

March 27, 1945.

D. W. KAHLE

2,372,431

HINGE

Filed Aug. 13, 1942

2 Sheets-Sheet 1

Fig. 1.

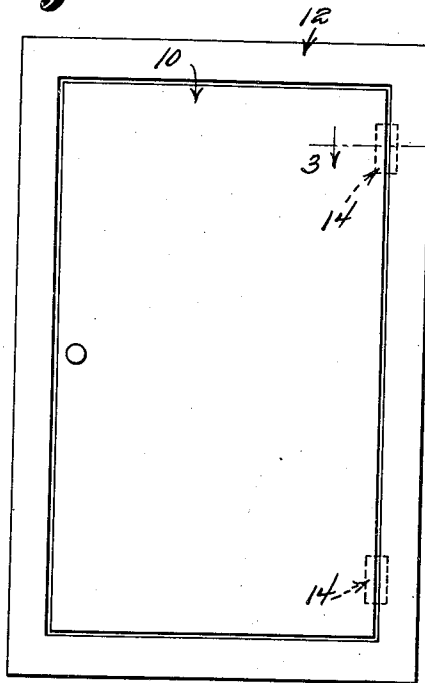


Fig. 2.

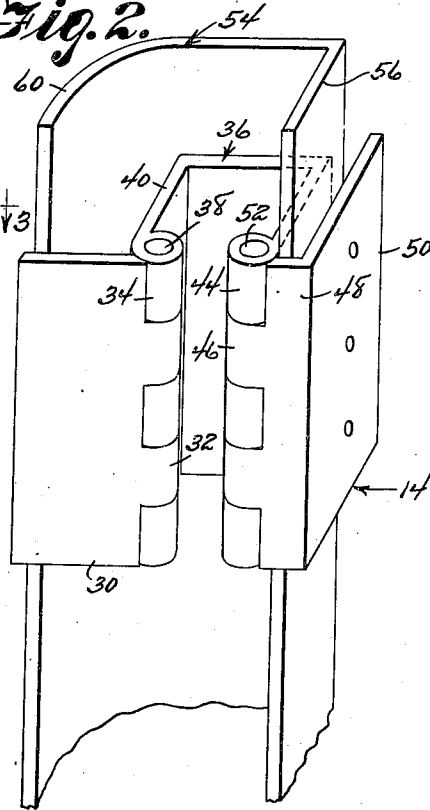
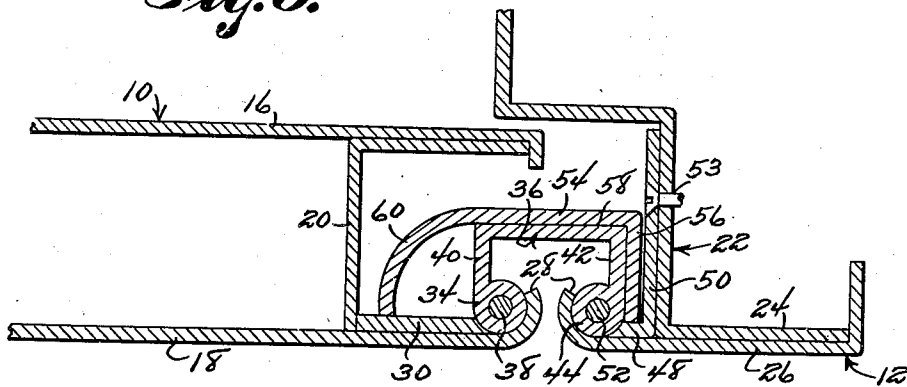


Fig. 3.



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2 Sheets-Sheet 2

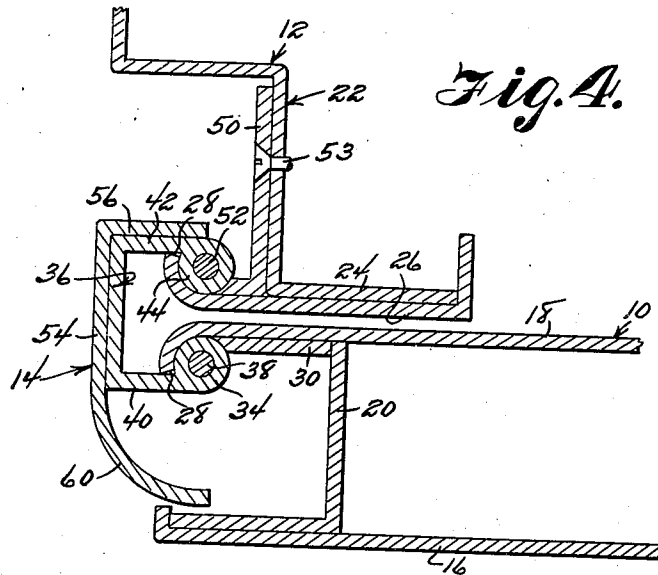
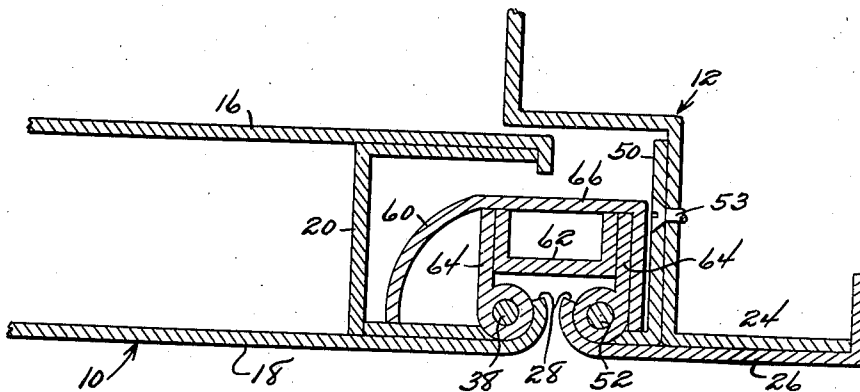


Fig. 5.



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Application August 13, 1942, Serial No. 454,699

4 Claims. (Cl. 16—164)

My invention relates to swinging doors and the like, and has among its objects and advantages the provision of an improved hinge particularly well suited to an all-metal door and frame construction.

In the accompanying drawings:

Figure 1 is a face view of a door and a door frame showing my invention applied thereto;

Figure 2 is a perspective view of one of the hinges;

Figure 3 is an enlarged sectional view taken along the line 3—3 of Figure 1;

Figure 4 is a view similar to Figure 3 but illustrating the door in an open position; and

Figure 5 is a view similar to Figure 3 but illustrating a modified form of hinge structure.

In the embodiment selected for illustration, the door 10 is connected with a frame 12 through the medium of hinges 14. In Figure 3, the door 10 includes an inner metallic wall 16 and an outer metallic wall 18 spaced therefrom. An angle 20 is welded to the walls 16 and 18 for fixedly relating the same.

Frame 12 includes an angle 22 to the wing 24 of which is secured a metallic trim 26, as by welding. Both the wall 18 and the trim 26 have curved and adjacent edge margins 28 constituting hinge stops for limiting further pivotal movement of the door when moved one hundred and eighty degrees from its fully closed position.

To the wall 18 is fixedly secured a hinge wing 30 having loops 32 aligning with loops 34 on a hinge part 36 of U-shaped contour when viewed according to Figure 3. A hinge pin 38 is inserted through the aligned loops 32 and 34 for pivotally connecting the wing 30 with the wing 40 of the hinge member 36. The second wing 42 of the hinge member 36 is provided with loops 44 aligning with loops 46 on a right angular flange 48 of a hinge wing 50. A hinge pin 52 is inserted in the aligned loops 44 and 46. The wing 30 may be welded to the wall 18 while the wing 50 is secured to the trim 22 by screws 53.

To the hinge member 36 is welded a hinge control 54 having a right angular flange 56 attached to the wing 42 and a flange 58 fitting against the bight of the hinge member 36 and curved at 60 to have edge engagement with the wing 30 in the closed position of the door 10. Both hinge members 36 of the hinges 14 are fixedly secured to the hinge control 60, the latter extending throughout the full height of the door.

In operation, the door 10 lies flush with the face of the frame 12 in the closed position of the door. Notwithstanding this arrangement the

door 10 may be swung one hundred and eighty degrees about the axes of the pins 38 and 52 to its fully opened position of Figure 4.

The hinge control 54 fixedly connects the hinge members 36 of the two hinges 14 so that the hinge members operate in unison. With the door 10 swung to its fully opened position of Figure 4, one curved end 28 has engagement with the wing 40 of the hinge member 36 and the other end 28 has engagement with the wing 42, so that the door is limited from further pivotal movement in its opening direction.

Figure 5 illustrates a modification in that a U member 62 is secured to hinge wings 64 corresponding to the wings 40 and 42 of Figure 3. The U member 62 is welded to the hinge control 66, and the remaining structure is identical with that illustrated in Figures 2, 3 and 4.

Without further elaboration, the foregoing will so fully illustrate my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. Means for mounting a door on its frame, comprising lower and upper hinges, each including side members and an intermediate member pivotally connected by aligned hinge pin engaging loops, the side members being adapted to be connected to the door and frame and the intermediate member being of U-form in cross section and adapted to be recessed in the door and frame, curved stop members fixedly related to the door and frame partially embracing the loops to limit the opening movement of the door, and a stop carried by the intermediate members of the hinges and adapted to cooperate with those side members of the hinges secured to the door to limit the closing movement of the door.

2. A hinge of the character set forth comprising side members and an intermediate member, the intermediate member being of U-form in cross section, and a stop carried by the intermediate member and adapted to cooperate with said side members to limit the movement of said side members in one direction with respect to the other member of the hinge said stop comprising a channelled bar of angular formation at one side and curved at the opposite side fixed to the intermediate member and engageable with said side members to limit the closing movement of the door.

3. A hinge for mounting a door on a frame comprising a pair of side members adapted to be connected to a door and a frame respectively, a member of U-shaped cross section mounted in-

intermediate said side members, interfitting aligned loops formed on the free longitudinal edges of the U-shaped member and said side members, hinge pins extended through said loops, curved stop elements fixedly related to the door and frame respectively and partially embracing each aligned loop assembly so as to limit the opening movement of the U-shaped member relative to the frame and the door with relation to the U-shaped member, and means for limiting the closing movement of the door.

4. A hinge as claimed in claim 3 wherein said last named means comprises a channeled member fixed to and partially surrounding the U-shaped member and having an angular portion at one side adapted to engage the side member on the frame and a curved portion at the opposite side engageable with the side member on the door.

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