

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 829 582 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
18.03.1998 Bulletin 1998/12

(51) Int Cl.⁶: **E02D 29/14**

(21) Application number: **97307064.2**

(22) Date of filing: **11.09.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV RO SI

(72) Inventors:
• **Clark, Francis Sidney**
Yaxley, Peterborough PE7 3EG (GB)
• **Clark, Ronald Francis**
Yaxley, Peterborough PE7 3EG (GB)

(30) Priority: **17.09.1996 GB 9619368**

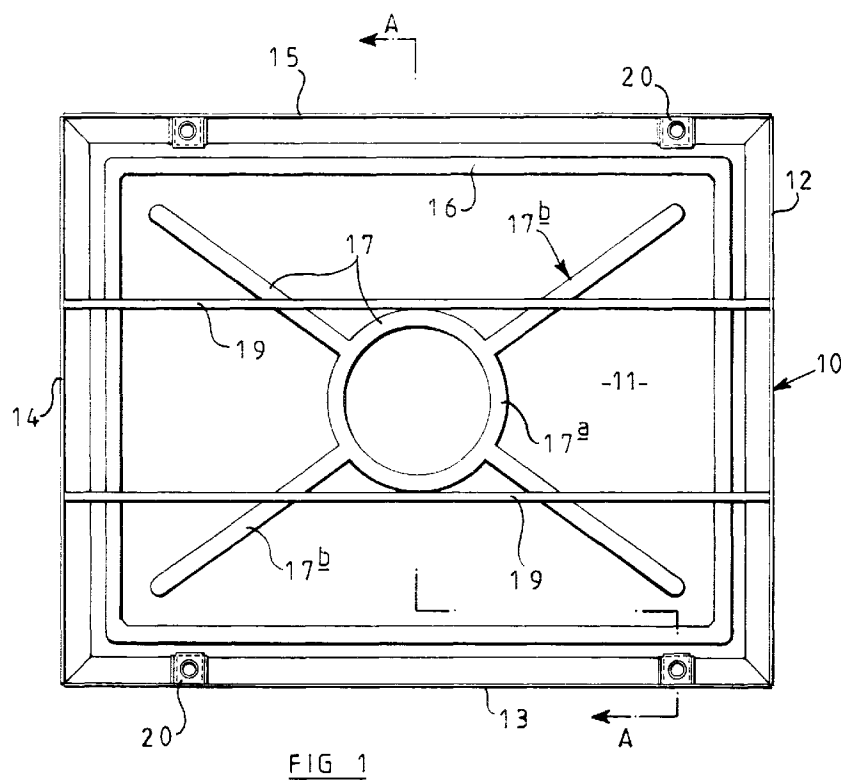
(74) Representative: **Higgins, Michael Roger**
A.R. Davies & Co.
27, Imperial Square
Cheltenham Glos. GL50 1RQ (GB)

(71) Applicants:
• **Clark, Francis Sidney**
Yaxley, Peterborough PE7 3EG (GB)
• **Clark, Ronald Francis**
Yaxley, Peterborough PE7 3EG (GB)

(54) Access cover

(57) A method of making an access cover of tray-like form for receiving an infill, comprises the steps of starting with a flat metal sheet, forming notches 9 in the corners of the flat metal sheet so that the sides 12, 13,

14 and 15 of the access cover can be pressed out of the plane of the plate to lie adjacent to one another, pressing the sides of the cover out of the plane of the plate and, in the same pressing operation, pressing stiffening ribs 17 in the base of the cover.



EP 0 829 582 A2

Description

This invention relates to a method of making an access cover and more particularly a load bearing access cover for an inspection chamber or access hole, e.g. a sewage manhole, in a traffic bearing surface, such as a road surface or a pavement, and to an access cover made by such a method.

It is known to make such covers in tray-like form for containing an infill typically of concrete. Known "infill" covers are generally made by welding together five separate parts making up the four sides and the base of the tray, respectively. The base is then often strengthened by welding separate ribs to the underside of the tray. This method is labour intensive and expensive.

According to a first aspect of the present invention, there is provided a method of making an access cover of tray-like form for receiving an infill, comprising the steps of:-

(a) starting with a flat metal sheet,

(b) notching the corners of the flat metal sheet so that the sides of the access cover can be pressed out of the plane of the plate to lie adjacent to one another,

(c) pressing the sides of the cover out of the plane of the plate and, in the same pressing operation, pressing stiffening ribs in the base of the cover.

Preferably steps (b) and (c) are performed in a compound notching and forming tool or, alternatively, steps (b) and (c) may be performed separately.

Preferably, at least some of the stiffening ribs form an endless channel in the underside of the base of the cover and adjacent to the four sides of the cover and a seal is provided in said channel for co-operating with a frame in which, in use, the cover is supported.

Preferably, the method also comprises the step of welding the sides of the cover together.

Lifting and/or fixing devices may be connected to at least two sides of the cover, such as by welding.

Reinforcing bars may be connected between at least one pair of opposite sides of the cover.

Preferably, a frame for supporting the cover is formed by cold rolling.

According to a second aspect of the invention, there is provided an access cover made by a method according to the first aspect of the invention.

The invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a plan view of one embodiment of a cover made according to the invention,

Figure 2 is a section of the cover taken along the

line A-A of Figure 1 and supported in a frame,

Figure 3 is a fragmentary view showing the same section as Figure 2 but on an enlarged scale, and

Figure 4 is a plan view showing one of the notched corners of the cover prior to pressing, also on an enlarged scale.

Referring now to the drawings, the cover 10 is of dished, tray-like form to receive an infill, such as of concrete.

The cover 10 is formed from a single flat sheet of steel and comprises a base 11 and four side walls 12, 13, 14 and 15 each of which has an inclined wall portion, e.g. 15a, and a substantially vertical wall portion, e.g. 15b, at its upper end.

In order to form the cover, the corners of the flat steel sheet are notched (as shown at 9 in Figure 4) and the side walls are then pressed out of the plane of the plate to lie adjacent to one another. Stiffening ribs 16 and 17 are pressed in the base 11 in the same pressing operation as that which presses the side walls out of the plane of the plate. The stiffening ribs 16 form an endless channel in the underside of the base 11 and adjacent to the four sides of the cover 10 to receive a flexible seal, such as a neoprene gasket 18.

The stiffening ribs 17 comprise a central circular rib 17a and four elongate ribs 17b extending from the circular rib 17a towards the four corners, respectively, of the cover. These stiffening ribs may however take other forms.

Adjacent side walls are welded together to give the cover the required strength and to render it stenchproof.

Re-enforcing bars 19 extend between the two shorter side walls 12 and 14 of the cover and are secured to the side walls 12 and 14, such as by welding.

Lifting and/or fixing devices in the form of brackets 20 are connected to the sides 13 and 15 by any appropriate means including welding. As shown, these devices 20 allow the cover to be held down by means of screws 21 in a manner to be described more fully hereinafter and when the screws are removed leave openings for lifting keys to be inserted. However, the devices 20 may simply be lifting devices providing holes for insertion of a lifting key.

Ideally, the notching and pressing operations are performed in a compound notching/forming tool. However, alternatively, the plate may be notched and subsequently pressed.

The cover 10 is designed to fit in a frame 22 shown in Figure 2. The frame 22 is formed from a one piece rolled steel section and comprises side walls 23 and a base section 24 defining two endless channels 25 and 26.

Each side wall 23 has an inclined wall portion 27 and a vertical wall portion 28. The base section 24 also includes an outwardly extending horizontal flange 29

formed with a fold.

The outer channel 25 receives a flexible seal, which may take the form of a neoprene gasket 30 and the inner wall of the inner channel co-operates with the seal 18. This double seal serves to exclude the egress of liquids or gases and renders the cover stenchproof.

Fixing lugs 31 having screw threaded apertures are secured to the frame 22 such as by welding. These lugs 31 co-operate with the fixing devices 20 on the cover 10 to enable the cover to be releasably secured to the frame.

The cover and frame may be made in various different sizes and from different thicknesses of metal according to the required load bearing capabilities.

15

Claims

1. A method of making an access cover (10) of tray-like form for receiving an infill comprising the steps of:-
 (a) starting with a flat metal sheet,
 (b) notching the corners (9) of the flat metal sheet so that the sides (12, 13, 14, 15) of the access cover can be pressed out of the plane of the plate to lie adjacent to one another,
 (c) pressing the sides of the cover out of the plane of the plate and, in the same pressing operation, pressing stiffening ribs (16, 17) in the base of the cover.
2. A method as claimed in claim 1, wherein steps (b) and (c) are performed in a compound notching and forming tool.
3. A method as claimed in claim 1, wherein steps (b) and (c) are performed separately.
4. A method as claimed in any one of the preceding claims, wherein at least some of the stiffening ribs (16) form an endless channel in the underside of the base of the cover and adjacent to the four sides of the cover and a seal (18) is provided in said channel for co-operating with a frame (22) in which, in use, the cover is supported.
5. A method as claimed in any one of the preceding claims, further comprising the step of welding the sides of the cover together.
6. A method as claimed in any one of the preceding claims, wherein lifting and/or fixing devices (20) are connected to at least two sides of the cover.
7. A method as claimed in any one of the preceding

claims, wherein reinforcing bars (19) are connected between at least one pair of opposite sides of the cover.

8. A method as claimed in any one of the preceding claims, further comprising the step of making a frame (22) for supporting the cover, the frame being formed by cold rolling.
9. An access cover made by a method according to any one of the preceding claims.

15

20

25

30

35

40

45

50

55

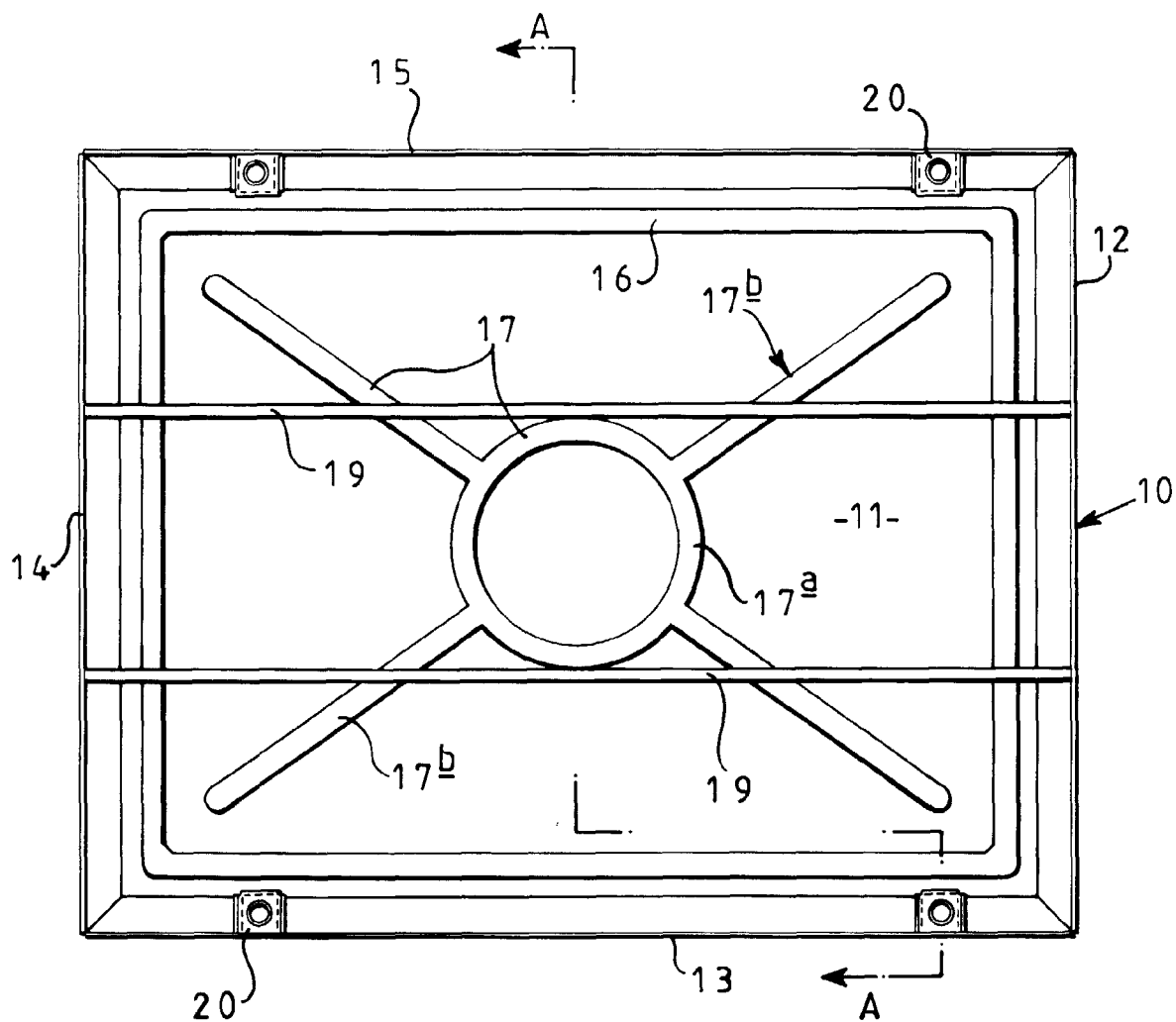


FIG 1

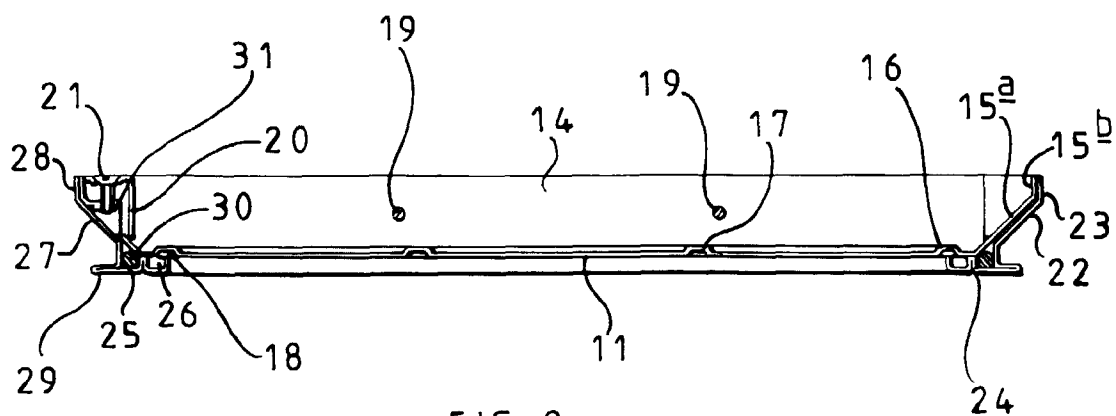


FIG 2

