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(54) **METHOD FOR RAISING A FIXED FRAME FOR MANHOLE COVERS**

VERFAHREN ZUM ANHEBEN EINES FESTEN RAHMENS FÜR EINE SCHACHTABDECKUNG

METHODE POUR ELEVER UN CADRE FIXE DE TROU D'HOMME

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EP 0 851 955 B1

Description

TECHNICAL FIELD

[0001] The invention relates to a method for raising a fixed frame for manhole covers.

BACKGROUND ART

[0002] The fixed manhole cover frame mentioned above consists of an annular wall, having a lower flange supported on a manhole frame and internally having a recess upon which the manhole cover rests. Thus, the fixed manhole cover frame is supported directly on the manhole frame. This type of manhole cover frame is frequently used for manholes or wells in roads with heavy and much traffic. When laying a new coat of asphalt it is necessary to raise the manhole cover frame with this layer thickness so that the frame cover is maintained level with the road.

[0003] When the fixed manhole cover frame is to be raised, it is lifted out of position, upon which the necessary spacer elements, usually flat rings, are placed on the frame of the well or manhole and the manhole cover frame is lowered on to them. This process will, however, entail that more than a narrow edge region around the frame is affected, frequently necessitating additional repair work on the road, and especially making it easy for gravel and other road materials to fall into the manhole or well, this being the case irrespective of whether the manhole cover frame has an outwardly facing flange requiring prior removal of material in a margin about the cover, or the manhole cover frame has a smooth outer ring with inwardly facing flange.

[0004] US 5 221 155 and US 4 582 450 disclose a segmented ring system to be placed on top of the manhole cover frame to provide a new raised manhole cover frame. These documents do not suggest to use the segmented ring system to support the original manhole cover frame at a raised level.

DISCLOSURE OF THE INVENTION

[0005] With the invention as defined in claim 1 it is recognized that it is sufficient to raise the manhole cover frame through a distance corresponding to the thickness of the new coat of asphalt or similar material, and to insert spacers from within the well or manhole into the cavity formed during this raising between the frame of the well or manhole and the flange of the manhole cover frame, in such a manner that they can provide a stable supporting base for the manhole cover frame and substantially prevent road-surface material from coming into the well or manhole.

[0006] This is done by each spacer element in a known manner having a width and a shape to fit the frame of the well or manhole and the flange on the manhole cover frame, and having a thickness that may be

uniform along the whole periphery or adapted for inclined positioning of the manhole cover frame, and is characterized in that each spacer element is divided into segments with an inner edge and an outer edge, said inner edge having at least one outwardly protruding abutment member at right angles to the spacer segment, and that the edge of the spacer segments overlap in such a manner that the outer edge on one spacer element abuts against the inner edge of a neighbouring segment.

[0007] The result of this is that the risk of road material falling into the well or manhole is small, partly because the raised distance is small and partly because the shape of the segments make them easy to place in position without risk of material being scraped down into the well or manhole.

[0008] The overlapping between the segments also means that it is almost completely avoided that road materials drift out between the segments as a consequence of the vibrations in the road caused by vehicles etc.

[0009] In an especially advantageous embodiment, the segments are made of cast iron, which is well-suited to absorb the vibrations in the road without cracking and has a good friction against both the concrete in the frame of the well or manhole and the frame for the cover, usually also being made from cast iron.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] In the following, the invention is described with reference to the drawing, in which

Figure 1 shows three segments according to the invention, together forming a spacer element in the form of a ring,

Figure 2 is a sectional view showing a segment in abutment against a manhole frame,

Figure 3 in perspective shows a segment according to the invention,

Figure 4 shows a frame with smooth outside surface, having been raised ready for insertion of the spacer segment, and

Figure 5 shows a frame with an outwardly directed flange, raised in readiness for insertion of the spacer segment,

Figure 6 shows a tripod placed upon a ring, and

Figure 7 shows the frame ready to be raised.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0011] In Figure 1, the three identical spacer segments 2 according to the invention are supported on a

manhole frame 12 indicated by a dotted line. Each of the segments 2 comprises an abutment member 4 protruding downwardly against the manhole frame, as well as along the inside teeth 6 separated by recesses 14, and on the outside forms a continuous arc of a circle with the exception of the ends 8 and 10, respectively, shaped in such a manner that the end 8 overlaps the end 10 on the neighbouring segment.

[0012] The spacer segments may be shaped with a view to inclined siting of the frame, so that the plane formed by the segment surface is inclined. This can be advantageous, if the road, in which the manhole is placed, is on an incline.

[0013] Naturally, the spacer segments may also be shaped with a view to rectangular or other geometrical shapes of the frame, and the number of segments may be chosen appropriately with regard to easy handling, i.e. dimensions as well as weight. In the example shown having three segments, handling down in the manhole or well will be easy, at the same time as the recesses 14 between the teeth 6 limit the weight of each segment. Saving in weight is advantageous, as it is contemplated to produce the segments in cast iron, this also meaning that the segments have ample strength, in spite of the recesses, to form the necessary abutment. The use of cast iron is also advantageous, as it is well-suited to absorb the multitudinous impacts from the road traffic without cracking, and provides good friction between the concrete on the manhole frame and the frame, the latter normally also being made of cast iron.

[0014] When placing a segment 2, the abutment member 4 is placed in abutment against the manhole frame 12 as shown in Figure 2. This makes it possible to have segments in different thicknesses t as indicated in Figure 2, and by placing a number of segments on top of each other it is possible to provide just the appropriate height dimensions. When placing segments on top of each other, the abutment member is, of course, placed so as to hit one of the teeth 6 on the segment below. The teeth, or rather the recesses between them, will improve the possibility for the ring segments to come into secure abutment, if there are irregularities in their supporting basis.

[0015] When the segment is to be placed in position, it is turned as shown in perspective in Figure 3 with the abutment member 4 directed downward ready to be introduced between the cover frame and the manhole frame. In Figure 4, this is shown with a frame 18 having a smooth external ring and being lifted vertically, so that the upper edge of the frame edge is at a higher level than the top of the surrounding road 16. This limits the impact on the edge region around the frame, so that only small quantities of road material, mainly gravel, come down into the well or manhole. The lifting can be carried out in a simple manner by means of a tripod placed above the well hole, and it is only necessary to raise slightly more than the thickness of the segmentally divided ring or rings to be installed.

[0016] During this raising there will, however, be a risk that the edge region around the frame is affected, because the asphalt will normally adhere to the frame and in part follow it upwardly during the raising.

[0017] This can be prevented by placing a ring around the frame, so that the internal diameter of the ring is slightly greater, i.e. a few millimeters, than the external diameter on the frame, as well as by placing the tripod on the ring, so that the edge region is held securely during the lifting.

[0018] The ring 36, cf. Figure 6, can advantageously be provided with welded-on rings 38 or the like as abutments for each of the legs 40 of the tripod. At the same time, this provides a base for the legs of the tripod, so that pressure marks in the asphalt are avoided. In the middle of the tripod there is a lifting wire with a hook 42, and in the top of the tripod there is a lifting device for the wire, i.e. a lifting tackle.

[0019] Figure 7 shows the hook 42 of the tripod and the ring 36 placed around the frame 18 prior to the raising of the latter. In the hook 42 a lifting device is suspended, having rods 44 engaging the lower side of the recess 24 of the frame for lifting the latter. The lifting device indicated is constructed on the same principle as an inverted umbrella lowered into the well or manhole. The lifting device comprises three, four or a greater number of lifting rods 44 being pivoted outwardly for engagement below the recess 22 via rods 46 assembled in a slide member 50 with a stop 52 on a rod 48.

[0020] In Figure 4 it is also possible to see the inwardly facing flange 22, the cover recess 24, and that the frame in a known manner comprises abutment members 20 with a view to correct positioning in the manhole frame 12. When placing the segment 2 in position it can easily be pushed inward behind the abutment member 20, this more generally also being the case, since normally there are only three abutment members 20 on the frame.

[0021] In Figure 5, the segment 2 is introduced in the same manner as in Figure 4. The cover frame 26 shown in Figure 5 is, however, of a type with an outwardly protruding flange 28, which makes it necessary to remove material around the frame, but does not require the shape of the segments or the way of installing to be changed. In addition to a recess 30 for positioning the cover and the abutment member 32, the frame 26 comprises recesses for positioning wedges of which one designated 34 is shown. By using the recesses 34 it is possible to lift the frame by driving in wedges.

Claims

1. Method of re-installing manhole covers for roads at an elevated level by raising the manhole cover frame (18, 26), placing one or a number of spacer rings (2) on the basis (12) previously supporting the manhole cover frame (18) and lowering the manhole cover frame (18, 26) on to this ring or these

rings (2), **characterized** in that the manhole cover frame (18, 26) is only raised to a position a little above its re-installing level, and that the spacer ring or rings (2) in the form of ring segment pieces (2) at their ends being shaped with complementarily protruding overlapping parts (8, 10) for closing radial butt seams, are installed by introducing these segment pieces below the manhole cover frame (18, 26) in its raised position, after which the manhole cover frame is lowered to its position of re-installment.

2. Method according to claim 1, **characterized** in that prior to the raising of a manhole cover frame (26) of the externally smooth type a scraping ring (36) is placed around the manhole cover frame (26) and preferably used as a supporting basis for a lifting device being used, such as a tripod (40).
3. Method according to claim 1, **characterized** in that the spacer ring is segmentally divided, preferably in three segments.
4. Method according to claim 3, **characterized** in that each of the segments is shaped with a downwardly protruding abutment member (4) placed internally.
5. Method according to claim 3, **characterized** in that each of the ring segments (2), preferably made from cast iron, is shaped with a series of teeth (6) along one edge, preferably the inner edge.

Patentansprüche

1. Verfahren zum Wiederinstallieren von Schachtabdeckungen für Straßen an einem erhöhten Niveau durch Anheben des Rahmens (18, 26) für die Schachtabdeckung, Platzieren eines oder einer Anzahl von Distanzringen (2) auf der Basis (12), die vorher den Rahmen (18) der Schachtabdeckung trägt, und Absenken des Rahmens (18, 26) der Schachtabdeckung auf diesen Ring oder diese Ringe (2), dadurch gekennzeichnet, dass der Rahmen (18, 26) der Schachtabdeckung nur in eine Position etwas überhalb seines Wiedermontageniveaus angehoben wird, und dass der Distanzring oder die Distanzringe (2) in der Form von Ringsegmentstücken (2), die an ihrem Enden mit komplementär vorstehenden überlappenden Teilen (8, 10) zum Schließen radialer Zusammenstoßfugen geformt sind, montiert werden, indem diese Segmentstücke unter dem Rahmen (18, 26) für die Schachtabdeckung in deren angehobener Position eingeführt werden, wonach der Rahmen für die Schachtabdeckung in seine Wiedermontageposition abgesenkt wird.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, dass vor dem Anheben eines Rahmens (26) einer Schachtabdeckung der äußerlich glatten Art ein Streifring (36) um den Rahmen (26) für die Schachtabdeckung platziert wird und vorzugsweise als eine Tragebasis für eine Anhebevorrichtung, wie ein Dreibein (40), die verwendet wird, verwendet wird.
3. Verfahren nach Anspruch 1, dadurch gekennzeichnet, dass der Distanzring in Segmente unterteilt ist, vorzugsweise in drei Segmente.
4. Verfahren nach Anspruch 3, dadurch gekennzeichnet, dass jedes der Segmente mit einem nach unten vorstehenden Widerlagerelement (4) geformt ist, das innen platziert ist.
5. Verfahren nach Anspruch 3, dadurch gekennzeichnet, dass jedes der Ringsegmente (2), die vorzugsweise aus Gussstahl gefertigt sind, mit einer Reihe von Zähnen (6) entlang einer Kante geformt ist, vorzugsweise der inneren Kante.

Revendications

1. Procédé de réinstallation de couvercles de trous d'homme à un niveau surélevé, par soulèvement du cadre (18, 26) de couvercle de trou d'homme, par disposition d'un ou plusieurs anneaux d'entretoise (2) sur la base (12) supportant auparavant le cadre (18) de couvercle de trou d'homme, et par descente du cadre (18, 26) de couvercle de trou d'homme sur cet anneau ou ces anneaux (2), caractérisé en ce que le cadre (18, 26) de couvercle de trou d'homme n'est soulevé qu'à une position un peu supérieure au niveau de réinstallation, et en ce que l'anneau ou les anneaux d'entretoise (2), sous forme de morceaux (2) de segment d'anneau ayant des extrémités sous forme de parties (8, 10) de recouvrement qui dépassent avec des formes complémentaires afin qu'elles ferment les raccords radiaux en butée, sont installés par introduction des morceaux de segment sous le cadre (18, 26) de couvercle de trou d'homme en position surélevée, puis le cadre de couvercle de trou d'homme est abaissé dans sa position de réinstallation.
2. Procédé selon la revendication 1, caractérisé en ce que, avant le soulèvement d'un cadre (26) de couvercle de trou d'homme du type à partie extérieure lisse, un anneau de raclage (36) est placé autour du cadre (26) de couvercle de trou d'homme et est utilisé de préférence comme base de support pour un appareil de levage utilisé tel qu'un trépied (40).
3. Procédé selon la revendication 1, caractérisé en ce

que l'anneau d'entretoise est divisé en segments,
de préférence au nombre de trois.

4. Procédé selon la revendication 3, caractérisé en ce
que chacun des segments a la forme d'un organe 5
de butée (4) dépassant vers le bas et disposé à l'in-
térieur.
5. Procédé selon la revendication 3, caractérisé en ce
que chaque segment (2) d'anneau, qui est de pré- 10
férence formé de fonte, a une configuration com-
prenant une série de dents (6) formées le long d'un
bord, de préférence le bord interne.

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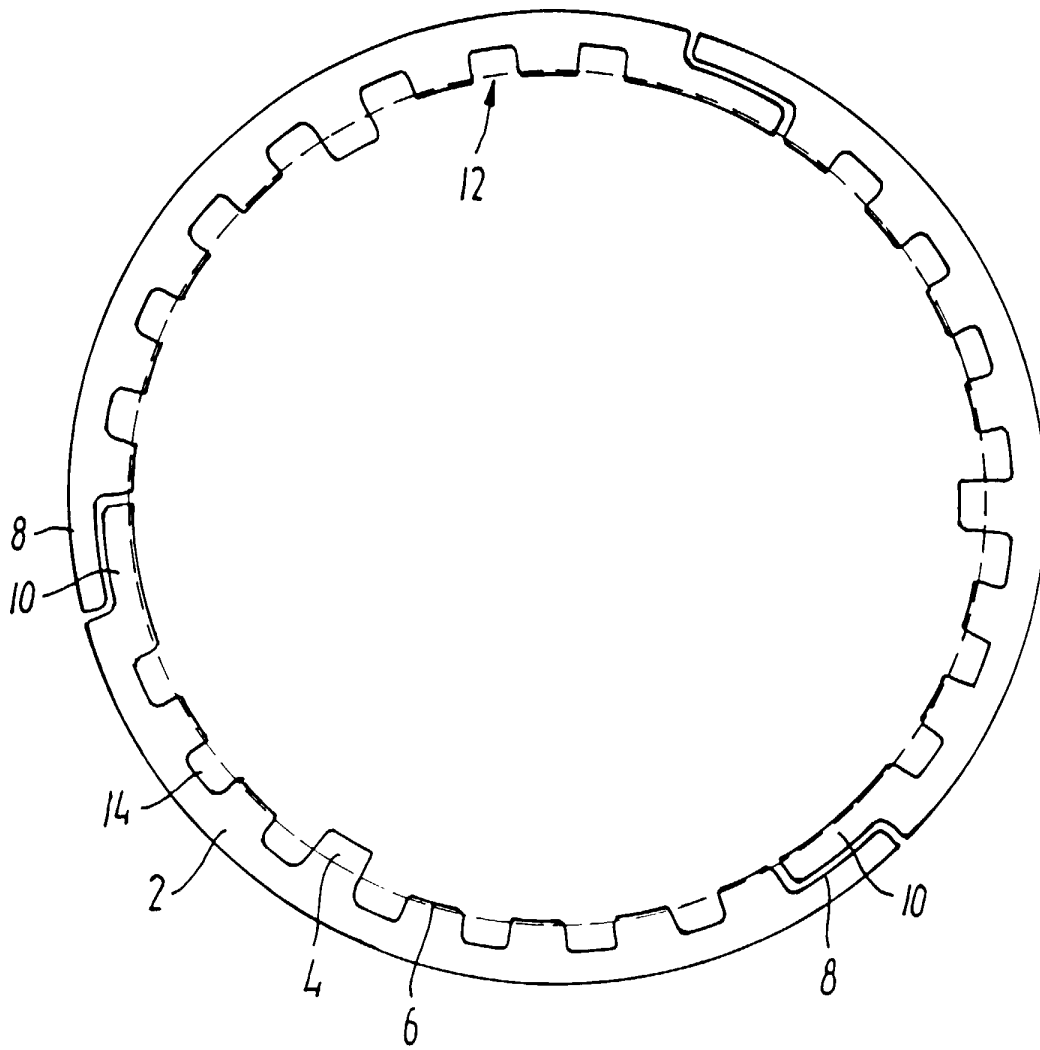


FIG. 1

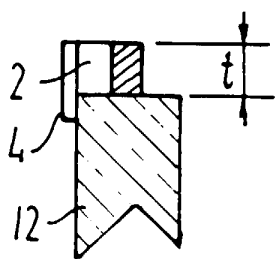


FIG. 2

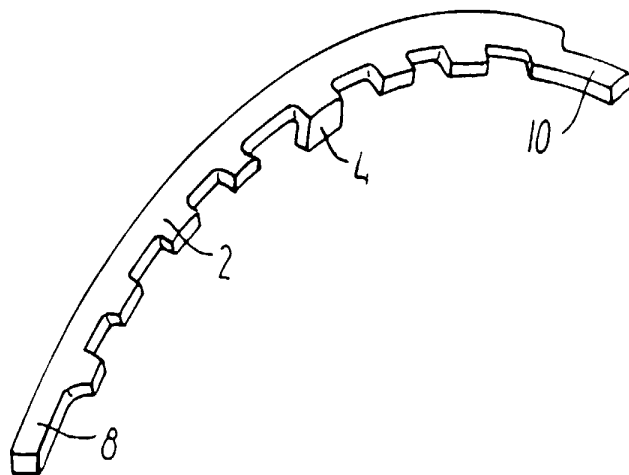
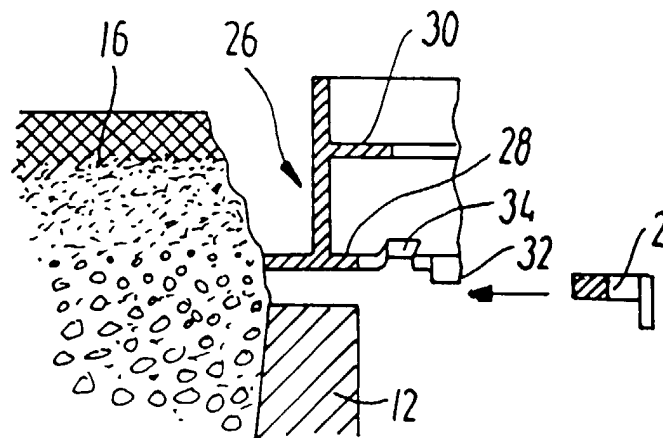
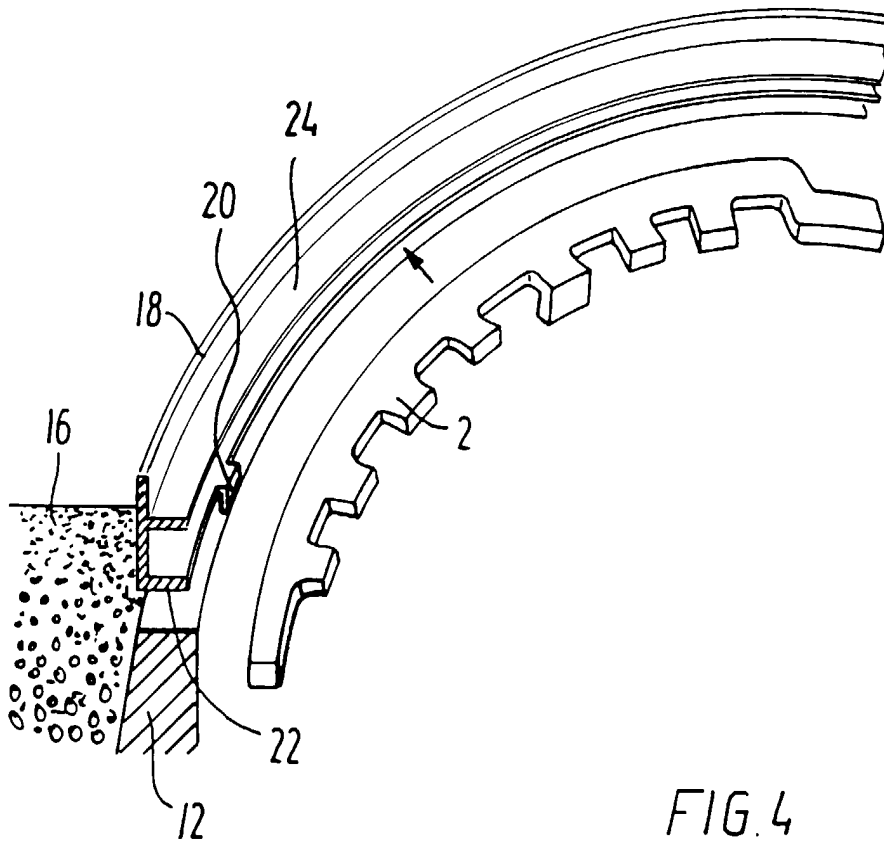


FIG. 3



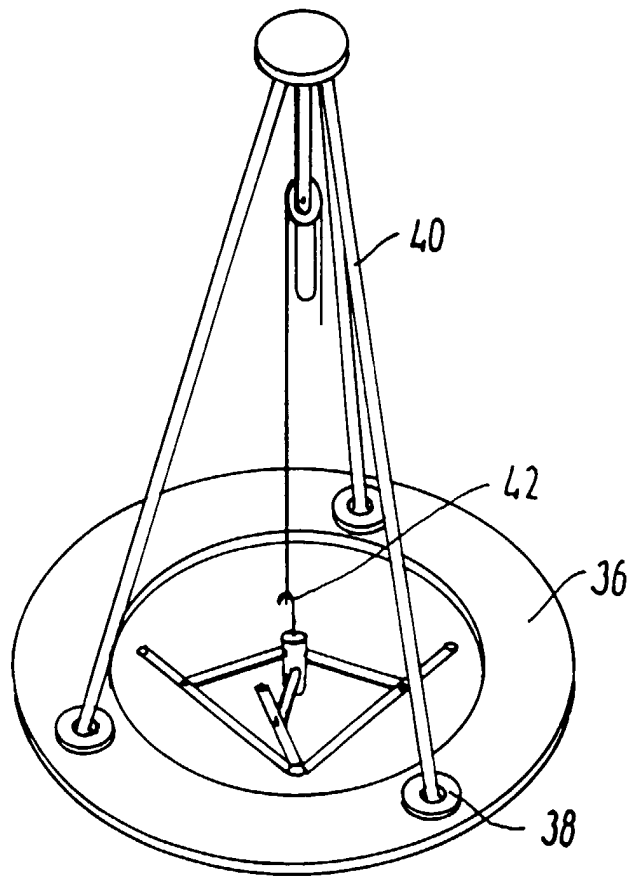


FIG. 6

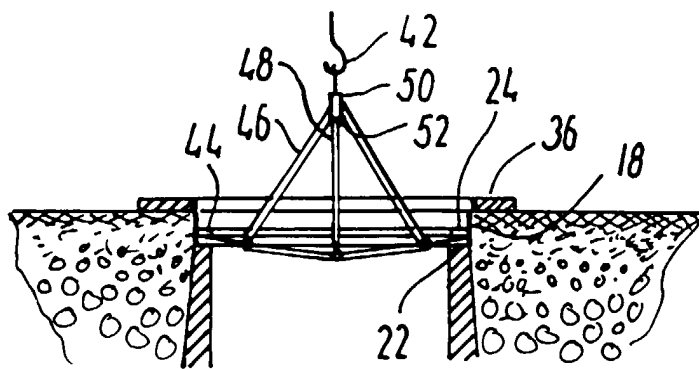


FIG. 7