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(54) **A GROUND SURFACE ACCESS ASSEMBLY FRAME AND METHOD OF INSTALLATION OR REPLACEMENT THEREOF**

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Description

Technical Field

[0001] This invention relates to the frame of a ground surface access assembly; and in particular to means of engaging the flange with lifting keys in order to facilitate initial installation or subsequent removal.

Background Art

[0002] Ground surface access assemblies are widely employed in roadways and sidewalks/pavements. Typically, such assemblies include a frame with a flange and hinged or removable cover portion. Often such covers are relatively heavy and need to be handled using approved lifting gear, in order to avoid possible injury to operatives during installation or servicing. One or more Lifting Keys (in accord with BS 7903) are generally used to engage keyholes in the cover member. These keys engage the keyholes in a similar way to a key engaging a door-lock; that is by alignment of the key-blade with the keyhole, prior to insertion and the part rotation. Such keyholes are difficult to produce by the metal casting procedures typically used to manufacture such assembly covers and are prone to blockage by sand (after casting) and also (in normal use) by debris.

[0003] In use, after such assemblies have been installed in a roadway etc., subsequent removal of a frame and flange (rather than the cover) from bedding material, for replacement etc., can be difficult owing to a lack of provision for attachment of lifting gear to the frame.

[0004] FR3059018A discloses a road surface access assembly comprising a mounting frame housing two or more covers, that may pivot relative to the frame, and in particular provides improved sealing of such covers when in the closed position. In addition, it illustrates pairs of U-Shaped handles attached to the frame external sidewalls. US 6276732 describes a device for lifting manhole covers using a pair of gripping pads (32,34) combined with a lifting tool comprising two arms (14), pivotably connected (16); this combination providing scissor-like action/grip that in use allows said gripping pads to grip opposing sidewalls of the manhole frame.

Disclosure of Invention

[0005] An aim of the present invention is to provide a frame for a ground surface access assembly that is easier and safer to install or replace than existing frames because means for engaging lifting keys are provided on the frame; in particular on the frame flange, the frame side-walls, or both. This aim is achieved by providing a ground surface access assembly according to claim 1.

[0006] In a first aspect the invention comprises a ground surface access assembly frame surrounding and defining an aperture, with sidewalls that extend downwardly to connect to an outwardly extending flange por-

tion: said frame comprising at least one key-engaging member that extends externally/outwardly from said frame, and further comprises a pair of spaced-apart members, located in a raised position relative to the general level of said flange portion; and a recess located on the underside of each spaced-apart member, configured to allow engagement of a lifting key (K) having a shaft (Ks) by firstly sideways movement of the shaft (Ks) to a position between said spaced-apart members followed by upward movement of said key (K) towards said underside recesses.

[0007] The key-engaging member may extend upwardly from said flange portion or may extend outwardly from a said frame sidewall. Alternatively, the key-engaging member may extend upwardly from said flange portion and outwardly from a said sidewall.

[0008] The underside recess may comprise a planar/flat upper face and at least one perpendicularly extending flat/planar side face. Where there are two (spaced-apart) side faces they, advantageously, restrain pivotal/rotational movement of the key shaft (Ks) relative to the frame, during the lifting sequence; especially where the centre-of-gravity of the frame is such that it otherwise wobble during lifting, and so result in an unstable, and less-safe lift. Optionally the recess may be arcuate or semi-circular in cross section.

[0009] The two spaced-apart members may be connected by an intermediate roof member to form a roof portion that presents a generally "U-Shaped" aperture; this allows sideways access to the lifting key shaft (Ks). This "U-Shaped" aperture also advantageously results in movement of a suitably configured key shaft (Ks) relative to the frame, during lifting, being restrained, owing to close proximity of the key shaft (Ks) to (or abutment against) the inner (e.g. semi-circular) sidewall of said aperture. Thus again, the frame is less likely to wobble during lifting, which confers a safety advantage. A bridge member may connect the roof portion to the sidewall. The key-engaging member(s) may further comprise a sloping portion that extend downwardly from the outer end of each spaced-apart member and adjoin said flange portion.

[0010] Preferably, the flange portion is generally flat/planar and extends underneath said spaced-apart members.

[0011] The flange portion may not extend underneath said pair of key engaging members and the space therebetween.

[0012] Preferably, the key-engaging member is configured to allow engagement of a lifting key (K) by firstly sideways movement of the shaft of said key (K) to a position between said spaced-apart members followed by upward and non-rotational movement of said key (K) towards said underside recesses.

[0013] In a second aspect the invention comprises a ground surface access assembly frame surrounding and defining an aperture, with sidewalls that extend downwardly to connect to an outwardly extending flange por-

tion: said frame comprising at least one key-engaging member that extends externally/outwardly from said frame, and further comprises a pair of spaced-apart members that in use are engaged by a lifting key (K) having a shaft (Ks) by firstly sideways movement of the shaft (Ks) to a position between said spaced-apart members followed by upward movement of said key (K) towards said spaced-apart members.

[0014] In another aspect the invention comprises a method of lifting a ground surface access assembly frame according to any preceding claim, during initial installation or replacement; wherein said frame has at least two key-engaging members located on opposite sides of said frame; using a pair of keys (K1, K2), each comprising a main shaft (Ks) and at least one radially extending side-arm (Kb), that in use engage said key engaging members; comprising the following steps:

(a) Engaging said lifting keys (K1, K2) within each key-engagement members by: firstly sideways movement of the main shaft (Ks) of said key (K1/2) to a position between said spaced-apart members; followed by upward movement of said keys (K1/2) towards said underside recesses; and

(b) Lifting or lowering frame into desired bedding position using said pair of engaged keys (K1, K2) and either by hand or using approved lifting gear. Preferably, in the above step (a) comprises: engaging said lifting keys (K1, K2) within each key-engagement members by firstly sideways none-rotational movement and then secondly movement of said keys (K1, K2), both movements being relative to said frame.

[0015] The ground surface access assembly frame surrounds and defines an aperture, with sidewalls that extend downwardly to connect to an outwardly extending flange portion: said frame comprising at least one key-engaging member that extends externally from said frame, and further comprises a pair of spaced-apart members, located in a raised position relative to the general level of said flange portion; each of said spaced apart members having an underside slot configured to allow engagement of a lifting key (K) by firstly sideways movement of the shaft of said key (K) to a position between said spaced-apart members followed by upward movement of said key (K) towards said underside slots.

[0016] Preferably, the ground surface access assembly frame key-engaging member comprises a roof portion that has an aperture defining a keyhole and is located in a raised position relative to said flange portion. The key-engaging member may further comprise a downwardly extending portion that extends from an outer end of said roof portion. The underside surface of said roof portion may be arcuate or semi-circular in cross section.

[0017] Preferably, the ground surface access assembly frame key engaging member comprises a pair of

spaced-apart key-engaging slots that are located side-by-side. Optionally, a pair of spaced-apart key-engaging slots share a single roof portion. The shared single roof portion may contain a generally "U-Shaped" aperture that allows access for the shaft (Ks) of a lifting key (K).

[0018] Preferably, said key-engaging member extends upwardly from said flange portion. Optionally, said key-engaging member extends outwardly from said frame sidewall. Optionally, said key-engaging member extends upwardly from said flange portion and outwardly from a said sidewall.

[0019] Optionally, the frame flange portion is generally flat/planar and extends underneath said pair of key engaging slots and the space there-between. Optionally, the ground surface access assembly frame (10) may further comprise a flange portion that is generally flat/planar but does not extend underneath said key-engaging slot(s).

[0020] In another aspect the invention comprises a ground surface access assembly frame surrounding and defining an aperture; said frame comprising sidewalls that extend downwardly to connect to an outwardly extending flange portion: and further comprising a key-engaging member that extends externally from said frame: configured to allow engagement of a lifting key (K) by firstly sideways none-rotational movement and then secondly upward movement of said key (K), both movements being relative to said frame.

[0021] In another aspect the invention comprises a ground surface access assembly frame surrounding and defining an aperture; said frame comprising sidewalls that extend downwardly to connect to an outwardly extending flange portion; and further comprising at least one key-engaging member that extends externally from said frame: configured to allow engagement of a lifting key by firstly sideways movement and then secondly upward movement of said key (K), both movements being relative to said assembly frame.

[0022] In another aspect the invention comprises a method of lifting a ground surface access assembly frame according to present invention, during initial installation or replacement; wherein said frame has at least two key-engaging members located on opposite sides of said frame; using a pair of keys (K1, K2), comprising a main shaft with at least one radially extending side-arm, that in use engages said key engaging members; and comprising the following steps:

(a) Engaging said lifting keys (K1, K2) within each key-engagement member by firstly sideways none-rotational movement and then secondly upward movement of said keys (K1, K2), both movements being relative to said frame;

(b) Lifting or lowering frame into desired bedding position using said pair of engaged keys (K1, K2), either by hand or using approved lifting gear.

Brief Description of Drawings

[0023] The present invention is illustrated by the following diagrammatic figures in which:

Figure 1 shows a perspective view of a ground surface access assembly frame according to a first embodiment of the invention;

Figure 2 shows an enlarged perspective view of one key engaging member;

Figures 3a and 3b show a lifting key about to be inserted into the key-engaging member and engaged therein, respectively;

Figure 4 shows a perspective view of a ground surface access assembly frame according to a second embodiment of the invention, with a pair of keys engaged within two key-engaging members located on opposite sides of the frame, prior to lifting;

Figure 5 shows an enlarged perspective view of one key-engaging member for this second embodiment of the invention;

Figures 6a and 6b show a lifting key about to be inserted into the key-engaging member and engaged therein respectively, for this second embodiment of the invention;

Figure 7 shows a variant of the second embodiment illustrated in Figures 4-6; and

Figure 8 illustrates a side sectioned-view of a key-engagement member comprising a roof portion that is attached to a sidewall of the frame.

Detailed Description

[0024] The expressions slots/recesses (18) were used in the wording of the claims as originally filed. Therefore, in the following detail description, slot may have also the meaning of recess.

[0025] Figure 1 shows a perspective view illustration of a ground surface access assembly frame (10) according to a first embodiment of the invention. The frame (10) surrounds and defines an aperture and comprises four sidewall portions (12) that extend downwardly; three of these sidewall portions (12) being connected via curved intermediate portions (12a) to three outwardly extending and generally planar flange portions that together form a flange (14).

[0026] The flange (14) further comprises a member(s) configured to allow engagement of a lifting key; thus a key-engaging member (16) extends upwardly the upper surface of at least one of said three flange portions.

[0027] Figure 2 shows an enlarged perspective view

of the key-engaging member (16) illustrated in Figure 1, that provides a pair of spaced-apart key-engaging slots (18) defined by a pair of side-by-side, spaced-apart roof members (20) a pair of inclined/sloping portions (22) and a pair of rear sidewall portions (24). These two spaced-apart slots are (left and right hand) mirror images of one-another. The pair of inclined/sloping sidewall portions (22) extend downwardly from said spaced-apart members (20) and away from each other at an acute angle (in this illustration at ca. 45°) to the flange portion (14). Each key-engaging slot (18) is defined by a rear sidewall portion (24) that extends upwardly from the flange portion (14), preferably in a vertical direction; again leading to and being integrally formed with said spaced-apart member (20). The illustration shows the normal, generally planar, underside of the flange portion (14) being interrupted by the key-engaging member (16). As the flange portion (14) is preferably made by casting ferrous material, this openbottom arrangement of the key-engaging member facilitates the casting process. However, this is optional and so the frame member may be uninterrupted (as described below in the second embodiment). Alternatively, the sidewall portions (22) may extent upwardly in a generally vertical direction. While the pair of key-engaging slots (18) are preferably formed by two/three generally perpendicular walls (20, 22, 24), these slots may comprise a continuous curved face, when using a lifting key that has a pair of (outwardly extending) blades of circular cross section.

[0028] Figures 3a and 3b show how a lifting key normally engages the key-engaging member (16) comprising a pair of spaced-apart members (20a, 20b). Figure 3a shows the blade (Kb) attached to the shaft (Ks) of a lifting key (K); where the shaft (Ks) is positioned near to and in front of an entry gap (G) located between the spaced-apart members (20a, 20b), such that the shaft (Ks) can be moved in a direction generally perpendicular to the rim of the flange portion (14), until it is located within the entry gap (G); the shaft (Ks) and attached blade (Kb) are then vertically lifted so that the two upper side faces of the key blade (Kb) engage the recesses (18) that extend downwardly from the underside face of the spaced-apart members (20a, 20b). Thus, the required engagement is achieved simply by: firstly sideways movement (towards the frame sidewall (12); and then secondly upward (vertical) movement of the key shaft (Ks) and blade (Kb); both movements being relative to the frame (10). Advantageously, the more complex movement (where a key is first aligned with a key-hole, then inserted, and then rotated to engage), normally required by such a key, is avoided. Further, in use the key-engaging member is less likely to become blocked with debris than a conventional keyhole, as the side entry arrangement is less susceptible such blockage, and can in any event be unblocked more easily.

[0029] Figures 4 to 6 illustrate a second embodiment of the present invention again using a pair of spaced-apart key-engaging slots (118) but in this case sharing a

common roof portion (120) and having an uninterrupted flange portion (114a) underneath.

[0030] Figure 4 shows a perspective view illustration of a ground surface access assembly frame (10) according to this second embodiment of the invention. The frame (110) surrounds and defines an aperture and comprises four sidewall portions (112) that extend downwardly; three of these sidewall portions (112) being connected to three outwardly extending flange portions are that together form a flange (114). The flange (114) further comprises two members configured to allow engagement of a pair of lifting keys (K1 and K2); these key-engaging member (116) again being located on the upper surface of opposite (opposing) flange portions. The figure shows the pair of lifting keys engaged such that the frame can be moved either manually; or more preferably using approved lifting gear (not shown).

[0031] Figure 5 shows an enlarged perspective view of the key-engaging member (116) illustrated in Figure 4, that provides a pair of spaced-apart key-engaging slots (118) defined by a single of roof portion (120) a pair of sidewall portions (122) and a single rear-wall portion (124). These two spaced-apart slots are (left and right hand) mirror images of one-another. The pair of sidewall portions (122) extend generally vertically upwards from the upper surface of a flange portion (114) and lead to the single roof portion (120). Each key-engaging slot (118) is further defined by a single rear-wall portion (124) that extends upwardly from the frame flange (114), preferably in a vertical direction; again leading to and being integrally formed with said single roof portion (120). This single roof portion (120) has a U-Shaped aperture provided to allow access of a lifting key shaft (Ks) and also to form two separate (spaced apart) engagement slots (118). Also, the two sidewalls portions (122) and the single rear-wall portion have are generally U-Shaped cross-section, when viewed from above.

[0032] Figure 5 also shows the normal, generally planar, underside of the flange (114) being uninterrupted by the key-engaging member (116). This configuration of the key-engaging member facilitates/assists secure bedding of the frame upon its support surface. However, this is optional and so the frame member may be interrupted (as described above in the first embodiment). While each of the spaced-apart key-engaging slots (118) are formed by two/three generally perpendicular walls (120, 122, 124), these slots may comprise a continuous curved face - when using a lifting key that has a pair of (outwardly extending) blades (Kb) of circular cross section.

[0033] Figures 6a and 6b show how a lifting key can engage a key-engaging member (116). The two spaced-apart members (120a, 120b) are connected by an intermediate roof member (120c) to form roof portion (120) presenting a generally "U-Shaped" aperture that allows sideways access the lifting key shaft (Ks). Figure 6a shows the blade (Kb) attached to the shaft (Ks) of a lifting key (K); where the shaft (Ks) is positioned near to and in front of an entry gap (G) located between the spaced-

apart members (120a, 120b), such that the shaft (Ks) can be moved in a direction generally perpendicular to the rim of the flange portion (14), until it is located within the entry gap (G); the shaft (Ks) and attached blade (Kb) are then vertically lifted so that the two upper side faces of the key blade (Kb) engage the recesses (118) that extend downwardly from the underside face of the spaced-apart members (120a, 120b). Thus, the required engagement is achieved simply by: firstly sideways movement (towards the frame sidewall (112); and then secondly upward (vertical) movement of the key shaft (Ks) and blade (Kb); both movements being relative to the frame (10). Advantageously, the more complex movement (where a key is inserted in a key-hole, and then rotated to engage), normally required by such a key, is avoided. Further, in use the key-engaging member is less likely to become blocked with debris than a conventional keyhole, as the side entry arrangement is less susceptible such blockage, and can in any event be cleaned more easily.

[0034] Figure 7 illustrates a variant of the second embodiment where a bridge member (128) connecting the roof portion (120) to the sidewall (112) is provided.

[0035] Figure 8 illustrates the key-engagement member (216) and part of the sidewall (212) and flange (214) for a further embodiment where the key-engagement member (216) comprises a pair (only one shown) of spaced-apart members (220) extending outwardly from a frame sidewall (212) the engagement slots (218) in the underside of the spaced-apart members (220) being semi-circular or arcuate in cross-section, this being particularly suitable when the blade (Kb) of the lifting key (K) is circular in cross-section. Alternatively, the engagement-slots (218) may be defined by a sidewall, the roof member (220) and a portion that extends downwardly from an outer end of this roof portion (220), as described in the earlier embodiments.

Claims

1. A ground surface access assembly frame (10), for use with a lifting key (K), said frame (10) surrounding and defining an aperture, with sidewalls (12) that extend downwardly to connect to an outwardly extending flange portion (14): said frame (10) comprising at least one key-engaging member (16) that extends upwardly from said flange portion (14), and further comprises a pair of spaced-apart members (20), located in a raised position relative to the general level of said flange portion (14); and a recess (18) located on the underside of each spaced-apart member (20), characterised: in that the spaced-apart members are configured to allow engagement of a lifting key (K) having a shaft (Ks), and attached blade (Kb); by firstly sideways movement of the shaft (Ks) near to and in front of an entry gap (G) located between the spaced-apart members (20a, 20b), followed by up-

ward movement of said key (K) towards said underside recesses (18) so that the two upper side faces of the key blade (Kb) engage the recesses (18) that extend downwardly from the underside face of the spaced-apart members (20a, 20b).

2. A ground surface access assembly frame (10) according to Claim 1 where said key-engaging member(s) (16) extends/extend outwardly from a said frame sidewall (12). 5
3. A ground surface access assembly frame (10) according to Claim 1 where said key-engaging members extend upwardly from said flange portion (14) and outwardly from a said sidewall (12). 10
4. A ground surface access assembly frame (10) according to any preceding claim where said underside recesses (18) comprise a planar/flat upper face and at least one perpendicularly extending flat/planar side face. 15
5. A ground surface access assembly frame (10) according to any preceding claim where said underside recesses (18) are arcuate or semi-circular in cross section. 20
6. A ground surface access assembly frame (10) according to any preceding claim where said spaced-apart members are connected by an intermediate roof member (120c) resulting in a roof portion (120) that presents a generally "U-Shaped" aperture, that allows sideways access the lifting key shaft (Ks). 25
7. A ground surface access assembly frame (10) according to any preceding claim where said key-engaging member(s) (16) further comprises sloping portions (22) that extend downwardly from the outer end of each spaced-apart member (20) and adjoin said flange portion (14). 30
8. A ground surface access assembly frame (10) according to any preceding claim wherein the flange portion (14) is generally flat/planar and extends underneath said spaced-apart members (20). 35
9. A ground surface access assembly frame (10) according to any of Claims 1 to 7 wherein the flange portion (14) does not extend underneath said pair of key engaging members (16) and the space therebetween. 40
10. A ground surface access assembly frame (10) according to Claim 6 comprising a bridge member (128) connecting the roof portion (120) to the sidewall (112). 45
11. A ground surface access assembly frame (10) ac-

cording to any preceding claim wherein said key-engaging member (16) is configured to allow engagement of a lifting key (K) by firstly sideways movement of the shaft of said key (K) to a position between said spaced-apart members (20) followed by upward and non-rotational movement of said key (K) towards said underside recesses (18).

12. A method of lifting a ground surface access assembly frame (10) according to any preceding claim, during initial installation or replacement; wherein said frame (10) has at least two key-engaging members (16) located on opposite sides of said frame (10); using a pair of keys (K1, K2), each comprising a main shaft (Ks) and at least one radially extending side-arm (Kb), that in use engage said key engaging members (16); comprising the following steps:

- (a) Engaging said lifting keys (K1, K2) within each key-engagement members (16a, 16b) by: firstly sideways movement of the main shaft (Ks) of said key (K1/2) to a position between said spaced-apart members (20); followed by upward movement of said keys (K1/2) towards said underside recesses (18); and
- (b) Lifting or lowering frame into desired bedding position using said pair of engaged keys (K1, K2) and either by hand or using approved lifting gear.

13. A method of lifting a ground surface access assembly frame (10) according to claim 12 where step (a) comprises: engaging said lifting keys (K1, K2) within each key-engagement members (16a, 16b) by firstly sideways none-rotational movement and then secondly movement of said keys (K1, K2), both movements being relative to said frame (10).

Patentansprüche

1. Bodenoberflächen-Zugangsanordnungsrahmen (10) zur Verwendung mit einem Hebeschlüssel (K), wobei der genannte Rahmen (10) eine Öffnung umgibt und definiert, mit Seitenwänden (12), die sich nach unten erstrecken, um sich mit einem sich nach außen erstreckenden Flanschabschnitt (14) zu verbinden: wobei der genannte Rahmen (10) mindestens ein Schlüsseleingriffselement (16) umfasst, das sich von dem genannten Flanschabschnitt (14) nach oben erstreckt, und ferner ein Paar voneinander beabstandeter Elemente (20), die sich in einer erhöhten Position relativ zur allgemeinen Ebene des genannten Flanschabschnitts (14) befinden; und eine Aussparung (18), die sich an der Unterseite jedes beabstandeten Elements (20) befindet, umfasst, **dadurch gekennzeichnet: dass** die beabstandeten Elemente dafür konfiguriert sind, den Eingriff eines

- Hebeschlüssels (K) mit einem Schaft (Ks) und einem daran befestigten Schenkel (Kb) zu ermöglichen: zunächst durch eine seitliche Bewegung des Schafts (Ks) in der Nähe und vor einem Eintrittsspalt (G), der sich zwischen den beabstandeten Elementen (20a, 20b) befindet, gefolgt von einer Aufwärtsbewegung des genannten Schlüssels (K) in Richtung der genannten unterseitigen Aussparungen (18), so dass die beiden oberen Seitenflächen des Schlüsselschenkel (Kb) in die Aussparungen (18) eingreifen, die sich von der Unterseite der beabstandeten Elemente (20a, 20b) nach unten erstrecken.
2. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach Anspruch 1, wobei sich das/die genannte(n) Schlüsseleingriffselement(e) (16) von der genannten Rahmenseitenwand (12) aus nach außen erstreckt/erstrecken.
 3. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach Anspruch 1, wobei sich die genannten Schlüsseleingriffselemente von dem genannten Abschnitt (14) des Flansches nach oben und von der genannten Seitenwand (12) nach außen erstrecken.
 4. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach einem der vorhergehenden Ansprüche, wobei die genannten Unterseitenaussparungen (18) eine ebene/flache Oberseite und mindestens eine senkrecht verlaufende ebene/flache Seitenfläche umfassen.
 5. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach einem der vorhergehenden Ansprüche, bei dem die genannten unterseitigen Aussparungen (18) im Querschnitt bogenförmig oder halbkreisförmig sind.
 6. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach einem der vorhergehenden Ansprüche, wobei die genannten voneinander beabstandeten Teile durch ein Zwischendachelement (120c) verbunden sind, so dass ein Dachabschnitt (120) entsteht, der eine allgemein "U-förmige" Öffnung aufweist, die den seitlichen Zugang dem Hebeschlüsselschaft (Ks) ermöglicht.
 7. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach einem der vorhergehenden Ansprüche, wobei das/die genannte(n) Schlüsseleingriffselement(e) (16) außerdem schräge Abschnitte (22) umfasst/umfassen, die sich vom äußeren Ende jedes beabstandeten Elements (20) nach unten erstrecken und an den genannten Flanschabschnitt (14) angrenzen.
 8. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach einem der vorhergehenden Ansprüche,
- wobei der Abschnitt (14) des Flansches im allgemeinen flach/planar ist und sich unterhalb der genannten beabstandeten Elemente (20) erstreckt.
9. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach einem der Ansprüche 1 bis 7, wobei sich der Abschnitt (14) nicht unterhalb des genannten Paares von Schlüsseleingriffselementen (16) und des Zwischenraums dazwischen erstreckt.
 10. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach Anspruch 6, der ein Brückenelement (128) umfasst, das den Abschnitt des Daches (120) mit der Seitenwand (112) verbindet.
 11. Bodenoberflächen-Zugangsanordnungsrahmen (10) nach einem der vorhergehenden Ansprüche, wobei das genannte Schlüsseleingriffselement (16) dafür konfiguriert ist, den Eingriff eines Hebeschlüssels (K) zu ermöglichen, indem zunächst der Schaft des genannten Schlüssels (K) seitlich in eine Position zwischen den genannten beabstandeten Elementen (20) bewegt wird, gefolgt von einer nach oben gerichteten, nicht drehenden Bewegung des genannten Schlüssels (K) in Richtung der genannten unterseitigen Aussparungen (18).
 12. Verfahren zum Anheben eines Bodenoberflächen-Zugangsanordnungsrahmens (10) nach einem der vorhergehenden Ansprüche bei der Erstinstallation oder beim Austausch; wobei der genannte Rahmen (10) mindestens zwei Schlüsseleingriffselemente (16) aufweist, die auf gegenüberliegenden Seiten des genannten Rahmens (10) angeordnet sind; unter Verwendung eines Paares von Schlüsseln (K1, K2), die jeweils einen Hauptschaft (Ks) und mindestens einen sich radial erstreckenden Seitenarm (Kb) umfassen, die im Gebrauch in die genannten Schlüsseleingriffselemente (16) eingreifen; umfassend die folgenden Schritte:
 - (a) Ineinandergreifen der genannten Hebeschlüssel (K1, K2) in jedem Schlüsseleingriffselement (16a, 16b) durch: zunächst eine Seitwärtsbewegung des Hauptschafts (Ks) des genannten Schlüssels (K1 /2) in eine Position zwischen den genannten beabstandeten Elementen (20); gefolgt von einer Aufwärtsbewegung der genannten Schlüssel (K1 /2) in Richtung der genannten unterseitigen Aussparungen (18); und
 - (b) Anheben oder Absenken des Rahmens in die gewünschte Bettungsposition mit Hilfe des genannten Paares von ineinandergreifenden Schlüsseln (K1, K2) und entweder von Hand oder mit Hilfe von zugelassenem Hebezeug.
 13. Verfahren zum Anheben eines Bodenoberflächen-

Zugangsanordnungsrahmens (10) nach Anspruch 12, wobei Schritt (a) Folgendes umfasst: in Eingriff bringen der genannten Hebeschlüssel (K1, K2) in jedes Schlüsseleingriffselement (16a, 16b) durch eine erste seitliche, nicht drehende Bewegung und dann eine zweite Bewegung der genannten Schlüssel (K1, K2), wobei beide Bewegungen relativ zu dem genannten Rahmen (10) erfolgen.

Revendications

1. Cadre d'ensemble d'accès à la surface du sol (10), pour une utilisation avec une clé de levage (K), ledit cadre (10) entourant et définissant une ouverture, avec des parois latérales (12) qui s'étendent vers le bas pour un raccordement à une portion bride s'étendant vers l'extérieur (14) : ledit cadre (10) comprenant au moins un élément de mise en prise par clé (16) qui s'étend vers le haut à partir de ladite portion bride (14), et comprend en outre une paire d'éléments espacés l'un de l'autre (20), situés dans une position surélevée relativement au niveau général de ladite portion bride (14) ; et un évidement (18) situé sur le côté inférieur de chaque élément espacé de l'autre (20), **caractérisé : en ce que** les éléments espacés les uns des autres sont configurés de façon à permettre la mise en prise d'une clé de levage (K) ayant un manche (Ks), et une lame attachée (Kb) ; en effectuant d'abord un mouvement latéral du manche (Ks) près de et devant un intervalle d'introduction (G) situé entre les éléments espacés les uns des autres (20a, 20b), suivi d'un mouvement vers le haut de ladite clé (K) vers lesdits évidements de côté inférieur (18) de sorte que les deux faces latérales supérieures de la lame de clé (Kb) se mettent en prise avec les évidements (18) qui s'étendent vers le bas à partir de la face de côté inférieur des éléments espacés les uns des autres (20a, 20b).
2. Cadre d'ensemble d'accès à la surface du sol (10) selon la revendication 1 où ledit/lesdits élément/s de mise en prise par clé (16) s'étend/s'étendent vers l'extérieur à partir de ladite une paroi latérale de cadre (12).
3. Cadre d'ensemble d'accès à la surface du sol (10) selon la revendication 1 où lesdits éléments de mise en prise par clé s'étendent vers le haut à partir de ladite portion bride (14) et vers l'extérieur à partir de ladite une paroi latérale (12).
4. Cadre d'ensemble d'accès à la surface du sol (10) selon n'importe quelle revendication précédente où lesdits évidements de côté inférieur (18) comprennent une surface supérieure plane/plate et au moins une face latérale plate/plane qui s'étend perpendiculairement.
5. Cadre d'ensemble d'accès à la surface du sol (10) selon n'importe quelle revendication précédente où lesdits évidements de côté inférieur (18) ont une coupe transversale incurvée ou semi-circulaire.
6. Cadre d'ensemble d'accès à la surface du sol (10) selon n'importe quelle revendication précédente où lesdits éléments espacés les uns des autres sont raccordés par un élément toit intermédiaire (120c) résultant en une portion toit (120) qui présente une ouverture en forme d'U de manière générale, qui permet un accès latéral le manche de clé de levage (Ks).
7. Cadre d'ensemble d'accès à la surface du sol (10) selon n'importe quelle revendication précédente où ledit/lesdits élément/s de mise en prise par clé (16) comprend/comprennent en outre des portions inclinées (22) qui s'étendent vers le bas à partir de l'extrémité externe de chaque élément espacé de l'autre (20) et jouxtent ladite portion bride (14).
8. Cadre d'ensemble d'accès à la surface du sol (10) selon n'importe quelle revendication précédente dans lequel la portion bride (14) est plate/plane de manière générale et s'étend en dessous desdits éléments espacés les uns des autres (20).
9. Cadre d'ensemble d'accès à la surface du sol (10) selon n'importe lesquelles des revendications 1 à 7 dans lequel la portion bride (14) ne s'étend pas en dessous de ladite paire d'éléments de mise en prise par clé (16) et l'espace entre eux.
10. Cadre d'ensemble d'accès à la surface du sol (10) selon la revendication 6 comprenant un élément de pontage (128) qui raccorde la portion toit (120) à la paroi latérale (112).
11. Cadre d'ensemble d'accès à la surface du sol (10) selon n'importe quelle revendication précédente dans lequel ledit élément de mise en prise par clé (16) est configuré de façon à permettre la mise en prise d'une clé de levage (K) en effectuant d'abord un mouvement latéral du manche de ladite clé (K) jusqu'à une position entre lesdits éléments espacés les uns des autres (20) suivi d'un mouvement vers le haut et non rotationnel de ladite clé (K) vers lesdits évidements de côté inférieur (18).
12. Procédé pour lever un cadre d'ensemble d'accès à la surface du sol (10) selon n'importe quelle revendication précédente, durant une installation initiale ou un remplacement ; dans lequel ledit cadre (10) a au moins deux éléments de mise en prise par clé (16) situés sur des côtés opposés dudit cadre (10) ; utiliser une paire de clés (K1, K2), chacune comprenant un manche principal (Ks) et au moins un bras latéral s'étendant radialement (Kb), qui en utilisation

se met en prise avec lesdits éléments de mise en prise par clé (16) ; comprenant les étapes suivantes :

- (a) le fait de mettre en prise lesdites clés de levage (K1, K2) dans chaque élément de mise en prise par clé (16a, 16b) en : effectuant d'abord un mouvement latéral du manche principal (Ks) de ladite clé (K1/2) jusqu'à une position entre lesdits éléments espacés les uns des autres (20) ; suivi d'un mouvement vers le haut desdites clés (K1/2) vers lesdits évidements de côté inférieur (18) ; et
- (b) le fait de lever ou d'abaisser le cadre dans la position d'assise désirée grâce à l'utilisation de ladite paire de clés mises en prise (K1, K2) et soit manuellement, soit en utilisant un appareillage de levage approuvé.

13. Procédé pour lever un cadre d'ensemble d'accès à la surface du sol (10) selon la revendication 12 où l'étape (a) comprend : le fait de mettre en prise lesdites clés de levage (K1, K2) dans chaque élément de mise en prise par clé (16a, 16b) en effectuant d'abord un mouvement non rotationnel latéral et ensuite un mouvement desdites clés (K1, K2), les deux mouvements se faisant relativement audit cadre (10).

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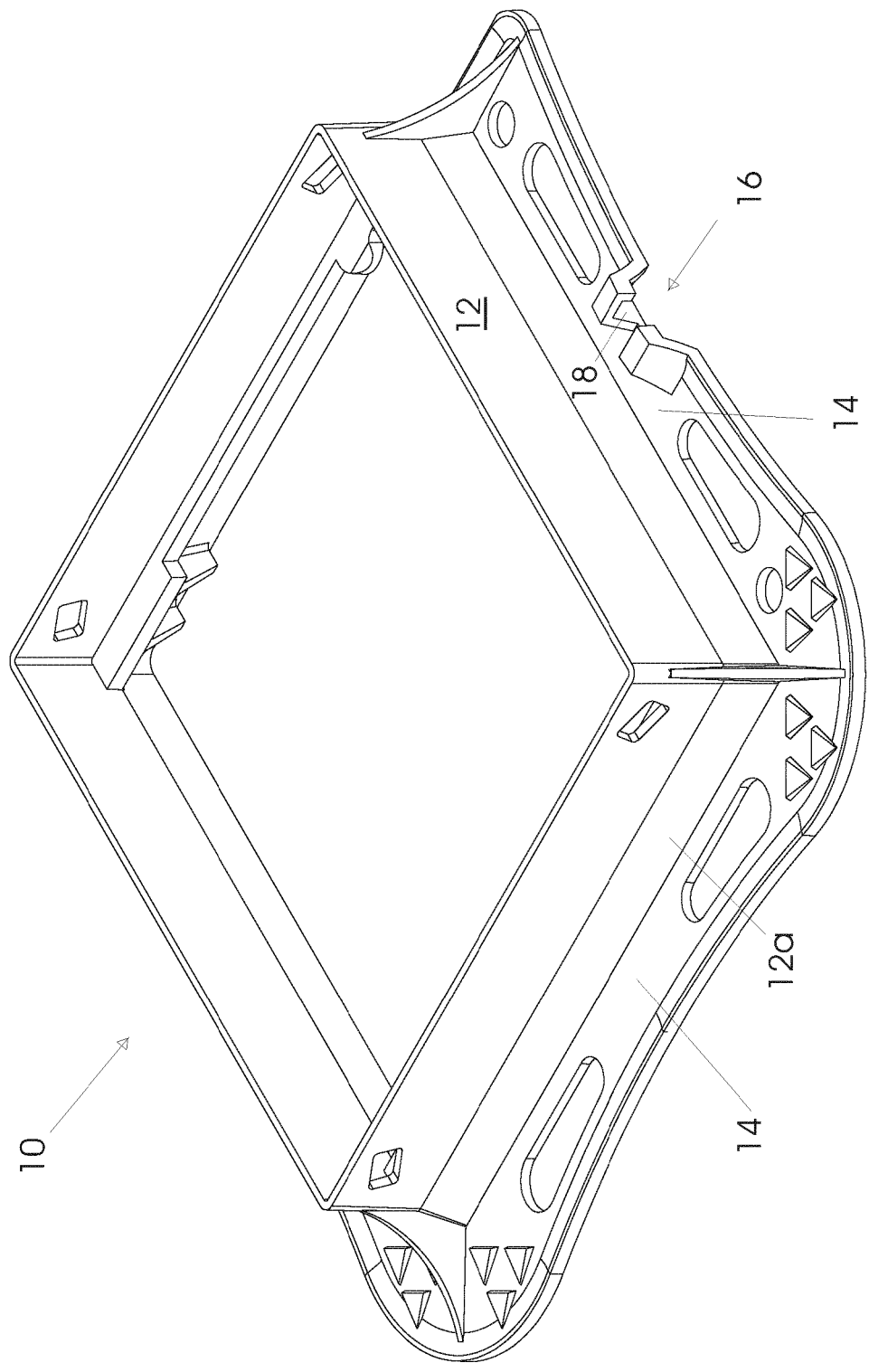


Figure 1

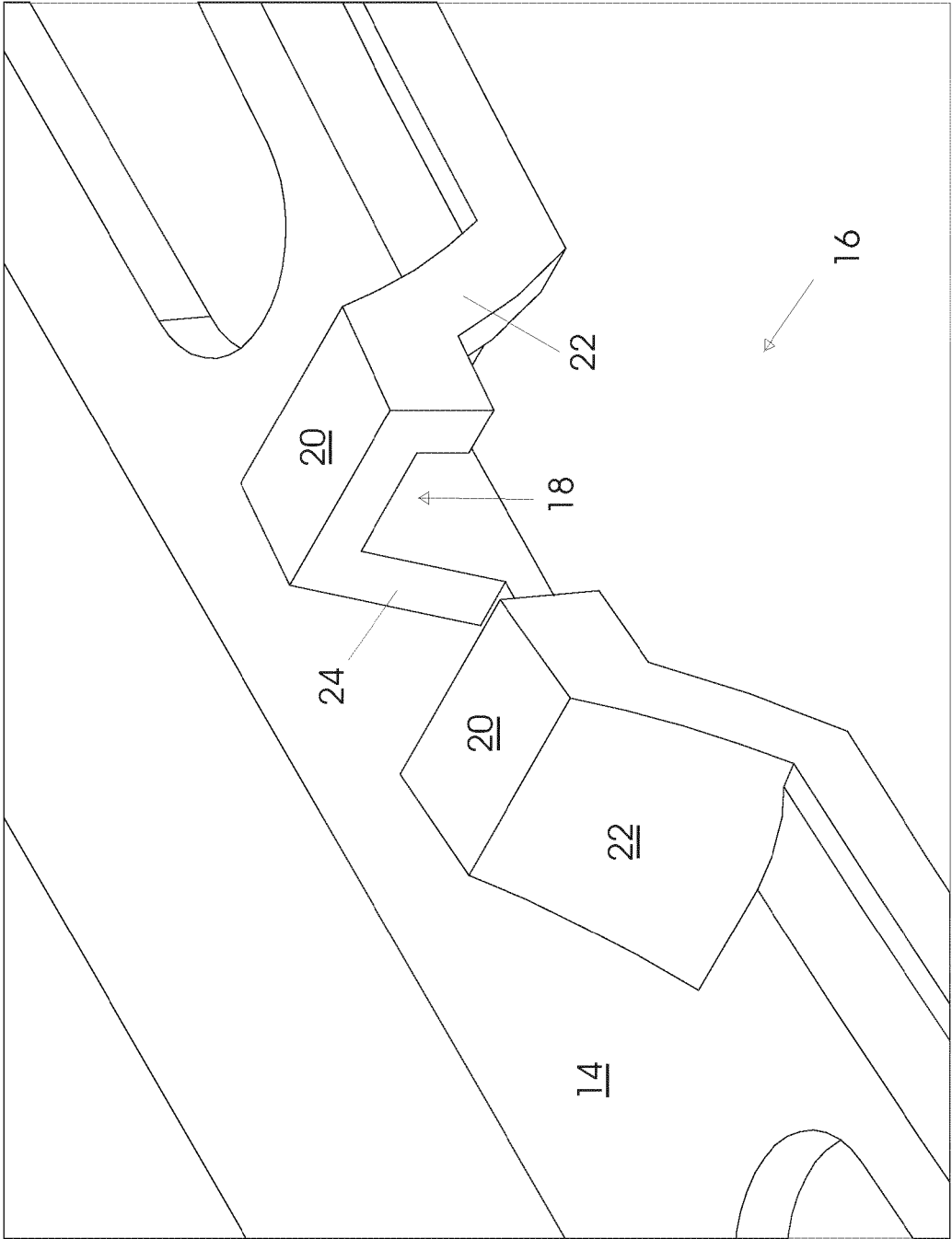


Figure 2

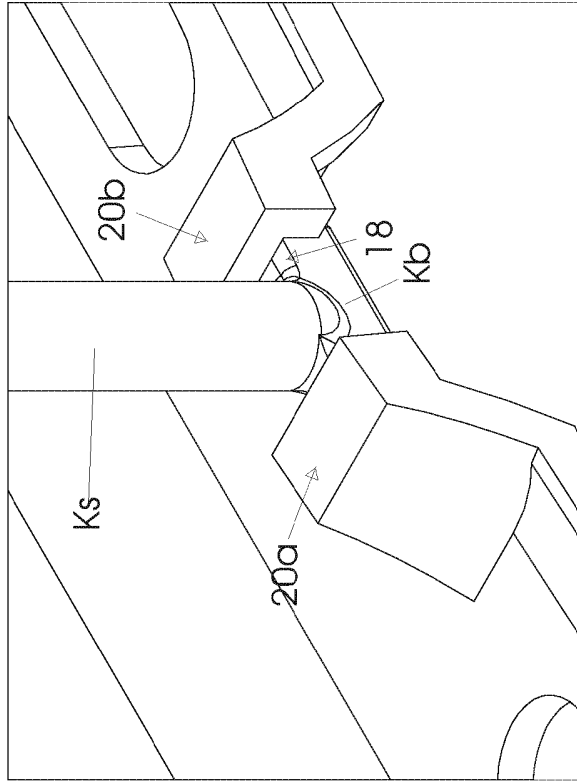


Figure 3b

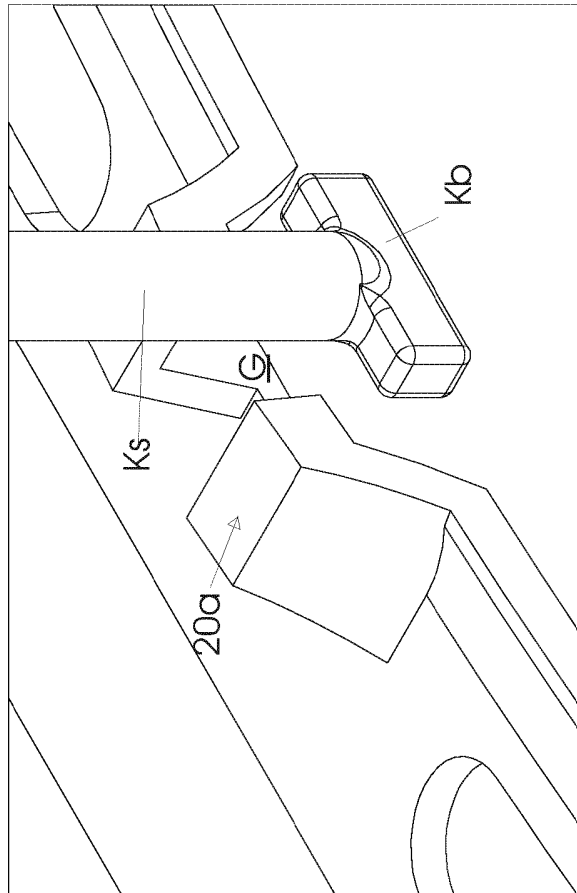


Figure 3a

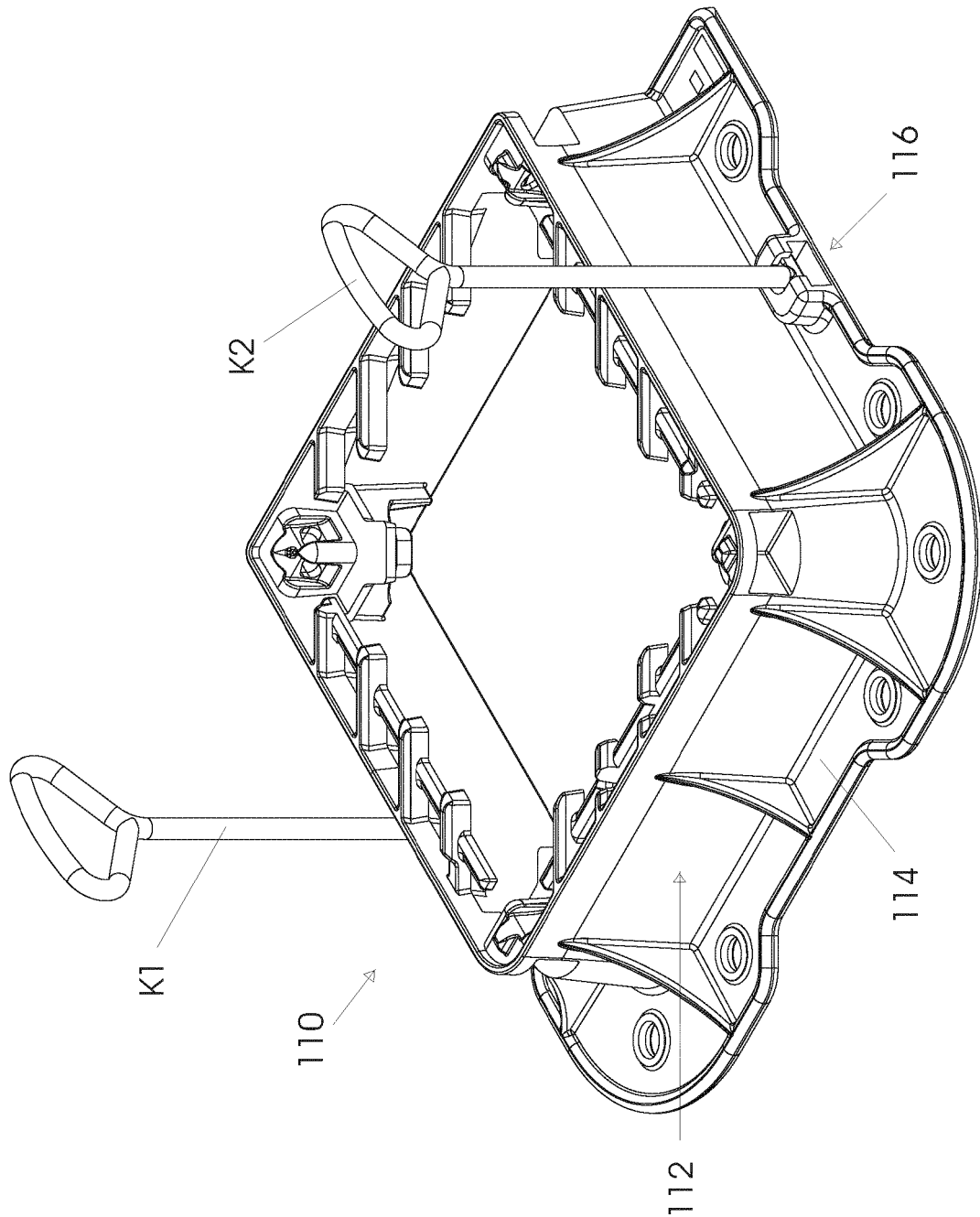


Figure 4

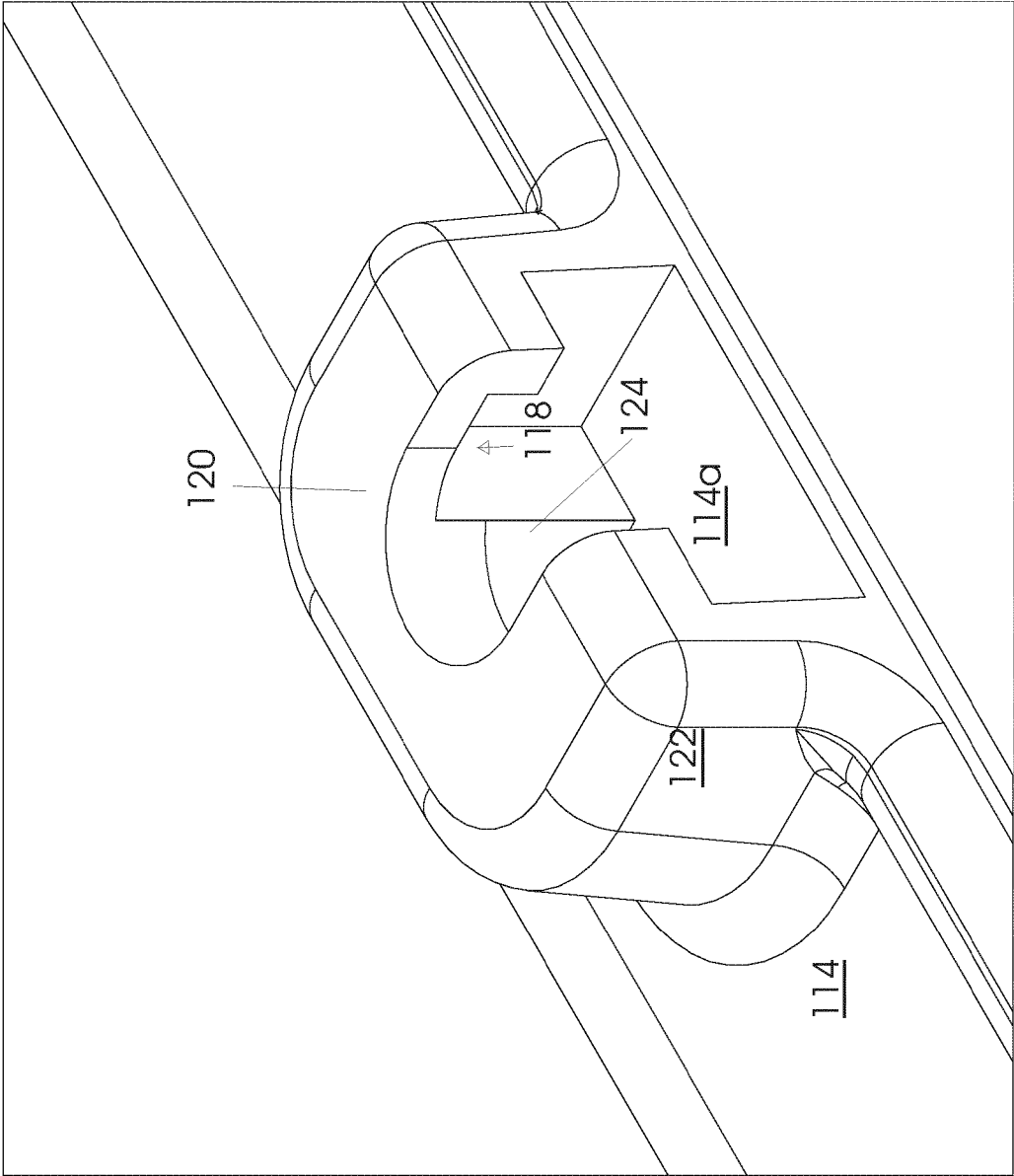


Figure 5

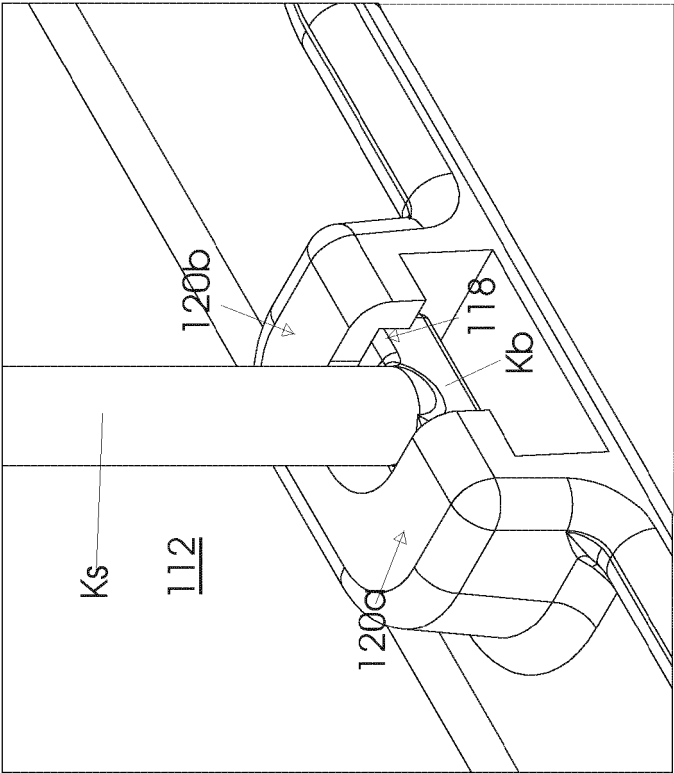


Figure 6b

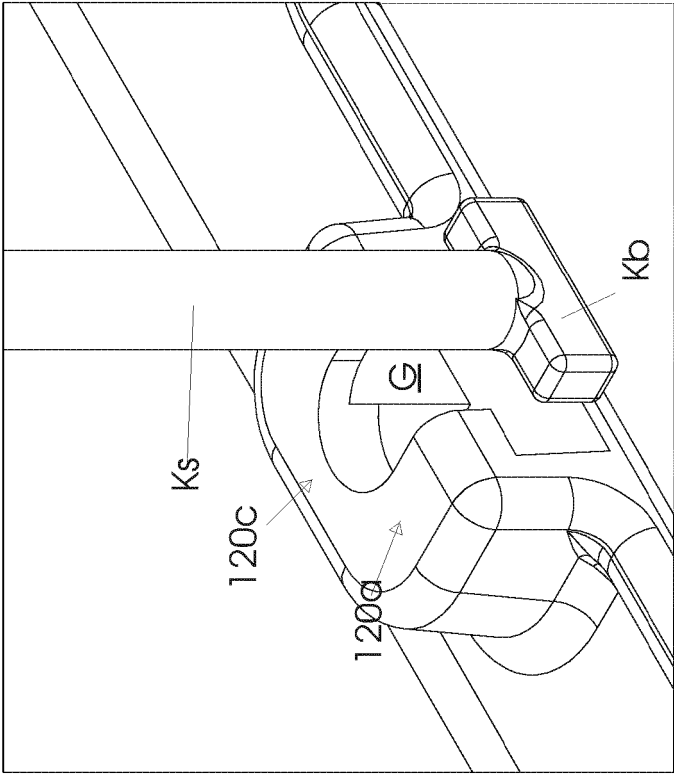


Figure 6a

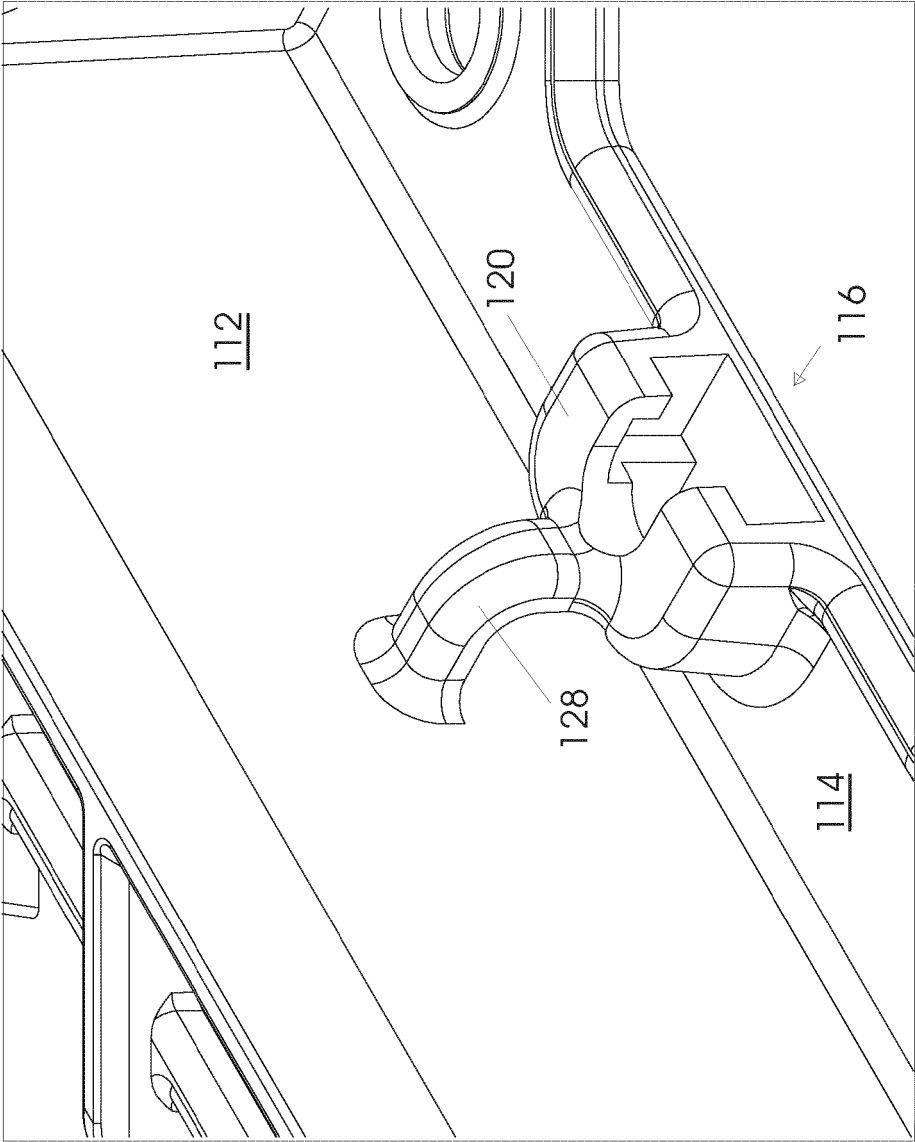


Figure 7

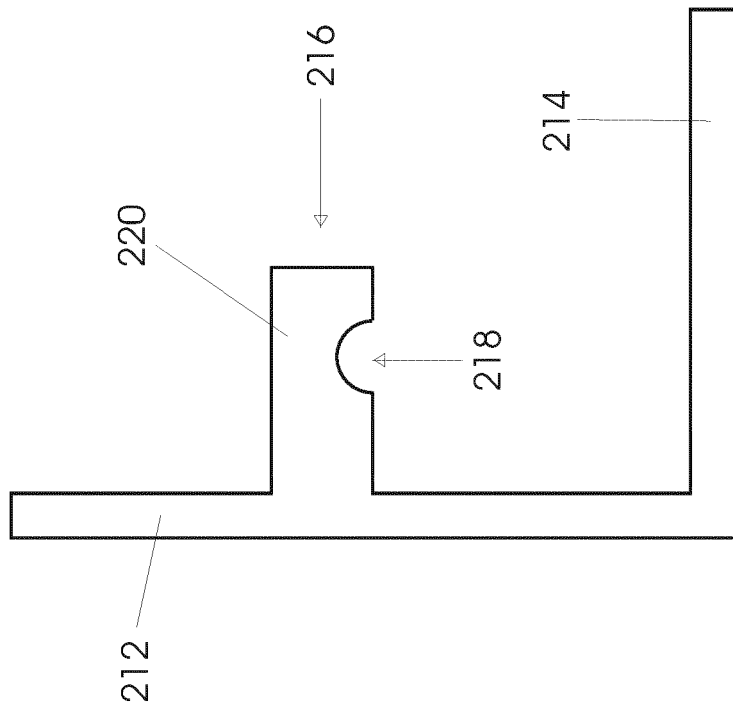


Figure 8

REFERENCES CITED IN THE DESCRIPTION

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