



(11)

EP 2 823 936 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
14.01.2015 Bulletin 2015/03

(51) Int Cl.:
B25C 5/16 (2006.01)

(21) Application number: **14002203.9**

(22) Date of filing: **27.06.2014**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME

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(30) Priority: **28.06.2013 GB 201311616**
28.06.2013 GB 201311618

(54) **Cable clip gun with clip magazine**

(57) The invention relates to a cable clip gun for securing clips with a pin into a surface. The gun has a gun body, at least one magazine to store a plurality of clips,

a driver station and a delivery means to deliver a clip from the storage to the driver station.

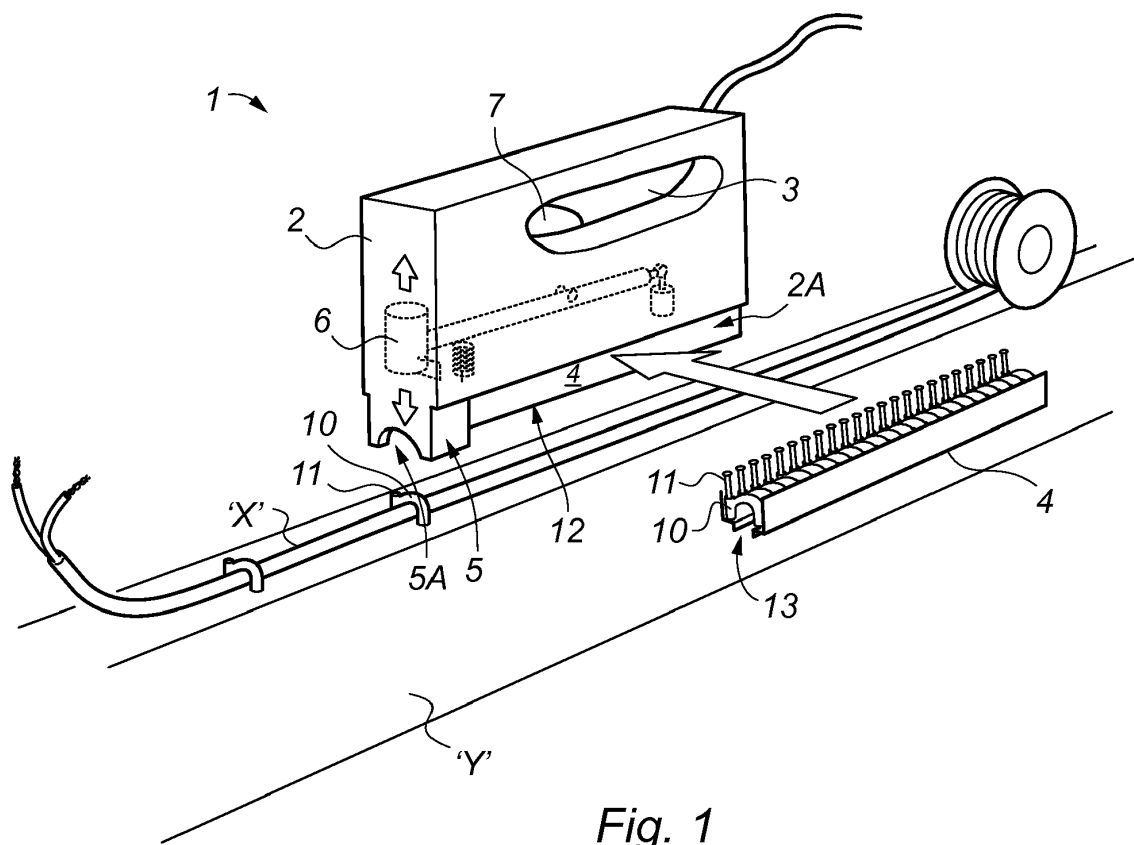


Fig. 1

Description

[0001] The present invention relates to a cable clip gun and to a cable clip gun with clip magazine.

[0002] It is known to provide a cable clip gun such as described in my published UK patent no. 2483957. This document described a gun having a housing with a straight bottom edge which can laid against a flat surface such as a skirting board. The straight bottom edge includes a recess to accommodate a cable and an array of clips. The gun has, adjacent one end of the straight edge, a hammer head to nail lips to the skirting or other flat surface.

[0003] It is sometimes desirable however to place cable clips onto surface which are not flat such as mortar recessed between rows of bricks. The gun mentioned in UK patent no. 2483957, having a flat edge for placement against a flat surface, is not able to deliver a cable clip into such mortar or other recesses.

[0004] The invention in one aspect seeks to provide a solution to the above problem.

[0005] The cable clip gun of UK patent no. 2483957 is useful to deliver clips over cable on a flat surface. It is also known to provide different types of cable clips such as those well known in the art and those described in UK patent no 2497737 and UK patent application no 1117952 (GB2492853).

[0006] Cable comes in different sizes and so different sizes of clips may be required for different cables. Also, it may be desirable to secure two or more cables to a surface with a single clip.

[0007] The invention seeks to provide a clip gun with clips in a magazine, and in which the magazine can vary in construction to suit sizes and types of clip and to allow a gun to be used to secure clips on flat and recessed surfaces.

[0008] According to a first aspect of the invention there is provided a cable clip gun for securing clips with a pin into a surface comprising:

- a) a gun body,
- b) at least one magazine to store a plurality of clips each with a pin and the or each magazine is adapted to releasably engage with the gun body,
- c) a driver station to deliver a clip into a workpiece, and
- d) delivery means to deliver a clip from the magazine to the driver station.

[0009] In one embodiment the magazine releasably engages with a recess in the gun body to create a flat edge to the gun body to abut against a flat surface. Preferably the magazine creates a channel along the flat edge to receive a cable.

[0010] In another embodiment the magazine releasably engages with a recess in the gun body to create a projection at the driver station to insert in a recess in a workpiece.

[0011] Different magazines may be provided to house different sizes and types of clips for a single cable gun.

[0012] In a second aspect of the invention, there is provided a cable clip gun for securing clips with a pin into a surface comprising:

- a) a gun body,
- b) storage means to store a plurality of clips each with a pin,
- c) a driver station, said driver station including a projection to project into a recess in a workpiece,
- d) delivery means to deliver a clip from the storage means to the driver station, and
- e) a driver means to drive the clip at the driver station through the projection and drive the pin into the surface to secure the clip to the surface.

[0013] Preferably the projection includes a cutout to receive cable when a clip is being secured over a cable.

[0014] Preferably the driver is a hammer.

[0015] Preferably the clips are in the form of an array of clips joined together by frangible bridging means.

[0016] Preferably the driver means severs a clip being secured to a cable from the array of clips. Optionally, a clip from an array of clips joined together by frangible bridging means may be individually removed from the array by an operator who may opt to affix specific clips by hand (e.g. by pin and hammer into the surface).

[0017] Preferably the driver means is adjustable to drive a clip pin at variable forces.

[0018] Preferably the driver means is electrically operated.

[0019] Preferably the gun further comprises a metering means to secure a clip over the wire at predetermined intervals.

[0020] Preferably the gun is adapted to accommodate different sizes of cable and clips.

[0021] Optionally, clip sizes that may be used include 2.5 mm, 3.5 mm, 4 mm, 5 mm, 6 mm, 7 mm, 8 mm, 9 mm, 10mm, 12 mm 14 mm, 16 mm, 18 mm, 20 mm, 22 mm and 25 mm.

Figure 1 shows in perspective view a cable clip gun according to one embodiment of the first aspect of the invention; and

Figure 2 shows in perspective view a cable clip gun according to a second embodiment of the first aspect of the invention.

Figure 3 shows in perspective view a cable clip gun according to the second aspect of the invention;

[0022] Embodiments of the invention will now be described with reference to the accompanying drawings.

[0023] Referring to Figure 1 there is shown a cable gun 1 for securing clips 10 with a pin 11 over a cable X into a surface such as a skirting board Y. Gun 1 has a gun body 2 and a handle 3.

[0024] An elongate magazine 4 provides a storage

means to store a plurality of clips 10 with pins 11. Magazine 4 is removeable and engages with a recess 2A in body 2.

[0025] When magazine 4 releasably engages with a recess 2A in the gun body, it creates a flat edge 12 to the gun body to abut against a flat surface. The magazine has a channel recess 13 along the flat edge to receive a cable.

[0026] Magazine 4 acts also as a cable guide to guide cable through a driver station 5. Magazine 4 also acts as a delivery means to deliver clips 10 to a driver station 5 with a cable recess 5A which aligns with the channel 12 so that the cable is recessed into the flat edge 12.

[0027] A driver 6 operated by trigger 7 is provided to drive the clip pin 11 at the driver station 5 as described in UK patent no 2483957.

[0028] In use the gun is used to guide the cable X along a surface such as skirting board Y, and the trigger 7 used to secure a clip 10 over the cable as required.

[0029] Referring now to Figure 2, there is shown a cable gun 20, according to a further embodiment/aspect (the fourth) of the invention, for securing clips 10 with a pin 11 over a cable X into a surface such as mortar Y recessed between bricks Z. Gun 20 has a gun body 22 and a handle 23.

[0030] An elongate magazine 24 provides a storage means to store a plurality of clips 10 with pins 11. Magazine 24 is removeable and engages with a recess 22A in body 22.

[0031] When magazine 24 releasably engages with a recess 22A in the gun body, because it is thinner than the recess, creates a projection 25A at a driver station 5 to abut against the recessed mortar surface Y. Gun 20 thus performs like the gun described hereinbefore (e.g. according to the second aspect of the invention) and with reference to Figure 3.

[0032] Magazine 24 also acts as a delivery means to deliver clips 10 to the driver station 25 with a cable recess 25B so that the cable is recessed into the recess 25B.

[0033] A driver 26 operated by trigger 27 is provided to drive the clip pin 11 at the driver station 25 as described in UK patent no 2483957.

[0034] It is envisaged that numerous magazines could be provided each supporting clips of different types to accommodate different sizes of cable and clips. The clips may be standard clips which are secured to a workpiece over a cable, or the clips may be of type described in UK patent application nos. GB1121713.0 or GB1117952.0, the disclosure of which is incorporated herein in their entirety by reference. Also it may be desirable to secure two or more cables to a surface with a single clip. In addition to clips, the magazine could accommodate hooks or other devices to secure Christmas lights and the like to walls.

[0035] It may be desirable for any clip to be held at the driver station against a workpiece with pressure as the driver drives the pin into the workpiece, and a suitable device may be provided for this purpose.

[0036] Referring to Figure 3 there is shown a cable gun 1, according to another embodiment/aspect (the third) of the invention, for securing clips 10 with a pin 11 into a surface such as mortar Y recessed between bricks X.

[0037] Gun 1 has a gun body 2 with a handle 3 to hold the gun adjacent a surface such as bricks X.

[0038] An elongate channel 4 provides a storage means to store a plurality of clips 10 with pins 11. Clips 10 may be formed as an array of clips in a strip joined together by frangible bridging means 12. Elongate channel 4 also acts as a delivery means to deliver a clip from the storage means to a driver station 5.

[0039] Driver station 5 includes a projection 5A to project into a recess in a workpiece such as recessed mortar Y between bricks X.

[0040] A driver 6 is provided to drive the clip pin 11 at the driver station 5 into the surface Y to secure the cable Z to the surface Y. Driver 6 is a hammer with a head 6A biased by a spring 6B towards a pin 11, and head 6A can be pivoted away from pin 11 by an electrical solenoid 6C. Driver 6 can be operated by a trigger 7. Operation of trigger 7 causes solenoid 6 to pivot head 6A away from pin 11 so stretching spring 6B and then turns solenoid 6C "off" whereby the spring 6B drives hammer head 6A onto the pin 11 so driving the pin into the surface Y. Hammer head 6A includes a cutter 8 which cuts through the frangible bridging means so severing the clip at the driver station 5 from the array of clips in channel 4. Power for solenoid 6C is provided from the mains through wire 9.

[0041] Preferably the projection 5A includes a cutout 5B to receive cable when a clip is being secured over a cable.

[0042] If desired the driver means may be adjustable, e.g. by altering the tension of spring 6B when stretched by the solenoid 6C, to drive a clip pin at variable forces. Thus a different force could be used to drive a pin 11 depending on the nature of the surface it is being driven into (e.g. brick, wood, plastic or plaster).

[0043] Furthermore the gun may further comprise a metering means to secure a clip over the wire at predetermined intervals automatically. A control knob (not shown) may be provided to adjust the predetermined interval.

[0044] Also the gun may be adapted to accommodate different sizes of cable and clips. The clips may be standard clips which are secured to a workpiece over a cable, or the clips may be of type described in UK patent application nos. GB1121713.0 or GB1117952.0.

[0045] It may be desirable for any clip to be held at the driver station against a workpiece with pressure as the driver drives the pin into the workpiece, and a suitable device may be provided for this purpose.

[0046] The invention has been described with reference to preferred embodiments. However, it will be appreciated that variations and modifications can be effected by a person of ordinary skill in the art without departing from the scope of the invention.

Claims

1. A cable clip gun for securing clips with a pin into a surface comprising:
a) a gun body,
b) at least one magazine to store a plurality of clips each with a pin and the or each magazine is adapted to releasably engage with the gun body,
c) a driver station to deliver a clip into a work-piece, and
d) delivery means to deliver a clip from the magazine to the driver station.
2. A cable clip gun according to claim 1, wherein the magazine releasably engages with a recess in the gun body to create a flat edge to the gun body to abut against a flat surface. Preferably the magazine creates a channel along the flat edge to receive a cable.
3. A cable clip gun according to claim 1, wherein the magazine releasably engages with a recess in the gun body to create a projection at the driver station to insert in a recess in a workpiece.
4. A cable clip gun according to claim 1,2 or 3, wherein different magazines may be provided to house different sizes and types of clips for a single cable gun.
5. A cable clip gun substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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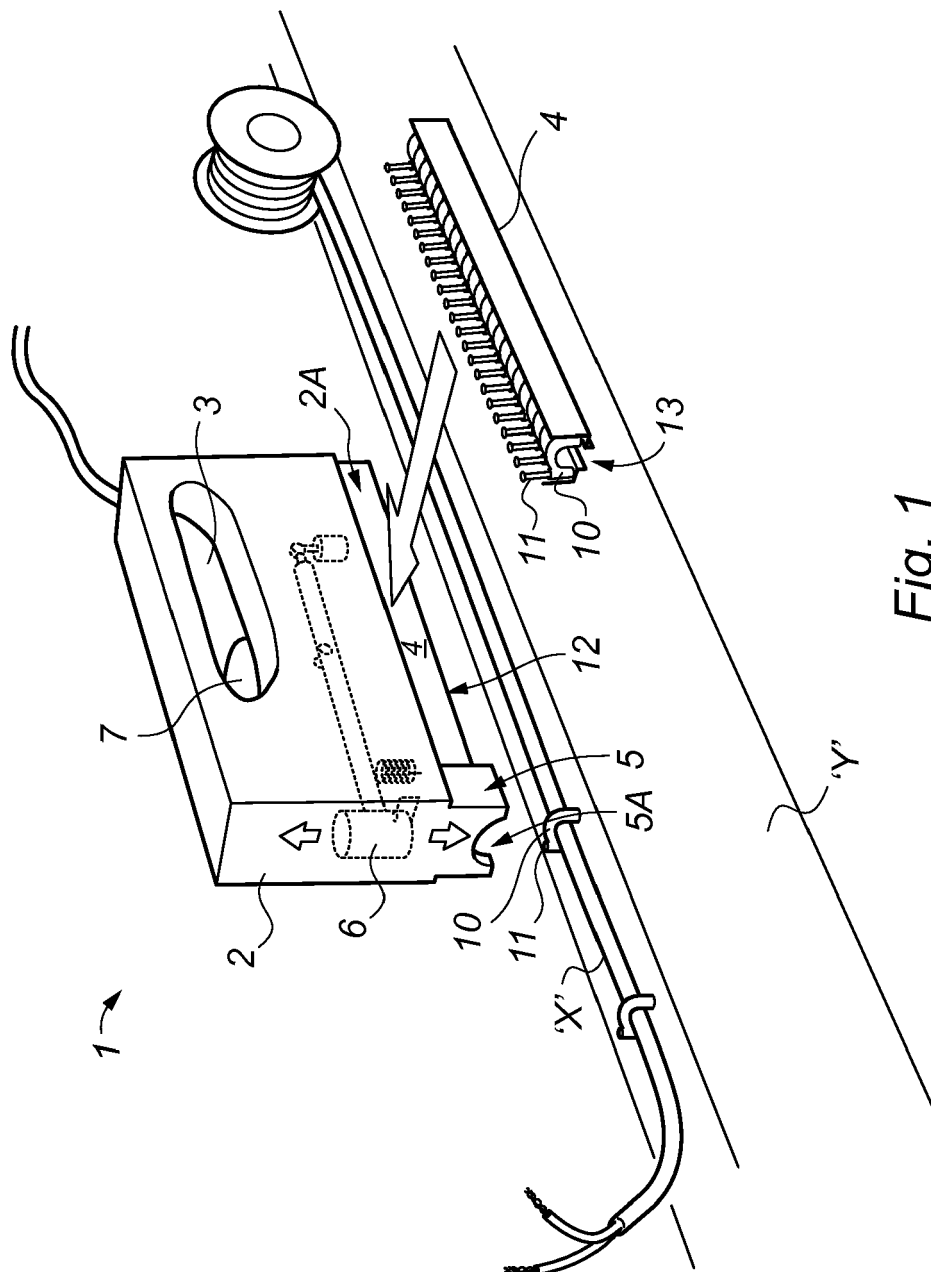


Fig. 1

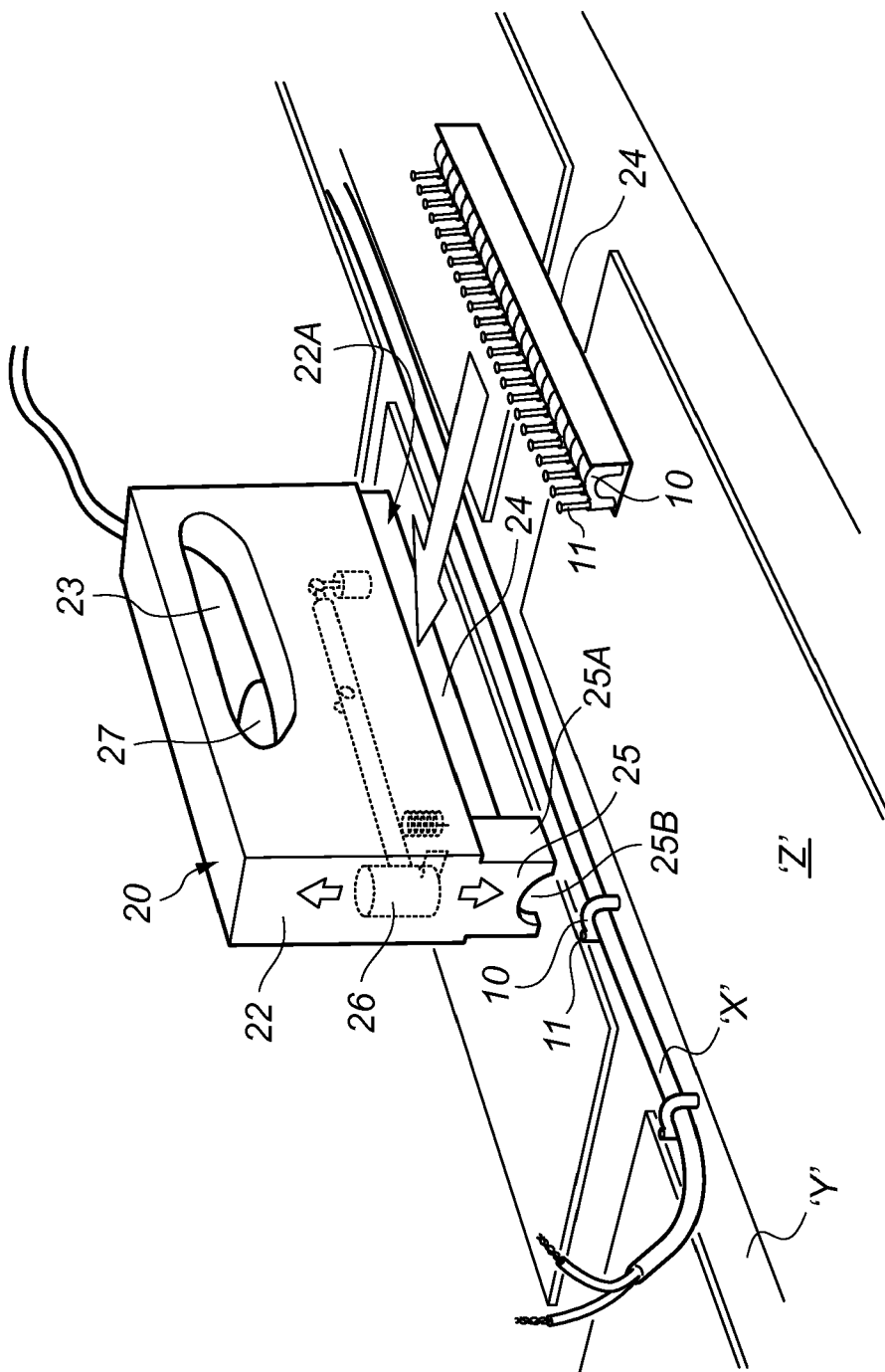


Fig. 2

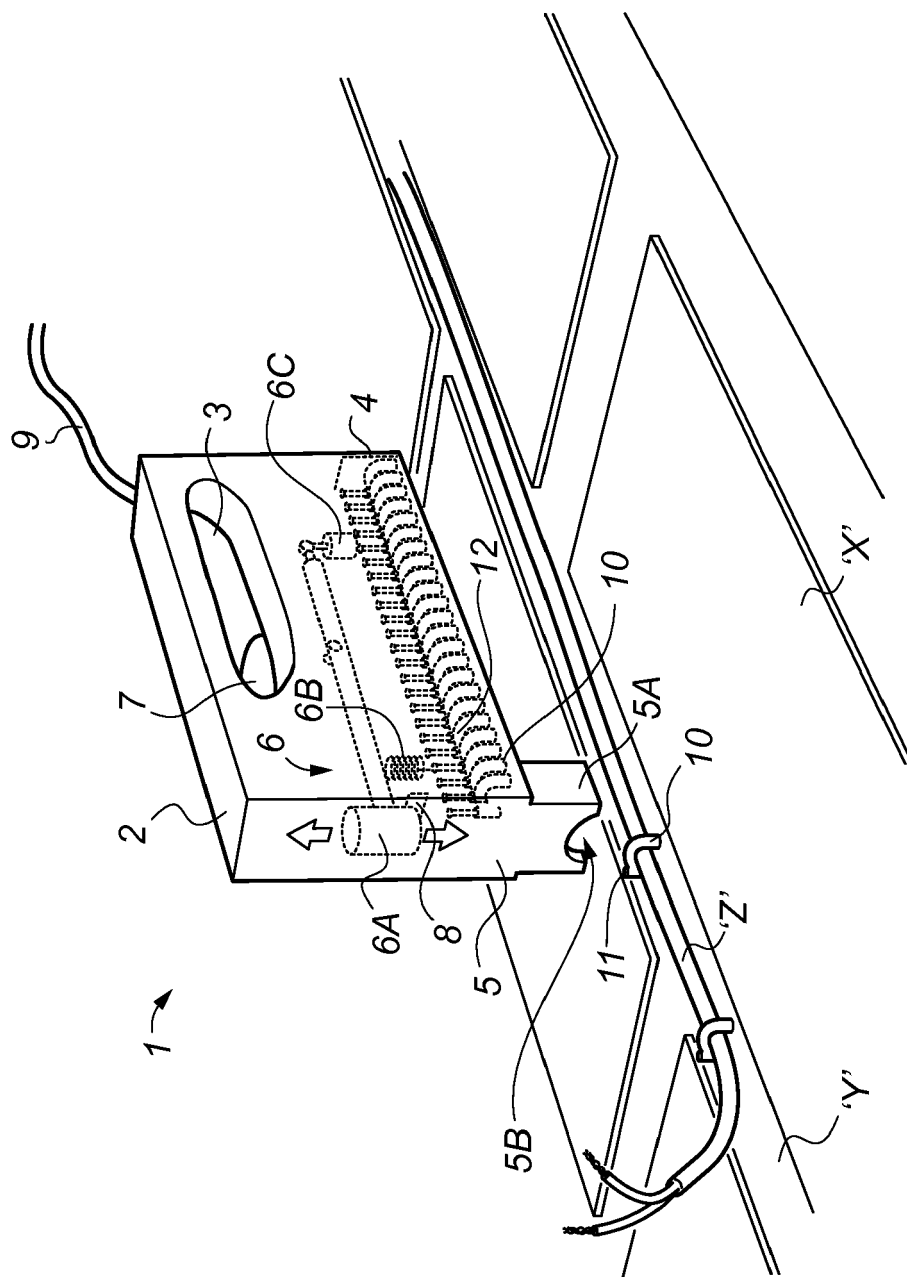


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- GB 2483957 A [0002] [0003] [0005] [0027] [0033]
- GB 2497737 A [0005]
- GB 1117952 A [0005] [0034] [0044]
- GB 2492853 A [0005]
- GB 1121713 A [0034] [0044]