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⑤④ **Access panel assembly.**

⑤⑦ An access panel assembly (1) has a frame (2) and an access panel (3) pivotally mounted in the frame (2) by hinge means (8, 17). The hinge means (8, 17) comprise a pair of T-shaped hinge rods (17) which cooperate with slots (8) in the frame (2) to allow simple release of the access panel (3) from the frame (2). The access panel (3) is movable relative to the hinge rods (17) so that during opening and closing thereof, the access panel moves radially, as well as angularly, of the pivot axis. The access panel (3) may be air sealed into the frame (2) if desired.

"ACCESS PANEL ASSEMBLY"

This invention relates to an access panel assembly primarily for a suspended ceiling.

An access panel assembly is known from G.B. publication 2116601 which discloses a suspended
5 ceiling access panel pivotally mounted in a frame by means of a fixed pin extending outwardly from each of a pair of side walls of the panel. The pins engage in an L-shaped slot in a respective side wall of the frame arranged to allow the panel
10 to be removed from the frame.

However that design, whilst enabling removal, has two main disadvantages namely:

- (i) it is not air sealed. Often building design requires different pressures either side of a suspended ceiling in which case an air sealed
15 access panel assembly is essential, and
- (ii) the assembly incorporates outwardly directed portions, such as the flanges on the frame, the pins and the lock tongue, which can foul
20 on light fixtures, ducting etc. within the ceiling space.

An object of the present invention is to provide an improved access panel assembly the design of which allows at least one, and preferably
25 both, of these disadvantages to be overcome.

According to the present invention there is

provided an access panel assembly comprising a frame, and an access panel pivotally mounted in the frame by hinge means which, during opening and closing thereof, cause the access panel to move
5 radially, as well as angularly, of the pivot axis.

Preferably the hinge means comprises a pair of hinge rods pivotally mounted on the frame and slidably received by one or respective brackets secured to the access panel. The hinge rods may be
10 T-shaped and may engage with respective T-shaped slots in the frame so that, by appropriate manipulation whereby the heads of the rods pass through the slots, the access panel may be released from the frame.

15 In the preferred arrangement the hinge axis moves inwardly of frame as the access panel is opened to provide additional downward movement the access panel on opening. In order to provide air sealing the frame may include a circumferential
20 seal which cooperates with the access panel on closure.

According to another aspect of the invention there is provided an access panel assembly comprising a frame, and an access panel pivotally
25 mounted in the frame by hinge means, the frame being stepped in cross-section and including a downwardly extending lower flange the outer surface of which determines the outer dimensions of the

assembly and an inner surface which defines the access panel seating. Preferably the hinge means, on opening and closing, causes the access panel to undergo radial movement, as well as angular movement, relative to the hinge axis. Air sealing may be provided by a circumferential seal on the inside surface of the step of the frame.

The invention also includes an access panel assembly comprising a frame, an access panel pivotally mounted in the frame by hinge means, and circumferential sealing means between the frame and the access panel to air seal the access panel assembly on closure thereof, the sealing means being so positioned and the opening and closing movement of the access panel being so arranged that, during opening and closing of the access panel, there is no interengagement between the sealing means and the moving access panel but, on closure, the sealing means is compressed, or at least subjected to sealing pressure, between the frame and the access panel. Preferably the sealing means is a neoprene gasket on the frame as opposed to being on the access panel.

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

Figure 1 is a perspective view of the preferred access panel assembly in the closed

position;

Figure 2 is a perspective view of the access panel assembly in the open position;

Figure 3 is a partial exploded perspective
5 showing the hinge detail of the preferred access panel assembly; and

Figures 4 and 5 are diagrammatic part side-sectional views of the access panel assembly in the closed and open positions
10 respectively.

In the drawings an access panel assembly 1 comprises a frame 2 and an access panel 3. The frame 2 has side walls of a stepped configuration, as shown, such that a lower flange 4 has an outer surface which determines the outer dimensions of
15 the assembly and an inner surface which defines the access panel 3 seating. The frame 2 is either bolted on to a primary channel 5 by means of brackets 6 as shown in phantom lines or, alternatively, can be suspended by rigid rod
20 hangers (not shown).

One side wall 7 of the frame 2 is provided with a pair of T-slots 8 for releasably receiving the hinge mounting of the access panel 3 as will be
25 explained in detail below, whilst an opposed side wall 9 has a lock 10 disposed within its step and adjacent a longitudinal slot (not shown). The lock

moved by a locking key so that the tongue protrudes through the slot in the frame 2 and engages under a lock bracket 11 on the access panel 3 thereby locking the panel 3 to the frame 2.

5 The access panel 3 has depending side flanges 12, of a depth consistent with a ceiling tile 13 to be positioned within the panel 3 in conventional manner, and a removable end wall 14 which allows positioning of the tile 13. The end wall 14 has
10 spaced screw holes 15 which enable the end wall 14 to be secured to a U-shaped bracket 16 welded to the upper surface of the access panel 3.

 The bracket 16 has an aligned pair of holes at each end each of which receive a T-shaped hinge rod
15 17. The hinge rods 17 are slidable relative to the bracket 16 within limits determined by a stop 18 positioned on each of the rods 17 and between the spaced upstanding limbs of U-shaped bracket 16. The heads of the hinge rods 17, which define a
20 movable hinge axis, are dimensioned such that they are able to pass through the slots 8 in the frame 2.

 In use the hinge rods 17 are positioned within the slots 8 so that, in the closed position of the
25 access panel 3 with the locking tongue in engagement with bracket 11 as shown in Figures 1 and 4, the hinge rods 17 extend horizontally with the stops 18 in abutment with the inside surface of

the farther of the limbs of bracket 16. When it is desired to open the access panel 3, the lock 10 is released by manipulation of a lock key through guide 19. This allows the access panel 3 to

5 hinge about the hinge axis made possible by the provision of the slots 8 with the rods 17 passing into the horizontally extending portions of the respective slots 8. Simultaneously, as the access panel 3 starts to open, it drops downwardly along

10 the rods 17 until the stops 18 abut the inside surface of the nearer of the limbs of the bracket 16 and the head of the rods 17, defining the hinge axis, moves towards the slots 8 as seen from Figures 4 and 5. In this way the access panel 8

15 moves radially of the hinge axis as well as angularly to drop clear of the lower flange 4 of the frame 2 so that it can be opened fully into the position shown in Figure 2.

If it is desired to remove the access panel 3

20 from the frame 2, the access panel 3 is held and lifted slightly until the heads of the rods 17 are aligned with the heads of the respective slots 8. Then the access panel 3 can be moved away from the side wall 7 to release the access panel 3 from the

25 frame 2.

As indicated in the introduction of the specification an important advantage of the present invention is that it allows the incorporation of

air sealing. This sealing is provided by means of a peripheral sealing gasket 20 positioned on the inside of the step of frame 2 as shown in Figures 4 and 5. Because the access panel 3 drops away from its hinge points on release, the sealing is effected by simple pressure of the access panel 3 against the gasket 20 without rubbing movement of the panel across the gasket 20 which would otherwise be the case.

10 The access panel assembly 1 is suitably made of metal material and the sealing gasket 20 may be neoprene.

CLAIMS

1. An access panel assembly comprising a frame, and an access panel pivotally mounted in the frame by hinge means which, during opening and closing thereof, cause the access panel to move radially, as well as angularly, of the pivot axis.

2. An access panel assembly according to claim 1 wherein the hinge means comprises a pair of hinge rods pivotally mounted on the frame and slidably received by one or respective brackets secured to the access panel.

3. An access panel according to claim 2 wherein the hinge rods are slots in the frame so that, by appropriate manipulation whereby the heads of the rods pass through the slots, the access panel may be released from the frame.

4. An access panel according to any one of the preceding claims wherein the pivot axis moves inwardly of the frame as the access panel is opened to provide additional downward movement of the access panel on opening.

5. An access panel according to any one of the preceding claims wherein the frame includes a circumferential seal which cooperates with the access panel on closure to provide air sealing.

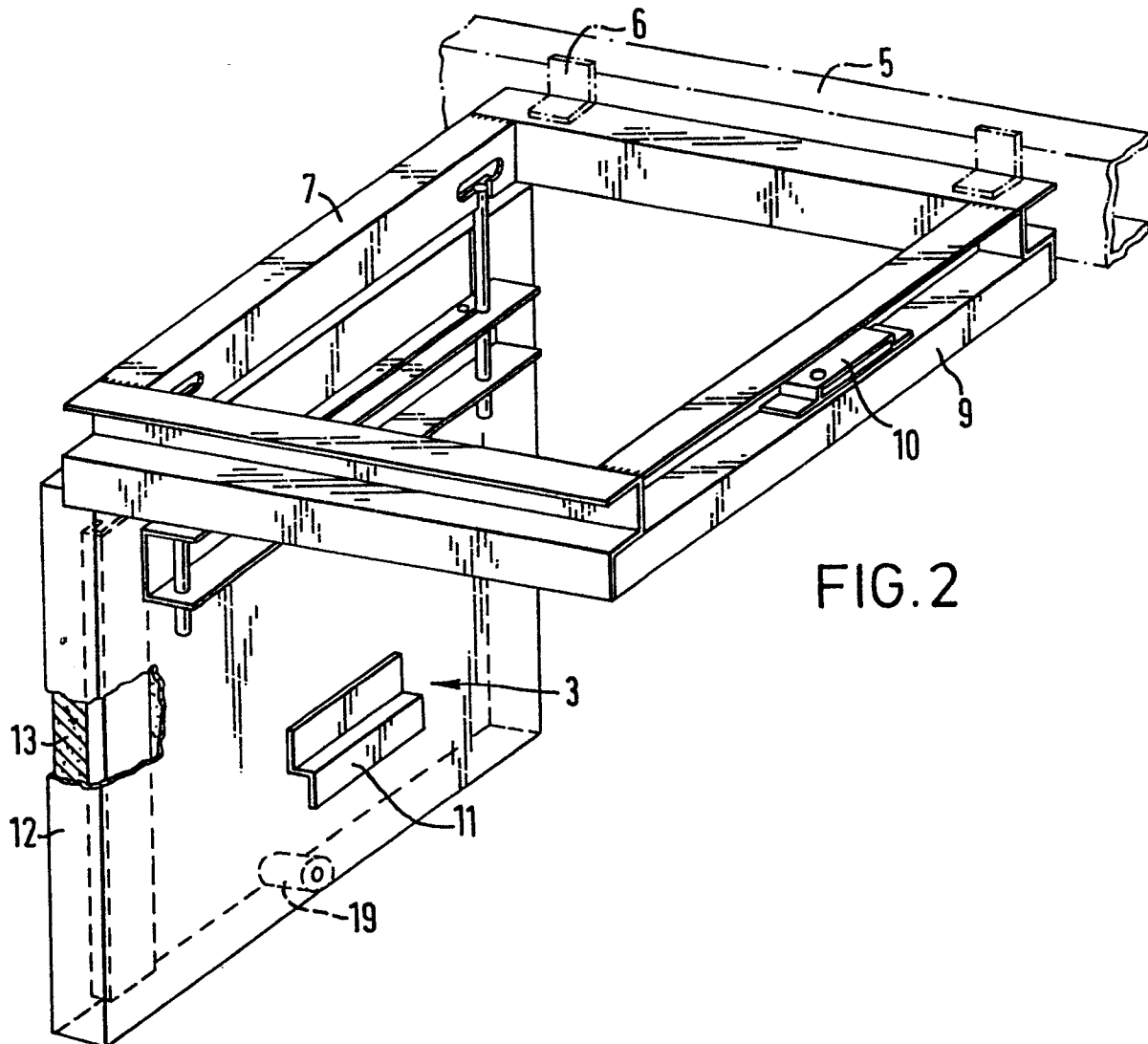
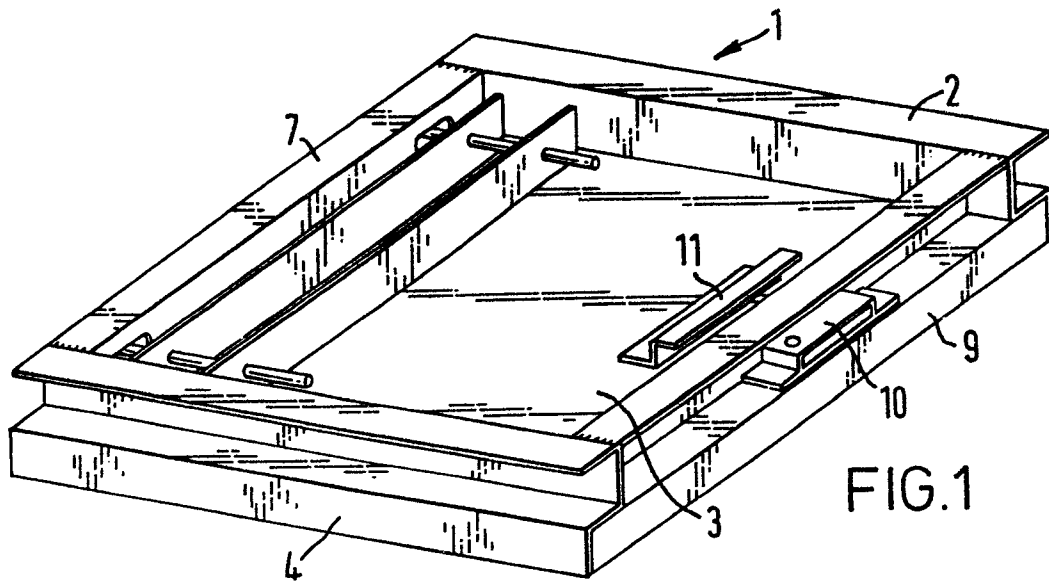
6. An access panel assembly comprising a frame, and an access panel pivotally mounted in the frame by hinge means, the frame being stepped in cross-section and including a downwardly extending lower flange the outer surface of which determines the outer dimensions of the assembly and an inner surface which defines the access panel seating.

7. An access panel assembly according to claim 6 wherein the hinge means, on opening and closing, causes the access panel to undergo radial movement, as well as angular movement, relative to the hinge axis.

8. An access panel assembly according to claim 6 or 7 wherein a circumferential seal is disposed on the inside surface of the step of the frame to provide air sealing on closure.

9. An access panel assembly comprising a frame, an access panel pivotally mounted in the frame by hinge means, and circumferential sealing means between the frame and the access panel to air seal the access panel assembly on closure thereof, the sealing means being so positioned and the opening and closing movement of the access panel being so arranged that, during opening and closing of the access panel, there is no interengagement between the sealing means and the moving access panel but, on closure, the sealing means is compressed, or at least subjected to sealing pressure, between the frame and the access panel.

10. An access panel according to claim 9 wherein the sealing means is a neoprene gasket on the frame.



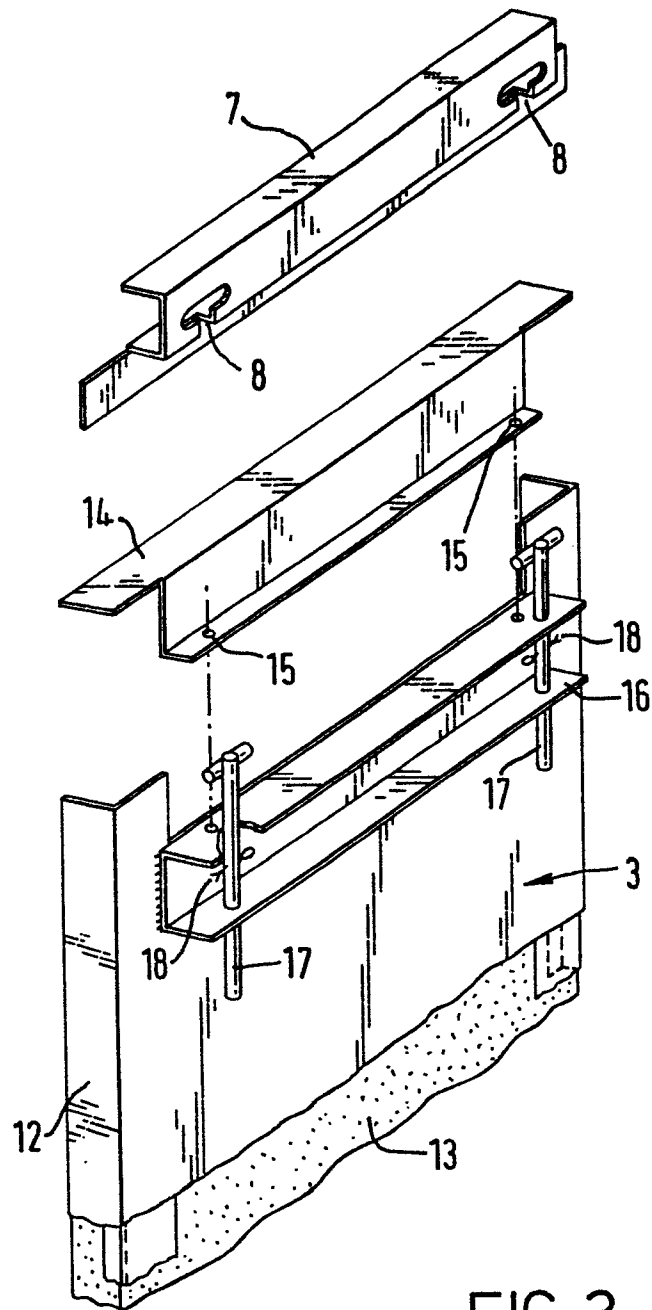


FIG. 3

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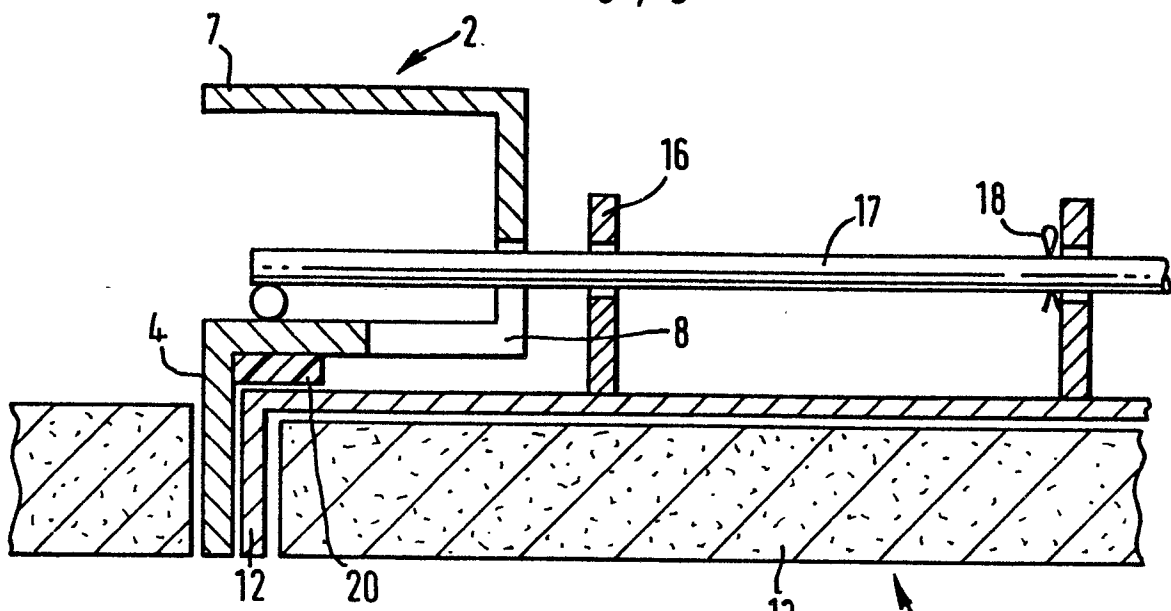


FIG. 4

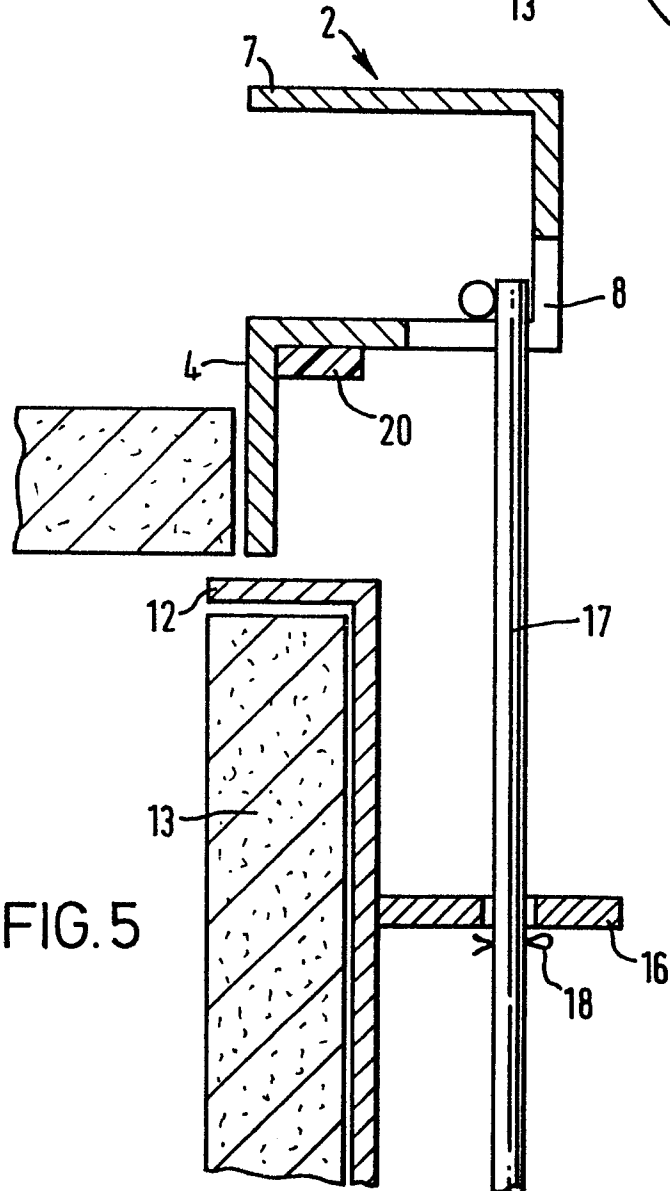


FIG. 5