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1,963,475

DOOR SUPPORT

Filed April 22, 1932

2 Sheets-Sheet 1

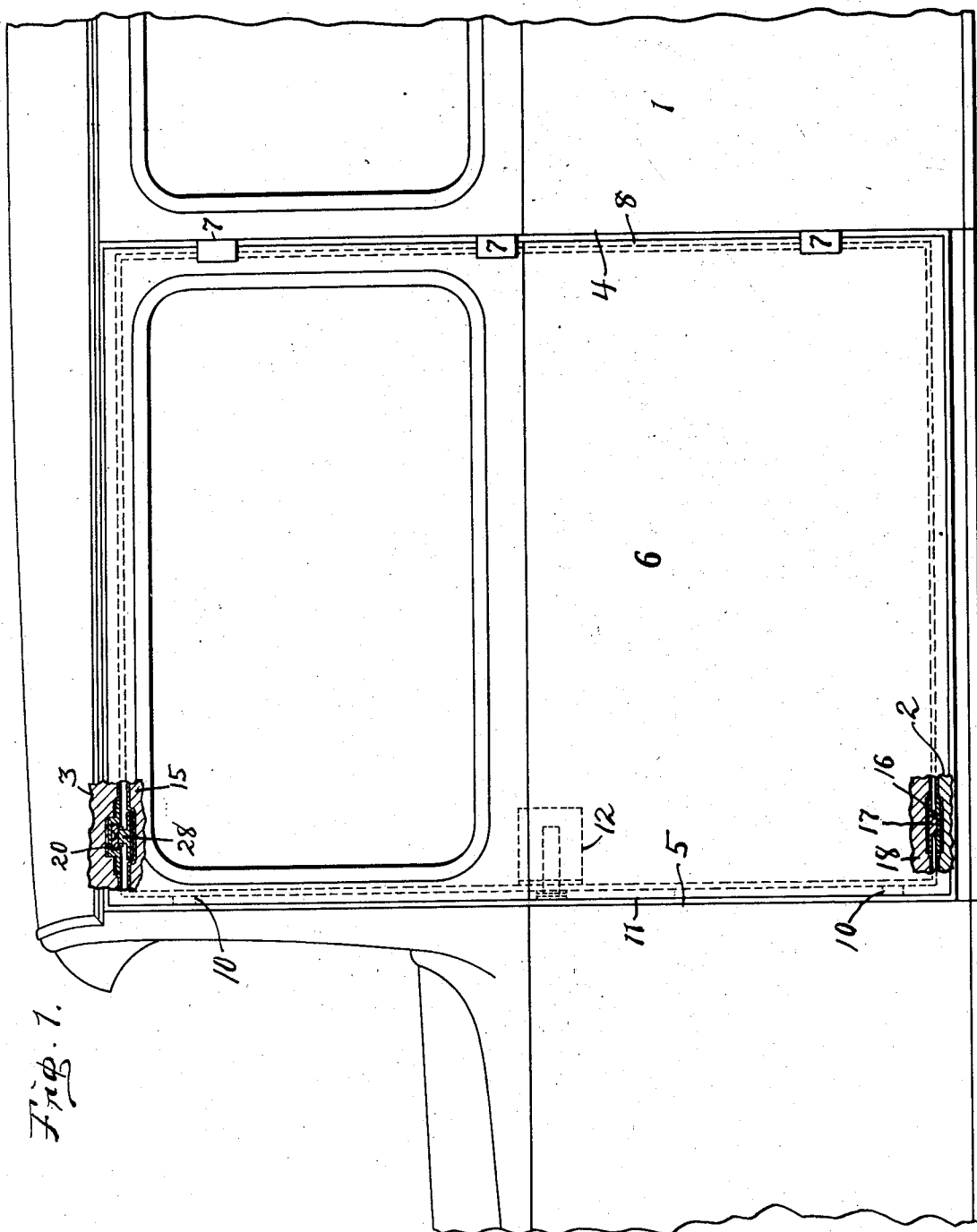


Fig. 1.

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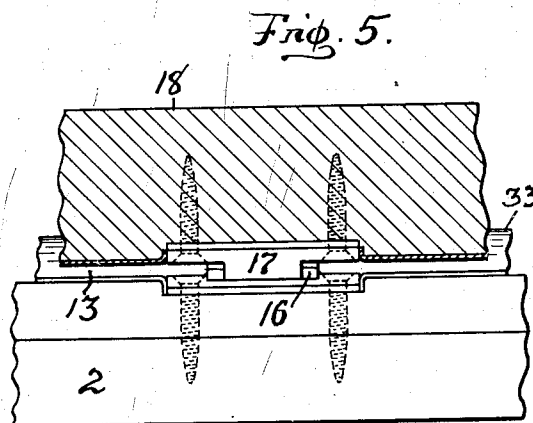
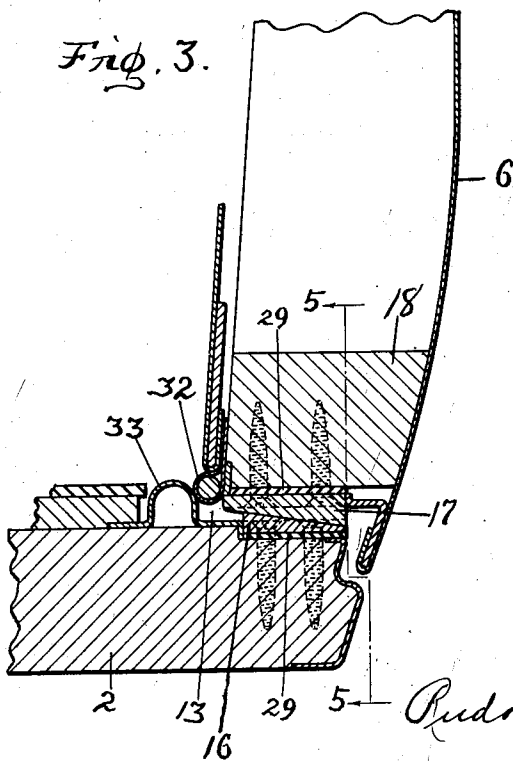
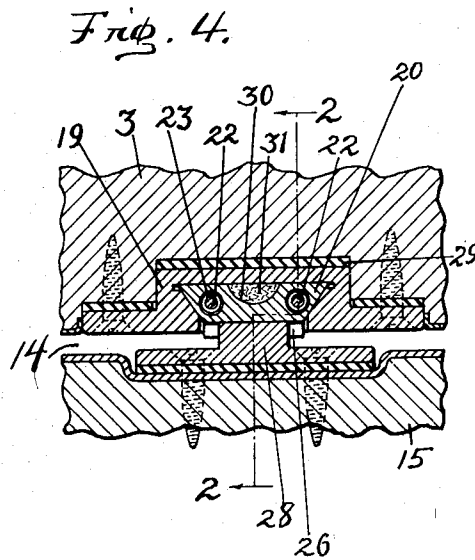
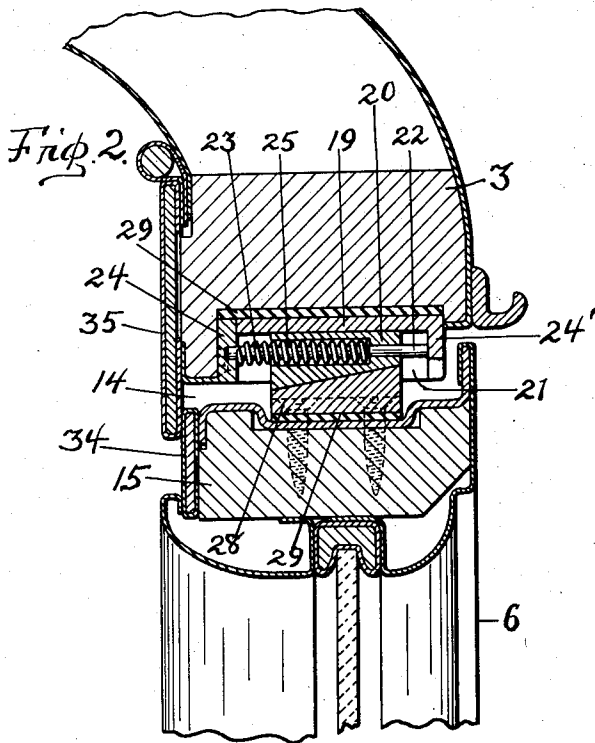
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1,963,475

DOOR SUPPORT

Rudolph I. Schonitzer, Auburn, Ind.

Application April 22, 1932, Serial No. 606,941

11 Claims. (Cl. 296—44)

This invention relates to improvements in door supports adapted to secure the door of a vehicle in its frame when closed. One of the objects of the invention is to provide automatically operable wedging means to prevent vertical play of a door between the roof rail and sill of the vehicle body in which it is mounted whereby the strain upon the door hinges is relieved and rattling of the door in its frame is obviated.

In the usual manufacture of vehicle bodies the doors are made of smaller dimensions than their frames sufficiently to allow tolerable variations in their shapes and sizes and to insure closing and opening of the door without binding against its surrounding frame, and thus the door is afforded more or less vertical play in its frame. To provide support for the door at points opposite its hinged side without binding in its frame is a further object of the invention.

The invention as herein illustrated and described with reference to certain physical embodiments is of a preferred form and is susceptible of modifications and may be embodied in various other forms within the scope of my claims without departure from the spirit of the invention.

An illustrative embodiment of the invention in a preferred form is shown in the accompanying drawings, in which:—

Fig. 1 is a fragmentary side elevation of a vehicle body equipped with the invention, parts being broken away;

Fig. 2 is a detail view showing a vertical section of the top of a door and door frame provided with corresponding parts of the invention;

Fig. 3 is a similar view of the bottom of the door and door frame provided with corresponding parts of the invention;

Fig. 4 is a cross section projected from Fig. 2; and

Fig. 5 is a side elevation projected from Fig. 3, a portion being in section.

In the illustrative embodiment of the invention is shown a vehicle body 1 provided with a sill 2, roof rail 3, hinge pillar 4 and lock pillar 5 arranged to form a door frame. The opening through the frame is closed by a door 6 that is supported upon hinges 7 that connect the hinge rail 8 of the door with the hinge pillar 4 of the frame. The lock pillar has thereon buffers 10 against which the rock-rail 11 of the door bears when closed, and a lock 12 is provided for securing the swing side of the door in connection with the lock pillar in the usual manner. The door is so proportioned relative to the frame as to provide a clearance space 13 between the lower end of the door and the

sill, and also a clearance space 14 between the top rail 15 of the door and the roof rail 3.

A bottom support is provided for the door which preferably consists of a pair of opposing contact members 16 and 17. The member 16 is rigidly secured upon the upper face of the sill 2 at a point thereon adjacent the lock-pillar 5, and preferably so that its upper face slants downwardly toward its outer end. The member 17 is rigidly secured to the bottom rail 18 of the door with its bottom face opposed to the upper face of the other member 16 with which it has bearing contact when the door is closed. In this manner the swing side of the door receives support from the sill through the medium of said bottom support.

In the lower face of the roof rail 3 adjacent the lock-pillar is rigidly secured a hollow guide block 19, the bottom of which is open and in which is disposed a take-up member 20 that has horizontal movement therein transverse to the roof rail. Preferably, the sides of the take-up member 20 and the corresponding inner faces 21 of the block extend divergently upward whereby the take-up member is held in operative position in the block. Rods 22 disposed lengthwise in the block 19 extend loosely through the take-up member, and compression springs 23 disposed concentrically upon the respective rods extend from the inner end 24 of the block into corresponding counterbores 25 in the take-up member and urge said member toward its outermost position. The lowermost face 26 of the take-up member 20 slants upwardly toward its outer end. Upon the upper face of the top rail 15 of the door is rigidly secured a contact member 28 at a point thereon in line with the take-up member so as to have engagement therewith when the door is closed. The upper face of the contact member 28 extends preferably in a plane parallel with the lower face of the take-up member 20. The guide block and the take-up member and the contact member 28 constitute a top support for the door.

Preferably, suitable spacers 29 are interposed between the block 19 and the roof rail 3, and between the contact members 16, 17 and 28 and the corresponding parts to which they are secured to bolster the supports and which serve also to deaden the sound incidental to concussions occasioned by closing the door.

As a further means of circumventing frictional sounds and to provide lubrication for the movable take-up member, a recess 30 is made in the top thereof which is filled with a suitable oil-laden wick 31 by which lubricant is supplied to the

contacting surfaces of the take-up member and its block.

The clearance spaces 13 and 14 are closed to the interior of the vehicle body when the door is closed in the usual manner by suitable weather-proofing means, such as a cushion strip 32 on the bottom rail of the door and its complemental bead 33 on the sill 2 which have contact with each other, and a liner 34 on the top rail of the door and a flexible valance 35 on the roof rail that overlaps and bears against the liner.

In operation, when the door is open, the movable or take-up member 20 is held in its outermost position against the corresponding outer end 24' of the block 19, and as the door is swung to closed position in the door frame the contact member 28 engages the take-up member which is thereupon accommodately moved in opposition to the outward pressure of the springs 23 until the door is secured against the buffers 10 by its lock 12. Concurrently with closing of the door, the contact member 17 is moved into bearing engagement with the contact member 16 and thus support is afforded for the bottom of the door. Preferably, the planes of contact between said members of the bottom and top supports extend divergently outward relatively at an acute angle so that when the door is completely closed it is firmly wedged by said supports between the sill and top rail of the frame. While locked in closed position the door is prevented from becoming loose between its bottom and top supports by the constant outward urge of the spring-pressed movable take-up member of the top support against its complemental contact member on the door, whereby play of the door in its frame is taken up and relative vertical movement between the door and frame prevented.

While the take-up member is herein set forth as being mounted in connection with the roof rail of the door frame, the bottom and top supports are susceptible to transposition or if so desired the bottom support may also have a similar take-up member.

I claim:—

1. In means to support a hinged door in the door frame of a vehicle, a bottom support having opposed contact members operatively associated and secured respectively to the sill of the door frame and the bottom rail of the door disposed to sustain the door against downward movement thereof in said frame, and a top support having opposed contact members operatively associated and secured respectively on the top of the door and roof rail of the frame disposed to prevent upward movement of the door in said frame, one member of one of said supports being transversely movable with respect to the frame and having means to yieldingly hold it in wedging engagement with the other corresponding member so that when closed the door is wedged between said sill and roof rail.

2. In means to support a hinged door in the door frame of a vehicle, a bottom support disposed between the sill of the door frame and the bottom of the door disposed to sustain the door against downward movement thereof in said frame, and a top support having opposed contact members operatively associated and secured respectively on the top of the door and roof rail of the frame disposed to prevent upward movement of the door in said frame, one of said members being transversely movable with respect to the frame and having means to yieldingly hold it in

wedging engagement with the other corresponding member so that when closed the door is wedged between said sill and roof rail.

3. In means for supporting a hinged door in its frame, operatively associated contact members secured respectively to the sill of the door frame and the bottom rail of the door disposed to sustain the door against downward movement in its frame, other opposed contact members operatively associated and secured respectively to the top of the door and roof rail of the frame disposed to prevent upward movement of the door in said frame, one of said members being transversely movable with respect to the frame, and yielding means to urge the movable member into wedging engagement with its complemental member so that when closed the door is wedged between said sill and roof rail.

4. In means for supporting the door of a vehicle in its frame, contact members on the sill of the door frame and bottom of the door operatively associated to sustain the door when closed against downward movement in its frame, a guide block secured to the roof rail of the frame, a sliding contact member disposed in said block having transverse movement with respect to the frame, yielding means opposing movement of said sliding member in one direction, and another contact member on the top of the door engageable with said sliding member adapted to move it in opposition to said yielding means into operating position whereby the door is wedged and sustained against vertical movement in said frame.

5. In means for supporting the door of a vehicle in its frame, opposing contact members secured respectively on the sill of the door frame and bottom of the door engageable when the door is closed to sustain the door against downward movement in its frame, and other opposing contact members secured respectively on the top of the door and the roof rail of the frame engageable when the door is closed to sustain the door against upward movement in its frame, one of said members being transversely movable and provided with yielding means opposing movement thereof to permit closing of the door.

6. An attachment for a door and its frame consisting of opposing supports associated respectively with the bottom and top rails of the door and corresponding adjacent rails of its frame, one of said supports having a horizontally movable and vertically immovable member and complemental contact member disposed so that the door when closed is thereby wedged between said supports.

7. Door supporting means located between the top rail of a door and the roof rail of its frame and between the bottom rail of the door and the sill of said frame respectively, said means having a movable take-up member co-operable with the closing movement of the door arranged to rigidly support and thereby prevent relative vertical movement of the door respecting its frame.

8. Means to support a door within a surrounding frame against vertical play therebetween, said means being located respectively between the top and bottom rails of the door and corresponding adjacent rails of the frame and including a member capable of bodily movement to compensate for change of alinement of and variation in size respecting the door and frame.

9. Means to take up vertical play of a door in a body, said means including contact members located between the bottom rail of the door and

the sill of the body and other contact members located between the top rail of the door and the roof rail of the body respectively, one of said contact members having a bodily movable compensating member to take up the variation in size, wear, or change of alinement between the door and the body.

10. A device for securing a door within a surrounding frame consisting of supports located respectively between the top and bottom rails of the door and corresponding rails of the frame, including a bodily movable take-up member disposed to compensate for variations in size or change of alinement between the door and the surrounding frame.

11. In means for supporting a door of a vehicle in its frame, opposing supports for the door located respectively between the bottom and top rails of the door and corresponding rails of the door frame disposed to sustain the door when closed against vertical movement in its frame, one of said supports having a guide block provided with a sliding contact member including yielding means opposing movement thereof in one direction, and another contact member engageable with the sliding member adapted to move it in opposition to its yielding means into operating position whereby the door is wedged within the frame between said supports.

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