

- (21) Application No **8305919**
- (22) Date of filing
3 Mar 1983
- (30) Priority data
- (31) **8206859**
- (32) **9 Mar 1982**
- (33) **United Kingdom (GB)**
- (43) Application published
2 Nov 1983
- (51) **INT CL³ E03F 5/06**
- (52) Domestic classification
E1G 94D 94L 94M2
94N 96B 96K 96L
- (56) Documents cited
GB A 2080373
GB 1574535
GB 1541763
GB 0602190
GB 0529826
GB 0524768
GB 0325711
- (58) Field of search
E1G
E1C
- (71) Applicant
Brickhouse Dudley

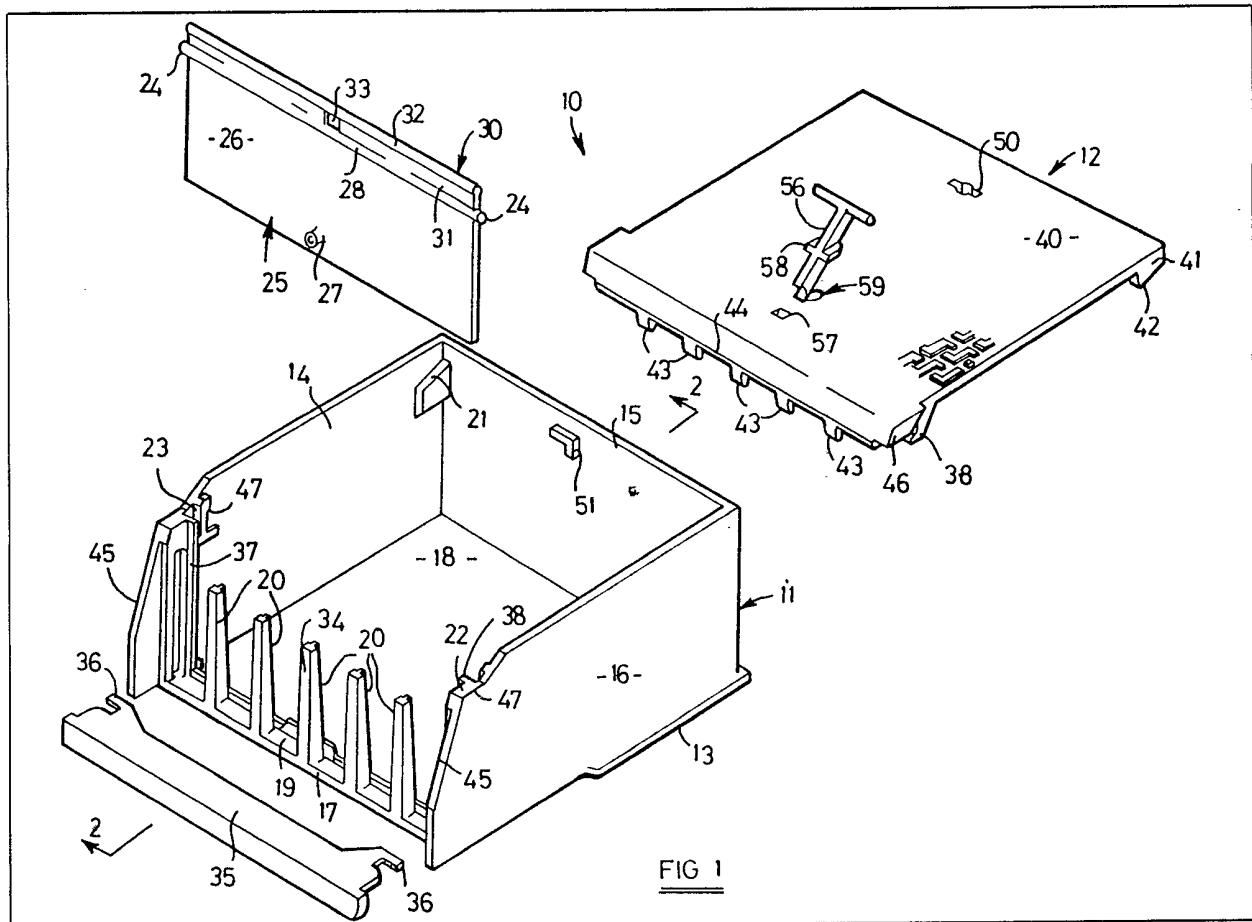
- Manufacturing Limited**
(Great Britain)
Dudley Road West
Tipton
West Midlands
DY4 7XD
- (72) Inventors
Dennis William Sains
Derek Humphries
- (74) Agent and/or Address for Service
Forrester Ketley and Co
Rutland House
148 Edmund Street
Birmingham B3 2LD

(54) **Roadside gully boxes**

(57) The front-entry aperture of a roadside gully box overlying a drain can be closed to prevent ingress of sand etc. in a dry season by lowering a hinged stopgate 25 from a horizontal open position, underlying the top cover 12, to a vertical

closed position behind the mating grating bars 20-43. The stopgate 25 has hinge pins 24 engaging grooves 23, carries a magnetic catch 27 for retaining it in its open and closed positions, and is actuated by inserting a pushing tool rack as 56 through an aperture in the cover 12.

The cover 12 seats on inclined supports 21 so that as it settles it moves forwardly to engage locking lugs 38 within frame recesses 47, the cover being held forwardly locked by means such as a turnbuckle which engages under a keep 51 and is accessible through a cover aperture 50.



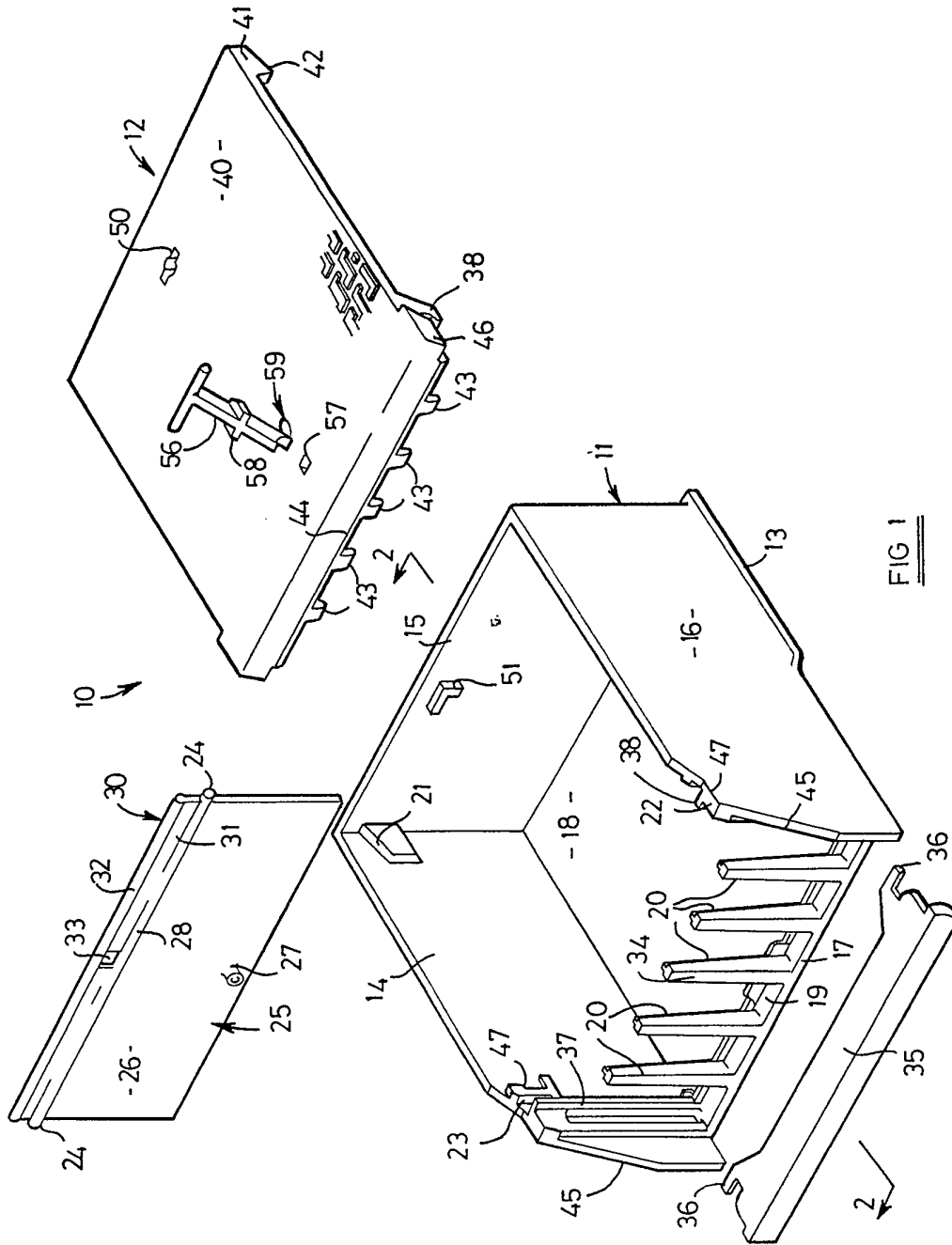


FIG 1

SPECIFICATION

Improvements in or relating to cover and frame assemblies

5

This invention relates to a cover and frame assembly of the type, hereinafter referred to as of the kind specified comprising a frame, adapted to be embedded in the ground, concrete or the like, hereinafter referred to as "the ground", above a sewer, sump, drain or other underground working, and a cover receivable within the frame to close on opening afforded by the frame, the assembly including an aperture or apertures through which water can pass into the opening. More particularly, the invention is concerned with a cover and frame assembly of the kind particularly useful in areas where drifting sand is encountered, for example in Middle Eastern areas, where drifting sand can enter the opening through the aperture or apertures and block the sewer or other underground working.

It is an object of the present invention to provide a new or improved cover and frame assembly of the kind specified.

According to the invention, we provide a cover and frame assembly of the kind specified comprising a stopgate movable along a predetermined path from a closed position wherein the aperture or apertures is or are closed by the stopgate to an open position wherein the aperture or apertures is or are open, means being provided to retain the stopgate in said open and/or closed position.

Thus during the dry season, the stopgate may be closed to prevent drifting sand entering the opening, whilst during other seasons, the stopgate may be opened to permit rain water to drain away.

Preferably, the means which maintain the stopgate in the open and/or closed position comprise a magnet means.

Preferably the stopgate is pivoted adjacent the top of the assembly so that the stopgate is pivoted upwardly into said open position.

As the stopgate is pivotable and accessible from outside the assembly, it is not necessary to remove the cover in order to move the stopgate from the open to the closed, or the closed to the open position.

In this case, a permanent magnet may be mounted on the stopgate or on the cover which, when the stopgate is opened, attracts a magnetic part of the cover or stopgate respectively to maintain the stopgate in the open position.

Where the magnet is mounted on the stopgate, when the stopgate is closed, the magnet may attract a magnetic part of the frame to retain the stopgate in the closed position.

However, if desired, a magnet may be mounted on the cover instead of the stopgate and the frame have a magnet mounted thereon to attract a magnetic part of the stopgate

to maintain the stopgate in a closed position. If required, a magnet may be provided on the stopgate, the cover and the frame also, so that the stopgate is maintained in an open position by mutual attraction of the magnets of the stopgate and the cover or in a closed position by mutual attraction of the magnets of the stopgate and the frame.

In a preferred embodiment, the cover and frame are each made of ductile iron, and the stopgate is made of lightweight grp plastics, although other materials may be used if desired.

Preferably the frame affords a rectangular or square opening and the cover is slit into the frame from a rear side thereof, the aperture or apertures being provided on an opposite front side of the assembly.

The frame and cover may together define an aperture on said front side and the cover and/or the frame may have teeth which cooperate to divide the aperture into a plurality of smaller apertures, to prevent objects such as bottles or cans or other rubbish from entering the opening.

The frame may provide inwardly and downwardly inclined seating formations adjacent the rear side thereof with which seating formations corresponding bearing formations of the cover engage, so that the cover is urged forwardly in a direction away from said rear side so that a front edge of the cover cooperates with a formation of an inner front surface of the frame to prevent the cover from being pivoted open by lifting the cover adjacent the front edge thereof.

A turnbuckle latch or other locking means may be provided adjacent a rear edge of the cover which engages a locking formation of the frame to maintain the cover in said urged forward position and prevent pivotal movement of the cover by lifting the cover adjacent the rear edge thereof.

The invention will now be described in more detail, with reference to the accompanying drawings, wherein:-

Figure 1 is an exploded perspective view of a cover and frame assembly in accordance with the invention;

Figure 2 is a fragmentary section on the line 2-2 of Fig. 1 showing the assembly assembled and the stopgate in an open position; and

Figure 3 is a view similar to that of Fig. 2 but showing the stopgate in a closed position.

Referring to the drawings there is shown an assembly 10 comprising a frame 11 and a cover 12 which is adapted to be received within the frame 11.

In use, the frame 11 is embedded in the ground over a sewer, sump, drain or like underground working, an outwardly extending flange 13 being provided on the frame to facilitate embedding the frame in the ground.

The frame comprises four sides designated

14, 15, 16 and 17 which provide a rectangular box structure affording a rectangular opening 18 therein. The front side 17, as shown in Fig. 1, comprises a bar 19 on which are provided a plurality of upwardly extending teeth 20, five in the example shown, although a different number may be provided, which teeth 20 cooperate with the cover 12 as hereinafter described.

5 The frame 11 presents two downwardly inclined inwardly extending seating formations 21 at the rear of the opening 18, only one of which can be seen in Fig. 1, and adjacent the front of the opening 18, a pair of front edge seating formations 22 adjacent which are further formations in the top of which grooves 23 are provided. The grooves 23 each receive an outwardly extending lug 24 of a stopgate 25, to provide a pivotal connection between the frame 11 and the stopgate 25.

15 The stopgate 25 further comprises a plate 26 made of grp lightweight plastics material in which is moulded a permanent magnet 27, although of course the magnet may be adhered thereto or attached by any other means.

20 The lugs 24 are each provided by the end of a cylindrical moulding 28 at the top of the plate 26, from which extends upwardly a further part 30 comprising a flange 31 with which a further cylindrical moulding 32 is integral.

25 The flange 31 has an aperture 33 adjacent the centre thereof, for a purpose hereinafter described.

30 When the stopgate 25 is connected to the frame 11 it will be appreciated that the stopgate 25 may be pivoted to a closed position in which it is retained by the magnet 27 attracting a central one 34 of the teeth 20, to close a front aperture defined by the cover 12 and the frame 11.

35 A road retaining bar 35 is provided which has two outwardly extending hooks 36 adjacent each end thereof which each engage behind an inwardly extending flange 37 and 38 respectively, on either side 14, 16 of the frame 11, to provide a weir-type entry for draining water as is well known.

40 The height of the road retaining bar 35 above the bar 19 can be adjusted by the provision of a desired number of shims (not shown) or simply the road surface material.

45 The cover 12 comprises a plate having a patterned non-slip upper surface 40, and being provided at the rear corners thereof, with a pair of downwardly extending bearing formations 41 (only one of which can be seen in the drawings) which each engage one of the seating formations 21 at the rear of the opening 18 the lower surface 42 of each of the bearing formations 41 being inclined at the same angle as the seating formations 21. The front edge 44 of the cover 12 comprises a lip which provides a plurality of downwardly extending teeth 43 corresponding to the number

of teeth 20 of the frame, which teeth 43, when the cover 12 is received in the frame 11, engage or lie closely adjacent and above the teeth 20 of the frame 11 to divide into smaller apertures the large front aperture defined by the front edge 44 of the cover, the bar 19 and side edges 45 of the sides 14, 16 of the frame 11. The lip 44 is discontinued adjacent to the front frame seating formations 22 to accommodate the formations 22. At the front corners of the cover 12, bearing formations 46 are provided behind which lugs 38 are provided which, when the cover is assembled with the frame 11, engage recess formations 47 behind seating formations 22 at the front of the frame sides 14, 16. It will be appreciated that, due to the inclined seating formations 21 and bearing formations 41 at the rear, that when the cover 12 is received in the frame 11, the cover 12 is urged forwardly until the lugs 38 engage recess formations 47, and the bearing formations 46 rest on the front edge formations 22 of the frame 11, thus the cover 12 is prevented from being lifted adjacent the front edge 44 without moving the cover 12 rearwardly because of overhang of the recesses 47.

50 However, the cover 12 is prevented from being moved rearwardly by a device such as a turnbuckle latch beneath the rear of the cover 12 (not shown) which may be activated by a conventional key, through an aperture 50 in the cover 12, which turnbuckle latch engages under a keep 51 on the inside surface of the rear side 15 of the frame 11.

55 The cover 12 may thus be received in the frame 11 by a sliding action from back to front, until the lugs 38 behind the bearing formations 46 of the cover 12 each engage the insides of the recesses 47 and the turnbuckle latch is then activated to prevent unauthorised removal of the cover 12.

60 The stopgate 25 can be pivoted relative to the frame 11 from the closed position, hereinafter described, to an open position wherein the magnet 27 engages a floating keeper 53 of magnetic material provided on the underside of the cover 12 or the underside of the cover itself, to retain the stopgate 25 in an open position. The stopgate 25 may be pivoted to the open position by inserting a suitable tool between the teeth 20, but preferably a key 56, such as shown in Fig. 2, is provided which is inserted at an inclined angle through an aperture 57 in the cover 12 to engage the cylindrical moulding 32 of the stopgate 25. The key 56 is provided with a stop 58 to prevent the risk of damaging the cylindrical moulding 32 by inserting the key too far into the opening 57. The stopgate 25 can thus be pivoted anti-clockwise about lugs 24 to an open position, the end of the key 56 being bifurcated and located in the aperture 33 provided in the stopgate 25.

65 To close the stopgate 25, a suitable probe

is inserted into a further aperture 59 in the cover 12 above the open stopgate 25 and moved downwardly to move the magnet 27 away from the keeper 53, whereafter the stopgate 25 will rotate clockwise under the influence of gravity until the magnet 27 is attracted by the central tooth 34 and maintained in its closed position.

Of course, many modifications are possible without departing from the scope of the invention. For example, the aperture in the front side of the assembly need not be defined by the cover and the frame as described, but the aperture may be defined solely by the frame, grating bars being provided if required to divide the aperture into smaller apertures.

Although in the example described, the frame 11 and cover 12 are both made of ductile iron, and the stopgate 25 from grp plastics, other suitable materials may be used.

If desired, instead of providing a magnet 27 on the stopgate 25, a magnet may be provided on the underside of the cover 12 instead, or in addition to the magnet 27. Where no magnet is provided on the stopgate, if required a magnet may be provided on the frame to maintain the stopgate in the closed position, or the stopgate 25, cover 12 and frame 11 may each be provided with a magnet.

It can be seen that in the example described, the stopgate may be pivoted between open and closed positions without having to remove the cover 12 thus considerably facilitating closing off or opening of the aperture. If access is required to the sump, sewer or drain beneath the opening 18 afforded by the frame 11, this can be achieved by undoing the turnbuckle latch and sliding the cover from the frame rearwardly.

However, if required the stopgate may be pivoted about an axis adjacent to the bottom of the frame, or moved along another predetermined path between the open and closed positions.

CLAIMS

1. A cover and frame assembly of the kind specified comprising a stopgate movable along a predetermined path from a closed position wherein the aperture or apertures is or are closed by the stopgate to an open position wherein the aperture or apertures is or are open, means being provided to retain the stopgate in said open and/or closed position.

2. An assembly according to Claim 1 wherein the means which maintain the stopgate in the open and/or closed position comprise a magnet means.

3. An assembly according to Claim 1 or Claim 2 wherein the stopgate is pivoted adjacent the top of the assembly so that the stopgate is pivoted upwardly into said open position.

4. An assembly according to Claim 3 wherein a permanent magnet is mounted on the stopgate or on the cover which, when the stopgate is opened, attracts a magnetic part of the cover or stopgate respectively to maintain the stopgate in the open position.

5. An assembly according to Claim 4 wherein the magnet is mounted on the stopgate and, when the stopgate is closed, the magnet attracts a magnetic part of the frame to retain the stopgate in the closed position.

6. An assembly according to Claim 4 wherein a magnet is mounted on the cover and the frame has a magnet mounted thereon to attract a magnetic part of the stopgate to maintain the stopgate in a closed position.

7. An assembly according to Claim 4 wherein a magnet is provided on the stopgate, and the cover and the frame also, so that the stopgate is maintained in an open position by mutual attraction of the magnets of the stopgate and the cover or in a closed position by mutual attraction of the magnets of the stopgate and the frame.

8. An assembly according to any one of the preceding claims wherein the cover and frame are each made of ductile iron.

9. An assembly according to any one of the preceding claims wherein the stopgate is made of lightweight grp plastics.

10. An assembly according to any one of the preceding claims wherein the frame affords a rectangular or square opening and the cover is slid into the frame from a rear side thereof, the aperture or apertures being provided on an opposite front side of the assembly.

11. An assembly according to Claim 10 wherein the frame and cover together define an aperture on said front side.

12. An assembly according to Claim 10 or Claim 11 wherein the cover and/or frame have teeth which co-operate to divide the aperture into a plurality of smaller apertures.

13. An assembly according to any one of the preceding claims wherein frame provides inwardly and downwardly inclined seating formations adjacent the rear side thereof with which seating formations corresponding bearing formations of the cover engage, so that the cover is urged forwardly in a direction away from said rear side so that a front edge of the cover cooperates with a formation of an inner front surface of the frame to prevent the cover from being pivoted open by lifting the cover adjacent the front edge thereof.

14. An assembly according to Claim 13 wherein a locking means is provided adjacent a rear edge of the cover which engages a locking formation of the frame to maintain the cover in said urged forward position and prevent pivotal movement of the cover by lifting the cover adjacent the rear edge thereof.

15. A cover and frame assembly substantially as hereinbefore described with reference

to and as shown in the accompanying drawings.

16. Any novel feature or novel combination of features disclosed herein and/or
5 shown in the accompanying drawings.

Printed for Her Majesty's Stationery Office
by Burgess & Son (Abingdon) Ltd.—1983.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.