

June 4, 1929.

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1,716,038

ACCESS DOOR

Filed Nov. 4, 1927

Fig. 1

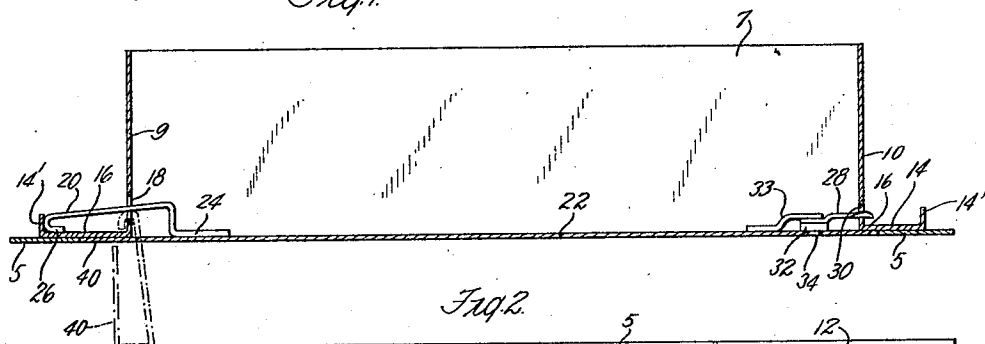


Fig. 2

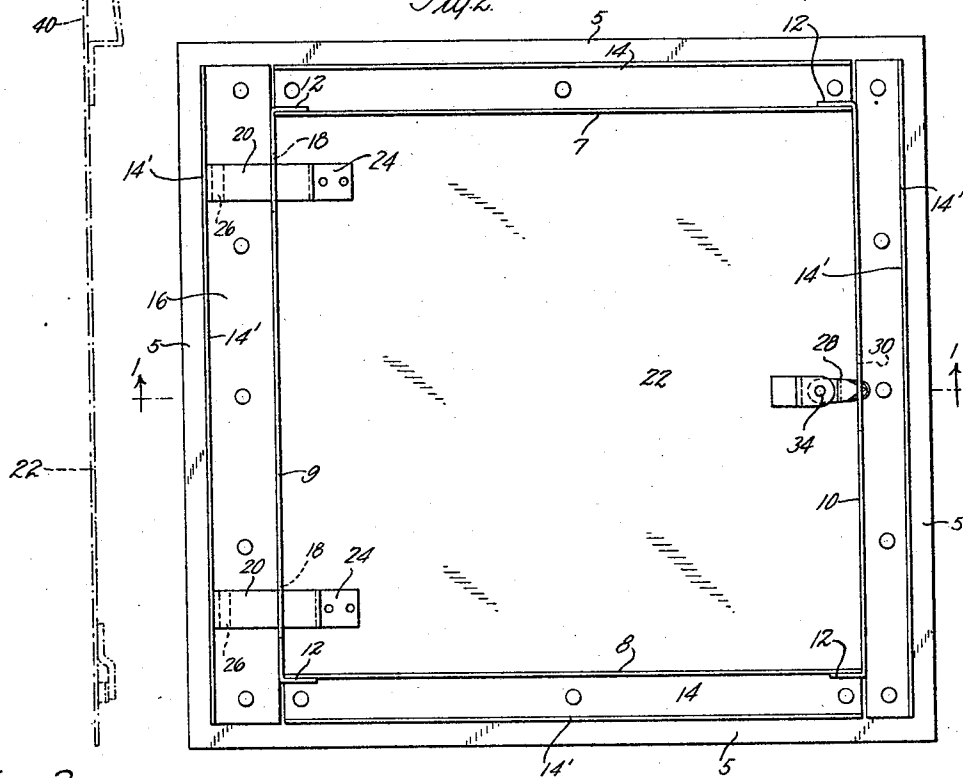
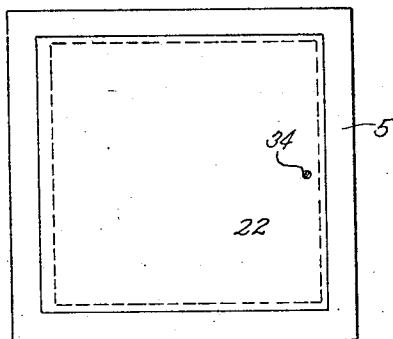
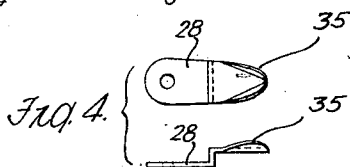


Fig. 3



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ACCESS DOOR.

Application filed November 4, 1927. Serial No. 231,056.

This invention relates to closures, and particularly to closures for wall or ceiling openings which give access to concealed plumbing, electrical wiring or other building equipment to which only occasional access is desired.

In certain buildings such, for example, as hospitals, the plumbing is usually suspended from the under sides of the floors of the building, and in such installations access to the traps and other parts of the plumbing to which occasional access is desirable is obtained through openings in the ceilings of the floors below, these openings being usually closed by what are commonly termed access doors.

A general object of the present invention is to provide an improved access door construction, particularly useful for installation in ceilings, which will be inconspicuous, which can be opened and closed with a minimum of effort, which automatically assumes a flush position with the frame and surrounding ceiling when closed, which is so constructed that when opened it quickly moves into a position to clear the opening without liability of falling and which requires but a single simple fastening means to maintain it in flush closed position.

An important feature of the present invention is the utilization of a single means for both suspending the access door in its open position and for insuring its movement into flush relation to the ceiling when the door is brought to its closed position.

Other objects and important features of the invention will appear from the following description and claims when considered in connection with the accompanying drawings in which

Figure 1 is a section on the line 1—1 of Fig. 2 showing an access door embodying the present invention in full lines in its closed position and in dotted lines in its open position;

Figure 2 is a plan view looking from above the ceiling of an access door embodying the present invention;

Figure 3 is a plan view looking from below, showing the flush appearance of the access door in the ceiling, the invention being shown on a reduced scale, and

Figure 4 is a detail plan and side elevation of the latch.

In the illustrated embodiment of the inven-

tion, the access door is provided with a casing of considerable depth so that the casing itself helps to form a compartment about the plumbing or other building equipment to which access is desired, the illustrated casing being formed of four strips of sheet metal 7, 8, 9 and 10, each provided with a flange 14, the flanges 14 of the respective members preferably all lying in one plane and each of the flanges 14 being preferably reversely flanged as shown at 14' to increase its rigidity. The members 9 and 10 of the casing are cut to a length to permit their flanges 14 to overlap and substantially abut the ends of the flanges of the members 7 and 8, and those parts of the members 9 and 10 which project beyond the members 7 and 8 are severed from the flanges 14 of the members 9 and 10 and bent into overlapping relation to the members 7 and 8, as shown in Fig. 2, and spot welded or otherwise permanently secured to the members 7 and 8 to form a permanent rigid casing construction.

The frame member 5 of the access door has an access door opening somewhat larger than the opening provided by the casing members 7, 8, 9 and 10 so that when placed in position on the casing there is provided an abutment, seat or stop 16 against which the door 22 abuts along each of its margins, the width of the stop against which the hinged side of the door abuts being somewhat greater than that of the other portions of the stop.

One of the important features of the invention is the novel means for providing a swinging support for the door 22 so that it may swing from closed to open position and yet may readily be bodily removed. In order to maintain the outer face of the door substantially flush with the frame 5 and with the ceiling in which the casing is to be located so that the whole structure may be painted over and decorated in the same way as the rest of the ceiling, it is preferable that the whole hinge construction, as well as the means for securing the door in its closed condition, be upon the inside of the door.

It is, of course, important that when the door is swung to its closed position that edge which is adjacent to the door support be brought up tight against its part of the stop 16. In the illustrated embodiment of the invention, therefore, the door 22 is supported by resilient hook-like members 20 which extend through openings 18 provided in the side

9 of the casing. These hook-like members comprise each a base portion 24 which may be secured in any suitable manner to the door 22 as, for example, by spot welding, and the hook-like end 26 of each member is so located with respect to the plane of the inner face of the door 22 that when this hook is brought into the position shown in Figure 1, in which it bears against the inner face of the flange of the member 9, it tends to press the edge 40 of the door 22 tightly against the adjacent portion of the stop 16. In other words, as shown in Fig. 1 of the drawings, when the access door is in its closed position the hook-like member 20 is sprung somewhat out of its normal position, the elasticity of the member tending, therefore, to press the margin 40 of the door tight against its stop 16.

The door is held in its closed position by any suitable latch construction such, for example, as that shown in Figs. 1 and 2, which comprises a latch member 28 carried by a rotatable block 32 mounted on a shaft 34 having a bearing at one end in the ear 33 connected to the inner face of the door 22 and at its other end in an opening through the door itself, the outer end of the shaft 34 being provided with a kerf to receive a screw-driver by which the latch may be turned between its open and closed positions. In order to insure that the latch hold the latch edge of the door tight against the stop 16, that edge of the opening 30 through the member 10 with which the latch engages is preferably somewhat higher than the normal position of the main body of the latch and the two lateral edges of the latch are preferably slightly upturned, as shown at 35, to form cams to guide the latch into engagement with the latch-engaging edge of the opening 30, thus putting a tension upon the latch which holds the adjacent edge of the door 22 tight against its part of the stop 16.

When the door is swung to open position as shown in dotted lines in Fig. 1, it will be seen that it slides toward the right after the latch is released until the hook 26 engages that part of the outer face of the member 9 adjacent to the opening 18, when the door may swing down into the dotted line in Fig. 1, in which position it is held by the hook 26 which is hooked over the lower edge of the opening 18. The construction is such that even if the door tends to swing beyond the vertical position shown in Fig. 1, the edge of the door hitting the stop 16 pulls the hook tighter into engagement with the lower edge of the opening 18 and thus prevents the hook from jumping out of its support and releasing the door altogether. By suitable manipulation of the door in its open position, the hook 26 may be unhooked from its engagement with the lower edge of the opening 18 and the door bodily removed. There is, how-

ever, no danger, from its merely swinging to open position, of its dropping and injuring anyone or anything.

From the foregoing description it will be seen that the invention provides a simple, easily made and easily manipulated access door construction which, when in its closed condition, presents a flush surface that can readily be concealed by the decoration of the ceiling and which is opened merely by the movement of a single latch member into unlatched condition, the opening being unattended by danger of the door dropping from its support while at the same time the construction readily permits the complete removal of the door.

What is claimed as new is:

1. A device of the character described comprising a frame, means for closing the opening in the frame, and means for holding one side of said closing means in closed position, said means including a plurality of hook members serving as pivots about which the closing means may swing to suspend the closing means from the frame when it is in its open position.

2. A device of the character described comprising a frame, means for closing the opening in the frame, means for securing one side of said closing means in closed position and including a hinged support for suspending said closing means from said frame when it is in its open position.

3. A device of the character described comprising a frame, a plate for closing the opening in said frame, resilient means for holding one side of said plate in closed position, and means for placing said resilient means under tension and for securing the plate in closed position, said resilient means serving as a pivot about which said closing means may swing when in its open position.

4. A device of the character described comprising a frame, means for closing the opening in said frame, resilient means for supporting one side of said closing means and maintaining it flush with the outer face of said frame member when the closing means is in closed position, and means for placing said resilient means under tension and for securing said closing means in its closed position, said resilient means serving as a pivot about which said closing means may swing when in its open position.

5. An access door comprising a frame, a flange providing a seat surrounding the opening in the frame, a plate adapted to engage said seat and close the opening in the frame, a plurality of resilient hook members carried by said plate, said resilient hook members serving in one position to hold one side of said plate in closed position and serving as pivot members about which said plate may swing when in the open position.

6. An access door comprising a plate hav-

ing an opening therein, a flanged casing projecting rearwardly from said plate, said casing providing a seat within the edges of said opening, a closure for the opening adapted to engage said seat when in its closed position, a hinged support for suspending the closure at an angle to the plate when in its open position and urging said plate into engagement with said seat when in closed position, and means for securing said closure in closed position.

7. A device of the character described comprising a frame, a seat within the opening in said frame, means adapted to engage said seat and close the opening in said frame, resilient means for holding one side of said closing means in engagement with said seat when in closed position and serving as a support for said closing means when in opened position and means for securing said closing means in its closed position, said securing means also serving to maintain the closing means in engagement with said seat.

8. An access door comprising a frame, a rearwardly extending flanged casing defining the opening in said frame, said casing providing a seat about said opening, a plate for closing the opening in the frame member, said plate having engagement with said seat when in its closed position, and means for retaining said plate in closed position, said means comprising a plurality of hook members extending through openings in the flange at one side of the frame member, and locking means engaging another opening in the flange at a point remote from said hook members.

9. A device of the character described comprising a door, a door frame and a casing providing a stop for the door, and means wholly within the door, when closed, for yieldingly maintaining said door in its closed position, said yielding means being provided with a hook about which said door may pivot for suspending said door in its open position.

10. A device of the character described comprising a door, a door frame and a door casing providing a stop within the edges of said door frame, said door being constructed to lie flush with said door frame when in its closed position, and means wholly within said door and connected thereto for yieldingly pressing said door into its flush closed position, said means comprising a latch acting upon one edge of said door and a hook mem-

ber about which said door may pivot adapted to suspend said door when in its open position and arranged to press said door into flush engagement with the stop when in its closed position.

11. A device of the character described comprising a flanged door casing providing a stop and a support for the door frame, a door frame connected to the flange of said casing, a door adapted to engage said stop and to lie flush with said frame when in its closed position, means wholly within said door when closed and acting upon said frame to press said door into its flush closed position, said means comprising spring members acting to hold one edge of said door in its flush closed position and having hooks for engaging said frame and for suspending said door in its open position, and a latch provided with a cam surface adapted to engage said frame and press the opposite edge of said door into its flush closed position.

12. A device of the character described, comprising a frame having an opening therein, a closure for said opening and means serving to urge said closure into engagement with said frame when the closure is in one position, said means including members about which said closure may swing when the closure is in another position.

13. A device of the character described, comprising a frame having an opening therein, a closure for said opening and means wholly within the closure for yieldingly urging said closure into engagement with said frame so as to present an outer surface flush with the outer face of said frame, said means including members serving as pivotal supports for said closure when in the open position.

14. A device of the character described comprising a frame having an opening therein, a seat within the opening in said frame, a closure for the opening in said frame adapted to engage said seat and present an outer surface flush with the outer face of said frame, and means urging said closure into engagement with said seat when in closed position, said means including means serving as a hinged support for said closure when in the open position.

Signed at New York, N. Y., this 1st day of November, 1927.

REED FERRIS.