Oct. 31, 1933. A. I. EPTON ET AL 1,933,009

DOOR MOUNTING AND LATCHING MEANS THEREFOR

Filed Sept. 11, 1931

Fig. 1.

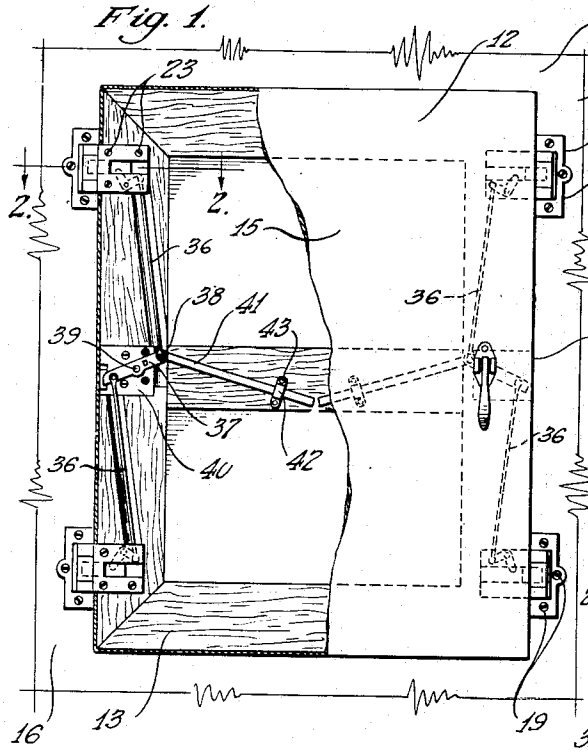


Fig. 2.

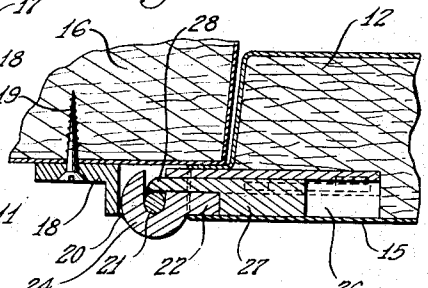


Fig. 3.

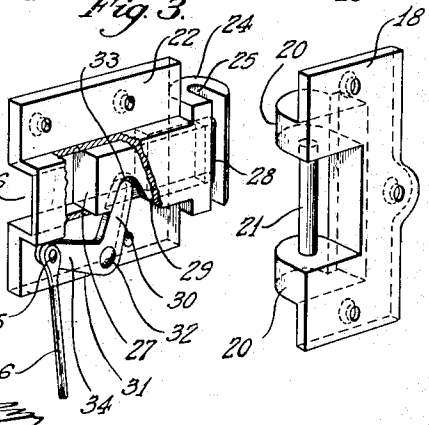
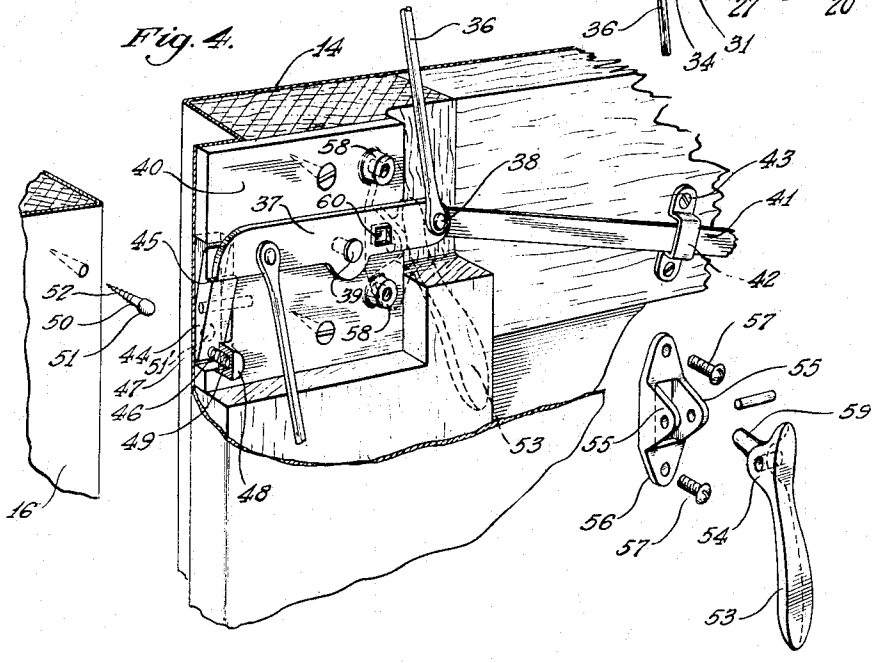


Fig. 4.



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DOOR MOUNTING AND LATCHING MEANS THEREFOR

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Chicago, Ill.

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Serial No. 562,322

4 Claims. (Cl. 16—147)

This invention relates to certain novel improvements in door mountings and latching means therefor, and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

Among the several objects of this invention is the embodiment of a simple combination and arrangement of parts in the hinge structures of a door which will permit the door to be opened from either of the side jambs of the door frame.

A still further object of the invention is the provision of a simple latching arrangement for latching the hinge latch operating means in a predetermined position to prevent the door from being opened from both of the side jambs at the same time.

A still further object of the invention is the provision for latching detachable hinge leaves together utilizing for that purpose a latching arrangement which will not interfere or cause resistance to the closing and opening of a door.

Other objects will will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing showing the preferred form of construction, and in which:

Fig. 1 is a part sectional and elevational view of a door frame and a door showing our improved door mounting associated therewith;

Fig. 2 is a fragmentary sectional detail view of the same taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a perspective view of one of the hinge structures embodying the invention showing the hinge plates thereof in separated position; and

Fig. 4 is a fragmentary perspective view of the door showing the invention associated therewith with certain parts of the invention in disconnected position.

Referring more particularly to the drawing, 10 indicates a frame structure having a door opening 11 normally closed by a door 12. This door 12 includes the frame structure 13, a back cover plate 14 and a front or face plate 15.

The door 12 is mounted to the side jambs 16 by means of hinge structures 17 constructed in a manner such as will permit the door to be opened from either of the side jambs. Each of these hinge structures is substantially the same in structure, and therefore the description with reference to one will be applicable to the other.

In this connection, each hinge structure includes a hinge plate 18 which is attached to the side jamb by means of screw elements 19 or the like. This hinge plate includes spaced knuckles 20 between which is arranged a pintle 21. A hing plate is indicated at 22, and this hinge plate is connected to the door frame 13 by means of suitable screw elements 23. This plate 22 is preferably connected to the frame beneath the cover plate 15 so that a bifurcated knuckle 24 preferably formed as a part of the plate 22 will be exposed from beneath the cover plate 15. The bifurcation 25 of this knuckle is adapted to accommodate the pintle 21 when the door is in closed position.

A hinge plate 22 provides a guiding groove 26 in which is slidably mounted a latch bolt 27, the latch end 28 of which is adapted to be disposed to obstruct movement of the pintle 21 from the bifurcation 25, as best illustrated in Fig. 2.

Projecting upwardly through a slot 29 formed in that part of the plate 22 providing the groove 26 is one end portion 30 of a bell crank 31 preferably pivotally connected to the plate 22 as at 32. This end portion 30 operates in a notch 33 formed in the latch bolt 27. To the other end portion 34 of the bell crank 31 is connected as at 35 a link 36, and this link extends toward the middle portion of the door 12 beneath the plate 15 and has its opposite end portion connected to one end portion of an arm 37, as at 38. Connected to this arm 37, which is pivotally mounted as at 39 to a plate 40, is the end portion of a latching bar 41 guided in its movement by means of a guiding strap 42 connected to the frame as at 43.

Pivotally connected to the plate 40 is a keeper plate 44 provided with a latch shoulder 45 normally urged in latched position by means of a spring 46 disposed to engage the lower end portion 47 of this keeper plate and mounted in a boss 48, said spring having its inner end portion connected to the boss 48 by inserting the end portion thereof into an opening 49 formed in this boss.

The lower end portion of this keeper plate is urged inwardly against the action of the spring 46 by means of a pin 50 having a rounded striking head 51 formed thereon and adapted to pass through an opening 51' formed in the back plate 14. This pin includes a thread-bearing shank 52 to facilitate attaching the pin to the jamb 16, as shown.

As will be apparent, the operation of the latch

bolts of the hinge structures on one side of the door are substantially the same as those on the other side of the door, and in this connection there will be two latching bars disposed with their inner end portions in line for abutment, whereby when one latch bar has been moved inwardly, it will abut the other latch bar and consequently prevent movement of that latch bar, thus preventing operation of the latch bolts on the side of the door opposite the open edge, and consequently prevent the door from falling from its opening with respect to the door frame.

To complete the invention, an operating handle is indicated at 53, and this operating handle includes a bearing portion 54 adapted to be mounted between spaced ears 55 provided by a bracket 56, which bracket 56 is attached to the plate 40 by means of attaching screws 57 adapted to be threaded into spaced bosses 58 provided by this plate.

The bearing portion 54 has formed as a part thereof a pin 59 which is adapted to fit into an opening 60 formed in the arm 37, whereby when the handle 53 is manipulated in an upward direction, the arm 37 will be caused to pivot with its inner end portion moving in a downward direction so as to exert downward pull on the bell crank 31 in a direction to move the latch bolt 27 in a direction to dispose the latch end 28 from latched engagement with the pintle. As this arm 37 pivots in the direction indicated, the outer end portion thereof will move upwardly, and when moved in its extreme upward position, the keeper plate 44 will pivot by action of the spring so as to dispose the shoulder 45 under the outer end portion of the arm 37, and in this position the handle opposite to the one operated cannot be operated because the latch arm 41 having moved into a position by the pivotal action of the arm 37 will abut the latch arm on the other side of the door and consequently restrain operation of the latch moving means of the hinge structures on the side supporting the door for pivotal movement.

In closing the door the latch plate 44 will be struck by the head 51 of the pin 50, and this action will pivot the keeper plate against the action of the spring 46 to dispose the shoulder 45 from latched engagement with the outer end of the arm 37 so that this arm may be pivoted in a direction to again dispose the latch bolts 27 into latched position with the pintle 21.

By the provision of this pin 50 it is obvious that the latch bolts 27 will in no way interfere with movement of the hinge plates into position to be connected together by these latch bolts, and as a consequence movement between the hinge plates will be smooth and uninterrupted.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to protect by Letters Patent is:

1. Door mounting and latching means including pintle carrying plates adapted to be connected to the side jambs of a door frame, plate members adapted to be connected to a door on opposite corresponding edge portions thereof and having bifurcated knuckles adapted to receive the pintles of said pintle carrying plates, latch means slidably carried by the plate members and adapted to be moved in a position to latch the pintles in the bifurcation of said knuckles, operating means for the latch members on one side edge portion of the door, similar operating means for the latch members on the opposite side edge portion of the door, and bar members operable by said operating means and adapted to be slidably carried by the door and provided with end portions arranged in opposed relation with respect to each other to arrest simultaneous operation of said operating means.

2. Door mounting and latching means comprising pintle carrying plates adapted to be connected to the side jambs of a door frame, hinge members adapted to be connected to a door and having bifurcated knuckles adapted to receive the pintles of said plates, latch members slidably carried by the said hinge members and adapted to be moved in positon to latch the pintles in the bifurcation of said knuckles, operating means for the latch members on one side edge portion of the door, similar operating means for the latch members on the opposite side edge portion of the door, link members slidably carried by the door and operable by the operating means and disposed with end portions in position for abutment with respect to each other to arrest simultaneous operation of the said operating means, and means for releasably latching said operating means in a position with the latch members disposed from latched position with respect to the pintles.

3. Door mounting and latching means comprising separable hinge structures adapted to be connected to the side jambs of a door frame and a door and each including hinge structures comprising a slot and pintle engageable in the slot, latch members slidably carried by the hinge structures and provided with notches and movable into a position to latch the pintles in the slots, bell cranks pivotally carried by the hinge structures with corresponding end portions engageable in the notches, and means providing operative connection between the opposite corresponding end portions of the bell cranks and for simultaneously moving the latch members from latched position with respect to the pintles.

4. Door mounting and latching means comprising separable hinge structures adapted to be connected to the side jambs of a door frame and a door and each including hinge structures comprising a slot and pintle engageable in the slot, latch members slidably carried by the hinge structures and provided with notches and movable into a position to latch the pintles in the slots, bell cranks pivotally carried by the hinge structures with corresponding end portions engageable in the notches, means providing operative connection between the opposite corresponding end portions of the bell cranks and for simultaneously moving the latch members from latched position with respect to the pintles, and means associated with the side jambs for releasing said last named means from latching engagement with said operating means.

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