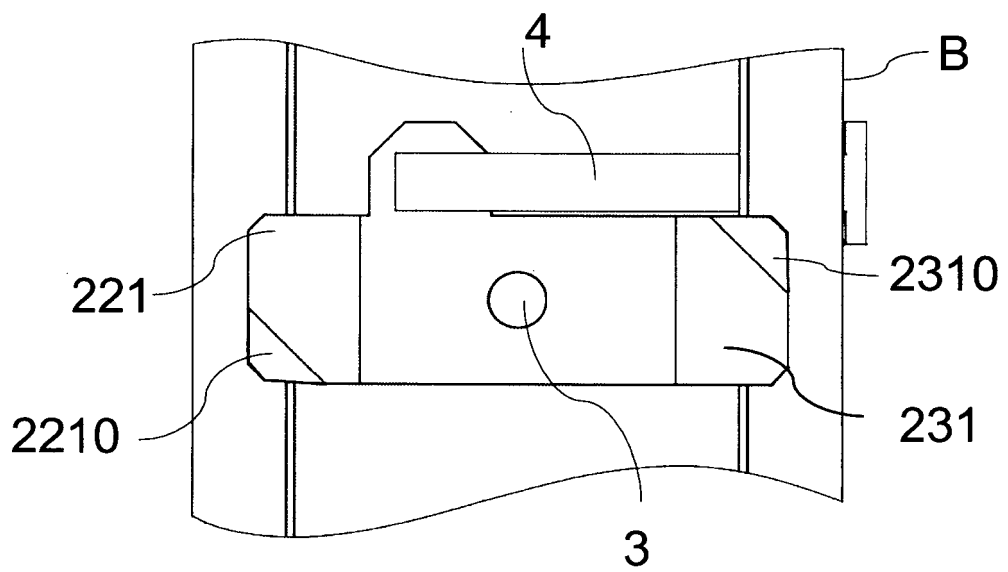


Fig. 6

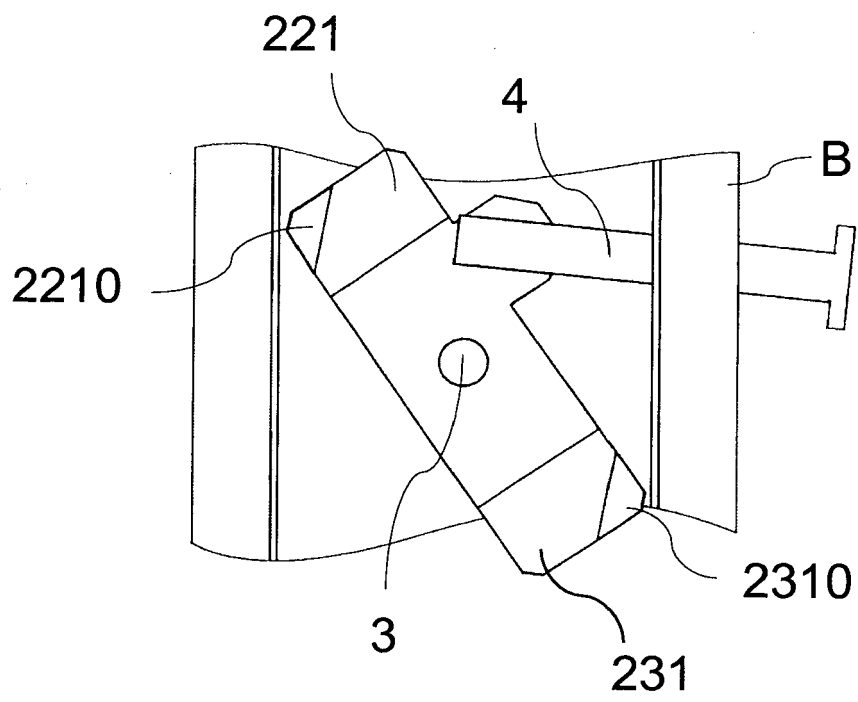


Fig. 7

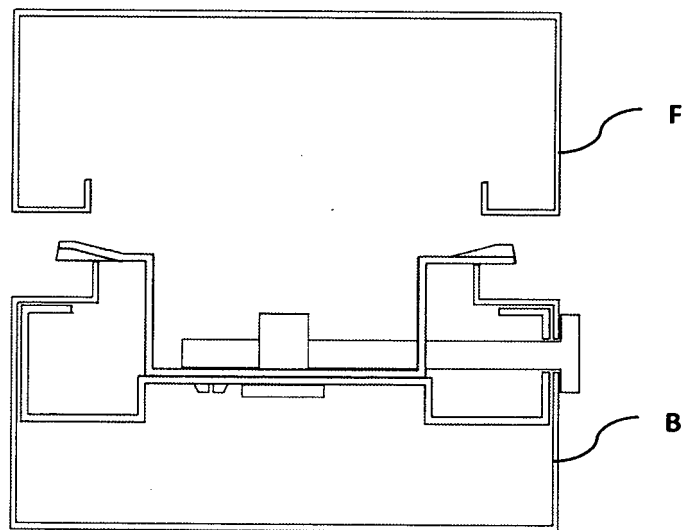


Fig. 8

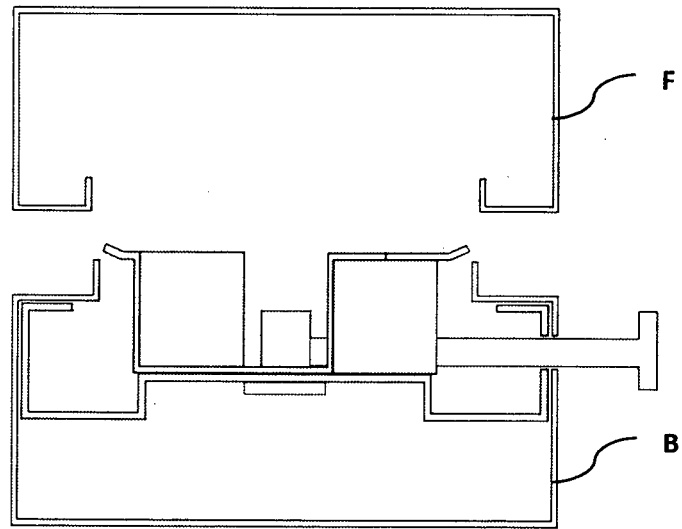


Fig. 9

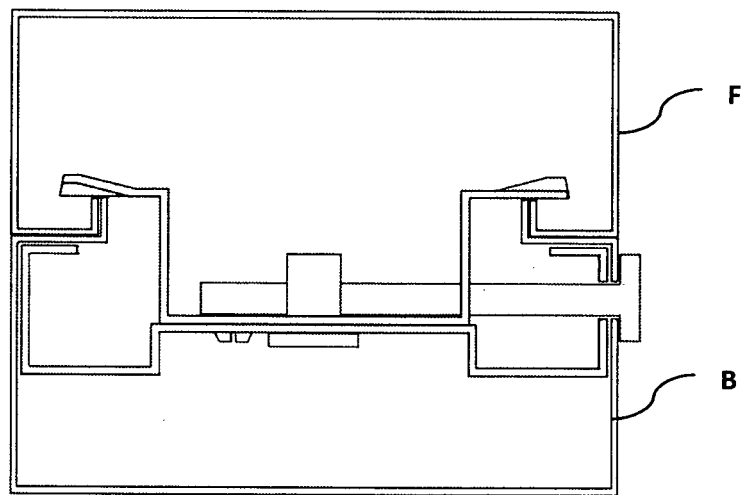


Fig. 10



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Application Number
EP 18 46 0074

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			F21V
Place of search		Date of completion of the search	Examiner
The Hague		29 March 2019	Krikorian, Olivier
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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