Feb. 2, 1960 T. T. BEYRLE 2,923,036

DOOR ASSEMBLY

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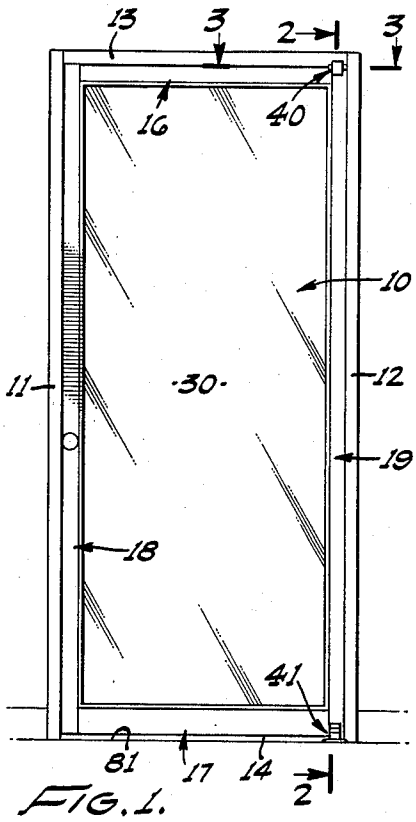


FIG. 1.

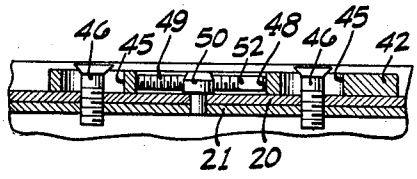


FIG. 4.

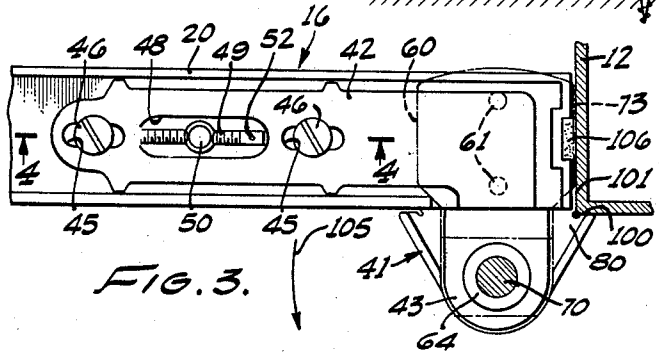


FIG. 3.

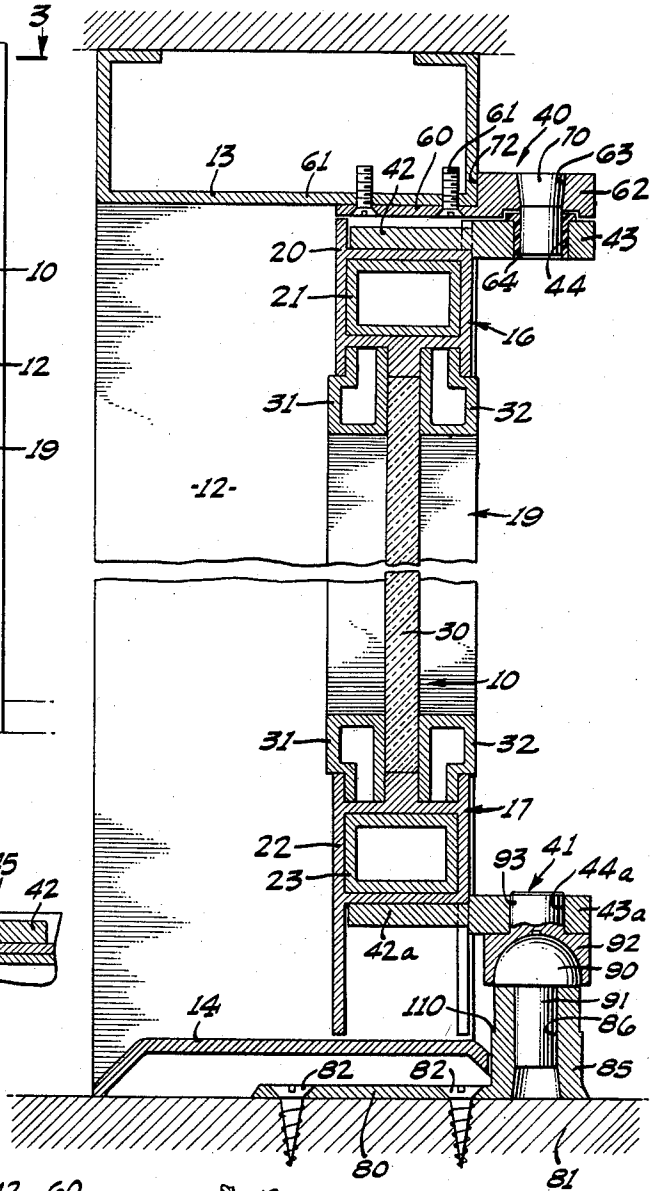


FIG. 2.

THOMAS T. BEYRLE
INVENTOR.

BY Lyon & Lyon

ATTORNEYS

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DOOR ASSEMBLY

Thomas T. Beyrle, Los Angeles, Calif., assignor, by mesne assignments, to Jackson Exit Device Corporation, Los Angeles, Calif., a corporation of California

Application June 25, 1956, Serial No. 593,408

8 Claims. (Cl. 20—16)

This invention relates to door constructions and has particular reference to offset-pivoted door assemblies.

One of the principal objects of this invention is to provide a novel door and offset-pivot assembly therefor.

Another object of this invention is to provide a novel pivot assembly for offset, single action doors, the assembly being of universal application in that it is adapted to be used, without modification, for hanging both left-hand and right-hand opening doors.

Another object of this invention is to provide such a novel pivot assembly which is so constructed as to eliminate the need for the making of measurements for proper placement and setting of the door.

Still another object of this invention is to provide a novel, self-adjusting pivot assembly for offset, single action doors.

Another object of this invention is to provide an offset, single action door assembly which is so designed as to prevent removal of the door when it is in the closed position.

Yet another object of this invention is to provide a door assembly having novel pivot members which do not require morticing or recessing thereof into the door frame members or floor.

Other objects and advantages of this invention, it is believed, will be readily apparent from the following detailed description thereof, when read in connection with the accompanying drawings.

In the drawings:

Figure 1 is a front elevation of a door embodying the present invention.

Figure 2 is a sectional view taken substantially on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1.

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 3.

Referring now to the drawings, it will be seen that the present invention is particularly designed to be incorporated in an otherwise generally conventional metal frame door 10. The door is hung in a doorway or frame comprising a pair of vertical jambs 11 and 12, a header 13 and a raised threshold member 14, these members being preferably of extruded metal such as aluminum. It will be appreciated that no separate threshold member is necessary for the purposes of the invention, the invention being so constituted as to permit use of the floor itself as a threshold area.

The door 10 comprises upper and lower horizontal frame members 16 and 17 and vertical side frame members 18 and 19. The upper frame member 16 is made up of extruded frame elements 20 and 21 and the lower frame member is made up of similar frame elements 22 and 23. Similar elements (not shown) form the side frame members 18 and 19. A rectangular sheet of plate glass 30 is supported in the frame members by means of extruded elements 31 and 32.

It will be understood that the structure thus far described is conventional. In order to hang the door in the doorway, upper and lower pivot assemblies 40 and 41, respectively, are provided. The upper pivot assembly 40 includes an adjustable bracket plate 42 (shown best in Figures 3 and 4). This plate is generally L-shaped, the smaller leg comprising a pivot bracket 43 provided with a central aperture 44. The plate is provided with a pair of slots 45 for the reception of attachment screws 46 which secure the plate to the upper frame elements 20 and 21. A central elongated slot 48 is provided in the plate between the slots 45, an adjustment screw 49 extending between the ends of the slot through a threaded screw support member 50 which is connected to the frame elements 20 and 21. The screw 49 is provided with an aperture 52 into which a nail or other tool may be inserted for turning the screw to permit initial adjustment of the plate 42 with respect to the door before the screws 46 are finally tightened down.

A bracket plate 60 is secured to the underside of the header 13 by means of the screws 61, and integral therewith is a pivot bracket 62 having a tapered central aperture 63. A bearing 64 is inserted in the aperture 44 of the pivot bracket 43 and tapered pivot pin 70 is dropped into the apertures 63 and 44 to complete the upper pivot assembly. It will be noted that the shoulder portion 72 of the pivot bracket 62 abuts against the outer vertical surface of the header 13, and the side 73 of the plate 60 abuts the inside of the jamb 12 (as shown by the phantom lines of Figure 3). Thus, by initially so positioning the plate when assembling the door, proper alignment of the pivot assembly is assured, without the necessity for taking measurements or without the necessity of fabricating cut-outs in or recessing the header or jamb.

The lower pivot assembly 41 includes a bracket plate 42*a*, which is identical to the plate 42, including a pivot bracket 43*a* having a central aperture 44*a*. The plate 42*a* includes the identical attachment and adjustment screws (not shown) as described and shown in connection with the plate 42, except that the plate 42*a* is attached to the frame elements 22 and 23.

The lower half of the lower pivot assembly 41 comprises a bracket plate 80 which extends under the threshold member 14 and is secured to the floor 81 by means of a pair of screw members 82. Integral with the plate 80 is an upstanding generally cylindrical boss 85 having a central aperture or bore 86. A hemispherical member 90 is carried on a cylindrical base 91 seated in the aperture 86, and a socket member 92 having a cylindrical portion 93 extending into the central aperture 44*a* completes the lower pivot assembly, forming a ball and socket pivot joint. As shown best in Figure 3, proper positioning of the plate 80 with respect to the door frame is assured by virtue of the abutment of the notched portions 100 and 101 of the plate against the side and front of the jamb 12.

If it is desired to entirely dispense with the raised threshold member 14, the boss 85 may be cut off at the shoulder 110 to remove the boss portion thereabove. The member 90 will then rest on the shoulder 110, thus lowering the entire door. If desired, the threshold member may be lowered and the door also lowered by similarly reducing the height of the boss 85.

From this description it will be understood that the door is pivoted to swing outwardly in the direction of the arrow 105 of Figure 3. The side frame member 19 of the door may be recessed to receive a felt or other bumper material strip 106.

In view of the identical construction of the bracket plates 42 and 42*a*, it will be understood that the assembly

is of universal nature in that it can be used without modification on right- and left-hand opening doors as well as doors opening inwards or outwards. The ball and socket joint of the lower pivot assembly permits installation on uneven surfaces and floors that are out of level, and the adjusting screws permit quick and easy lateral adjustment of clearance between the door and jambs. Another important feature of the invention is that when the door is closed, it is impossible to remove it even though the upper pivot pin 70 is removed, inasmuch as the lower pivot assembly is virtually tamperproof. Additionally, no morticing or recessing of the parts into the frame or floor is necessary.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details set forth, but my invention is of the full scope of the appended claims.

I claim:

1. An offset door assembly to be hung in a doorway having a pair of vertical jambs, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of identical L-shaped bracket plates adapted to be attached to the upper and lower frame members, each of said plates including an apertured pivot bracket extending outwardly from the door, said identical bracket plates permitting installation of said door assembly on either side of said doorway for swinging of said door either inwardly or outwardly, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and provided with a central bore, a ball member, a base on which said ball member is carried, said base being received in said central bore, and a socket member having a spherical seat for said ball, said socket member being operably connected to the pivot bracket on said lower bracket plate.

2. An offset door assembly to be hung in a doorway having a pair of vertical jams, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of identical L-shaped bracket plates adapted to be attached to the upper and lower frame members, each of said plates including an apertured pivot bracket extending outwardly from the door, said identical bracket plates permitting installation of said door assembly on either side of said doorway for swinging of said door either inwardly or outwardly, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and provided with a central bore, and a ball and socket joint operably connecting said lower L-shaped bracket plate to said last-named bracket plate, said ball and socket joint including a ball member carried on a cylindrical base, said base being slidably received in said central bore, and a socket member operably connected to the pivot bracket on said lower bracket plate.

3. An offset door assembly to be hung in a doorway having a pair of vertical jambs, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of identical L-shaped bracket plates adapted to be attached to the upper and lower frame members, each of said plates including an apertured pivot bracket extending outwardly from the door, said identical bracket plates permitting installation of said door assembly on either side of said doorway for swinging of said door either inwardly or outwardly, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and providing with a central bore, and a ball and socket joint operably connecting said lower L-shaped bracket plate to said last-named bracket plate, said ball and socket joint including a ball member carried on a cylindrical base, said base being slidably received in said central bore, and a socket member operably connected to the pivot bracket on said lower bracket plate, and said upper pivotal connection means including a pivot bracket secured to the header and a pivot pin extending therethrough.

4. An offset door assembly to be hung in a doorway having a pair of vertical jambs, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of identical L-shaped bracket plates adapted to be attached to the upper and lower frame members, each of said plates including an apertured pivot bracket extending outwardly from the door, said identical bracket plates permitting installation of said door assembly on either side of said doorway for swinging of said door either inwardly or outwardly, means for adjusting the positions of said plates with respect to said door, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and provided with a central bore, a ball member, a base on which said ball member is carried, said base being received in said central bore, and a socket member having a spherical seat for said ball, said socket member being operably connected to the pivot bracket on said lower bracket plate.

5. An offset door assembly to be hung in a doorway having a pair of vertical jambs, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of identical L-shaped bracket plates adapted to be attached to the upper and lower frame members, each of said plates including an apertured pivot bracket extending outwardly from the door, said identical bracket plates permitting installation of said door assembly on either side of said doorway for swinging of said door either inwardly or outwardly, means for adjusting the positions of said plates with respect to said door, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and provided with a central bore, and a ball and socket joint operably connecting said lower L-shaped bracket plate to said last-named bracket plate, said ball and socket joint including a ball member carried on a cylindrical base, said base being slidably received in said central bore, and a socket member operably connected to the pivot bracket on said lower bracket plate, and said upper pivotal connection means including a pivot bracket secured to the header and a pivot pin extending therethrough.

6. An offset door assembly to be hung in a doorway having a pair of vertical jambs, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of identical L-shaped bracket plates adapted to be attached to the upper and lower frame members, each of said plates including an apertured pivot bracket extending outwardly from the door, said identical bracket plates permitting installation of said door assembly on either side of said doorway for swinging of said door either inwardly or outwardly, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower

pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and provided with a central bore, and a ball and socket joint operably connecting said lower L-shaped bracket plate to said last-named bracket plate, said ball and socket joint including a ball member carried on a cylindrical base, said base being slidably received in said central bore, and a socket member operably connected to the pivot bracket on said lower bracket plate, said last-named bracket plate being provided with notched portions for abutment against one of the jambs and alignment thereby.

7. An offset door assembly to be hung in a doorway having a pair of vertical jambs, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of upper and lower bracket plates adapted to be attached to the upper and lower frame members respectively, each of said plates including a pivot bracket extending outwardly from the door, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and provided with a central bore, a ball member, a base on which said ball member is carried, said base being received in said central bore, and a socket member having a spherical seat for said ball, said socket member being operably

connected to the pivot bracket on said lower bracket plate.

8. An offset door assembly to be hung in a doorway having a pair of vertical jambs, a header and a threshold, comprising the combination, with a door having upper and lower and side frame members, of upper and lower bracket plates adapted to be attached to the upper and lower frame members respectively, each of said plates including a pivot bracket extending outwardly from the door, means for adjusting the positions of said plates with respect to said door, and upper and lower pivotal connection means attached to said doorway for cooperation with said pivot brackets for assembly of said door in said doorway, said lower pivotal connection means including a bracket plate adapted to be secured to the threshold, an upstanding boss carried by said last-named bracket plate and provided with a central bore, a ball member, a base on which said ball member is carried, said base being received in said central bore, and a socket member having a spherical seat for said ball, said socket member being operably connected to the pivot bracket on said lower bracket plate.

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