Nov. 30, 1937. A. HABERSTUMP 2,100,591

COMBINED LOCKING AND SUPPORTING MEANS FOR DOORS

Filed March 11, 1935

FIG. 1.

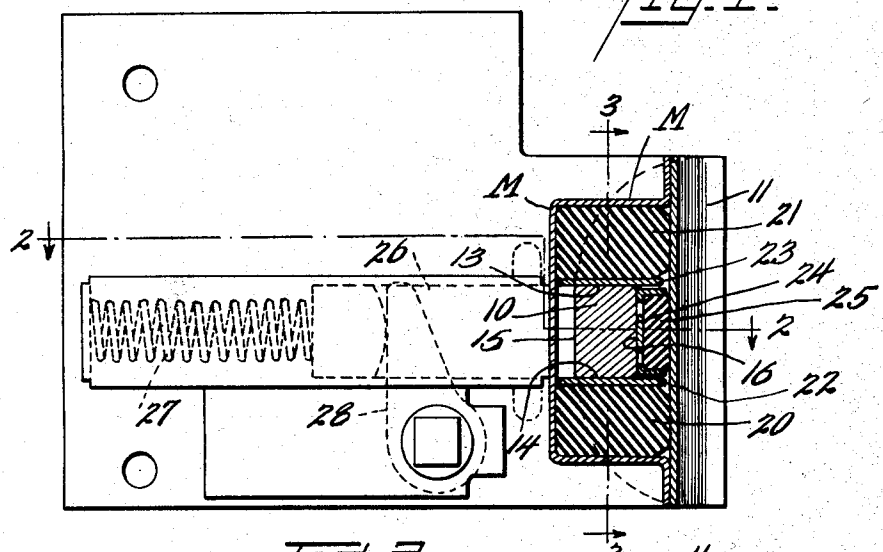


FIG. 2.

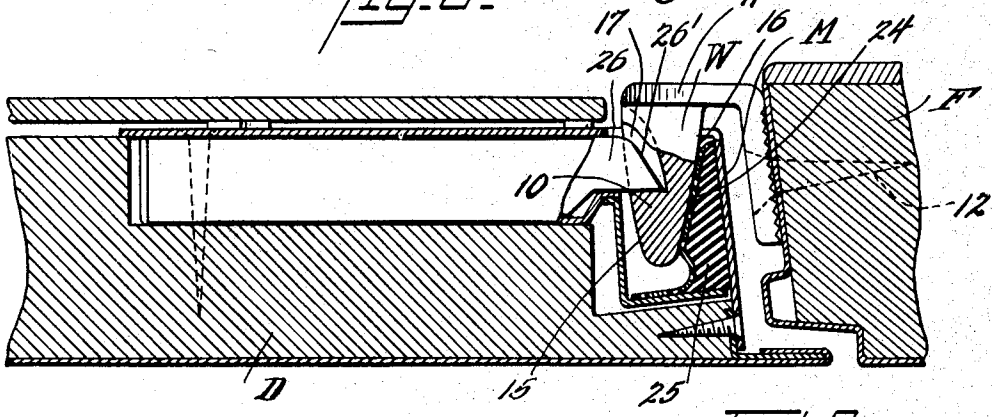


FIG. 3.

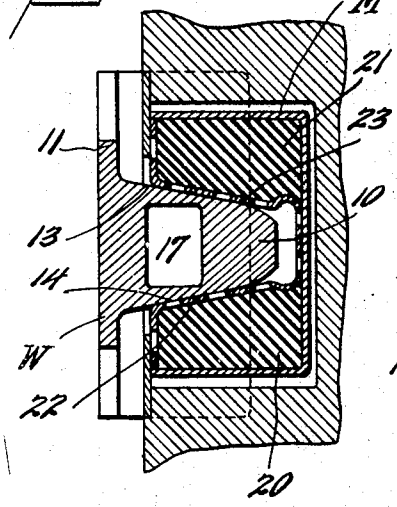


FIG. 4.

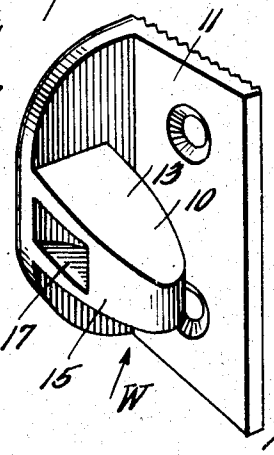
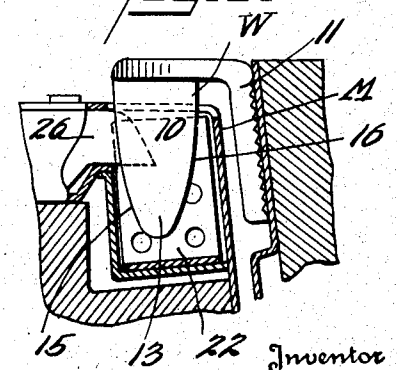


FIG. 5.



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COMBINED LOCKING AND SUPPORTING MEANS FOR DOORS

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7 Claims. (Cl. 292—302)

The present invention relates to combined locking and supporting means for doors and particularly to means of this type adapted for use in connection with motor vehicle doors which, as is well known, tend to vibrate in the plane of the door as the vehicle to which they are attached moves along a highway. The invention comprises an improvement upon the combination lock and door retainer disclosed in Patent No. 1,908,387, issued May 9, 1933 to J. A. Watson.

In the patent just mentioned is disclosed a combination with door and door frame members of a tongue or retainer rigidly fixed upon one of said members and a latch bolt and retainer receiving means mounted upon the other of said members. When the door is closed the tongue or retainer is not only engaged by the latch bolt but is also gripped between opposed resiliently supported jaws for the purpose of preventing the door from vibrating relatively to the door frame. The necessity of providing entirely separate locking and door supporting means was thereby avoided, reducing the cost of manufacture and installation of these devices and effecting a considerable simplification in the door and door frame construction.

In accordance with the present invention the several elements of the general combination set forth in the Watson patent just referred to are rearranged so that the benefits of such construction may be realized, together with additional benefits and advantages. Thus the wedging means, sometimes designated the tongue or door supporting member, is differently shaped and supported in a somewhat different manner so that the aperture provided therein for the reception of the end of the latch bolt is entirely enclosed and presents no corners or edges which might be engaged by the clothes of a person entering or leaving the car door when open. Again the wedging means is designed as an elongated wedging member disposed substantially at right angles to the plane of the door, when the door is closed, and is secured at its inner end upon the door frame or other supporting member, being unattached laterally to the door frame so that all of its side surfaces are exposed.

The wedge receiving means is so designed that a portion thereof lies behind the wedging means when the door is closed or, in other words, is hooked around this wedging means so that, in the event that there is any tendency on the part of the door frame members to separate, the wedging means in cooperation with the wedge receiving means and door will act as a tension member preventing such separation. This will prevent accidental unlatching of the door when the motor vehicle to which it is attached is in transit due to failure of the body to remain rigid, which sometimes happens with other types of securing means. Again, the wedge receiving means includes resiliently supported jaws and the wedging means is clamped between these jaws. Preferably, although not necessarily, resilient material extends almost completely around the wedging means when the door is closed, this material being preferably rubber, and the latch bolt is strongly spring pressed into latching position in the remaining direction so that the door is in reality resiliently supported against vibration not only vertically but also horizontally, which is highly desirable. It is, however, not necessary in all cases, particularly in those cases where the body of the vehicle is strongly built and the door is supported upon heavy hinges, to provide a resilient support for the door to dampen horizontal vibrations. In all instances, however, it is necessary to provide means for resiliently supporting the door against vibration in a vertical plane.

The improved locking and supporting means likewise has further advantages, as will be clear to one skilled in the art. One form of the invention is disclosed in the accompanying drawing by way of example but it will be appreciated that in adapting the invention to vehicle bodies which differ in design, minor changes may be made to accommodate the door locking and supporting means to such design, without departure from the invention. It is immaterial whether the wedging means be upon the door frame or upon the door and the wedge receiving means upon the other member, but in the general case the wedge receiving means and the latch bolt will be placed upon the door, and the wedging means upon the door frame, as illustrated in the drawing.

In the drawing:

Figure 1 is a view, partially in side elevation and partially in section of the wedging and wedge receiving means in interengaging relationship;

Figure 2 is a section on line 2—2 of Figure 1, portions of the door being illustrated in rather diagrammatic fashion;

Figure 3 is a section on line 3—3 of Figure 1;

Figure 4 is a perspective view of the wedging means and its attachment plate; and

Figure 5 is a section through a slightly modified form of locking and supporting means.

A portion of the frame of a door is indicated at F in the drawing and portion of the door itself indicated at D, it being understood that the

portion of the door shown in the drawing is remote from the axis of swing of the door. The wedging means is indicated generally at W and the wedge receiving and latching means generally indicated at M.

The wedging means may be formed in various ways but preferably comprises a single elongated member 10 disposed substantially normally to the plane of the door when closed and having its innermost end integral with a supporting angle plate 11 which may be rigidly attached to the door frame member by screws 12 or other securing devices, or by welding. Wedging means 10 tapers outwardly, both vertically and horizontally, and preferably has four distinct side surfaces facing in different directions, upper and lower faces 13 and 14 and side faces 15 and 16. Sections through the wedging means parallel to the plane of the door when closed will preferably be square or rectangular. The upper and lower faces 13 and 14 comprise the principal faces or surfaces which are resiliently engaged by the wedge receiving means but the rear face 16 may likewise be engaged. The forward face 15 is recessed to provide an aperture 17 for the reception of the end of the latch bolt. It will be appreciated that the exact configuration of the wedging means will be varied but in every instance it will have upper and lower surfaces for engagement with the wedge receiving means, a laterally opening recess for the reception of a latch bolt, and a surface such as 16, rearwardly facing, and which is preferably engageable by portions of the wedge receiving means for reasons heretofore set forth.

The wedge receiving means, preferably mounted upon the door, comprises suitable housing or casing members for supporting resilient elements such as springs or the like, these elements preferably being rubber blocks such as indicated at 20 and 21. The mutually facing surfaces of the rubber blocks are covered with protective material, preferably relatively inclined metallic plates 22 and 23 which may be conveniently formed as portions of a single continuous generally U-shaped member, as shown in Figure 3. This metallic member preferably has a third wedging means engaging surface 24 for engagement with the rear surface 16 of the wedging means and portion 24 is backed by a rubber block 25.

A latch bolt is indicated at 26 and a spring normally urging the latch bolt to locking position at 27. Any suitable means for retracting the bolt may be provided such as the customary manually operable rock shaft and operating arm, this latter being shown in Figure 1 in dotted lines at 28.

As the door is moved toward closed position the inclined face 26' of the latch bolt will contact with the rounded end of the wedging means W and the latch bolt will be forced rearwardly against the action of spring 27 as its end rides along the face 15 of the wedging means. Finally, the end of the latch bolt registered with the recess 17 and the spring 27 becomes active to thrust the latch bolt into this recess, thus locking the door in closed position. Prior to the time that the door reaches fully closed position, however, the upper, lower, and rear surfaces, 13, 14 and 16 of the wedging means, have come into contact with the metallic members 22, 23 and 24, which may be designated wedge receiving jaws, and these jaws are laterally deflected by the wedging means as it moves to final position, compressing the rubber backing blocks 20, 21 and 25. When the door is completely closed, therefore, the wedging means 10 is resiliently clamped not only between the upper and lower jaws 22 and 23 but between the jaw 24 and the spring pressed latch bolt 26. It is therefore resiliently held against vibration vertically and horizontally and may not rattle even when the vehicle to which it is attached is travelling along the roughest roads.

As has previously been pointed out, the rubber block 25 may be omitted if desired as shown in Figure 5, particularly in the case of very well built bodies, but I preferably make use of this additional resilient supporting means. The jaw 24 is preferably provided in any event, even if not resiliently supported, inasmuch as by the engagement of this jaw, or its equivalent, with the face 16 of the wedging means, the door is locked to the door frame in such manner that the latch bolt 26 cannot become disengaged from the recess 17 owing to spreading of the pillars of the frame.

The resilient supporting means may be formed in various ways and may include metallic springs or a combination of metallic springs and rubber blocks. The "jaws" 22, 23 and 24 may likewise be formed individually and be shaped in various ways. That form of the invention disclosed in the drawing, however, is preferred inasmuch as the several parts are of simple nature, inexpensive to produce, and may be readily assembled together and applied respectively to the door and door frame members of a vehicle.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a combined locking and supporting means for doors, the combination with door and door frame members, of a latch bolt and spaced metallic jaws mounted on one of said members, together with means for resiliently opposing separation of said jaws, and a single element positioned on the other member and adapted to be engaged by said jaws and latch bolt when the door is closed, said element having a recess for the reception of the end of the latch bolt which recess opens only toward the latch bolt.

2. In a combined locking and supporting means for doors, the combination with door and door frame members, of a latch bolt and spaced metallic jaws mounted on one of said members, together with means for resiliently opposing separation of said jaws, and a single element positioned on and rigidly secured to the other member and adapted to be engaged by said jaws and latch bolt when the door is closed, said element having oppositely facing relatively inclined surfaces for engagement by said jaws and a recess for the reception of the end of the latch bolt.

3. In a combined locking and supporting means for doors, the combination with door and door frame members, of a latch bolt and spaced metallic jaws mounted on one of said members, together with means for resiliently opposing separation of said jaws, and a single element positioned on and rigidly secured to the other member and adapted to be engaged by said jaws and latch bolt when the door is closed, said element tapering outwardly from its support and having a lateral aperture for the reception of the latch bolt.

4. The combination for use with a door frame member and a door member hinged to swing laterally with respect to the frame member, of an element rigid with and projecting from one of said members and adapted to enter a recess in the second member when the door is closed, said element having generally flat relatively in-

clined upper and lower surfaces and said second member being provided with relatively movable metallic parts to engage and resiliently support said surfaces, means yieldingly supporting said parts, and means to lockingly engage said element.

5. The combination for use with a door frame member and a door member hinged to swing laterally with respect to the frame member, of an element rigid with and projecting from one of said members and adapted to enter a recess in the second member when the door is closed, said element having three generally flat relatively inclined surfaces facing in different directions and a recess opening in a fourth direction and said second member being provided with resilient means to tightly engage the surfaces of said element and a latch bolt to project into said recess.

6. The combination with a tapering element or wedge adapted to be secured to and to project from a door frame, said element being substantially rectangular in all transverse sections, of a resilient wedge receiving means adapted to be secured upon a door, the wedge being resiliently gripped by said means on three angularly disposed sides when the door is closed.

7. The combination set forth in claim 6 in which a spring pressed latch bolt is also mounted on the door which lockingly engages the wedge when the door is closed, said bolt coacting with said means in damping vibrations of the door.

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