Nov. 17, 1931. A. I. EPTON ET AL 1,831,850

DOOR MOUNTING

Filed May 26, 1930

Fig. 1.

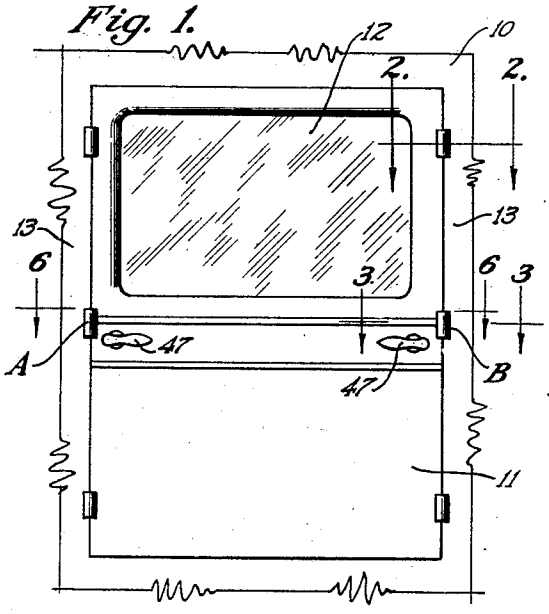


Fig. 2.

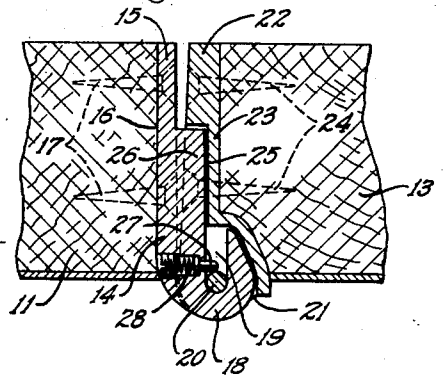


Fig. 4.

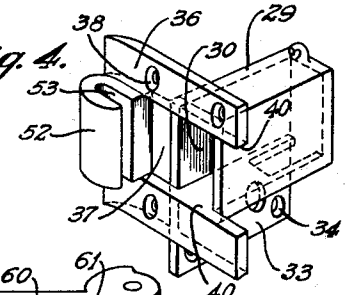
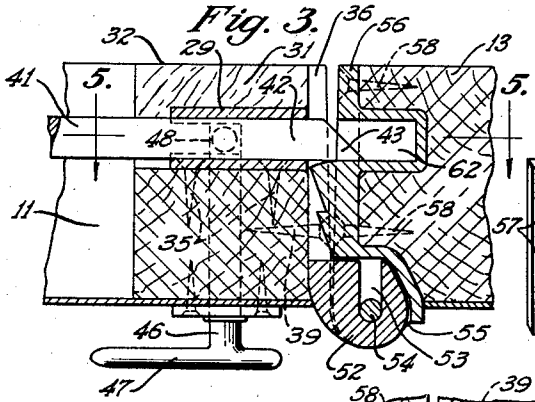


Fig. 3.



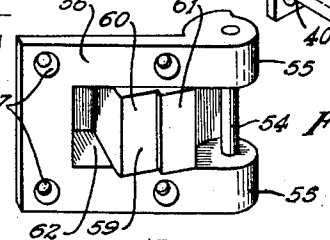


Fig. 4A.

Fig. 5.

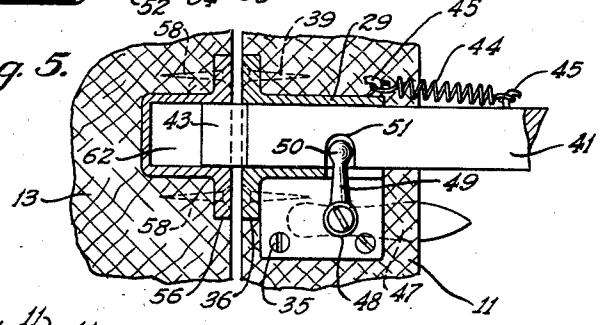
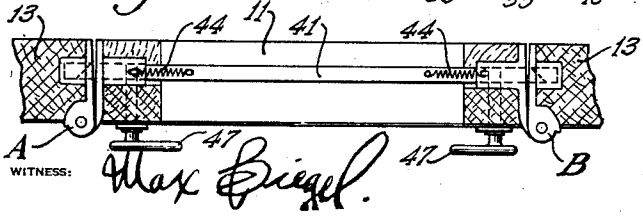


Fig. 6.



WITNESS: Max Siegel.

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UNITED STATES PATENT OFFICE

ARTHUR I. EPTON AND MAX W. FELDMAN, OF CHICAGO, ILLINOIS

DOOR MOUNTING

Application filed May 26, 1930. Serial No. 455,539.

This invention relates to certain novel improvements in door mountings, 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.

The present invention has reference more particularly to an arrangement which is intended and is adapted to be incorporated or associated with a door suspended or mounted in its opening by the employment of hinge structures such as disclosed in our pending applications Serial Numbers 439,763, 453,459, and 453,460, filed in the United States Patent Office for United States Letters Patent.

A door suspended or mounted in its opening by the employment of hinge structures disclosed in our pending applications referred to is such that the door may be opened from either of the side door jambs of the door opening. In this connection our present invention more particularly has reference to an arrangement for releasably latching the door on one side thereof during manipulation of the mechanism for opening the door from the other side accomplishing one of the many objects of the invention wherein the arrangement will permit the door to be opened from either side, yet prevent the door from being opened from both sides at the same time which would consequently result in the door dropping from closing position.

In mounting an automobile door in its opening by the use of the hinge structures referred to which permit the door to be alternately opened from either side jamb, it is advantageous to provide an inexpensive arrangement which will prevent the door from being opened at the same time from both of the side jambs where two occupants of the automobile should inadvertently or accidently endeavor to manipulate the mechanism for opening the door at the same time. If this were permitted, the door might not only fall from its position in the opening, but might injure the occupants of the car or automobile. Therefore, it is another object of this invention to provide a simple and expeditious arrangement of parts which will function to releasably latch the door on the side nearest its point of swinging movement yet which will not interfere with such swinging movement.

Again it has been found expedient to provide an arrangement to accomplish the above objects and which will serve to releasably latch the operating mechanism at one side of the door while the other mechanism is free to operate whereby should the door be not completely swung into a closed position, the opposite operating mechanism cannot be manipulated until the door has been completely closed.

A still further object of the invention is to provide an arrangement of parts for accomplishing the above objects and which will have for its object a simple arrangement for guiding the door into its proper position when closed, thereby avoiding the usual bulging or warping of the door caused from any well known manner. In connection with automobile doors, it is a known fact that due to the vibratory action of the automobile and due to the weak condition of the hinges or the weight of the door disposed upon such hinges that the door has a tendency to buckle or warp, and consequently when the door is in a closed position the door does not assume a true closing position. By the use of the arrangement hereinafter described, and which constitutes one of the objects of our invention, by providing a guide the door will be caused to assume a true position when in closed position.

Other objects 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 drawings showing the preferred form of construction, and in which:

Fig. 1 is a side elevational view of an automobile door showing our invention 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 sectional detail view taken substantially on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of a latch housing embodied in the invention;

Fig. 4A is a perspective view of a keeper plate embodied in the invention;

Fig. 5 is a fragmentary sectional detail view taken substantially on line 5—5 of Fig. 3; and

Fig. 6 is a fragmentary sectional detail view taken substantially on line 6—6 of Fig. 1.

While we have indicated herein that our present invention is especially adaptable for connection with an automobile door, it is to be understood that the invention may be associated with a door of any description or character. Therefore, we do not wish to be limited to the use of our invention in connection with an automobile door.

Referring more particularly to the drawings, 10 indicates the casing of the door opening of an automobile body, and 11, a door which may include a window 12. This door 11 is suspended to the casing 10 so that the door may be opened from either of the side jambs 13. This suspension is accomplished by the use of a hinge structure described in our pending applications herein referred to. For a better understanding of the invention we have illustrated a form of hinge structure which is employed to mount the door 11 in its opening. In this connection, reference being had to Fig. 2, our hinge structure in the present instance includes a hinge leaf 14 comprising a body plate 15 attached to the edge 16 of the door 11 by means of suitable connecting elements 17 such as screws or the like.

Preferably formed as an integral part of this body plate is a knuckle 18 which includes a transverse slot 19 opening from the inner side of the knuckle. This slot is intended to receive a pintle 20 carried by a knuckle 21 preferably formed as an integral part of a body plate 22 of a hinge leaf 23 which is likewise secured to the casing 13 by means of suitable connecting elements 24 such as screws or the like. This body plate 22 includes an inwardly extending tapered recess 25 which is adapted to receive a tapered lug 26. This lug 26 is adapted to have its edges ride upon the edges of the tapered socket whereby to effectuate a guide for guiding the door in its complete closed position whereby when the door is closed, the door will assume a true position in the opening.

A suitable latch pin is indicated at 27, and this latch pin extends when the door is in a closed position to the rear of the pintle 20 and is urged in this position by means of a suitable spring 28.

For further description of the hinge structure reference is to be had to our pending applications.

The means for releasably latching the door to the side of the jamb on which it is swinging in the present instance preferably includes a housing 29 providing a transverse passage 30. This housing 29 is adapted to fit into a recess 31 formed in the edge 32 of the door, it being pointed out that there are two such housings employed and the description of one is equally applicable to the other.

This housing 29 includes a plate 33 having suitable openings 34 formed therein for the passage of connecting elements 35 such as screws or the like. The housing 29 further includes a transverse plate 36 which is provided with a tapered slot 37 to prevent obstruction of the passage 30, and this plate is likewise provided with suitable openings 38 for the passage of connecting elements 39 such as screws or the like.

The tapered slot 37 provides oppositely disposed edges 40 thereof which taper upwardly and outwardly toward each other for reasons hereinafter understood.

Associated with the door 11 is a transversely extending latch member 41, the ends 42 of which are adapted to pass through each housing 29 associated with the edge 32 of the door, and these ends are preferably tapered as at 43. The latch member 41 in the present instance is centralized with respect to the door by means of suitable spring elements 44 connected to the latch member and the housing as at 45.

Associated with the door on each side thereof is an operating lever 46 which includes a handle 47. The inner end portion 48 of this lever provides an upstanding arm 49 which may be provided with a spherical shaped head 50. This head 50 is adapted to engage in a notch 51 formed in the end of the latch member 41, whereby upon rotation of the operating lever 46 in one direction the latch member 41 will be moved thereby.

The plate 36 provides a knuckle 52 which is provided with a transverse slot 53 opening at the inner side of the knuckle. This slot 53 is adapted to receive a pintle 54 carried by the knuckles 55 of a plate 56 having suitable openings 57 for the projection of connection elements 58 such as screws or the like whereby the plate may be connected to the door jamb. This plate 56 provides a keeper block 59 providing parallel heads 60 and 61 arranged in step formation for reasons hereinafter set forth. The head 60 provides together with the plate 56 a recess 62 for reasons hereinafter set forth.

The keeper block 59 is preferably tapered so that its opposite sides 63 will taper in a direction to correspond to the tapered edges of the slot 37 for reasons hereinafter understood.

For a better understanding of the operation of the invention we have indicated in the drawings the latch member operating mechanism by the reference characters A and B.

In operation, assuming that it is desired to open the door from the right hand side,

thus swinging the door on its left hand side, the operator will grasp the handle 47 of the operating mechanism B and apply pressure thereto so as to rotate the lever 46 in a direction to cause the arm 49 to act upon the latch member and shift the latch member longitudinally in a direction to dispose the tapered end 43 thereof from engagement to the rear of the latch head 60. As this latch member is shifted, the opposite tapered end 43 thereof will be shifted into latched position to the rear of the latch head 60. The door is now swung to an open position, this being permitted by reason of the fact that the latch pins 27 of the hinge structures on the right hand side of the door will be moved by contact with the pintles of these hinge structures from latched position with respect to these pintles.

When the door is closed one of the springs 44, that spring nearest the mechanism operated being placed under tension, will act when the operating mechanism is released to urge the latch member in an opposite direction and thereby dispose the tapered end of the latch member on the right hand end thereof into latched position with respect to the latch member 60 of the mechanism B, and consequently the door will be latched from both sides. During this opening operation of the door from the right hand side the action of the operating mechanism B being transposed to move the bar 41 will prevent operation of the operating mechanism A and consequently the door cannot be opened from the left hand side during the operation of opening the door from the right hand side.

Assuming that during the closing action of the door sufficient pressure has not been applied thereto to complete the closing of the door, but the door is closed so as to dispose the end of the latch member adjacent the mechanism B in alignment with the latch head 61, under these conditions the spring which is under tension will urge the latch member in a movement to dispose the tapered end thereof in latched position with respect to this latch head and consequently the door cannot be opened from the left hand side as there is not sufficient room to permit movement of the latch member toward the mechanism B to release the latch member from latched engagement with the head 60 of the mechanism A. In this manner we prevent by the use of our combination of parts the opening of the door from the left hand side when the door is not completely closed at the right hand side.

During the closing action of the door the keeper plate 59 being of a tapered construction will engage the tapered socket and the edges thereof will cause the door to assume a true position in the opening provided by the casing.

As is apparent from the drawings and the description herein, the arrangement is such that the tapered ends of the latch member will be disposed in the sockets 62 of the keeper plates and consequently the door when in closed position will be latched at both side jambs.

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. Latching means for a door including a latch member, means for supporting the latch member for slidable movement, means for moving the latch member in one direction, said supporting means including a body providing a tapered slot, a keeper plate including a latch head adapted to be engaged by the latch member and said latch head being tapered for engagement in said tapered slot.

2. Latching means for a door including a latch member, means for supporting the latch member for slidable movement, means for moving the latch member in one direction, said supporting means including a body providing a tapered slot including adjacent latch heads adapted to independently engage the latch member, said heads being tapered for engagement in said tapered slot.

3. A combination latch and hinge structure including a body providing a knuckle and a passage, a latch member supported by the body and slidable through the passage, means for slidably moving said latch member, a keeper plate including a knuckle, a pintle supported by the knuckle, said knuckle provided by said body having an open slot formed therein for the reception of said pintle, and a latch head provided by the keeper plate and adapted for engagement with the latch member.

4. The combination with a door and hinge structures for mounting said door to opposite side jambs of a door casing whereby said door may be opened from either of the side jambs, of latch mechanism for alternately latching said door to the said opposite side jambs including a latch member, means for supporting the latch member for movement transversely of the door, operating members adapted to independently move said latch member, said latch member being adapted to oppose simultaneous operation of said operating members, and keeper plates carried by the said jambs and adapted for engagement with the opposite ends of said latch member.

5. A combined hinge and latch mechanism including hinge leaves adapted to be attached to a door and a door jamb, means including a slot and pin connection for detachably connecting said hinge leaves together, a movable latch member supported by the door for releasably holding said hinge leaves in attached position by said slot and pin connection, and means for moving said latch member in a direction to permit detachment of said hinge leaves.

6. The combination with a door and hinge structures for mounting said door to opposite side jambs of a door casing whereby said door may be opened from either of the side jambs, of latching mechanism for said door including a latch member, means for supporting the latch member for movement transversely of the door, with the opposite ends of said latch member normally projecting beyond the opposite side edges of the door, and keeper plates associated with the side jambs and adapted for latched engagement with the opposite ends of the latch member.

7. Latching means for a door which is mounted for opening movement from either of the side jambs of a door casing including keeper plates associated with the side jambs, a latch member normally having latched engagement with the keeper plates when the door is in closed position with respect to the casing, operating members common to said latch member, and means providing connection between the operating members and said latch member, said latch member being adapted to oppose simultaneous operation of said operating members in corresponding directions.

In testimony whereof, we affix our signatures.

ARTHUR I. EPTON.
MAX W. FELDMAN.