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G. W. WELLS

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DOOR HOLDER

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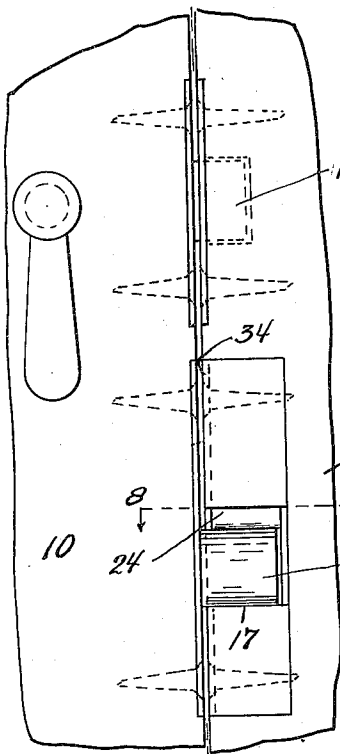


Fig. 1.

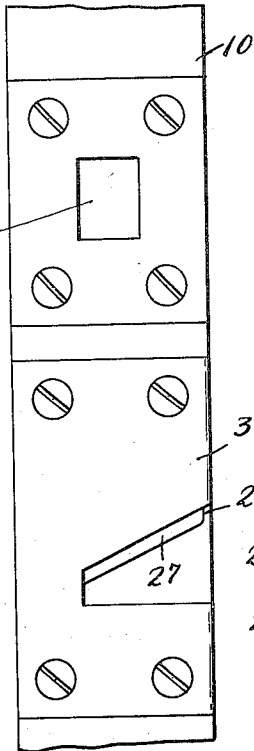


Fig. 2.

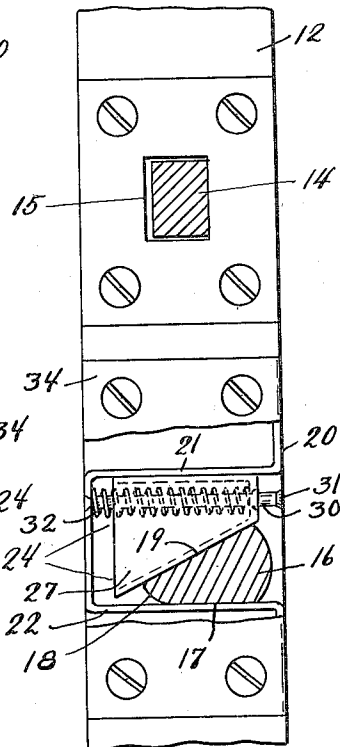


Fig. 3.

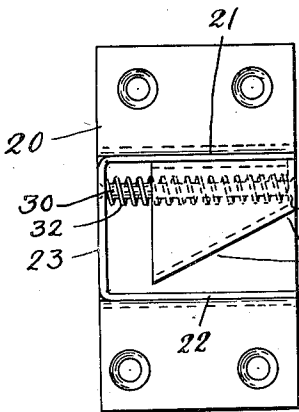


Fig. 4.



Fig. 5.

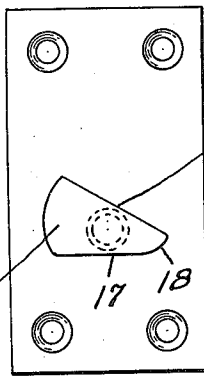


Fig. 6.

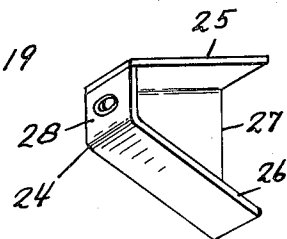


Fig. 7.

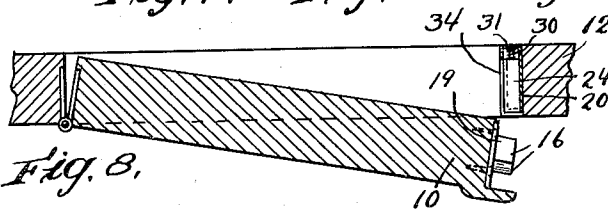


Fig. 8.

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UNITED STATES PATENT OFFICE

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DOOR HOLDER

Application filed May 24, 1928. Serial No. 280,123.

This invention relates to that class of door holding devices which are generally used for preventing the rattling of doors of closed body automobiles and are frequently referred to as "dove tails" and as "anti-rattlers."

Devices of this character in general use are of different types, probably the most common of which comprise a wedge shaped projection mounted on the edge of the door and a correspondingly shaped socket mounted on the jamb into which the wedge is forced at the end of the closing movement of the door. These devices, to be effective, must so coordinate with the latch of the door that the full wedging effect is secured at the point where the latch locks the door in fully closed position, assuming that the ordinary type of latch is employed. To secure this coordination, the sides of the socket into which the wedge is forced is usually made of rubber, or like yieldable material, which in time loses its resiliency and to avoid this difficulty spring actuated means have been employed, an example of which is illustrated in my prior Patent 1,612,480. Aside from certain manufacturing difficulties, an inherent objection to a door holder of this type is that it necessarily permits some upward or downward yielding, either or both, of the door in its fully closed position, which is likely to result in rattling under some conditions. While all up and down vibration of the door in its casing may be prevented by having a rigid door member become wedged between a pair of rigid holding members on the casing, it has not, prior to my invention, been considered practical to employ holding members both of which were rigid or unyielding vertically, for several reasons, principally because of the impossibility as a practical matter, of setting the latch and the holding means in relative positions in which the door will latch at the point at which the door member wedges firmly between the two holding members. The practical impossibility of doing this is not only due to the difficulty a workman would have in coordinating these parts perfectly at the

time of installation, but, in order that the latch may be forced by its spring into firm engagement with its holding abutment, the door usually must be forced inward slightly beyond its normal closed position, so that the latch may be forced outward to its limit, after which the door will move outward until the latch firmly engages its abutment, and, assuming that the door holding means wedges firmly at the end of the inward movement of the door, the wedging engagement would be somewhat loosened by this outward movement. Moreover, some allowance must be made for wear of engaging parts and some cushioning means would need to be provided to prevent the too sudden stopping of the closing movement of the door.

The objects of my invention are to provide a door-holding device, of the general character above referred to, which, when the door is fully closed, will positively and unyieldably lock the door against any up or down movement in the jamb, and which is at the same time adapted to perform this function within a range of positions, so that it will be unnecessary for the holding device to be set exactly in a certain position with relation to the locking position of the door, but will permit an approximate location thereof with reference thereto without substantial effect on the desired results of positively holding the door against all up or down movement in the jamb. Also, which will permit the door to close to a sufficient extent to permit the latch to move outward freely to its fullest extent, and will cushion the closing movement of the door, and, at the same time, permit the parts to become worn to a reasonable extent without detracting from the efficiency of the holding means.

A further object of the invention is to provide a construction, for the above described purpose, which may be manufactured without difficulty and without substantial, if any, increased expense, as compared with that required for similar devices.

I accomplish these objects primarily by providing, in combination with a rigid

wedge-shaped projecting lug on the door, an inwardly yieldable rigid metal wedge, which slidably engages one side of a recess in the jamb and is arranged to be engaged at the opposite side by the lug, while the opposite side of the latter from the wedge engages the opposite side of the recess, so that the lug is firmly and unyieldably wedged between the opposite sides of the recess in the jamb.

For a more complete description of the invention, reference is made to the following specification, in connection with the accompanying drawing in which:

Fig. 1 is a front elevation of a portion of a door and its casing, provided with an embodiment of my invention.

Fig. 2 is a view of a portion of the inner face of the door jamb.

Fig. 3 is a similar view with certain parts broken away.

Figs. 4 and 5 are detail side and front views of the casing member.

Fig. 6 is a detail view of the door member.

Fig. 7 is a detail perspective view of the locking wedge.

Fig. 8 is a sectional view, on a reduced scale, at line 8—8 of Fig. 1.

In the drawing 10 indicates the edge portion, opposite the hinges, of a horizontally swinging door and 12 the jamb portion of the casing corresponding thereto, said door being provided with any common form of spring-actuated latch 14, which engages in a corresponding recess 15 in the casing when the door is closed.

According to my invention a metal lug 16 is rigidly mounted on the edge of the door in position to project right angularly thereto, or horizontally, the under side of said lug having a flat, horizontally disposed face 17, which is formed continuously with an upwardly inclined, slightly rounded face 18 at the rear side of the lug or side which is next the bottom of the jamb when the door is closed. The top side 19 of the lug is disposed in a plane which inclines downward from its front side, at an angle of approximately 30° to the horizontal, to meet the inclined face 18 in a horizontal edge.

The jamb portion opposite the lug 16 is recessed to receive a metal casing 20, which is rigidly secured thereto, said casing being formed to provide a recess which is open at its front end and has a horizontal top side 21 and horizontal bottom side 22, and the inner end of which is closed by a vertical wall 23. A wedge 24 is disposed in said recess, said wedge consisting of a rigid sheet metal piece bent to provide a horizontal top wall 25, which is held flat against, and in sliding engagement with the top side 21 of the casing recess, a bottom wall 26, which is inclined downward from front to rear at

the same angle as the angle of inclination of the top face 19 of the lug, connecting outer side wall 27, and a front wall 28, which is preferably normally located adjacent the front side of the casing. A post 30, having a head 31 at its outer end, extends thru the front wall 28 in parallel relation to the top side 21, or horizontally, and is rigidly mounted at its inner end in the inner end wall 23 of the casing. A coil spring 32 is arranged on the post 30 between the end wall 23 of the casing and the inner side of the front wall 28 of the wedge and normally holds the outer side of said wall 28 in engagement with the head 31 of the post 30, which thus serves as a stop; the normal position of the wedge being indicated in Fig. 4.

The casing 20 is enclosed by an outer plate 34 for the purpose primarily of giving the installation a finished appearance. Said plate 34 acts to confine the wedge 24 by engaging its outer side 27, thereby providing an additional guiding means therefor.

The relative arrangements are such, that, when the door is swung to closed position, the inclined face 18 of the lug 16 will usually engage the outer end of the bottom side 22 of the casing recess and cause a slight lifting of the door, so that, when the under side 17 of the lug passes onto the side 22, the door will be firmly supported thereon. When the door is within approximately from say 1/8" to 1/4" of its fully closed position, in which it will be latched, the inclined top face 19 of the wedge will engage the inclined bottom face 26 of the wedge, so that, on further inward or closing movement, the wedge will be pushed inward against the action of the spring 32 until the door becomes latched and locks it against opening movement, as indicated in Fig. 3.

When the lug 16 engages the wedge 24, as the lug is rigidly supported at its under side, its wedging action will cause the wedge to be forced upward, so that its top side 25 will be firmly held against the top side 21 of the casing, and this condition will continue during the further closing movement of the door, and, while the vertical pressure may be increased somewhat by the increased pressure due to the action of the spring 32, in all positions in which the lug 16 is firmly engaged with the wedge 24, the lug, and consequently the door to which it is rigidly attached, will be firmly locked against vertical movement relatively to the casing, so that there is no possibility of yielding action between the door and casing or rattling of the door therein, when the door is in locked position.

It will be apparent that there may be some variation in the relative position of the door holding means in relation to the latching means without affecting the results secured,

also, that the door may move inward beyond its normal closed position, so that the latch may be moved out, and that the closing movement of the door will be cushioned, at its end, and that reasonable wear of the parts will be permitted, without in anyway affecting the efficiency of the holding means. The device may also be employed in connection with a latch which holds the door closed in several positions, within certain limits, as for example with a latch of the pawl and ratchet type.

If the spring 32 is compressed to a substantial extent by the closing movement, it will act to a corresponding extent to push the door open when unlatched.

The construction is simple and may be manufactured without difficulty, as most of the parts may be produced from suitably bent sheet metal.

I claim:

1. In combination with a horizontally swinging door having a horizontally projecting lug rigidly mounted thereon, a casing having a recess into which said lug is arranged to pass when the door is closed, said recess having horizontally disposed top and bottom sides and said lug being arranged to engage said bottom side and support the door, a wedge mounted to move horizontally in said recess with its top side engaged with the top side of said recess and having an inclined face at its bottom side arranged for engagement by the top side of said lug, when the lug is engaged with the bottom side of said recess, to hold the lug against upward movement from its door supporting position.

2. In combination with a horizontally swinging door having a horizontally projecting lug rigidly mounted thereon, a casing having a recess provided with horizontally disposed top and bottom sides, and a wedging device mounted to move horizontally in said recess with its top side engaged with the top side of said recess, the bottom side of said device being arranged to extend divergently with relation to the top side of the recess as it extends rearwardly, and means including a spring for holding said wedging device in an outer position, said lug being arranged for engagement at its bottom side with the bottom side of said recess, to support the door and thereafter at its top side with the bottom side of said wedging device, to lock the door against upward movement as it is moved into its fully closed position.

3. In combination with a horizontally swinging door, a jamb having a recess provided with horizontally disposed top and bottom sides, a latch for holding the door in closed position, a wedge having its top side slidably engaged with the top side of said recess and having its bottom side ex-

tending divergently inward relatively thereto, a spring for normally holding said wedge in an outer position, a horizontally projecting lug rigidly mounted on the door and so arranged that, as the door is closed, the bottom side of the lug will slidably engage the bottom side of said recess and slightly lift the door so as to support the same and its top side will thereafter engage the bottom side of the wedge and said spring will yield to permit the wedge to be moved inward until the door is latched, to hold the door rigidly against upward movement from its supported position when in latched position.

4. In combination with a horizontally swinging door, a jamb having a recess provided with horizontally disposed top and bottom sides, a wedge of rigid material disposed in said recess with its top side slidably engaged with the top side of the recess and having its bottom side extending divergently to the top side from its outer end, means including a spring normally acting to hold said wedge in an outer position, and a horizontally projecting lug rigidly mounted on the door and having a face on its bottom side arranged for sliding engagement with the bottom side of said recess to support the door as it is moved to closed position and having its top side inclined to correspond to the inclination of the bottom side of the wedge and so arranged that said inclined sides will be engaged and said wedge moved inward during the latter portion of said closing movement of the door.

5. In combination with a horizontally swinging door, a jamb having a recess provided with horizontally disposed top and bottom sides, a wedge of rigid material disposed in said recess with the top side thereof slidably engaged with the top side of said recess and its bottom side extending divergently relatively thereto from its outer end, a post mounted on the jamb at the rear end of said recess, and extending thru said wedge to its front side, said post providing a guiding means for the wedge in its sliding movement and having a stop at its outer end for limiting the outward movement of the wedge, a spring on said post for normally holding the wedge against said stop, and a horizontally projecting lug rigidly mounted on the door and arranged for sliding engagement at its bottom side with the bottom side of said recess, to support the door as it is moved into the jamb and for engagement at its top side with the bottom side of said wedge, to hold said lug rigidly against the bottom side of said recess at the end of the closing movement of the door.

6. In combination with a door member and its jamb member, said door member being horizontally movable to a latched position in the jamb member, and one of said members having a recess provided with top

- and bottom faces, consisting of a horizontal supporting face and a holding face, a rigid wedging device disposed in said recess and slidably engaged at one side with said holding face and having its opposite side extending obliquely towards said supporting face from its outer end, a lug rigidly mounted on the other member and arranged to be successively engaged at one side with said supporting face, to support the door member as it is moved into the jamb member, and at its opposite side with the oblique side of said wedging member, to lock the door member against upward movement from its supported position said wedging device being adapted thereafter to yield to permit the door to be moved into its latched position.
7. In combination with a door member and its jamb member, said door member being horizontally movable to a latch position in the jamb member, and one of said members having a recess provided with top and bottom faces, consisting of a horizontal supporting face and a holding face, a rigid wedging device disposed in said recess and slidably engaged at one side with said holding face and having its opposite side extending obliquely towards said supporting face from its outer end, a lug rigidly mounted on the other member and arranged to be successively engaged at one side with said supporting face, the side of said lug and the face of said recess being relatively inclined at their points of initial engagement and arranged to cause a slight lifting action on the door, and thereafter provide a rigid support therefor during the remainder of its closing movement, and the opposite side of said lug being arranged to be engaged with said oblique side of the wedging device before the door reaches the end of its closing movement, so that during the remainder of said movement said device may yield and may lock said lug against the face with which it is engaged and prevent further lifting action of the door.
8. In combination with a horizontally swinging door and its jamb, said jamb having a recess provided with an inwardly extending, horizontally disposed bottom face and a top face disposed thereover, a rigid wedging device disposed in said recess and having its top side slidably engaged with said top face and its bottom side extending obliquely towards said supporting face from its outer end, and a lug rigidly mounted on said door and arranged to be moved into said recess as the door is closed and engage its bottom side with said bottom face, and cause a slight lifting action on the door and rigidly support the same and thereafter engage its top side with the bottom side of said wedging device, to lock the door against upward movement from its supported position, said wedging device being adapted to yield inwardly to permit the door to move to its fully closed position.
- In testimony whereof, I have signed my name to this specification.
- GEORGE W. WELLS.

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