April 25, 1933. H. B. WUEBLING 1,905,082

FLUSH PANEL CONSTRUCTION

Filed Dec. 19, 1930 2 Sheets-Sheet 1

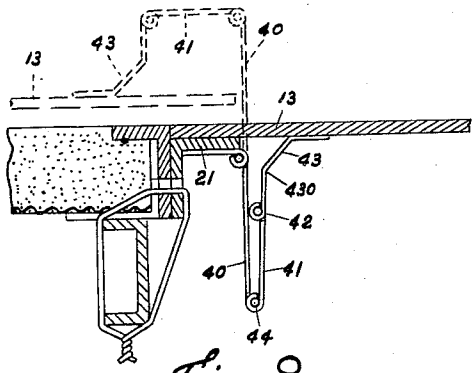


Fig. 8.

Fig. 1.

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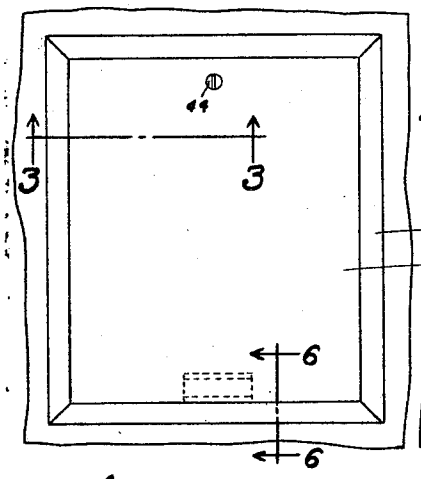


Fig. 2.

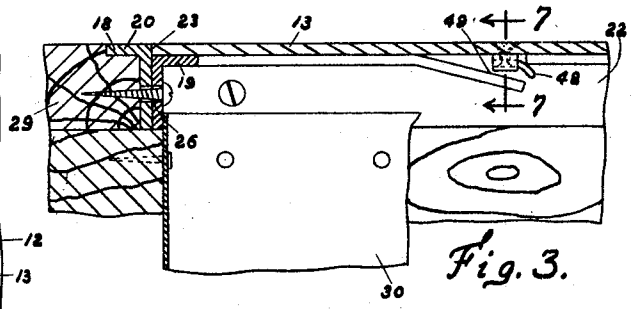


Fig. 3.

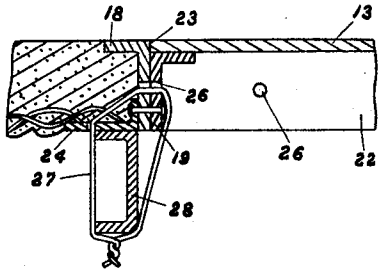


Fig. 4.

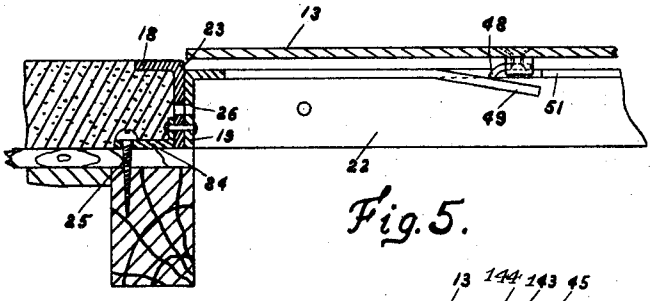


Fig. 5.

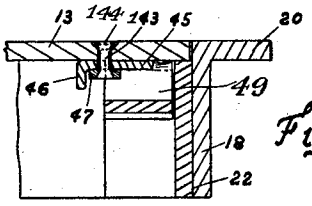


Fig. 7.

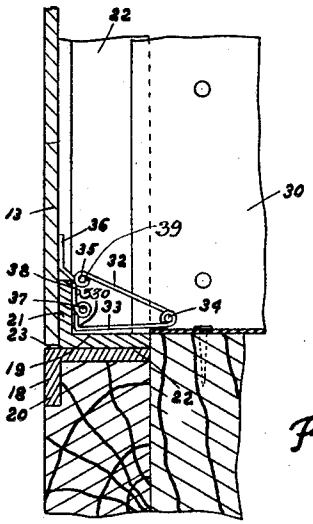


Fig. 6.

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UNITED STATES PATENT OFFICE

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FLUSH PANEL CONSTRUCTION

Application filed December 19, 1930. Serial No. 503,418.

This invention relates to a structure known as an access panel or unit which is adapted to be installed in a wall or floor in flush relationship with the outer surface thereof and which covers but permits access to plumbing, wiring, etc., without disturbance or injury to the wall or floor. The device, with a grill replacing the solid panel portion thereof, is likewise adapted for use as a register.

An object of the invention is to provide an improved structure of this type.

Another object is to provide such a device wherein the closure or panel portion, is permanently connected to the frame portion.

Another object is to construct such a device wherein the movable panel portion, in its opened position, lies flush with the adjacent wall or floor surface.

Another object is the provision of a novel kind of hinge means between the movable and the supporting portions of the structure.

Another object is an improvement in the locking and release means of the device.

Another object is to provide such a structure which is unusually simple and sturdy in its construction, convenient in use, and adapted for low-cost manufacture.

These and other objects are attained by the means described herein and set forth in the accompanying drawings, in which:

Fig. 1 is a perspective view of the access panel of this invention in an opened position.

Fig. 2 is a front elevational view of the access panel, closed and positioned in a floor, wall or ceiling.

Fig. 3 is a cross sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 3 showing the device as installed in a wall.

Fig. 5 is a view similar to Fig. 4 showing the panel portion in its initial opening position.

Fig. 6 is a cross sectional view taken on line 6—6 of Fig. 2.

Fig. 7 is a cross sectional view taken on line 7—7 of Fig. 3.

Fig. 8 is a cross sectional view showing a modification of the hinge structure of the invention.

The access panel comprises the rectangular open frame 12 and the panel or door 13, both preferably formed of metal. The frame has top 14, bottom 15 and sides 16 and 17, each of which may be formed of a pair of right angle strips 18 and 19, joined together as by spot welding so as to provide a flange 20 projecting outwardly, a flange 21 projecting inwardly and flange 22 projecting rearwardly of the frame. Flange 21 is offset inwardly relative to flange 20 whereby a countersunk ledge 23 is formed on the frame for seating panel 13 flush with flange 20. In constructing the frame, the joined angle strips may be suitably mitered at their ends before being welded together to form top, bottom and sides. Perforated angle clips 24 (Fig. 5) are secured upon the outer face of rearwardly projecting flange 22 and are adapted to receive screws 25 for securing the frame to beams, or other supporting structure accessible within the wall space which receives the frame. In addition, the flange 22 is provided with perforations 26 adjacent clips 24 for receiving suitable securing means. These means, as shown in Fig. 4, might consist of wires 27, passed, one each through perforated clip 24 and around stud 28 contained within the wall, the wire 27 being thereafter twisted together at its ends. As seen in Fig. 3, perforations 26 receive screws which are driven directly into flooring 29. This view as well as Fig. 6, shows the edges of flange 22 disposed beneath the metal sheeting 30 of a heat conduit. It will be seen in the various views that the flange 20 lies flush with the adjacent outer wall or floor surface. In the case of a plaster wall installation, the spaces between flange 20 and the broken edges of the wall space may be filled in after positioning of the frame.

A three-knuckle hinge 31 of novel construction joins panel 13 to frame 12. Hinge 31 comprises a pair of leaves 32 and 33 hingedly joined at 34 (Figs. 1 and 6). Straight leaf 32 is hingedly attached at 35 to a bracket 36 secured to the rear face of panel 13 and extending over flange 21 when the panel is closed. Leaf 33, having a downward bend at 330, is hingedly attached at 37 to a bracket 38, secured

upon the rear face of flange portion 21 of bottom 15. When panel 13 is initially opened outwardly the journal members 39 of the hinge joint 35 remain in abutment against bracket 38 (Fig. 6) and there is only a slight pivotal movement of the panel 15 at joint 35 before the bottom edge of the panel 13 binds against the flange portion 21 of the frame bottom, whereby the panel is locked against further outward movement. A safety means is thus provided to preclude sudden outward and downward swinging of the panel and possible injury to the wall or to the person using the device. To open the panel fully and bring it down flush against the outer floor or wall surface, it is necessary to lift upward upon the panel, breaking the abutment of journal members 39 and bracket 38, and of the bottom edge of panel 13 with flange 21. Pivotal movement at joints 34, 35 and 37 is then effected, the leaf 33, due to the bend at 330, is projected forwardly and lies across the edge of flange 21 while the leaf 32 extends downwardly in substantial parallelism with downwardly-extending panel 13.

A modification of the hinge structure is shown in Fig. 8. Herein a somewhat elongated hinge leaf 40 is hingedly attached to flange 21 at the top edge thereof. A shorter hinge leaf 41 has a hinge connection 42 with the inwardly-projecting bracket 43, the other end of leaf 41 being hingedly associated at 44 with leaf 40. Hinge connection 42, when the panel 13 is closed, bears against the adjacent side of leaf 40 and, together with the abutment of panel 13 against flange 21, provides a safety stop operative upon initial opening of the panel, by which two means the panel is held against further outward movement until lifted as above explained. It is preferable to provide bracket 43, before positioning thereof, with a slight bend so that after complete installation of the associated hinge structure this bend may be increased exactly to the required extent, as at 430, for insuring firm abutment of hinge connection 42 against leaf 40.

The means for locking and opening panel 13 comprises a bolt 143 passing through the top of panel 13 and revoluble therein. Bolt 143 has a screw-head 144 counter-sunk in the outer face of panel 13. The inner end of the bolt passes revolubly through a bracket 45 secured upon the inner face of panel 13, the bracket being of substantially the same thickness as flange 21. Bracket 45 is provided with the inwardly-projecting ledge portion 46. Upon the inner end of bolt 143, a latch member 47 is fixed, said member having an end 48 curved outwardly of panel 13. Inwardly-projecting flange portion 21 (Fig. 1) of the top 14 is cut transversely and a portion thereof bent rearwardly to provide a cam face 49. A way 50 results between this cam face and the unbent edge 51 of flange 21. Upon closing of panel 13, the latch 45 is turned, by means of screw head 44, so that end 48 of the latch projects upwardly, whereby the latch is receivable in the way 50, and panel 13 abuts against the outer face of flange 21. Latch 45 is then turned to the position seen in Fig. 3, with end 48 disposed above edge 50 of flange 21 whereby the panel is locked in a closed position. Upon turning of the latch in the opposite direction, end 48 thereof rides upon the cam face 49 and serves as a back up cam for pushing the panel 13 outwardly, the latter automatically assuming the initial opening position previously described. Ledge 46 limits pivotal movement of latch member 45.

The invention therefore provides a simplified access panel having the door portion in permanent attachment thereon by means permitting movement of the door to an unobstructing open position and providing safety means to effect a controlled opening. A single fastening means is provided in place of the frequently used three point closure, said means likewise initiating opening movement of the panel, it being understood that the outer panel face is completely smooth and flush with the adjacent surface so that paint, papering, or the like, may be applied to said outer face. The access panel, due to the abutment of the door 13 with flange 21 is likewise dust-proof.

In case an access panel or similar structure of larger than average size is to be installed, it would be desirable to utilize a hinge structure of proportionately greater length to properly mount the larger and heavier panel door. Alternatively, two, three or more of the regular, smaller size hinge structures may be used. In this instance, it is preferable to utilize a single elongated hinge pintle joining the leaves of the various hinges whereby uniform positioning and movement of the hinges may be assured.

It is obvious that the substitution of a register grille for the solid door shown herein, would in no way affect the associated means described, this, and other modifications, falling clearly within the spirit and scope of the present invention.

What is claimed is:

1. The combination with a frame having an inwardly-projecting flange and a closing panel adapted to contact said flange, of a bolt passing through the panel and revoluble from the outer face thereof, and a latch member fixed upon the inner end of the bolt and having an end curved in a direction away from the panel, said flange being cut transversely and a portion thereof on one side of the cut being bent rearwardly of the frame and providing a way adapted to receive the latch member upon closing of the panel, the curved end of said latch member being adapted when turned in one direction, to overlap

the unbent portion of said flange for locking the panel, and when turned in the opposite direction, to contact the bent portion of said flange for initiating opening of the panel.

2. The combination with a frame having an inwardly projecting flange with a way therethrough and a closing panel adapted to contact said flange, of a latch member attached to the rear of the panel and movable from the outer face thereof, said latch member being receivable through said way and movable to a latched relationship with said flange, and means on the latch member and flange and adapted to initiate opening movement of the panel upon unlatching thereof.

3. An access panel adapted for insertion in a wall space and comprising frame members formed of pairs of angle strips joined longitudinally and providing divergent flanges extending inwardly and outwardly of the frame and rearwardly-extending flanges forming the body of the device, said outwardly-extending flanges lying in a common plane and being adapted to lie flush upon the supporting wall surface adjacent thereto, said inwardly-projecting flanges lying in a common plane offset rearwardly from the plane of the outwardly-extending flanges, and a closing panel adapted to lie flush upon said inwardly-projecting flanges and in the plane of the outwardly-projecting flanges.

In testimony whereof, I have hereunto subscribed my name this 12th day of December, 1930.

HARRY B. WUEBLING.