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(54) Access covers

(57) A load-bearing cover (C) for an access hole comprises a plurality of plates (1) joined in side-by-side relation, each plate (1) comprises a generally planar body, each plate (1) having at one side a tongue extension in the form of a depending post (3) from a side of which extends a generally horizontal ledge (4) below and parallel to the plate body (1), the plate (1) having at the opposite side an extension (5) projecting beyond the plate (1), the extension (5) depending from the plate (1) and having a groove portion (S1) shaped and dimensioned to receive and engage the tongue (4) of the neighbouring plate (1).

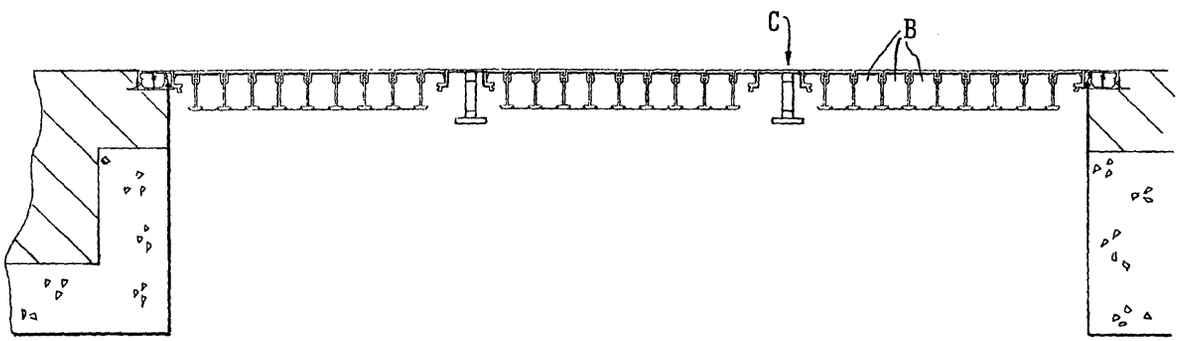

FIG. 1

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Description

[0001] The invention relates to access covers, in particular, to covers which are able to bear loads or which are load bearing.

[0002] An access cover comprises a main body of metal in a frame which is secured to the edge of a hole in a substrate. The hole may contain utility equipment or air conditioning equipment or the like. Often, such an access hole is in a pedestrian or vehicle pathway and there is a need to provide a cover which can withstand a heavy applied load, e.g. a laden truck or trailer.

[0003] It is one object of this invention to provide a particularly efficient access cover which can be assembled in a particularly efficient way.

[0004] According to the invention, in one aspect, there is provided a load-bearing cover for an access hole, the cover comprising a plurality of plates joined in side-by-side relation, each plate comprising a generally planar body, each plate having at one side a tongue extension in the form of a depending post from a side of which extends a generally horizontal ledge below and parallel to the plate body, the plate having at the opposite side an extension projecting beyond the plate, the extension depending from the plate and having a groove portion shaped and dimensioned to receive and engage the tongue of the neighbouring plate.

[0005] Preferably the lower end of the groove extension comprises a socket to receive the head portion of a load-bearing pillar; preferably the pillar has a T-shaped head to be received in a complementary socket in the groove extension. Preferably the pillar has a foot portion adapted to engage a bridge member at each side whereby adjacent pillars may be joined together at their foot.

[0006] In another aspect, the invention provides a load-bearing cover for an access hole, the cover comprising a plurality of box sections joined in side-by-side relation, each section comprising a generally planar roof, each roof having at one side a tongue extension in the form of a depending post from a side of which extends a generally horizontal ledge below and parallel to the roof, the roof having at the opposite side an extension projecting beyond the roof, the extension depending from the roof and having a groove portion shaped and dimensioned to receive and engage the tongue extension of the neighbouring roof, the lower end of the groove extension comprising a socket which receives the head portion of a pillar to define a side wall of the box section, the pillar having a foot portion which engages a bridge member at each side to define a floor of the box section.

[0007] Preferably the tongue and groove extensions extend the full width of the cover roof, but the pillar is of reduced length, leaving a gap at each end. A connector is received in each of those gaps and is adapted to connect the cover to a peripheral frame to form a unitary construction.

[0008] The invention also extends to weld-free methods of assembling the cover, as disclosed herein.

[0009] In order that the invention may be well understood, it will now be described by way of example only, with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a vertical median section through an access hole having a cover of the invention;
Figure 2 is a partial vertical median section of the cover drawn to an enlarged scale.
Figure 3 is a partial vertical section of an end of the cover showing end connectors;
Figure 4 is a view from one side showing the engagement of the cover and its frame;
Figure 5 is a partial elevation of the connector and the frame; and
Figure 6 is an underneath plan of the engaged connector.

[0010] An access hole may have a span of about 4 metres and has a cover C which is designed to withstand an applied load in excess of 11 tonnes, for example, from the wheel of a heavily laden goods transporter. The access hole may contain fuel pipes, e.g. for the refuelling of ships, or utility services or major installations in need of periodic servicing such as air conditioning units.

[0011] The cover C is made up of three rectangular bodies each of which consists of a row of interlinked box sections B. Each has a plate or roof 1, the upper surface of which is the exposed surface; this may have deformations 2 to prevent skidding or the like. At one side the plate 1 has a depending leg 3 which ends in a rectangular foot 4 below the plate 1 which defines a tongue or peg type connector P; at the other side the plate 1 has a longer leg 5 which projects below and beyond the edge of the plate 1 to define a socket S having two socket parts S1, S2. The first and upper socket part S1 is a groove or U-shaped to complement the tongue P of the neighbouring plate so that when the tongue P and the socket part S1 are engaged a locked connection is formed. The second and lower socket part S2 is shaped and dimensioned to receive the head 6 of a T-shaped pillar 7 in locking fashion; the engagement of this socket S2 and the head 6 of the pillar 7 is immediately below the connection of tongue P and groove part socket S1. The pillars 7 form the sides of the box sections B. The pillar 7 has a foot 8 with side extensions 9 and these engage with locking members 10 on each side to provide the floor of the box section. Because the pillar 7 is detachable from the socket part S2, pillars 7 of different load bearing capacity can be fitted according to local requirement.

[0012] The tongues P and groove sockets S extend across the roof (as shown in Figure 4) from one side to the other but the pillars 7 are shorter. At each end a connector 11 is inserted to fill the gap. The connector is shown in Figure 3 and comprises a T-shaped head 12

and a body 13 having two side slots 14. The head 12 is about half the width of the connector body 13 to define a slot 15 to receive an end portion of the adjacent pillar. A frame 20 surrounds the underside the cover and this has four walls each having a longitudinal slot 21. The head 22 of a bolt 23 is received in the slot 21 and the shank passes through a side slot 14 of the connector 11 and has a nut 24 at the other end. Two such bolts 23 are present, one per slot 14 of the connectors 11. In this way the cover (C) is connected to its frame. One side of the frame is connected by hinges to the perimeter of the access hole in known fashion.

[0013] Because the tongue P and groove S1 connection is of a locking type and the same applies to the connection of the socket S2 and pillar 7, the components will not separate when a heavy load is applied to the top of the cover. Instead, the box section beams of the cover will deflect under the load as a unit and there will be little, if any, separation of the components. This contrasts with a welded system in which the weld connections are liable to break.

[0014] The cover C is built up from the underside. The plates 1 are joined together in side-by-side relation by connecting the tongue P to the groove socket parts S1. The pillars 7 are then added followed by the connectors 11 to join the pillars to the frame 20. All the connections are made by sliding parts together to join them in locking fashion but no welding is required. This reduces the manufacturing time substantially compared to known techniques of assembling a load bearing cover. It also means that components can be replaced or substituted as required, according to requirements.

[0015] The invention is not limited to the embodiment shown.

[0016] The engagement of the components may be any locking system which is capable of easy assembly. Fittings may be present, examples being gas springs, locks and the like.

Claims

1. A load-bearing cover (C) for an access hole, the cover (C) comprising a plurality of plates (1) joined in side-by-side relation, each plate (1) comprising a generally planar body, each plate (1) having at one side a tongue extension (P) in the form of a depending post (3) from a side of which extends a generally horizontal ledge (4) below and parallel to the plate (1) body, the plate (1) having at the opposite side an extension (5) projecting beyond the plate (1), the extension (5) depending from the plate (1) and having a groove portion (S1) shaped and dimensioned to receive and engage the ledge (4) of the neighbouring plate (1).

2. A cover (C) according to Claim 1, wherein the lower end of the extension (5) comprises a socket (S2) in which is received or receivable the head portion (6) of a load-bearing pillar (7).

3. A cover (C) according to Claim 2, wherein the pillar (7) has a T-shaped head (6) to receive, or in which is receivable, a complementary socket (S2) in the extension (5).

4. A cover (C) according to Claim 2 or 3, wherein the pillar (7) has a foot portion (8) adapted to engage a bridge member (10) at each side (9) whereby adjacent pillars (7) are joined or joinable together at their foot portions (8).

5. A cover (C) according to any of Claims 2, 3 or 4, wherein the pillar (7) does not extend the full width of the cover (C) and connectors (11) are present at each end.

6. A cover (C) according to Claim 5, wherein the connectors (11) connect, or enable connection of, the cover (C) to a peripheral frame.

7. A load-bearing cover (C) for an access hole, the cover (C) comprising a plurality of box sections (B) joined in side-by-side relation, each section (B) comprising a generally planar roof (1), each roof (1) having at one side a tongue extension (P) in the form of a depending post (3) from a side of which extends a generally horizontal ledge (4) below and parallel to the roof (1), the roof (1) having at the opposite side an extension (5) projecting beyond the roof (1), the extension (5) depending from the roof (1) and having a groove portion (S1) shaped and dimensioned to receive and engage the tongue extension (P) of the neighbouring roof (1), the lower end of the groove extension (5) comprising a socket (S2) which receives the head portion (6) of a pillar (7) to define a side wall of the box section (B), the pillar (7) having a foot portion (8) which engages a bridge member (10) at a side to define a floor of the box section (B).

8. A cover (C) according to Claim 7, wherein the tongue (P) and groove extensions (5) extend the full width of the cover roof but the pillars (7) are of reduced length, leaving a gap at each end in which a connector (11) is received or receivable and which connects or enables connection of, the cover (C) to a peripheral frame to form a unitary construction.

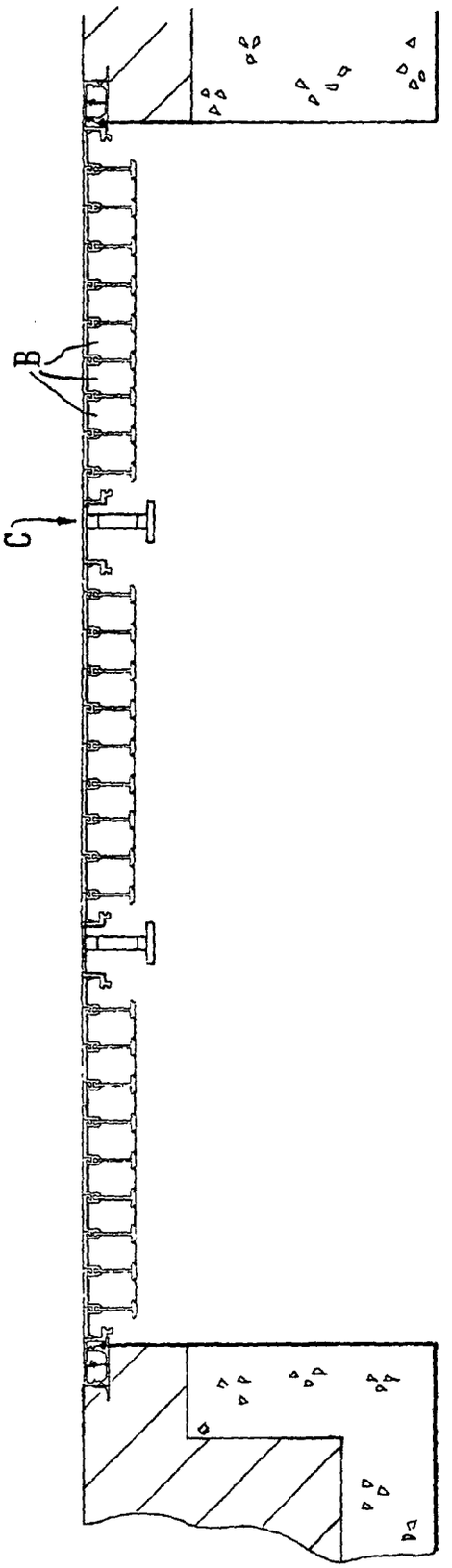

FIG. 1

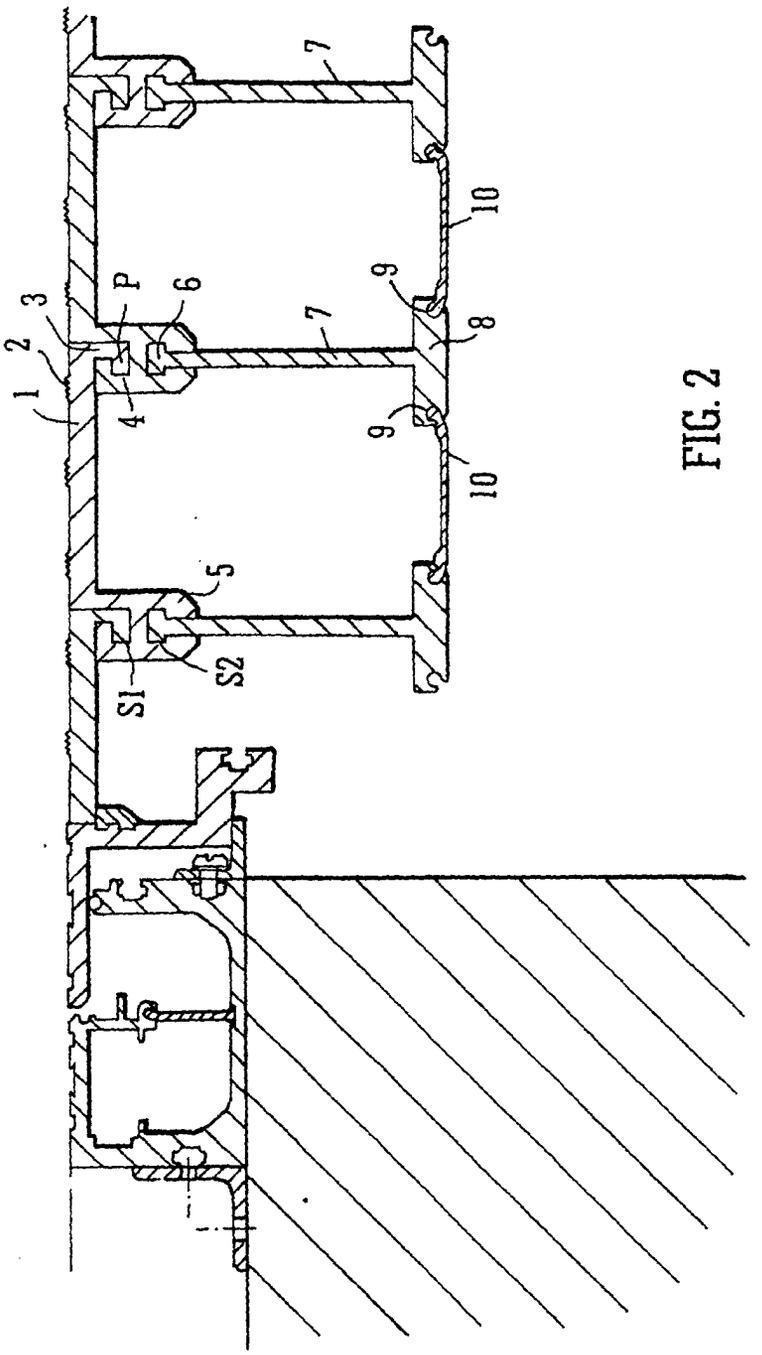

FIG. 2

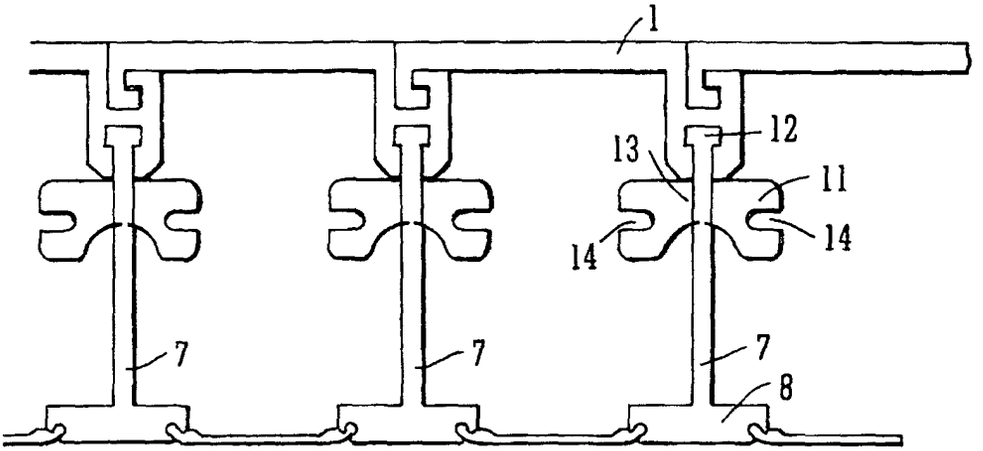

FIG. 3

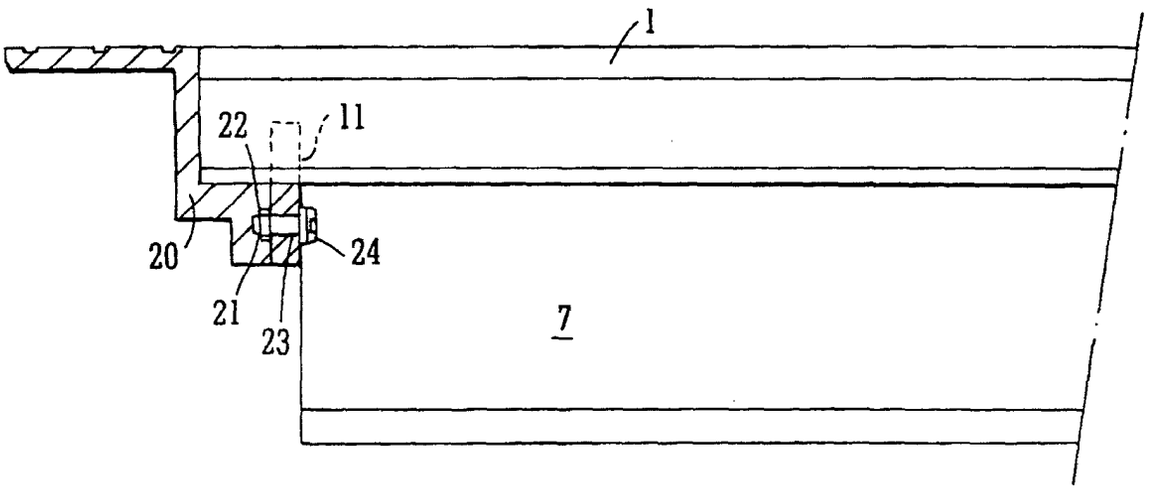

FIG. 4

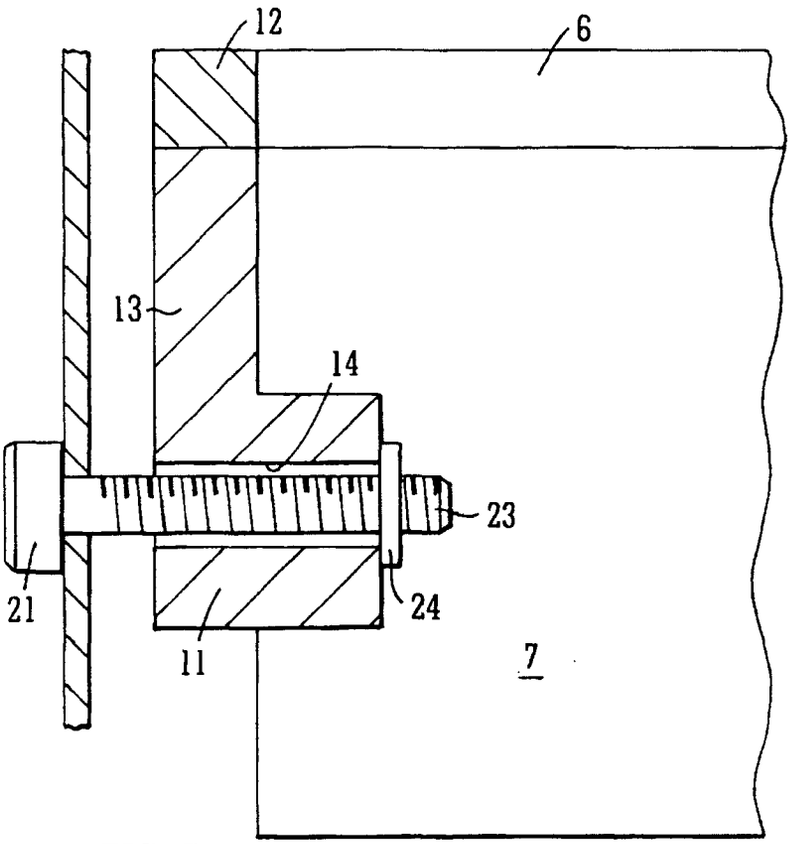

FIG. 5

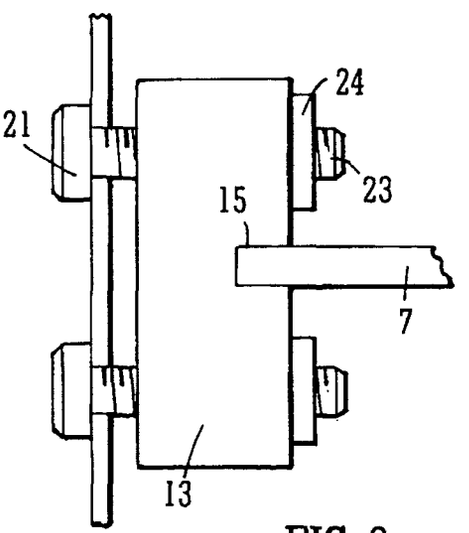

FIG. 6