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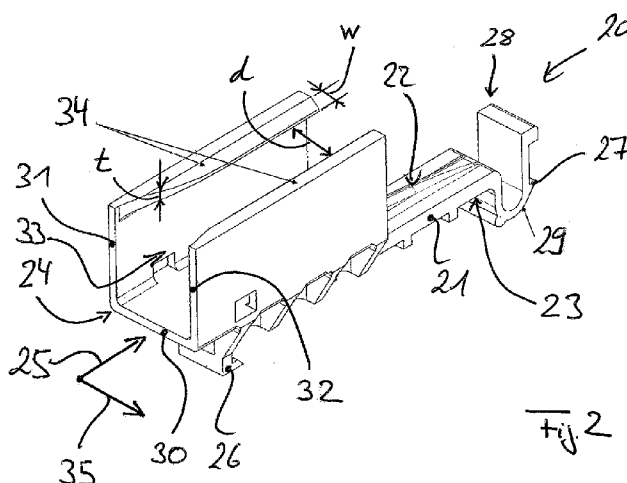
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(54) Title: DEVICE FOR RECEIVING A SUBASSEMBLY ASSIGNED TO AN OPTICAL FIBRE CABLE AND FOR FASTENING THE SAME TO A MOUNTING



(57) Abstract: A device for receiving a subassembly, in particular a furcation plug or a furcation adaptor, assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting, in particular to a wall of a distribution panel or distribution cabinet, via the device, with a bar-shaped basic body, there being formed on a topside of the basic body a guide element for receiving the subassembly assigned to the optical fibre cable, there being formed on an underside, in the region of mutually opposite ends of the basic body, anchoring elements, via which the device can be introduced into recesses of the mounting, whereby the guide element for receiving the subassembly comprises at least two protrusions forming latching elements which engage with shoulders or recesses formed in the subassembly to be received by the guide element when the subassembly is pushed into said guide element.

DEVICE FOR RECEIVING A SUBASSEMBLY ASSIGNED TO AN OPTICAL FIBRE CABLE AND FOR FASTENING THE SAME TO A MOUNTING

RELATED APPLICATIONS

[0001] The present application claims the benefit of European Patent Application No. 09007335.4 filed June 3, 2009, the entire contents of which are herein incorporated by reference.

BACKGROUND

[0002] The present application relates to a device for receiving a subassembly, in particular a furcation plug or a furcation adaptor, assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting via the device.

[0003] **Figure 1** shows a device, known from the prior art, for receiving a subassembly, in particular a furcation plug or a furcation adaptor, assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting, particularly to a wall of a distribution panel or distribution cabinet via the device. The device **10**, shown in a side view in **Figure 1**, has a bar-shaped basic body **11** with a topside **12** and with an underside **13**. On the topside **12** of the basic body **11** there is positioned a guide element being designed as guide rail **14**, which extends approximately parallel to the bar-shaped basic body **11** and onto which, to receive the subassembly assigned to the optical fibre cable, the respective subassembly can be pushed in such a way that, when the subassembly is pushed onto the guide rail **14**, the guide rail **14** engages into a groove formed on the subassembly to be received. A subassembly to be received on the device **10** is pushed onto the guide rail **14** in the direction of the arrow **15**. The arrow **15** therefore indicates the direction in which a subassembly to be received by the device **10** and assigned to an optical fibre cable is pushed onto the guide rail **14**.

[0004] In the region of the underside **13** of the bar-shaped basic body **11**, anchoring elements **16** and **17** are formed in the region of mutually opposite ends of the basic body **11**.

[0005] At the rear end of the basic body **11**, as seen in the push-on direction **15**, the anchoring element **16** is formed on the underside **13** of the basic body **11**. At the front end of the basic body **11**, as seen in the push-on direction **15**, the anchoring element **17** is formed on the underside **13** of the basic body **11**. Via the two anchoring elements **16**, **17** the device **10** is able to be introduced into recesses of a mounting, to which the device **10**, together with the subassembly received by it and assigned to the optical fibre cable, is to be fastened.

[0006] According to **Figure 1**, the anchoring element **17** positioned at the front end, as seen in the push-on direction **15**, of the bar-shaped basic body **11** is designed as an integral part of a stop **18** of U-shaped cross section, this stop **18** being effective in the push-on direction **15** and therefore, in the push-on direction **15**, forming a stop for a subassembly to be pushed onto the guide rail **14**.

[0007] The device **10** as illustrated in **Figure 1** is known from US 7,330,629 B2.

SUMMARY

[0008] Against this background, a novel device for receiving a subassembly assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting via the device is provided allowing easy installation of the subassembly to the device.

[0009] A novel device for receiving a subassembly assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting via the device is defined in claim 1. According to claim 1 the guide element for receiving the subassembly comprises at least two protrusions forming latching elements which engage with shoulders or recesses formed in the subassembly to be received

by the guide element when the subassembly is pushed into said guide element. The novel device for receiving a subassembly assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting via the device allows easy installation of the subassembly to the device.

[0010] It is to be understood that both the foregoing general description and the following detailed description present embodiments, and are intended to provide an overview or framework for understanding the nature and character of the same. The accompanying drawings are included to provide a further understanding of the disclosure, and are incorporated into and constitute a part of this specification. The drawings illustrate various embodiments, and together with the description serve to explain the principles and operation of the same.

BRIEF DESCRIPTION OF THE FIGURES

[0011] Preferred embodiments of a device for receiving a subassembly assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting via the device are given in the dependent claims and the description below. Exemplary embodiments will be explained in more detail with reference to the drawing, in which:

[0012] **Figure 1** shows a device, known from the prior art, for receiving a subassembly assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting, in a side view;

[0013] **Figure 2** shows a novel device for receiving a subassembly assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting, in a first perspective view;

[0014] **Figure 3** shows the device of **Figure 2** in a second perspective view;

[0015] **Figure 4** shows the device of **Figures 2, 3** together with a subassembly received by the device in a first perspective view; and

[0016] **Figure 5** shows the device of **Figures 2, 3** together with the subassembly received by the device in a second perspective view.

DESCRIPTION

[0017] Reference will now be made in detail to the preferred embodiments of the disclosure, examples of which are illustrated in the accompanying drawings. Whenever possible, like reference numbers will be used to refer to like components or parts.

[0018] **Figures 2 and 3** show different views of a preferred embodiment of a device **20** for receiving a subassembly, such as, for example, a furcation plug or a furcation adaptor, assigned to an optical fibre cable and for fastening the subassembly received on the device **20** to a mounting, such as, for example, a wall of a distribution panel or distribution cabinet, via the device.

[0019] The device **20** according to **Figures 2, 3** has a bar-shaped basic body **21** with a topside **22** and with an underside **23**. On the topside **22** of the bar-shaped basic body **21**, a guide element **24** is formed which is designed to receive a subassembly, such as a furcation plug or a furcation adaptor, assigned to an optical fibre cable. Such a subassembly can be pushed into the guide element **24** in the direction of the arrow **25**.

[0020] At mutually opposite ends of the bar-shaped basic body **21**, anchoring elements **26 and 27** are formed, via which the device **20** can be fastened to a mounting, in particular a wall of a distribution panel or distribution cabinet.

[0021] The device **20** can be fastened to a mounting in such a way that the anchoring elements **26, 27** can be introduced in a barb-like manner into recesses of the mountings and thus project into the recesses of the mounting. The anchoring element **27** positioned at the front end of the bar-shaped basic body **23**, as seen in the push-in direction **25**, is formed as part of an element **28** having U-shaped cross section.

[0022] The element **28** being U-shaped is designed in such a way that a closed portion **29** of the latter is formed on the underside **23** of the bar-shaped basic body

21 or projects with respect to the underside **23** of the bar-shaped basic body **21**. When the device **20** together with a subassembly received on the latter and assigned to the optical fibre cable, is to be fastened to a mounting, the element **28** being U-shaped engages with the closed portion **29** into a recess of the mounting. When a force is exerted on the element **28** in the push-in direction **25** the element **28** is subjected to a deformation in a way that the bar-shaped body **21** ultimately arches and the anchoring elements **26, 27** of the latter are clamped in the region of the recesses of the mountings. There is then no risk that the anchoring elements **26, 27** jump out of the recesses of the mountings inadvertently and the device **20** comes loose from the mounting inadvertently.

[0023] The guide element **24** of the device **20** comprises a bottom wall **30** formed by said bar-shaped basic body **21** and two opposite side walls **31, 32** running perpendicular to said bottom wall **21**. Said walls **30, 31 and 32** of the guide element **24** define an interior **33** of the guide element **24**. A subassembly, such as a furcation plug or a furcation adaptor, assigned to an optical fibre cable can be pushed into the interior **33** of guide element **24** in the push-in direction **25**.

[0024] The guide element **24** for receiving the subassembly comprises at least two protrusions **34** forming latching elements which engage with shoulders or recesses formed in the subassembly to be received by the guide element **24** when the subassembly is pushed into said guide element **24**.

[0025] **Figures 4 and 5** both show the device **20** together with a subassembly, namely a furcation plug **36**, received by the device **20**. The protrusions **34** forming said latching elements which engage with shoulders **37** formed in the furcation plug **36**.

[0026] Said protrusions **34** forming said latching elements are assigned to the opposite side walls **31, 32** of the guide element **24** in a way that they extend into said interior **33** of said guide element **24** so that they engage into said shoulders or recesses formed in side walls of the subassembly to be received by the interior of said guide element **24**.

[0027] The protrusions **34** forming the latching elements run in parallel to said bar-shaped basic body **21**, whereby the distance **d** (see **Figure 2**) between the protrusions **34** assigned to the opposite side walls **31**, **32** of the guide element **24** is decreasing as seen in the push-in direction **25** of the subassembly into the interior of said guide element **24**. At the rear end of the basic body **21**, as seen in the push-on direction **25**, the distance **d** between the protrusions **34** is larger than at the front end of the basic body **21**. The protrusions **34** form a lead-in taper helping to start the insertion of the subassembly in the device **20**. In the shown embodiment, the distance **d** between the protrusions **34** decreases only in a portion of the protrusions **34**, namely in a rear end portion, as seen in the push-on direction **25**, in which the protrusions **34** form said lead-in taper. The width **w** (see **Figure 2**) of said protrusions **34** assigned to said opposite side walls **31**, **32** is increasing as seen in the push-in direction **25** of the subassembly into the interior of said guide element **24**. Said increase of the width **w** of the protrusions **34** corresponds to said decrease of the distance **d** between the protrusions **34**.

[0028] The thickness **t** (see **Figure 2**) of the protrusions **34** assigned to said opposite side walls **31**, **32** is decreasing toward the interior **33** of the guide element **24** as seen in a direction **35** running perpendicular to the push-in direction **25** of the subassembly into the interior **33** of said guide element **24**.

[0029] When a subassembly, such as a furcation plug or a furcation adaptor, assigned to an optical fibre cable is inserted or pushed in the interior **33** of the guide element **24** in the push-in direction **25**, the protrusions **34** forming the latching elements flex outwardly to receive the subassembly and then the protrusions **34** spring back and engage with the shoulders or recesses formed in the side walls of the subassembly in order to secure the subassembly within the device **20**. The protrusions **34** are resiliently attached cantilever arms. With an increased insertion of the subassembly into the interior **33** of the guide element **24** the clamping force provided by protrusions **34** having the distance **d**, the width **w** and the thickness **t** to the subassembly is increasing. This allows an easy, durable and safe installation of the subassembly to the device **20**.

[0030] Many modifications and other embodiments of the disclosure set forth herein will come to mind to one skilled in the art to which the invention pertains having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the disclosure is not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. It is intended that the present disclosure cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

We claim:

1. A device for receiving a subassembly, in particular a furcation plug or a furcation adaptor, assigned to an optical fibre cable and for fastening the subassembly received on the device to a mounting, in particular to a wall of a distribution panel or distribution cabinet, via the device, with a bar-shaped basic body, there being formed on a topside of the basic body a guide element for receiving the subassembly assigned to the optical fibre cable, there being formed on an underside, in the region of mutually opposite ends of the basic body, anchoring elements, via which the device can be introduced into recesses of the mounting, wherein the guide element for receiving the subassembly comprises at least two protrusions forming latching elements which engage with shoulders or recesses formed in the subassembly to be received by the guide element when the subassembly is pushed into the guide element.

2. The device according to claim 1, wherein the guide element comprises a bottom wall and two opposite side walls running perpendicular to the bottom wall, the walls defining an interior of the guide element, whereby the at least two protrusions forming the latching elements are assigned to the opposite side walls in a way that they extend into the interior of the guide element so that they engage into the shoulders or recesses formed in side walls of the subassembly to be received by the interior of the guide element.

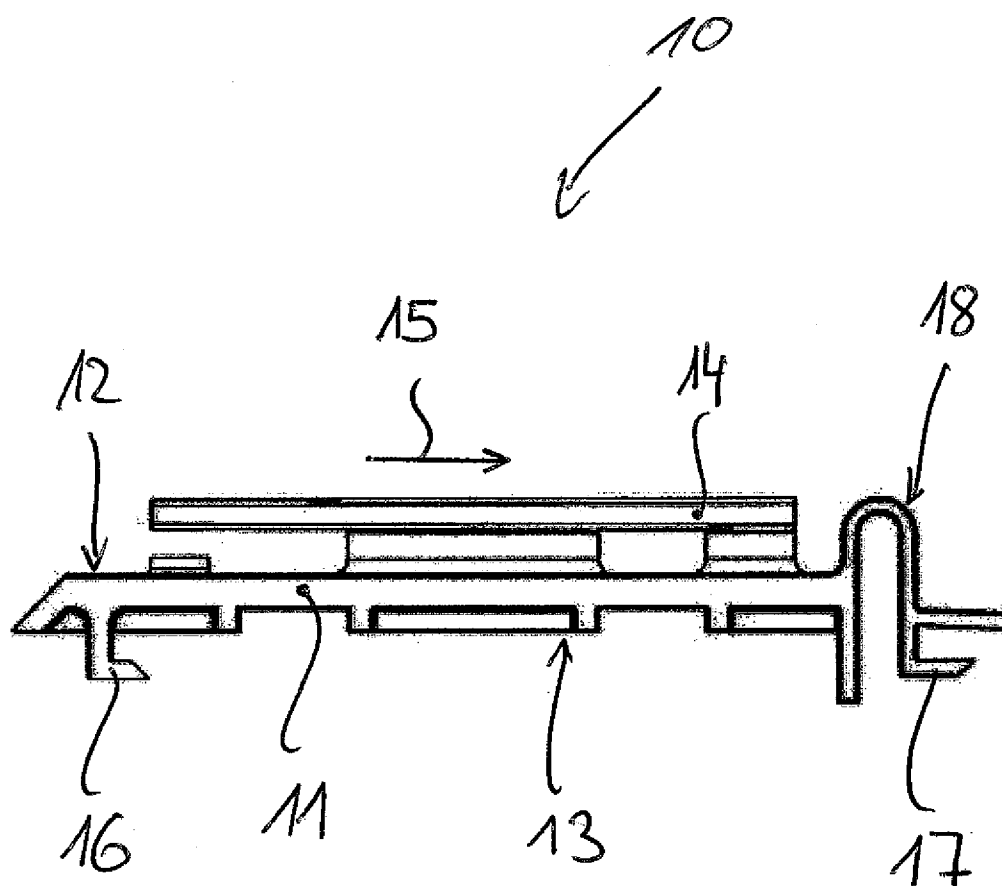
3. The device according to claim 1 or 2, wherein the protrusions forming the latching elements run in parallel to the bar-shaped basic body, whereby the distance between the protrusions assigned to the opposite side walls is decreasing as seen in the push-in direction of the subassembly into the interior of the guide element.

4. The device according to any of claims claim 1 to 3, wherein the protrusions forming latching elements run in parallel to the bar-shaped basic body, whereby the width of the protrusions assigned to the opposite side walls is increas-

ing as seen in the push-in direction of the subassembly into the interior of the guide element.

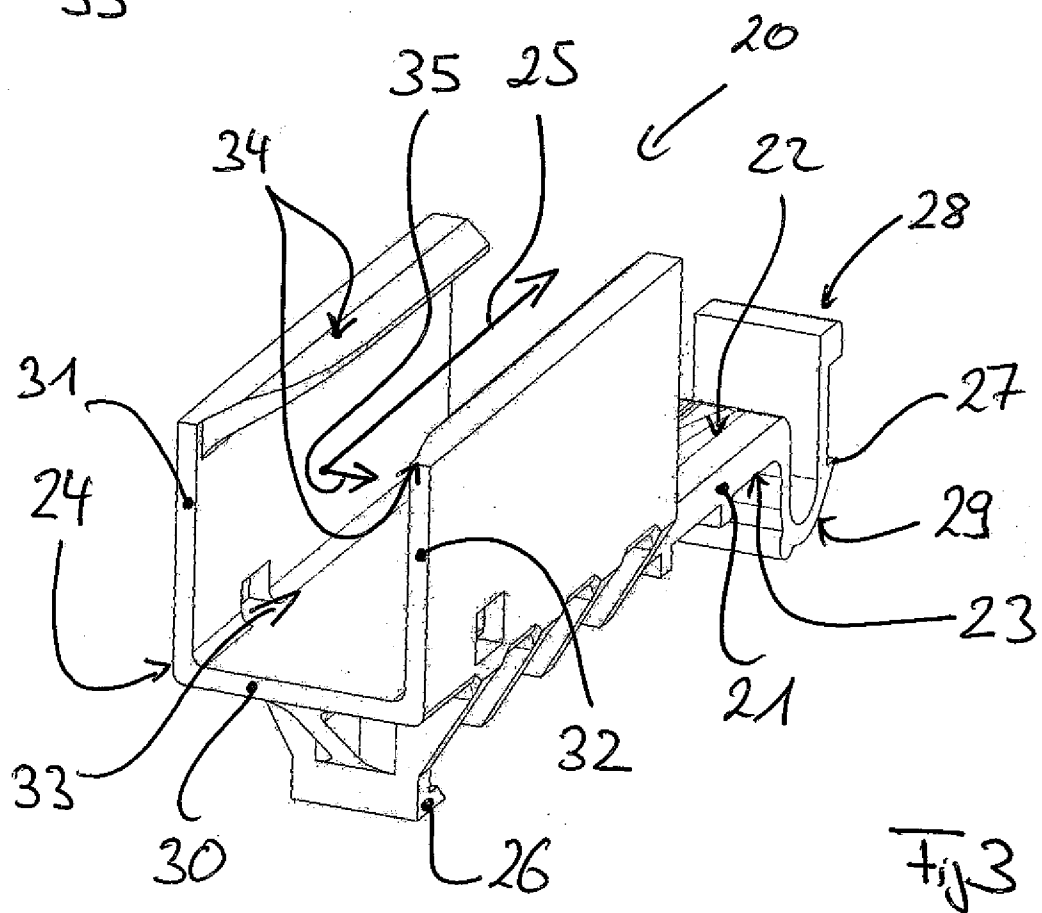
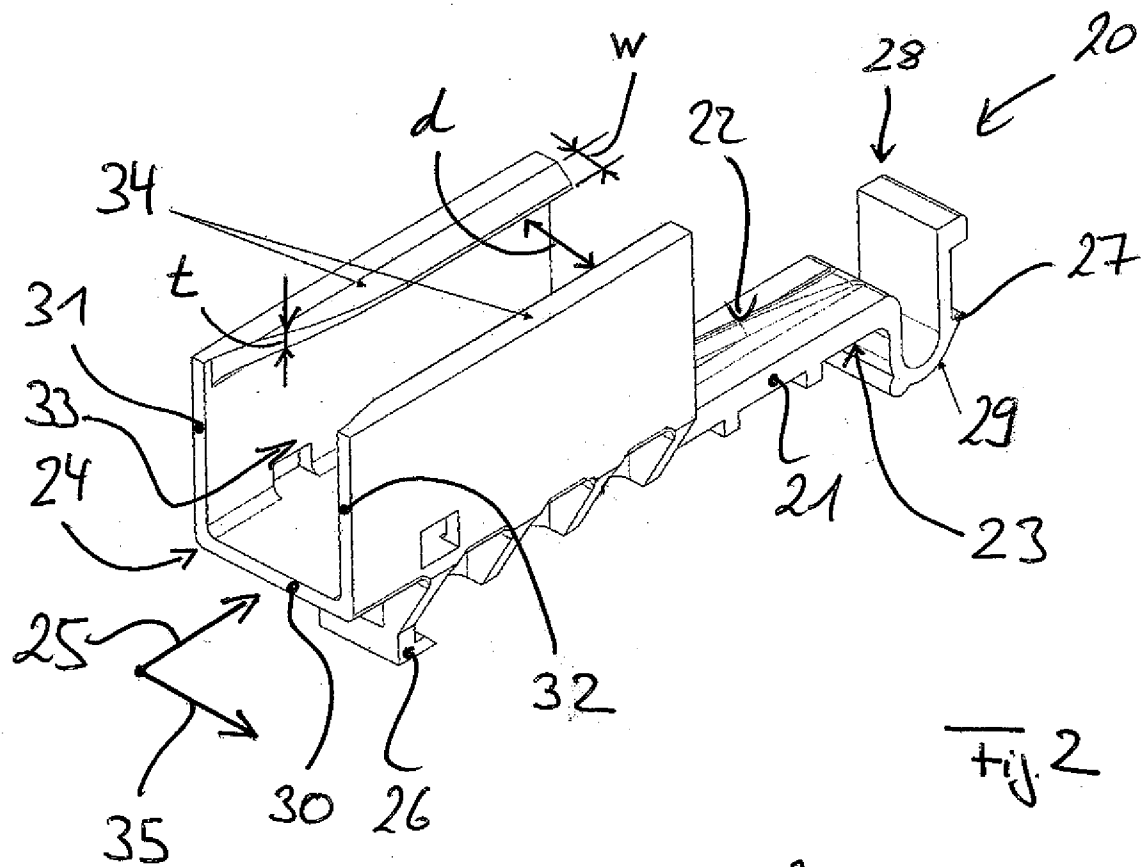
5. The device according to any of claims claim 1 to 4, wherein the protrusions forming latching elements run in parallel to the bar-shaped basic body, whereby the thickness of the protrusions assigned to the opposite side walls is decreasing as seen perpendicular to the push-in direction of the subassembly into the interior of the guide element.

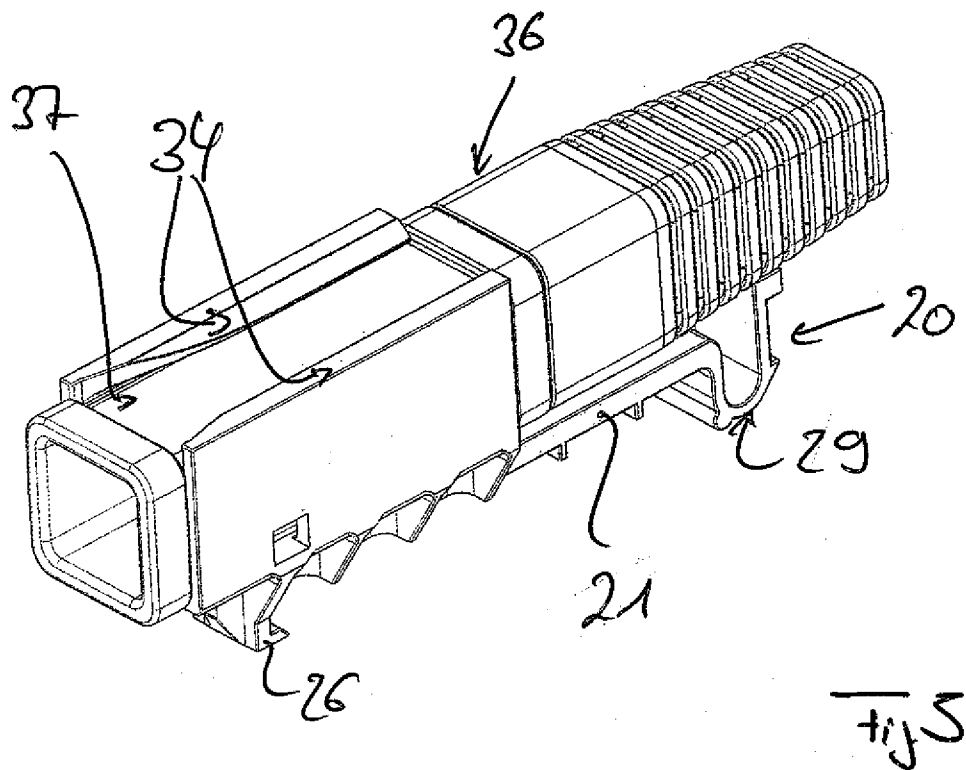
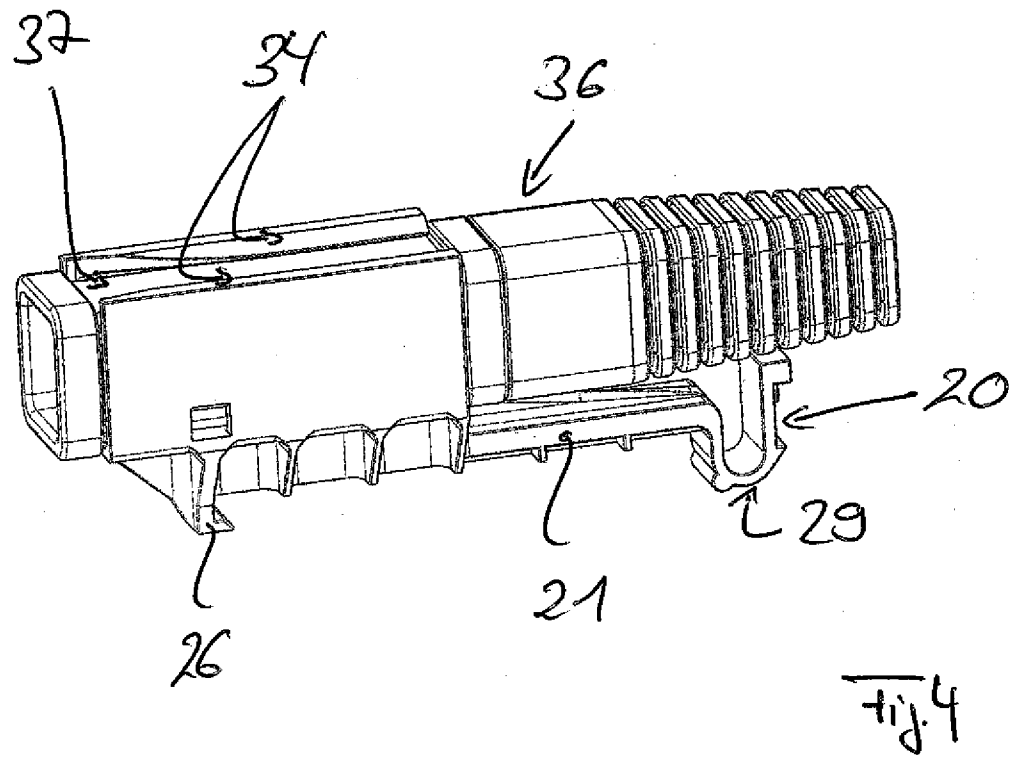
6. The device according to any of claims claim 1 to 5, wherein the anchoring element, which is assigned to a front end of the basic body as seen in the push-in direction of the subassembly into the interior of the guide element, is an integral part of an element being U-shaped, whereby the element is designed in such a way that a closed portion of the U-shaped element on the underside of the basic body projects with respect to the latter, in such a way that, when the subassembly received by the device is fastened to the mounting, the closed portion can be introduced into a recess of the mounting.



PRIOR ART

Fig. 1





INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 10/36343

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G02B 6/00 (2010.01)

USPC - 385/139

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

USPC - 385/134, 136, 137, 139

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC - 385/134, 136, 137, 139

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Electronic Data Base Used: PubWEST (PGPB, USPT, EPAB, JPAB), Google, Google Patents

Search Terms Used: furcation optical cable fiber fibre data mounting latching

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7,330,629 B2 (COOKE et al.) 12 February 2008 (12.08.2008), col 2 ln 9-13, 59-64; col 3 ln 10-12, Fig. 1, 2.	1 - 3
Y	US 7,302,152 B2 (LUTHER et al.) 27 November 2007 (27.11.2007), col 9 ln 59-63, col 10 ln 14-16, Fig. 2-4.	1 - 3

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

16 July 2010 (16.07.2010)

Date of mailing of the international search report

28 JUL 2010

Name and mailing address of the ISA/US

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PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 10/36343

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 4 - 6
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.