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(54) **Improvements in and relating to access chambers**

Verbesserungen an Mannlöchern

Améliorations concernant les trous d'homme

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Description

[0001] The present invention relates to a tool joining together in sealing engagement the upper edge of the access chamber above an underground storage chamber and the lower edge of a corbel unit, the latter extending from the access hole frame down to the upper edge of the access chamber.

[0002] A common problem associated with the installation of access chambers for underground storage tanks is that associated with ground movements which can occur. If the corbel unit is rigidly attached to the access chamber wall, ground movements can cause the whole structure to be pushed upwards and/or buckle.

[0003] US patent specification no. 4,763,806 describes an expansion joint which is folded over on itself and connects the manhole sump portion, itself rigidly connected to a rise pipe, to the upper rim which forms the top of the manhole.

[0004] It is the aim of the present invention to provide a fixing tool to aid joining the corbel unit to the access chamber wall in such a manner as to eliminate the aforementioned difficulties.

[0005] According to the present invention there is provided a temporary fixing tool for temporarily securing a corbel unit to an associated access chamber, the tool comprising a support mounted for longitudinal movement along a rod, one end of said rod being adapted to be supported by the upper edge of the access chamber, and the tool including clamp means which can be loosened to allow the support to slide along the rod and tightened to clamp the support rigidly onto the rod.

[0006] The corbel unit may include flexible sealing strip having an upper edge for securing circumferentially to an upper portion of a containment manhole and a lower edge for securing circumferentially to an access chamber of said manhole, wherein upper portion of the manhole comprises a corbel unit and the sealing strip has, between said two edges, a middle section which is shaped into a "bellows" configuration whereby any movement between the access chamber and the corbel unit can be accommodated by means of said shaped middle section without breaking the sealing engagement.

[0007] The "bellows" shaped middle section absorbs the relative movement of the two structures.

[0008] The fixing tool enables a method of joining and sealing a corbel unit to an access chamber during underground installation thereof, the method comprising temporarily fixing the relative positions of the lower edge of the corbel unit and the upper edge of the access chamber wall at the desired level, securing the first edge of a flexible sealing strip circumferentially to the corbel unit and securing the second edge of the strip circumferentially to the access chamber wall, said sealing strip having a "bellows" shaped middle section whereby any movement between the access chamber and the corbel unit can be accommodated by means of said shaped

middle section without breaking the sealing engagement.

[0009] Preferably, the apparatus includes a protective housing, one end of which is joined to the corbel unit, and the other end of which overhangs the seal.

[0010] During the installation, the access chamber is first fitted to the top of the storage tank, and then the corbel unit, which is of a fixed length, is fitted to the top of the access chamber at such a level that, when the access hole frame is seated on top of the corbel unit, the frame is flush with ground level.

[0011] The temporary fixing is achieved by means of the fixing tool of the invention.

[0012] Preferably, the tool comprises a small block having a bore running vertically therethrough, and a cylindrical rod which passes through the bore and is hooked over at the top. The block also has a threaded bore extending laterally, for receiving a tightening bolt.

[0013] To use this device, the hooked end of the rod is slipped over the edge of the access chamber wall, and the lower edge of the corbel unit is seated on top of the block. The block, and the corbel unit seated thereon, is then slid up or down the rod, until the desired level is achieved, i.e. when the level of the uppermost edge of the corbel unit is such that when the frame is seated thereon, the upper surface of the frame is flush with the ground, whereupon the bolts are tightened, clamping the block to the rod.

[0014] A further advantage of the applicant's device is that it may be used to assist in removing any unnecessary height from the access chamber. If necessary, a line can be marked around the interior of the corbel unit while the temporary fixing means is in place, and the excess height of the access chamber would be sawn off to approximately 25mm above this line, having first removed the temporary fixing means and the corbel unit. Then, the corbel unit would again be temporarily fixed within the access chamber, as described previously, adjusting the temporary fixing means as appropriate.

[0015] The edges of the sealing strip are then clamped as described, and the temporary fixing tools, of which several may be used, are removed only after back-filling to ground level with concrete, leaving the corbel unit attached and sealed to the access chamber wall in a flexible manner which is capable of absorbing changes in relative position of the two structures, by means of the specially shaped middle region of the seal.

[0016] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which;

Figure 1 illustrates in cross section the access hole cover, frame, corbel unit and access chamber, including water collection means and sealing strip; and

Figures 2, 3 and 4 illustrate the use of the temporary fixing tool of the invention to enable the sealing strip

illustrated in figure 1 to be attached in the desired manner.

[0017] Referring to the drawings, an underground storage tank (not shown) has an access chamber 10, only the upper wall 12 of which is shown, and a corbel unit 14 which spans the gap between the top of the access chamber 10 and the access hole frame 16.

[0018] Water may enter through the access hole when the cover 17 is removed, and condensation water can also form due to lower night-time temperatures, particularly on the underneath of the cover. Any such water drips onto domed lid 18, which covers the entry to the access hole, to run down the lid and into a U shaped channel 20 which is bolted at intervals to the corbel unit 14, by means of bolt 24, swan neck type clamp 24a and threaded insert 24b. In addition, mastic may be used to enhance the seal.

[0019] An alternative is to bond the channel 20 to the interior of the corbel unit 14, using, for example, an acrylic adhesive.

[0020] Small ridges 14a in the interior surface of the corbel unit cause any condensation droplets running down the surface to drip into the channel below.

[0021] The base of the channel is open at one or more points, to allow connection via strap 23 to duct 22 which removes the water to either a separate collection bottle (not shown) or the exterior of the access chamber.

[0022] Also illustrated in figure 1 is a flexible sealing strip 30, which runs around the entire perimeter of the corbel unit, the upper edge being strapped to the corbel unit via strap 32 and the lower edge being strapped to the access chamber wall via strap 34. The middle region of the seal is shaped as illustrated, which provides a "bellows" effect to absorb relative movements of the corbel unit and the access chamber.

[0023] A device for allowing accurate placement of this sealing strip during installation is shown in figures 2, 3 and 4.

[0024] Before the sealing strip 30 can be secured in place, the correct level of the corbel unit lower edge 15 relative to the access chamber upper edge 13 must be achieved, such as to allow the seal to be fitted, as well as having the frame 16, when seated on the corbel unit, flush with ground level.

[0025] The device 41 of figures 2, 3 and 4 achieves this and comprises a block 42 with a central bore running vertically therethrough, through which is received a cylindrical rod 40. The rod 40 is hooked at its uppermost end 40a, and this end is hooked over the upper edge of the access chamber wall 13. The block 42 also includes an internally threaded bore 42a running laterally, which receives a tightening bolt 43, the arrangement being such that tightening the bolt within the lateral bore clamps the block 42 onto the rod 40 in any desired position along the rod.

[0026] After hooking the rod 40 over the chamber wall 13, the edge 15 of the corbel unit is allowed to rest on

the block, and with the bolt 43 loosened, the block 42 is slid up or down along the rod 40 until the frame 16 is brought flush with ground level. The bolt 43 is then tightened to hold the corbel unit in place, whilst the sealing strip 30 is strapped into place as described above. If necessary, any excess height of the access chamber can be removed, using the temporary fixing as a guide as described previously. Figure 2 shows the arrangement before the excess height on the access chamber is sawn off, and figure 4 illustrates the arrangement afterwards, the position of the block 42 on the rod 40 having been re-adjusted.

[0027] Once fitted, the strip is protected by fitting a housing 36 to the corbel unit, as illustrated in the drawings.

[0028] The excavation is then back-filled with concrete up to ground level, the bolt 43 is loosened slightly, the rod 40 is rotated through 90 degrees, and the device 41 can then be slipped downwards and removed from the access chamber.

[0029] Typically, several of the devices 41 would be used (for example five or six), spaced around the perimeter of the access chamber, to collectively form what is essentially an adjustable height ledge for "hanging" the corbel unit within the access chamber at the desired height.

Claims

1. A temporary fixing tool (41) for temporarily securing a corbel unit to an associated access chamber, the tool comprising a support (42) mounted for longitudinal movement along a rod (40), one end of said rod being adapted to be supported by the upper edge (13) of the access chamber, and the tool including clamp means (42a, 43) which can be loosened to allow the support to slide along the rod and tightened to clamp the support rigidly onto the rod.
2. A tool according to claim 1 and comprising a small block (42) having a bore running vertically therethrough, and a cylindrical rod (40) which passes through the bore and is hooked over at the top.
3. A tool according to claim 1 or claim 2 and including a threaded bore (42a) extending laterally, for receiving a tightening bolt (43).

Patentansprüche

1. Provisorisches Befestigungswerkzeug (41) zum vorübergehenden Befestigen einer Konsoleneinheit an einer zugeordneten Zugangskammer, wobei das Werkzeug einen Träger (42) aufweist, der für eine Längsbewegung längs einer Stange (40) angebracht ist, wobei das eine Ende der Stange so

ausgelegt ist, daß es von der Oberkante (13) der Zugangskammer getragen ist, und wobei das Werkzeug eine Klemmeinrichtung (42a, 43) aufweist, die gelöst werden kann, um es dem Träger zu ermöglichen, längs der Stange zu gleiten, und die festgezogen werden kann, um den Träger starr an der Stange festzuklemmen. 5

2. Werkzeug nach Anspruch 1, das einen kleinen Block (42) mit einer Bohrung, die vertikal durch ihn hindurchgeht, und eine zylindrische Stange (40) aufweist, die durch die Bohrung hindurchgeht und die an der Oberseite darübergelagert ist. 10

3. Werkzeug nach Anspruch 1 oder 2, das eine Gewindebohrung (42a) aufweist, die sich quer hindurch erstreckt, um eine Spannschraube (43) aufzunehmen. 15

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Revendications

1. Outil de fixation temporaire (41) destiné à fixer temporairement une unité formant corbeau à une chambre d'accès associée, l'outil comprenant un support (42) monté pour effectuer un mouvement longitudinal le long d'une tige (40), une extrémité de ladite tige étant adaptée dans le but d'être supportée par le bord supérieur (13) de la chambre d'accès et l'outil comprenant des moyens de serrage (42a, 43) qui peuvent être relâchés afin de permettre au support de coulisser le long de la tige et resserrés afin de fixer le support sur la tige de manière rigide. 25

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2. Outil selon la revendication 1, comprenant un petit bloc (42) muni d'un alésage le traversant de manière verticale, et une tige cylindrique (40) qui passe à travers l'alésage et qui est accrochée sur le dessus. 40

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3. Outil selon la revendication 1 ou la revendication 2, comprenant un alésage fileté (42a) s'étendant de manière latérale afin de recevoir un boulon de serrage (43). 45

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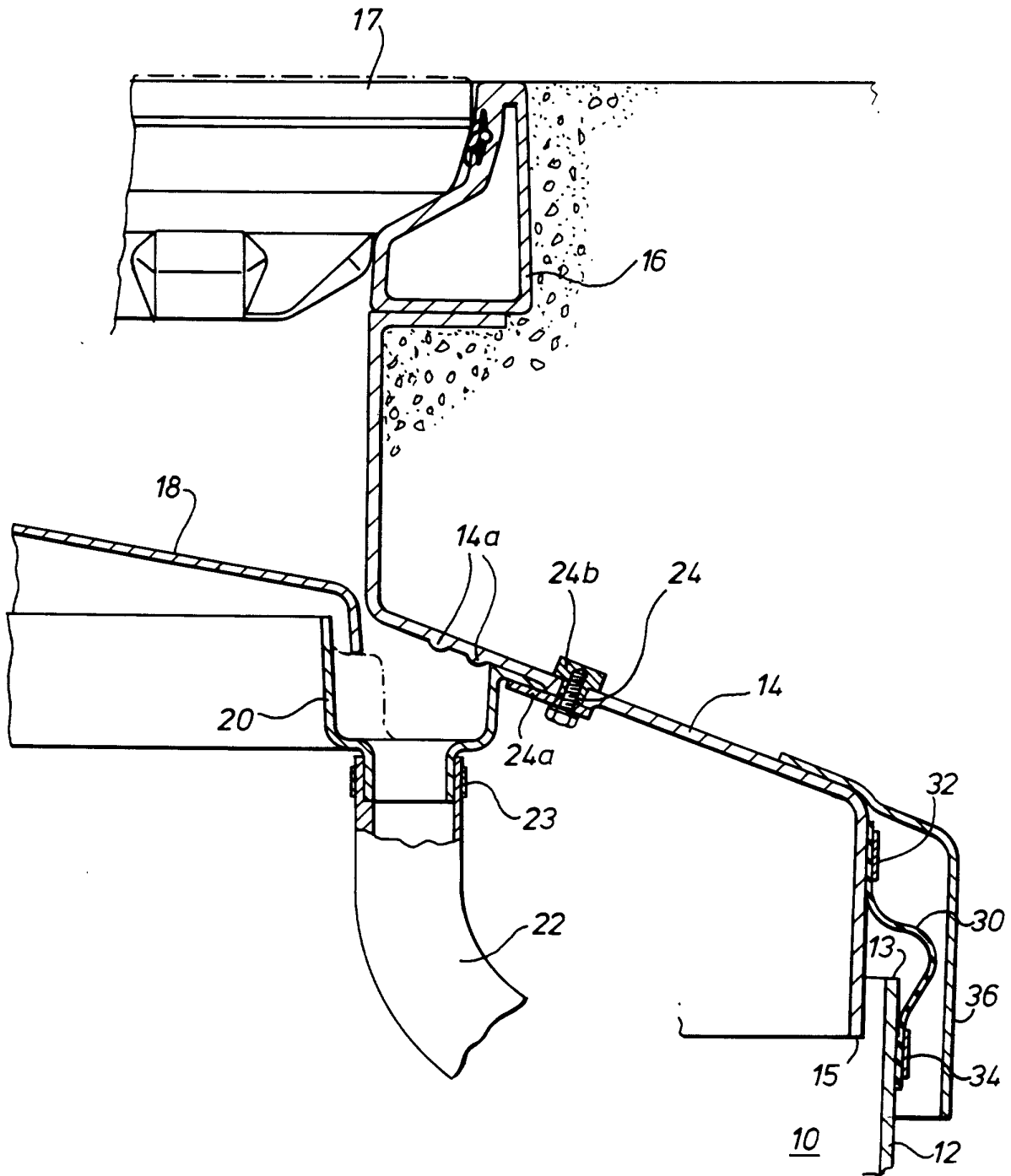
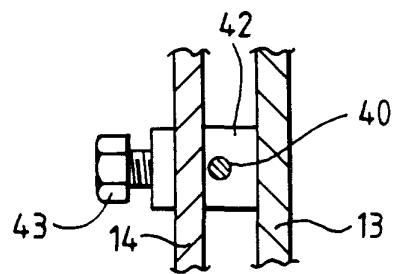
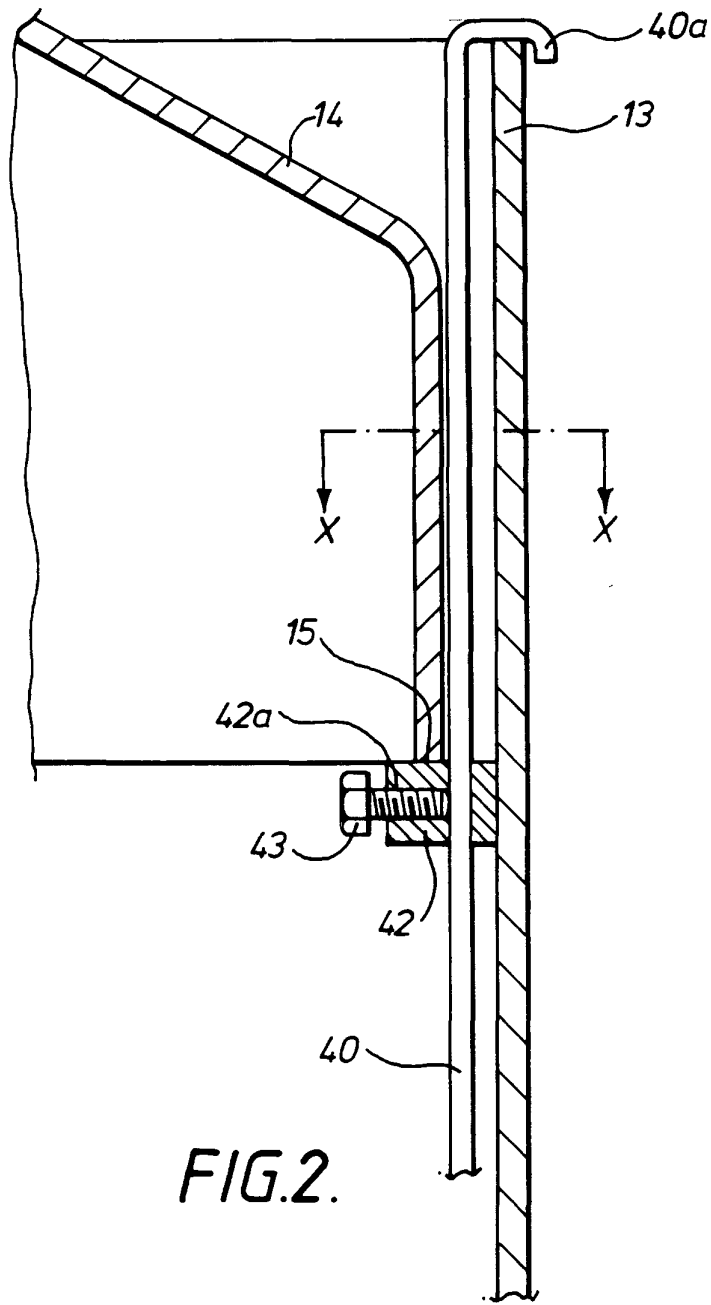


FIG. 1.



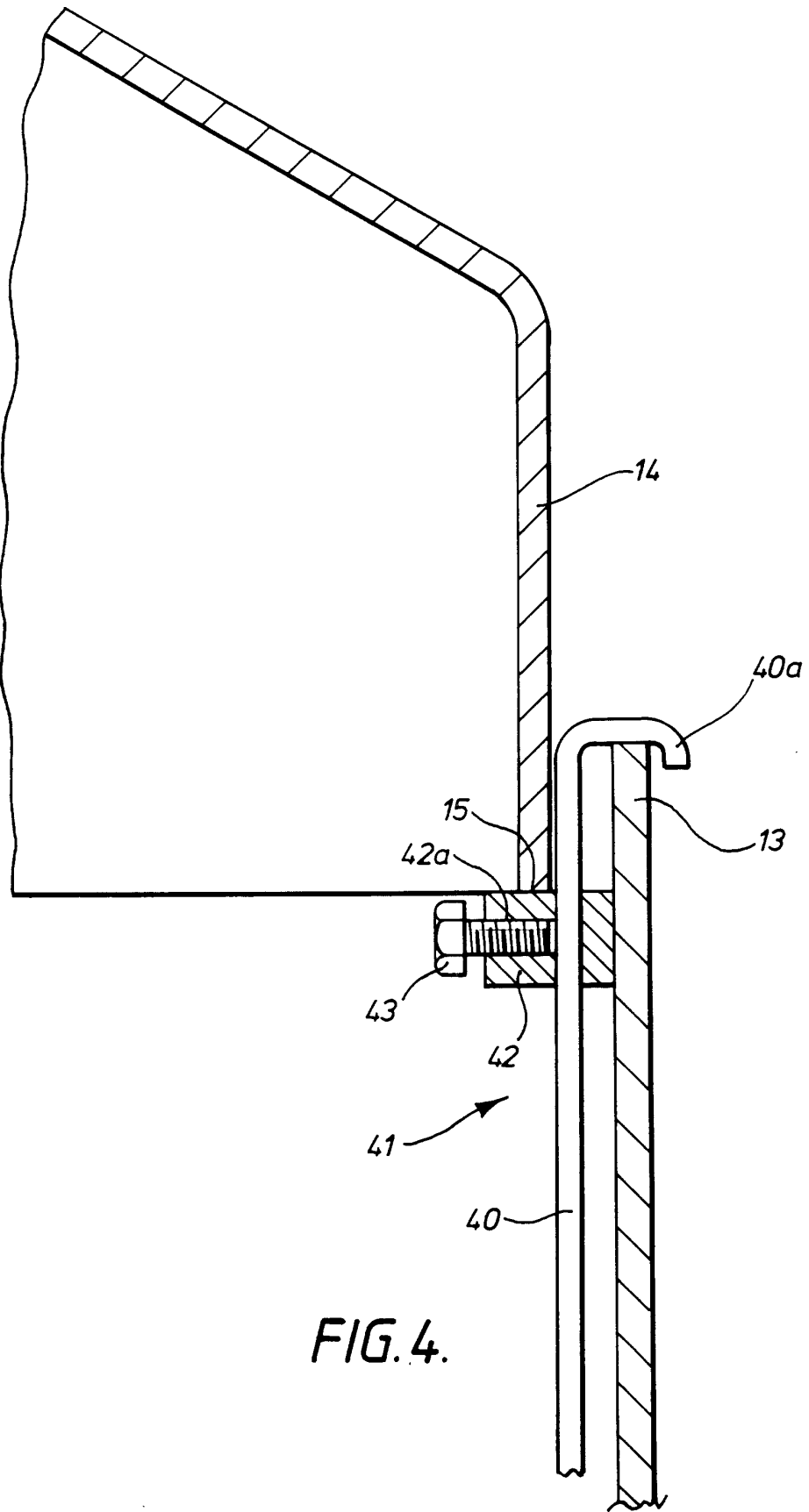


FIG. 4.