

(19) **DANMARK**

(10) **DK/EP 4086500 T3**



(12)

Oversættelse af
europæisk patentskrift

Patent- og
Varemærkestyrelsen

-
- (51) Int.Cl.: **F 16 M 11/20 (2006.01)** **B 66 D 3/02 (2006.01)** **F 16 M 11/24 (2006.01)**
F 16 M 11/42 (2006.01)
- (45) Oversættelsen bekendtgjort den: **2024-02-19**
- (80) Dato for Den Europæiske Patentmyndigheds
bekendtgørelse om meddelelse af patentet: **2023-12-20**
- (86) Europæisk ansøgning nr.: **22382091.1**
- (86) Europæisk indleveringsdag: **2022-02-03**
- (87) Den europæiske ansøgnings publiceringsdag: **2022-11-09**
- (30) Prioritet: **2021-05-05 ES 202130398**
- (84) Designerede stater: **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**
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- (54) Benævnelse: **BÆRBAR HOLDER TIL HEJSE- ELLER TRÆKVÆRKTØJ**
- (56) Fremdragne publikationer:
FR-A1- 2 110 281

DESCRIPTION

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a support device for hoist or traction tools, for example, those used in automotive workshops, which is designed in a portable manner for it to be easily moved and located within the workshop.

BACKGROUND OF THE INVENTION

[0002] Supports for hoist or traction tools are known, of those used, for example, in automotive workshops, which include a base on which a vertical column is fastened to which a hoist or traction tool to be used is coupled. The base can comprise one or more heavy elements, which keep the support device immobile on a support surface, for example, the floor of a workshop, while the hoist or traction tool is actuated, for example, to pull a heavy part or element towards the support device.

[0003] These known supports have the drawback that moving them to change their location is very cumbersome, due to the very heavy elements of their base, which make moving them difficult. In addition, on the other hand, if the weight of such elements is reduced to make moving them easier, the maximum value of the traction force to be exerted with the hoist or traction tool is limited, thus reducing the working capacity of such tool.

[0004] It is thus required to design a support for hoist or traction tools that is portable, i.e., that can be easily moved and located in different places where it is required for the use of a hoist or traction tool.

[0005] Patent with publication number FR2110281A3 discloses a portable traction device which is especially adapted for use in automobile repair work, comprises a column which can pivot on a base having a rubber seal in contact with the ground on its lower surface, a vacuum pump is connected to the space this surrounds by the joint so that the base is held in place on the floor, two wheels are mounted on one side of the base and serve to move the device. The traction direction is only provided by the orientation of the column or the height of a traction tool on said column.

DESCRIPTION OF THE INVENTION

[0006] The present invention is a portable support for hoist or traction tools.

[0007] The mobile support comprises:

- a base, adapted to be rigidly and removably fastened on a support surface, and
- a column, which is fastened at a third end to a first surface of the base, where the column is configured in such a way that a hoist or traction tool can be coupled to it.

[0008] In addition, the support comprises a flexible perimeter rim fastened and extending from a second surface of the base, in such a way that, during the use of the support, said flexible perimeter rim is arranged between the base and the support surface, forming a closed space. In other words, the base is supported on the support surface, for example, the floor of a workshop, by means of the flexible perimeter rim, which acts as a seal or joint between the base and the support surface, forming the closed space.

[0009] The support additionally comprises a vacuum generating means in fluid communication with the closed space formed, by means of a vacuum line or pipe that is connected to a perforation in the base, such that a vacuum or negative pressure generated by the vacuum generating means creates such a depression or reduction of pressure inside the closed space that it produces a rigid fastening of the base to the support surface, suitable for actuating the hoist or traction tool coupled to the column of the support.

[0010] For example, the vacuum generating means could be configured to create a vacuum pressure of 88 kPa in the closed space formed between the base and the support surface, such that the fastening achieved between such base and support surface supports a maximum traction force of the hoist or traction tool of 2500 Kg, achieving more than enough traction capacity for, for example, repair tasks in an automotive workshop that require it.

[0011] Besides, the third end of the column is fastened to the first surface of the base by means of plates longitudinally fastened to the base, where the plates are arranged parallel to each other and extended perpendicular to a longitudinal plane of the base, such that the column is adapted to fit between the plates and be fastened to said plates through removable fastening means that are adapted to pass through first and third holes of the third end of the column and of the plates respectively; the hoist or traction tool is a flexible element.

[0012] Also, the plates comprise respective rows of fourth holes, a return pulley or, wherein the column is arranged parallel with respect to the base, a directing element is arranged between two facing fourth holes of the respective plates, so that a position of the return pulley or the directing element can be varied with respect to the base, the hoist or traction tool passes between the return pulley and the base towards the outside of the support or passes over the directing element to change its direction.

[0013] Thus, it is possible to have a portable support for hoist or traction tools, which can be easily moved and located in the required place with the simple actuation of the vacuum generating means, which allows the base to be very easily fastened rigidly to the support surface with the actuation of the vacuum generating means, or, such base can be easily

decoupled from the support surface when said vacuum generating means is no longer activated, with a view to moving and locating the support in another place where the support is required to be relocated.

[0014] With the return pulley or the directing element is achieved that the free end of the hoist or traction tool acquires the desired direction, that is, it is possible to redirect the pull direction of the hoist or traction tool according to the specific need of the case. Specifically, in its use in vehicle sheet metal repair workshops, this is especially significant given that the sheet metal of a vehicle acquires different orientations and curvatures that make it necessary to adapt to them and in each case the pull direction to proceed with the sheet metal repair, usually to repair different dents.

[0015] In addition, the option where the column (2) is arranged parallel to the base (1) has the added advantage of making the support be approximately in the same plane, which facilitates its storage.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] This specification is supplemented by a set of figures illustrating the preferred embodiment and never intended to limit the invention.

Figure 1 represents a perspective view of the mobile support for hoist or traction tools, with the column arranged perpendicular to the base.

Figure 2 represents a top perspective view of the base of the support of Figure 1.

Figure 3 represents a diagram of the installation of a vacuum ejector as a vacuum generating means in the support of Figure 1.

Figure 4 represents a perspective view of the mobile support for hoist or traction tools, with the column arranged angled with respect to the base.

Figure 5 represents a perspective view of the mobile support for hoist or traction tools, with the column arranged parallel to the base.

Figures 6A, 6B, 6C, 6D and 6E represent schematic side views of different arrangements of the mobile support.

DETAILED DESCRIPTION OF THE INVENTION

[0017] In view of the foregoing, the present invention refers to a portable support for hoist or traction tools, for example, those used in automotive workshops.

[0018] As shown in Figure 1, the device comprises:

- a base (1), adapted to be rigidly and removably fastened on a support surface (3), Figure 3, and
- a column (2), which is fastened at a third end (2.1) to a first surface (1.1) of the base (1).

[0019] For example, said base (1) and column (2) can be made of aluminium or steel.

[0020] The third end (2.1) of the column (2) is fastened to the first surface (1.1) of the base (1) by means of plates (10) fastened longitudinally to the base (1). In said base (1), the plates (10) are arranged parallel to each other and extended perpendicularly to a longitudinal plane of the base (1), such that the column (2) is adapted to fit between the plates (10) and to be fastened to them through known removable fastening means (not shown in the figures), such as a screw-nut assembly or the like, which are adapted to pass through first (2.11) and third holes (10.1) of the third end (2.1) of the column (2) and of the plates (10) respectively. Additionally, the plates (10) comprise respective rows of fourth holes (10.2), so that a fastening position of the column (2) can be varied with respect to the base (1), as required.

[0021] Likewise, the column (2) is configured such that a hoist or traction tool (4) can be coupled to it by means of second fastening means (not shown in the figures) of a coupling part (12) of the hoist or traction tool (4), said second fastening means being of any known type that allow them to be placed at a certain height of the column (2), convenient for the correct operation of the hoist or traction tool (4). For example, the column (2) could comprise a row of second holes (2.3) adapted to be passed through by the second fastening means, which could be, for example, a screw-nut assembly or the like.

[0022] On the other hand, as shown in Figure 2, the support comprises a flexible perimeter rim (9), for example, made of rubber or similar material, fastened and extended from a second surface (1.2) of the base (1). The first and second surfaces (1.1, 1.2) are the largest opposite surfaces of the base (1). In use of the support, i.e., when it is required to fasten the base (1) to the support surface (3), see Figure 3, said flexible perimeter rim (9) is arranged between the base (1) and the support surface (3), forming a closed space (6) between said elements (1, 9, 3).

[0023] Preferably, the support surface (3) is a flat surface, without scratches or cracks, as well as free of dirt and dust. For example, it could be the floor of a workshop that meets such conditions.

[0024] Additionally, the support comprises a vacuum generating means (5), for example, as shown in Figure 3, a vacuum ejector (5.1), in fluid communication with the closed space (6) by means of a vacuum line or pipe (7) that is connected to a perforation (1.3) of the base (1), such that a vacuum generated by the vacuum generating means (5) produces the rigid

fastening of the base (1) to the support surface (3).

[0025] The vacuum ejector (5.1) is fed by a stream of pressurised air (A), and at its outlet, comprises a silencer (14), such that said stream of pressurised air (A), due to the "Venturi" effect caused inside the vacuum ejector (5.1), creates such depression or vacuum pressure in the closed space (6) that it produces the rigid fastening of the base (1) to the support surface (3).

[0026] The vacuum generating means (5) could be fastened to the base (1) or to the column (2). Likewise, it can be of any known type, such as a vacuum compressor or vacuum pump with 220 V electrical drive.

[0027] For example, in a preferred embodiment of the support, the latter is designed with a vacuum generating means (5) adapted to create a vacuum pressure of 88 kPa in the closed space (6), where said vacuum pressure value corresponds to a maximum traction force of the hoist or traction tool (4) of 2500 Kg, which is more than enough, for example, for repair work carried out in an automotive workshop that requires the use of a hoist or traction tool (4). However, supports according to the present invention could be designed with greater capacity to withstand higher traction forces.

[0028] Thus, a support for hoist or traction tools (4) that is portable and as effective as known supports, which require moving heavy weights to move them. The support of the present invention can be easily moved and located from one place to another as required. Its operation is based on the simple actuation of the vacuum generating means (5) with the stream of pressurised air (A), when the base (1) is required to be rigidly fastened to the support surface (3), in such a way that it allows to support the traction force exerted by the hoist or traction tool (4) during its use; and then, when the support is to be moved to another place where it is to be relocated, the base (1) can be easily uncoupled from the support surface (3), by simply stopping activating the vacuum generating means (5).

[0029] To make it easier to move the support from one location to another, or its transfer for storage, the support may comprise wheels (8) arranged at a first end (1.4) of the base (1). As shown in Figure 1, it is preferred that the wheels (8) are arranged perpendicular to a longitudinal plane of the base (1). For example, the wheels (8) could be fastened to the first surface (1.1) of the base (1) by means of respective flat plates (11), or with an "L" profile (embodiment not shown in the figures), for example, welded at one of its ends to said first surface (1.1) of the base (1), or as an extension of the base (1), Figures 4 and 5.

[0030] For the same purpose, additionally, a fourth end (2.2) of the column (2) could comprise handles (13), for example, arranged on the respective sides of the column (2).

[0031] Thus, a user who wishes to move the support from one location to another simply positions himself in front of the support, on the side of the first end (1.4) of its base (1), and pulls on the handles (13) towards himself, so that it pivots the base (1) of the support on the

wheels (8), and with this, the support is free for easy movement.

[0032] Additionally, a second end (1.5) of the base (1) could be designed comprising an oblong hole (1.51) as a gripper, so that, by hoist said gripper, the user can easily uncouple the base (1) from the support surface (3), when the vacuum generating means (5) is no longer actuated, for example, to then pull on the handles (13) with less effort, and achieve movement of the support.

[0033] Another feature of the support is that, when the plates (10) comprise respective rows of fourth holes (10.2), the hoist or traction tool (4) can be a flexible element, such as the chain of Figures 1, 4 and 5 or any other flexible element -cable, rope, etc.- as shown generically in Figures 6A to 6E, a return pulley (15) is arranged between two facing fourth holes (10.2) on respective plates (10), four in the embodiments of Figures 1, 4, 5, 6A to 6E, so that a position of the return pulley (15) can be varied with respect to the base (1), by simply arranging it in one or other facing fourth holes (10.2), the hoist or traction tool (4) passes between the return pulley (15) and the base (1) towards the outside of the support, as can be seen in Figures 6A to 6C.

[0034] With a similar effect, there is the option of the column (2) being arranged perpendicular, Figures 1 and 6A, angled, Figures 4 and 6B, or parallel, Figures 5 and 6C, with respect to the base (1). The support includes all the elements mentioned, except that the column (2) acquires a different orientation with respect to the base (1), thus being able to adapt to optimise the pull direction and force of the hoist or traction tool (4).

[0035] As previously mentioned, the third holes (10.1) serve to fasten the column (2) between the plates (10). This is not represented in the figures for when the column (2) is arranged perpendicular or angled with respect to the base (1); it is represented in Figure 6D when it is arranged parallel with respect to the base (1). In said Figure 6D, the hoist or traction tool (4) has been partially represented in the possible orientations of the other Figures 6A to 6C and 6E which are discussed below.

[0036] Figure 6E shows where the column (2) is arranged parallel with respect to the base (1), the hoist or traction tool (4) is a flexible element, a directing element (16) is arranged between two facing fourth holes (10.2) of the respective plates (10), so that a position of the directing element (16) can be varied with respect to the base (1), the hoist or traction tool (4) passes over said directing element (16) to change its direction.

[0037] Although not shown in the figures, two supports can be located on opposite sides of the workpiece to exert a pull and have an opposing or counter-hoist resistant element, this is sometimes done on opposite sides of a vehicle body.

[0038] Usually the support surface (3) or floor on which the support is arranged is more or less horizontal. However, said support surface (3) could have any orientation or even be vertical, like the wall of a workshop, and the support shown here would be equally valid and operate in

the manner explained here, highlighting that it may even be advantageous to obtain different directions, and resulting pull forces of the hoist or traction tool (4).

REFERENCES CITED IN THE DESCRIPTION

Cited references

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- FR2110281A3 [0005]

PATENTKRAV

1. Bærbar holder til hejse- eller trækværktøj omfattende:

- en base (1), der er tilpasset til at blive fast og aftageligt fastgjort på en holderflade (3),
5 og
- en søjle (2), der er fastgjort ved en tredje ende (2.1) til en første flade (1.1) af basen (1),
hvor søjlen (2) er konfigureret således, at et hejse- eller trækværktøj (4) kan kobles til
den,

hvor den omfatter en fleksibel perimeterkant (9), der er fastgjort og strækker sig fra en anden
10 flade (1.2) af basen (1) på en sådan måde, at den fleksible perimeterkant (9) anbringes mellem
basen (1) og holderfladen (3), hvorved der dannes et lukket rum (6); og et vakuumgenererende
middel (5) i fluidforbindelse med det lukkede rum (6) ved hjælp af en vakuumledning eller et
vakuumrør (7), der er forbundet med en perforering (1.3) af basen (1), således at et vakuum
genereret af det vakuumgenererende middel (5) frembringer den faste fastgørelse af basen (1) til
15 holderfladen (3), hvor den tredje ende (2.1) af søjlen (2) er fastgjort til den første flade (1.1) af
basen (1) ved hjælp af plader (10), der på langs er fastgjort til basen (1), hvor pladerne (10) er
anbragt parallelt med hinanden og strækker sig vinkelret på et længdeplan af basen (1), således
at søjlen (2) er tilpasset til at passe mellem pladerne (10) og blive fastgjort til pladerne (10) via
aftagelige fastgørelsesmidler, der er tilpasset til at blive ført gennem første (2.11) og tredje huller
20 (10.1) i henholdsvis den tredje ende (2.1) af søjlen (2) og i pladerne (10); hejse- eller
trækværktøjet (4) er et fleksibelt element; **kendetegnet ved**, at pladerne (10) omfatter respektive
rækker af fjerde huller (10.2), en returremskive (15) er anbragt mellem to modstående fjerde
huller (10.2) i de respektive plader (10), eller hvor søjlen (2) er anbragt parallelt i forhold til
basen (1), et føringselement (16) er anbragt mellem to modstående fjerde huller (10.2) i de
25 respektive pladers (10), således at en position for returremskiven (15) eller føringselementet (16)
kan varieres i forhold til basen (1), hejse- eller trækværktøjet (4) føres mellem returremskiven
(15) og basen (1) mod holderens yderside eller føres over føringselementet (16) for at ændre dets
retning.

30 2. Holder ifølge krav 1, hvor det vakuumgenererende middel (5) er egnet til at frembringe et
vakuumtryk på 88 kPa i det lukkede rum (6), hvilket svarer til en maksimumtrækraft for hejse-
eller trækværktøjet (4) på 2500 kg.

3. Holder ifølge et hvilket som helst af krav 1 eller 2, hvor det vakuumgenererende middel (5) er en vakuumejektor (5.1).
4. Holder ifølge krav 1, og som omfatter hjul (8) anbragt ved en første ende (1.4) af basen (1),
5 vinkelret på et længdeplan af basen (1).
5. Holder ifølge krav 1, hvor en anden ende (1.5) af basen (1) omfatter et aflangt hul (1.51) som en griber.
- 10 6. Holder ifølge krav 1, hvor pladerne (10) omfatter respektive rækker af fjerde huller (10.2), således at en fastgørelsesposition for søjlen (2) kan varieres i forhold til basen (1).
7. Holder ifølge krav 1, og som omfatter et andet middel til fastgørelse af en koblingsdel (12) af hejse- eller trækværktøjet (4) i en vis højde af søjlen (2).
- 15 8. Holder ifølge krav 7, hvor søjlen (2) omfatter en række af anden huller (2.3), der er tilpasset til gennemføring af koblingsdelens (12) andet fastgørelsesmiddel.
9. Holder ifølge krav 1, hvor en fjerde ende (2.2) af søjlen (2) omfatter greb (13).
- 20 10. Holder ifølge krav 1, hvor basen (1) og søjlen (2) er fremstillet af aluminium eller stål.
11. Holder ifølge et hvilket som helst af de foregående krav, hvor søjlen (2) er anbragt vinkelret, vinklet eller parallelt i forhold til basen (1).
- 25 12. Holder ifølge krav 1, hvor det vakuumgenererende middel (5) er en elektrisk vakuumkompressor eller vakuumpumpe.

DRAWINGS

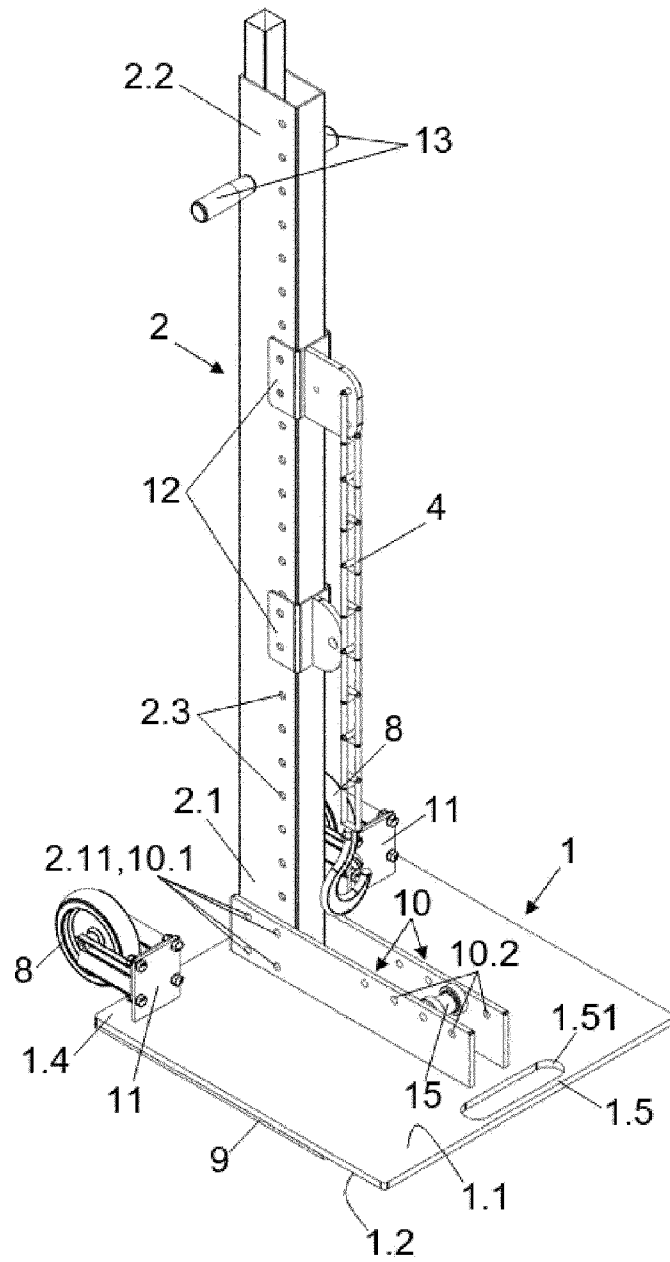


Fig.1

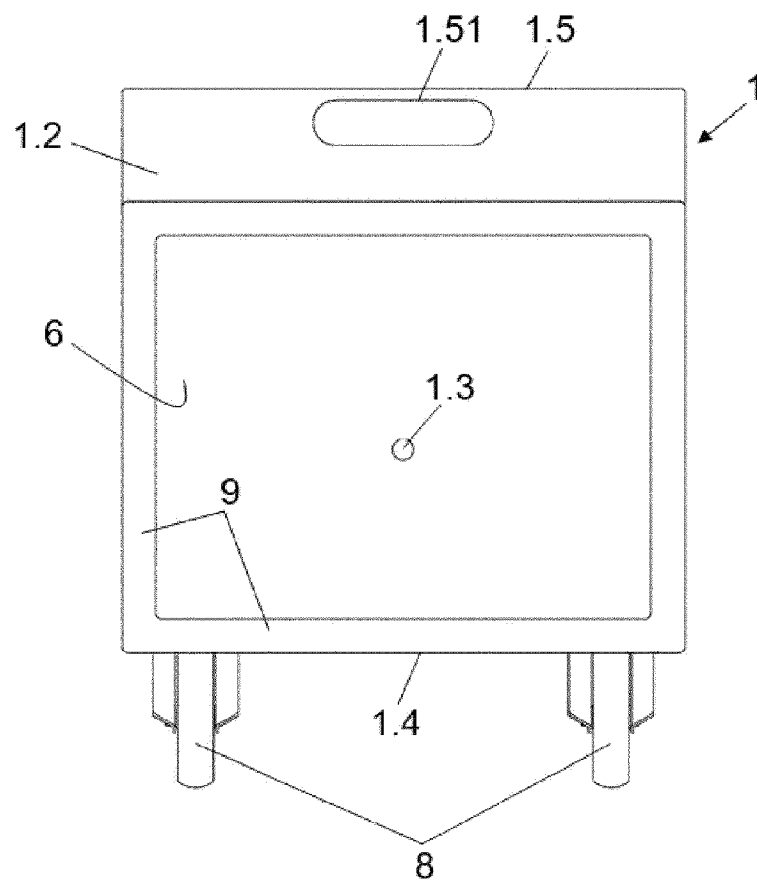
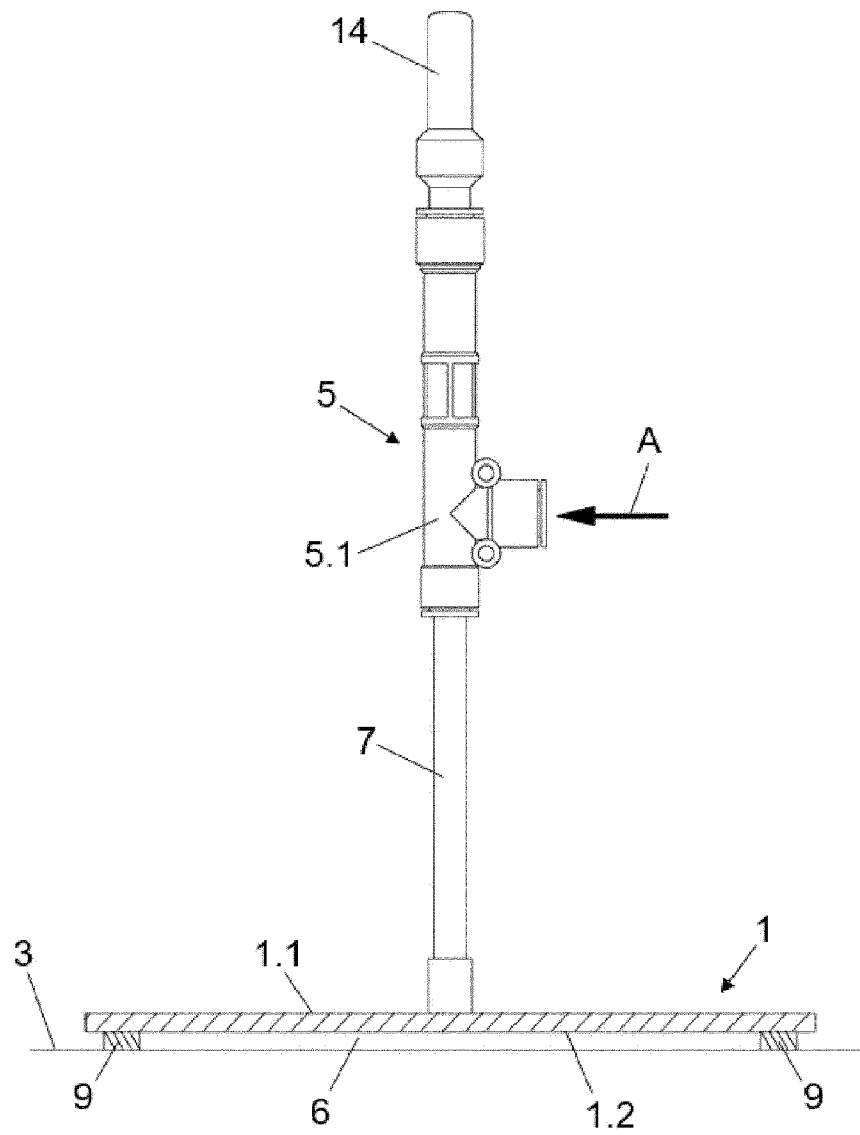


Fig.2

**Fig.3**

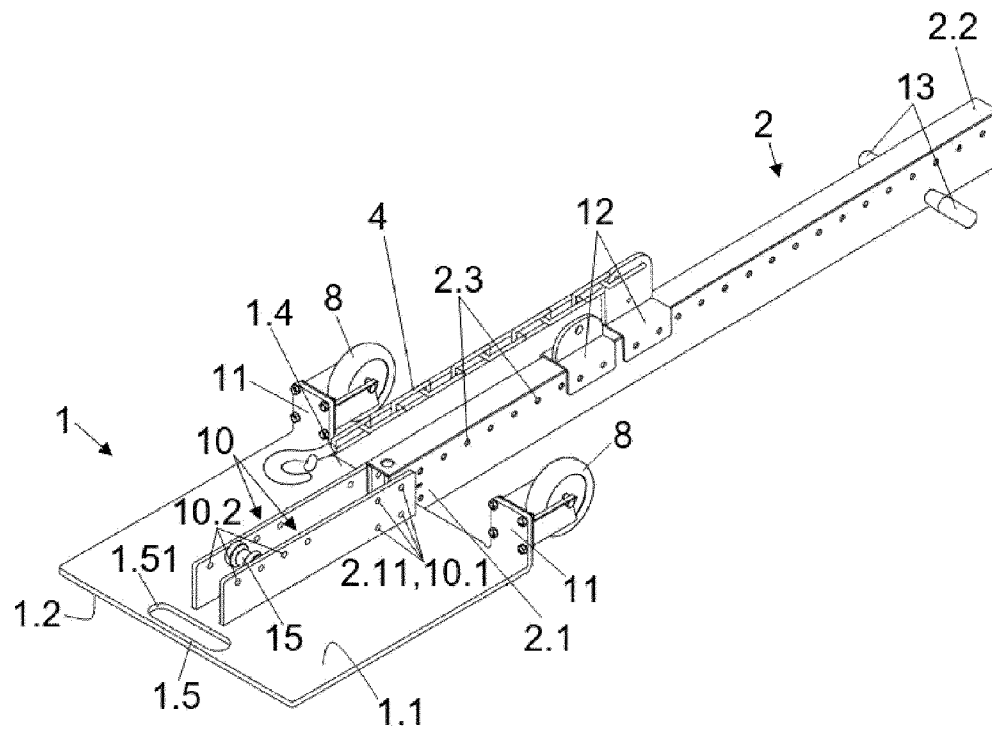


Fig.5

Fig.6A

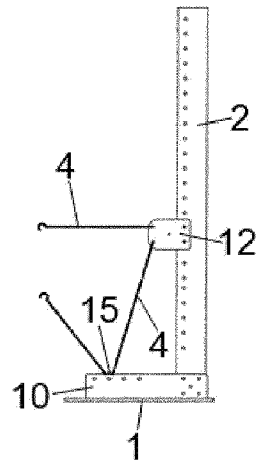


Fig.6B

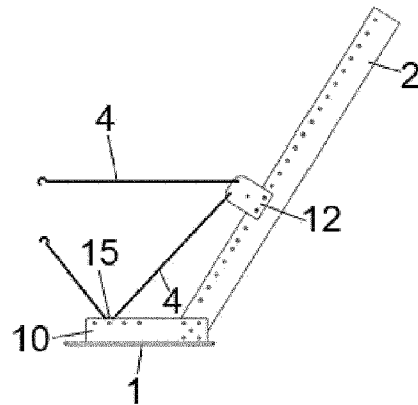


Fig.6C

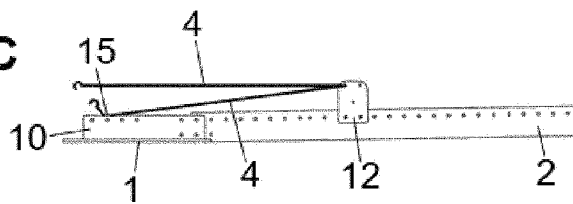


Fig.6D

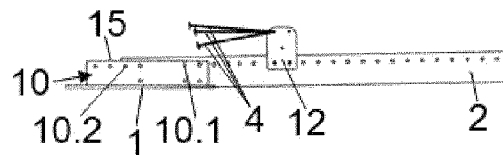


Fig.6E

