



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.02.2022 Bulletin 2022/08

(21) Application number: **21184601.9**

(22) Date of filing: **08.07.2021**

(51) International Patent Classification (IPC):
E04B 2/76 (2006.01) **E04B 2/82** (2006.01)
E04F 21/00 (2006.01) **E04B 9/00** (2006.01)
E04G 21/18 (2006.01) **E04B 2/74** (2006.01)

(52) Cooperative Patent Classification (CPC):
E04B 2/767; E04B 2/825; E04B 9/008;
E04G 21/185; E04B 2/7457

(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
Designated Validation States:
KH MA MD TN

(30) Priority: **21.08.2020 EP 20192248**

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(54) **A TRACK BEAM INSTALLATION SYSTEM AND A METHOD FOR USING SAME**

(57) A track beam installation system for assisting the fixation of a track beam to a wall structure, comprising: a metal plate, demountably attachable to the wall structure; and a track holder, configured to securely receive the track beam and which is adapted to affixingly engage with said metal plate, during use. A method of using a track beam installation system to assist the fixation of a

track beam to a wall structure, comprising the steps of: attaching a metal plate to a wall structure; providing a track holder to securely receive at track beam; and affixingly engaging said track holder with said metal plate so as to movably secure the track beam to the wall structure.

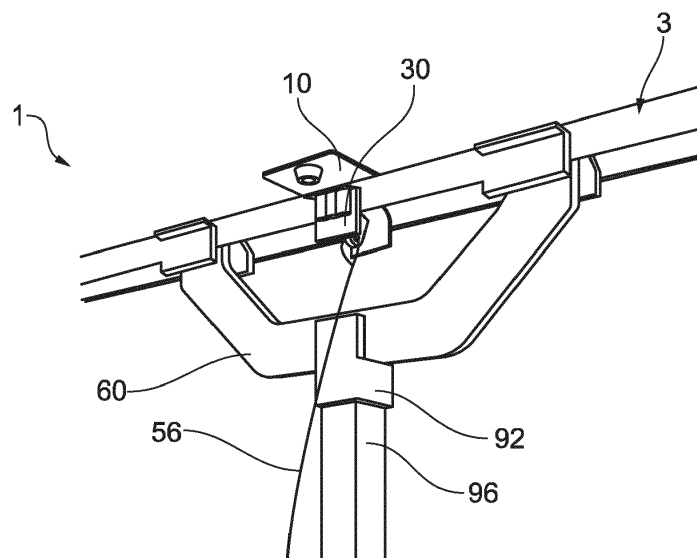


FIG. 3

Description

[0001] The present invention relates to a track beam installation system for assisting the fixation of a track beam to a wall structure. More specifically, the present invention relates to a track beam installation system for locating and/or stabilising the position of a track beam when it is mounted to a wall structure. The present invention also relates to a method of using a track beam installation system to assist the fixation of a track beam to a wall structure.

Background

[0002] Track beams are installed onto walls and ceilings for reasons such as, by not limited to, installing partitions to separate sections of a room. To install track beams, particularly to a wall structure that is difficult to reach such as ceilings, installers (i.e. builders) usually have to climb up to manually attach track beams using fasteners or other means of attachment. Typically, ladders are used by the installers to reach areas that are otherwise difficult to reach. The track beams are fastened gradually along its length as the installers work their way along the track beam. When the installer(s) is on the ladder, his/her reach (in order to fasten the track beam to for example, the ceiling) may only extend up to a specific section of the track beam. To move onto the next section of the track beam, they will have to climb down, reposition the ladder to an area closer to the adjacent part of the track beam to be fastened, before they climb back up and install the next section of the track beam. It is clear that this is a very time-consuming process requiring numerous cycles of climbing and repositioning. Installing the track beam in this way can therefore be a tiring process for the installer(s), especially when the track beams are relatively long and bulky.

[0003] In addition, the installer(s) often manually lift the track beams into position for the installation to then correctly position and orientate the track beams for installation. However, when supporting the track beam near the installation surface, it is usually difficult and cumbersome to arrange and/or rearrange the track beam into a desired position. Consequently, there is a need for a system and/or method that allows for a secure fixation to locate and maintain the position of the track beam before it is permanently installed to a wall structure or surface.

[0004] Thus, it is an object of the present invention to provide a track beam installation system which can solve or at least alleviate some of the aforementioned problems. Particularly, it is an object of the invention to provide a system for assisting the fixation of a track beam to a wall structure. It is another object of the present invention to provide a system that can facilitate the positioning and alignment of a track beam to a wall structure, and which is capable of locating and/or stabilising the track beam before and during the installation process. Furthermore, it is another object of the invention to provide a system

that can improve the efficiency, as well as, ease of use when installing a track beam. It is a further object of the invention to provide a method using a track beam installation system to assist the fixation of a track beam to a wall structure, that can at least alleviate some of the aforementioned problems.

[0005] The present invention provides at least an alternative to track beam installation systems and methods of the prior art.

Summary of the Invention

[0006] In accordance with the present invention there is provided a track beam installation system and a method of using a track beam installation system, according to the appended claims.

[0007] According to an aspect of the present invention, there is provided a track beam installation system for assisting the fixation of a track beam to a wall structure, comprising: a metal plate, demountably attachable to the wall structure; and a track holder, configured to securely receive the track beam and which is adapted to affixingly engage with said metal plate, during use.

[0008] Thus, the track beam installation system may be used to temporarily but securely locate a track beam onto a wall structure, whilst allowing its position to be adjusted before permanent attachment. The provision of a track holder and metal plate in the claimed manner provides a convenient aid to the installer(s) minimising the need for mounting ladders and/or lifting and holding a track beam in a desired position until it is fixed to the wall structure, thus making the installation of a track beam easier and less burdensome on the installer(s).

[0009] Advantageously, the metal plate may comprise at least one aperture configured to operably receive a fastening element for the wall structure. The aperture allows for easy location and fixation of a fastening element.

[0010] Advantageously, the track holder may comprise at least one magnetic element adapted to provide an attractive force between said track holder and said metal plate. Preferably, the magnetic element may comprise any one of a permanent magnet and an actuable electromagnet. Even more preferably, the metal plate may comprise a ferromagnetic material.

[0011] Advantageously, the track holder may comprise a bracket having at least two lateral attachment portions, each one configured to attachingly engage with said metal plate, and a central engagement portion configured to securely receive the track.

[0012] Advantageously, the central engagement portion may comprise a beam contact surface having a profile complementary to the profile of the track beam.

[0013] In some examples, the track holder may further comprise a hook portion protruding from the engagement portion. The hook portion can provide a predetermined point of engagement for the user. In some examples, a rope, string, wire, or another attachment means can be utilised to engage the hook portion so as to retrieve the

track holder after installation.

[0014] In some examples, the hook portion may be integrally formed with the beam engagement portion.

[0015] Advantageously, said track holder may further comprise at least one loop or hook adapted to engage with a cord and/or pole hook so as to move said track holder out of engagement with said metal plate.

[0016] Advantageously, said system may further comprise a lifting apparatus configured to supportingly receive at least one of said track holder and move between a lower position and a higher position.

[0017] According to another aspect of the present invention, there is provided a method of using a track beam installation system to assist the fixation of a track beam to a wall structure, comprising the steps of: attaching a metal plate to a wall structure; providing a track holder to securely receive a track beam; and affixingly engaging said track holder with said metal plate so as to movably secure the track beam to the wall structure. The track beam may thus be demountably attached to the wall structure by the engagement of the track holder and the metal plate, making installation easier and less burdensome.

[0018] Preferably, step (c) may comprise utilising at least one lifting apparatus to move said track holder and received track beam from a lower position towards and into engagement with said metal plate.

Brief Description of the Drawings

[0019] Certain embodiments are now described hereinafter with reference to the accompanying drawings, in which:

Figure 1 illustrates an example embodiment of the track beam installation system of the present invention including (a) a metal plate and (b) a track holder;

Figure 2 illustrates a perspective view of a lift accessory that may be used with the track beam installation system shown in Figure 1;

Figure 3 illustrates a schematic representation of the track beam installation system shown in Figure 1, *in situ* (i.e. positioned so as to hold the track beam affixed to the ceiling while adjusting its orientation) and assisted by the lift accessory shown in Figure 2;

Figure 4 illustrates a schematic representation of the track beam installation system shown in Figure 3, but with the lift accessory removed;

Figure 5 illustrates a schematic representation of the track beam installation system of Figure 4, where the track holder is simply pulled off the metal plate after permanent installation of the track beam;

Figure 6 illustrates a perspective close-up view of

the track beam installation system assisted by the lift accessory to move the track beam into its desired position.

Detailed Description

[0020] The described example embodiment relates to a track beam installation system, and a method of using the track beam installation system.

[0021] Certain terminology is used in the following description for convenience only and is not limiting. The words 'right', 'left', 'lower', 'upper', 'front', 'rear', 'upward', 'down' and 'downward' designate directions in the drawings to which reference is made and are with respect to the described component when assembled and mounted. The words 'inner', 'inwardly' and 'outer', 'outwardly' refer to directions toward and away from, respectively, a designated centreline or a geometric centre of an element being described (e.g. central axis), the particular meaning being readily apparent from the context of the description.

[0022] Further, as used herein, the terms 'connected', 'attached', 'coupled', 'mounted' are intended to include direct connections between two members without any other members interposed therebetween, as well as, indirect connections between members in which one or more other members are interposed therebetween. The terminology includes the words specifically mentioned above, derivatives thereof, and words of similar import.

[0023] Further, unless otherwise specified, the use of ordinal adjectives, such as, "first", "second", "third" etc. merely indicate that different instances of like objects are being referred to and are not intended to imply that the objects so described must be in a given sequence, either temporally, spatially, in ranking or in any other manner.

[0024] Like reference numerals are used to depict like features throughout.

[0025] Referring now to Figure 1 (a) and (b), an example embodiment of a track beam installation system comprises at least one metal plate 10 having a substantially planar main surface 12. In this example embodiment, the plate 10 has a rectangular profile. In other example embodiments, the plate 10 may have a different profile such as a square, a circle, a regular shape, or any other suitable irregular shape. The plate 10 is provided with a protrusion 16 extending away from the main surface 12 and having an opening 14 extending therethrough. The opening 14 may have a circular rim 18 defining the profile of the opening 14 and providing an access point and housing for a fastener used to attach the plate 10 to a wall structure (e.g. temporarily during installation of the track beam). In this particular example, the plate 10 may be made of a ferromagnetic steel.

[0026] As shown in Figure 1 (b), the installation system further comprises at least one track holder 30 having a first bracket 34 (i.e. a lateral attachment portion) and a second bracket 38, each provided with beam contact surfaces. The contact surfaces of the first bracket 34 and

the second bracket 38 are arranged to be inwardly facing (i.e. towards one another) and are parallel to each other. Further, the track holder 30 has a support portion 40 (i.e. a central beam engagement portion) connecting the first and second bracket 34, 38. In this example embodiment, the support portion 40 has an arched profile (i.e. a half-pipe cross section or U-profile) complementary to the cross-sectional profile of the track beam (e.g. a H- or I-steel beam, or a U-steel beam). The inner part of the support portion 40 may be provided with an attachment loop 50 so as to attach a rope 56 (e.g. via rope loop 54) or any other line allowing the user to pull the track holder 30 from the steel plate 10. In other examples, the attachment loop 50 may be an attachment hook. The attachment loop 50 may be integrally formed with the support portion 40

[0027] Furthermore, in this example, the first and second bracket 34, 38 each have a flange 32, 36 extending laterally outward from the inner contact surface. One or more attachment members 42 a-c, 44 a-c may be provided on respective flanges 32, 36 and which are adapted to affixingly engage with the steel plate 10 so as to form a temporary track beam holder. In this particular embodiment, the attachment members 42, 44 are provided by permanent magnets, however, any other magnetic means may be used. For example, the engagement surface of the flanges 32, 36 may be provided with suitable electromagnets that can be actuated (i.e. switched on and off) to selectively attach and release the track holder 30. The electromagnets may be actuated manually (i.e. via a switch provided on the track holder connecting the electromagnet to a battery) or wirelessly (e.g. a wireless switch mechanism).

[0028] Referring now to Figure 2, a lifting apparatus 60 may be used to assist in lifting the track beam into position (e.g. on a ceiling wall) before engaging the track holder 30 with the pre-installed steel plate 10. The lifting apparatus 60 typically has a base 92, having a square shaped opening 94 (for coupling the lift mechanism) on one end and two angled beams 64, 66 extending outwards in opposite direction on the other end. More specifically, a first angled beam 64 extends from a first side of the base 92 and a second angled beam 66 extends from an opposing second side of the base 92. The angled beams 64, 66 extend horizontally away from the first and second sides of the base 92 respectively, and direct upwards, forming an angle of 45 degrees. The first angled beam 64 terminates at a first end 68 distal the base 92. The second angled beam 66 terminates at a second end 80 distal the base 92. The first end 68 of the first angled beam 64 and the second end 80 of the second angled beam 66 are each connected to a support portion, first bracket and second bracket having an arrangement substantially as hereinbefore described with reference to the holder 30 in Figure 1, however the brackets of the lifting apparatus 60 do not have attachment members of the track holder 30.

[0029] The first end 68 of the first angled beam 64 is

connected to a first support portion 70 which extends between and connects respective contact surfaces of a first bracket 72 and a second bracket 76. A flange 74, 78 extends outwardly from the ends of the respective contact surfaces. Similarly, the second end 80 of the second angled beam 66 is connected to a second support portion 82, extending between and connecting respective contact surfaces of a third bracket 84 and a fourth bracket 88. A flange 86, 90 extends outwardly from the ends of the respective contact surfaces.

[0030] Referring now to Figure 3 and Figure 6, both track beam installation system and lifting apparatus 60 are shown in use. Here, the plate 10 is fixed to a ceiling surface and a track beam 3 is held by the track holder 30 attached to the steel plate 10 and the lifting apparatus 60. The support portion 40 is held against and in contact with the bottom surface of the track beam 3. The attachment members 42, 44 of the track holder 30 provide an attractive force between the track holder and the plate 10. Also shown is a rope 56 that is attached to the track holder 30 via the attachment loop 50 (or a hook).

[0031] During installation, the lifting apparatus 60 is used to raise the track beam 3 towards the mounting plate 10 before the track holder is operably attached to the steel plate securing the track beam 3 to the ceiling. The lifting apparatus 60 may include a stud 96 that is received inside the base opening 92.

[0032] Further, and as shown in Figure 4, the lifting apparatus 60 is removed and the track beam 3 is solely held in place by the track beam installation system of the present invention. It is understood that the magnetic attachment still allows lateral movement of the track beam 3, so as to adjust its orientation and or position while attached to the steel plate 10. When the track beam 3 is placed in the desired position and alignment, it is fixed to the wall structure (e.g. ceiling) using known means such as fixings or fasteners (not shown).

[0033] Referring now to Figure 5, the track holder 30 can simply be retrieved by applying a pulling force to the rope 56 overcoming the attractive force of the attachment members 42, 44 to the mounting steel plate 10.

[0034] Through the description and claims of this specification, the words "comprise" and "contain" and variations of them mean "including but not limited to", and they are not intended to (and do not) exclude other moieties, additives, components, integers or steps. Throughout the description and claims of this specification, the singular encompasses the plural unless the context otherwise requires. In particular, where the indefinite article is used, the specification is to be understood as contemplating plurality as well as singularity, unless the context requires otherwise.

[0035] Features, integers, characteristics, compounds, chemical moieties or groups described in conjunction with a particular aspect, embodiment or example of the invention are to be understood to be applicable to any other aspect, embodiment or example described herein unless incompatible therewith. All of the features

disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive. The invention is not restricted to the details of any foregoing embodiments. The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract or drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

[0036] It will be appreciated by persons skilled in the art that the above embodiment(s) have been described by way of example only and not in any limitative sense, and that various alterations and modifications are possible without departing from the scope of the invention as defined by the appended claims. Various modifications to the detailed designs as described above are possible.

Claims

1. A track beam installation system for assisting the fixation of a track beam to a wall structure, comprising:
 - a metal plate, demountably attachable to the wall structure; and
 - a track holder, configured to securingly receive the track beam and which is adapted to affixingly engage with said metal plate, during use.
2. A track beam installation system according to claim 1, wherein said metal plate comprises at least one aperture configured to operably receive a fastening element for the wall structure.
3. A track beam installation system according to any one of claims 1 and 2, wherein said track holder comprises at least one magnetic element adapted to provide a predetermined attractive force between said track holder and said metal plate.
4. A track beam installation system according to claim 3, wherein said at least one magnetic element is any one of a permanent magnet and an actuatable electromagnet.
5. A track beam installation system according to any one of the preceding claims, wherein said metal plate comprises a ferromagnetic material.
6. A track beam installation system according to any one of the preceding claims, wherein said track holder comprises a bracket having at least two lateral attachment portions, each one configured to attachingly engage with said metal plate, and a central engagement portion configured to securingly receive the track beam.
7. A track beam installation system according to claim 6, wherein said central engagement portion comprises a beam contact surface having a profile complementary to the profile of the track beam.
8. A track beam installation system according to any one of the preceding claims, wherein said track holder further comprises at least one loop or hook adapted to engage with a cord and/or pole hook so as to move said track holder out of engagement with said metal plate.
9. A track beam installation system according to any one of the preceding claims, further comprising a lifting apparatus configured to supportingly receive at least one of said track holder and move between a lower position and a higher position.
10. A method of using a track beam installation system to assist the fixation of a track beam to a wall structure, comprising the steps of:
 - (a) affixing a metal plate to a wall structure;
 - (b) providing a track holder to securingly receive a track beam; and
 - (c) affixingly engaging said track holder with said metal plate, so as to movably secure the track beam to the wall structure.
11. A method according to claim 10, wherein step (c) comprises utilising at least one lifting apparatus to move said track holder and received track beam from a lower position towards and into engagement with said metal plate.

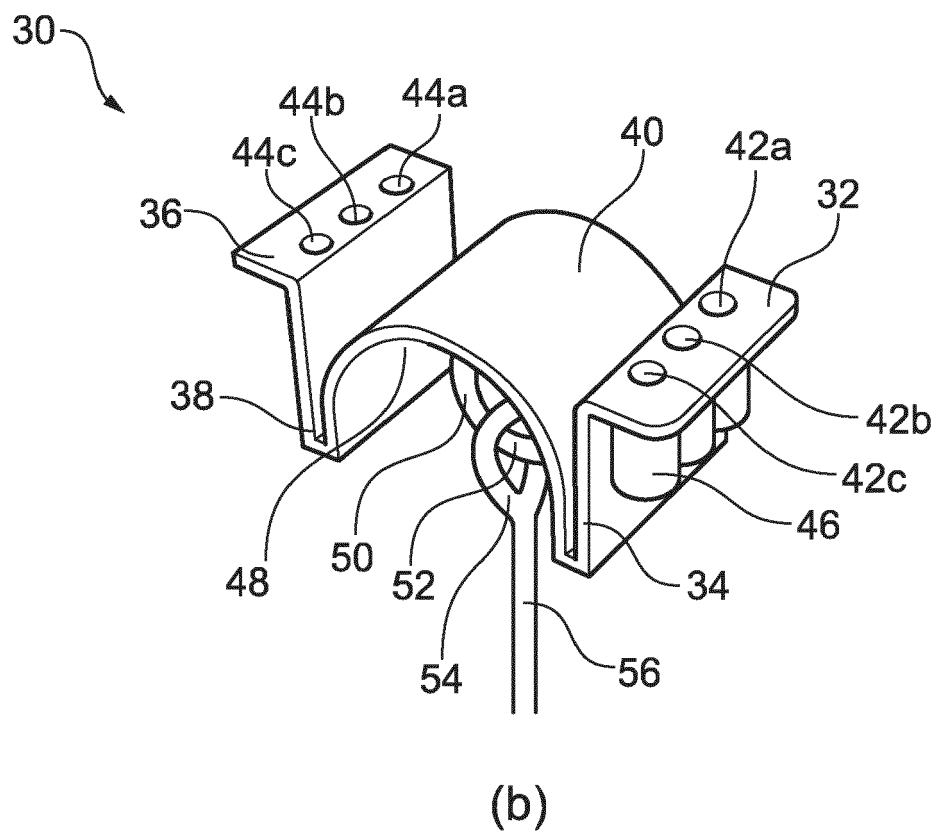
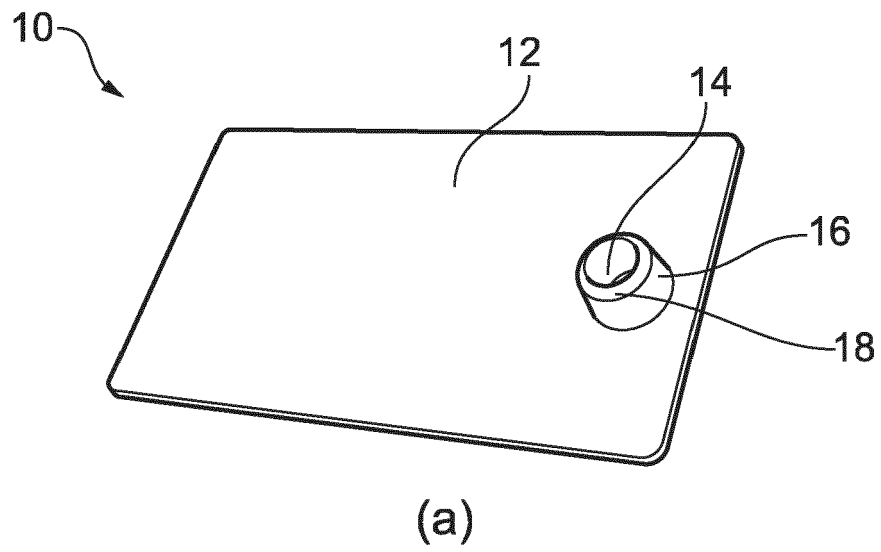


FIG. 1

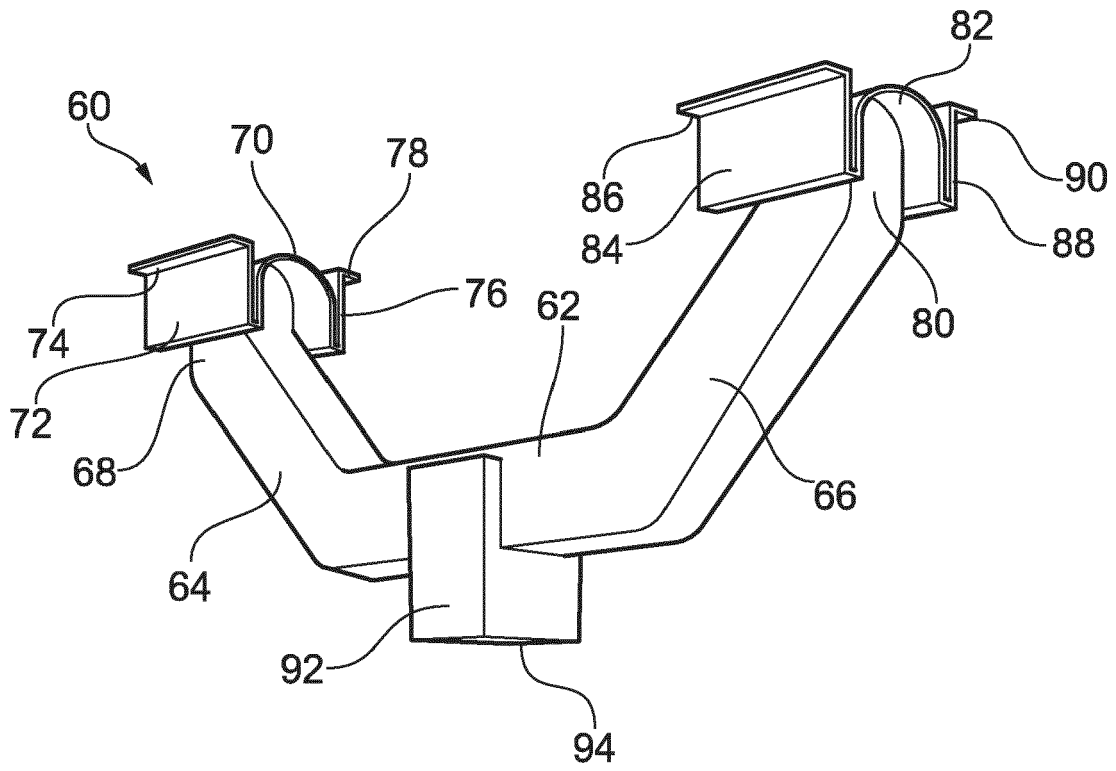


FIG. 2

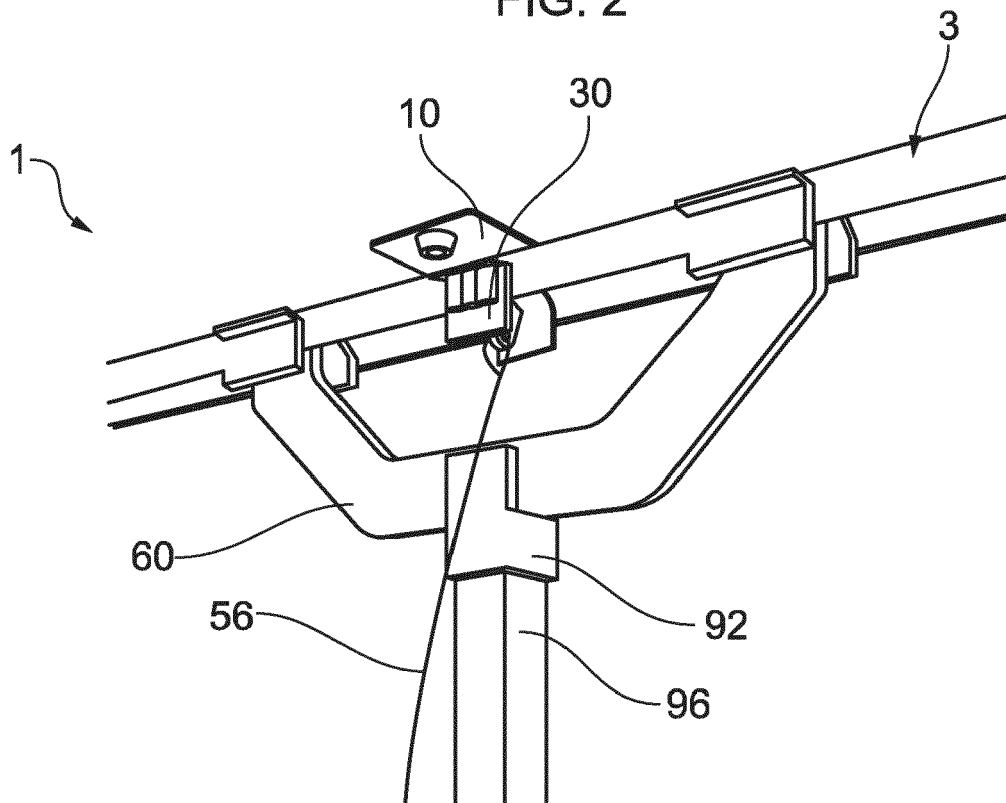


FIG. 3

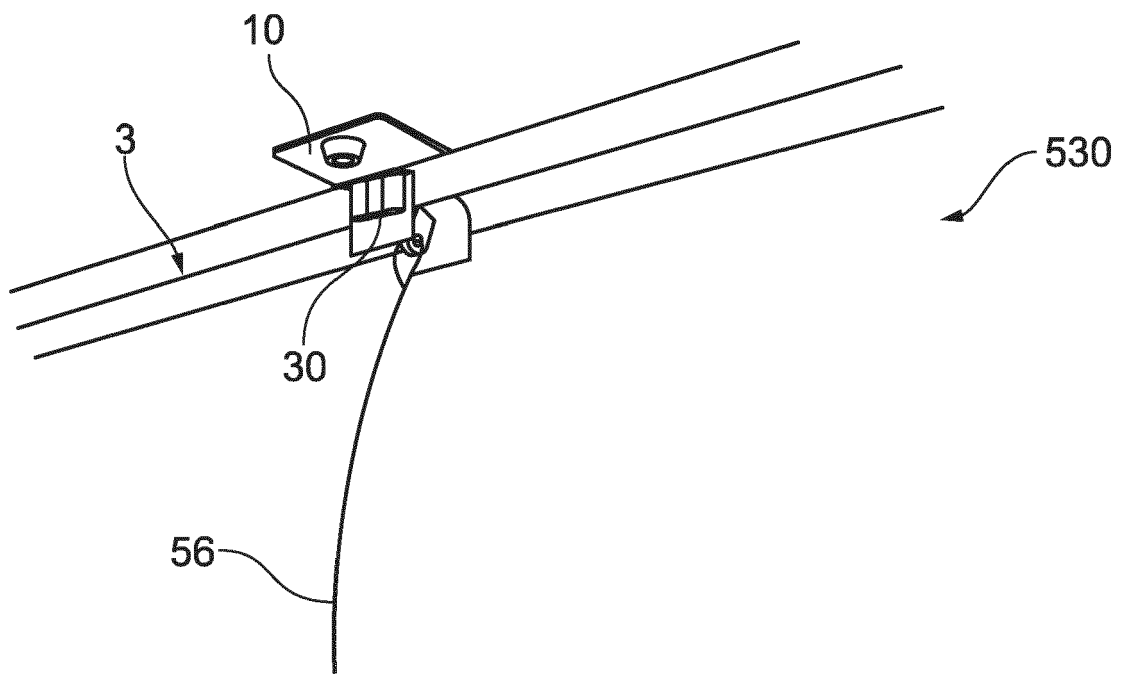


FIG. 4

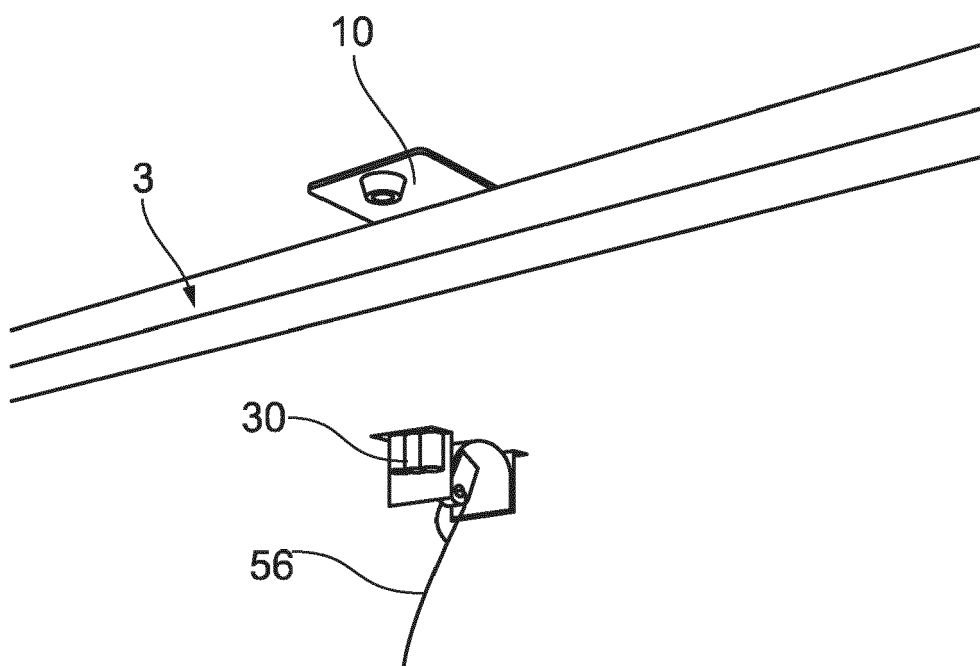


FIG. 5

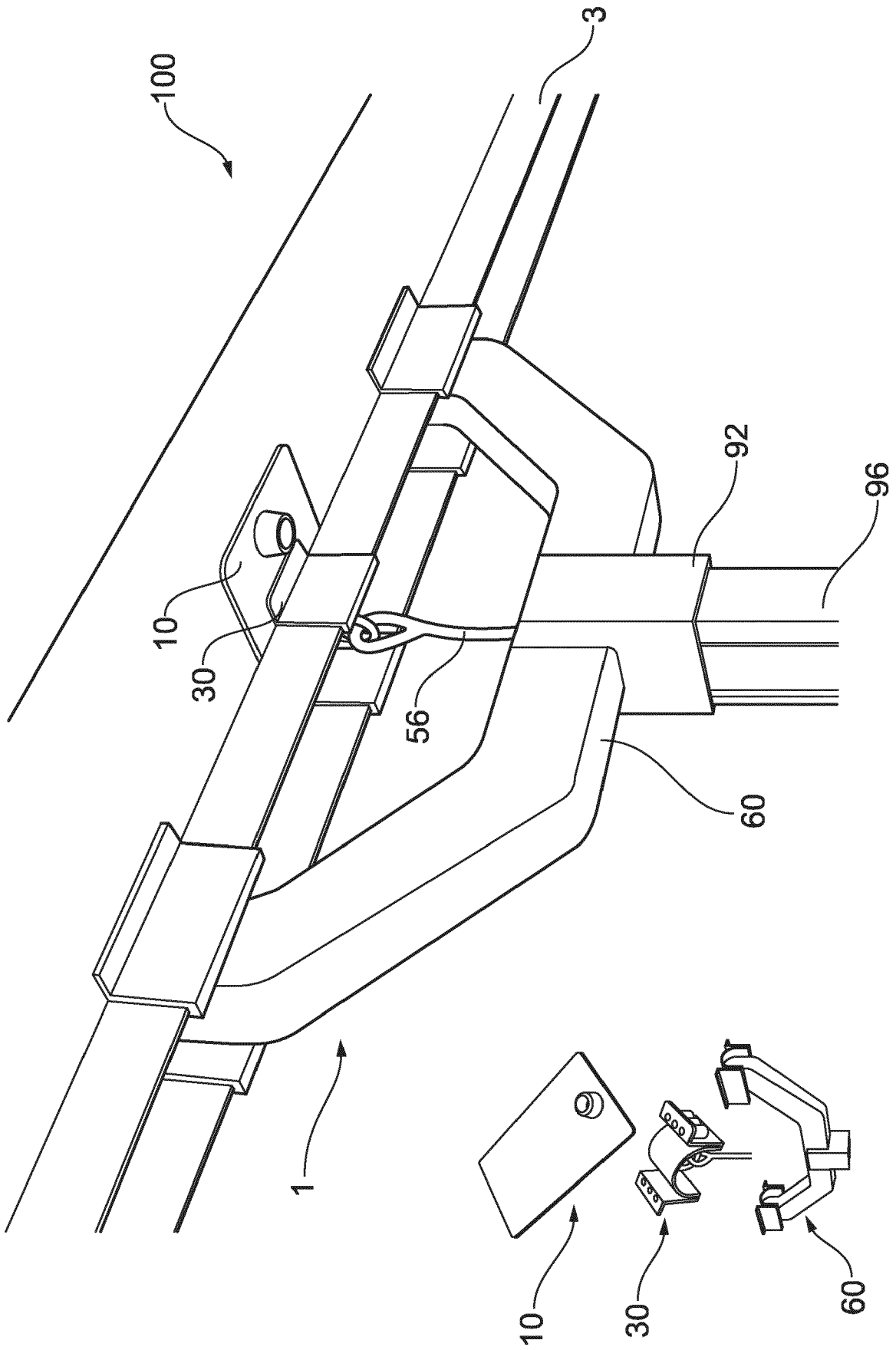


FIG. 6



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Application Number

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			TECHNICAL FIELDS SEARCHED (IPC)
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Place of search The Hague		Date of completion of the search 17 December 2021	Examiner López-García, G
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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