DOOR ALIGNING AND ANTI-RATTLE DEVICE

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This invention relates to door aligning and anti-rattle devices and more particularly to the types such as are used in connection with vehicle doors.

There have been provided in the past for this purpose various devices which for the most part comprise sliding wedge members suitably encased and adapted to be actuated by and simultaneously function with the tongue member of the door. Naturally the repeated opening and closing of doors equipped with such interdependent devices causes considerable wear upon the parts mentioned and subsequently greatly reduces the efficiency thereof. Another deterrent factor in the above mentioned construction is that not infrequently the tongue and wedges bind in a manner which prevents free and easy opening and closing of the door when it is desired to do so.

The primary object of my invention is to provide a novel and effective device of this character which is actuated by the door itself rather than by the tongue of the door and in a resilient manner which insures positive, smooth, and easy aligning and wedging action upon the closing of said door and likewise imparts a free smooth initial opening momentum upon the opening thereof.

Another and important object of this invention lies in the provision of means whereby the movement of the wedge members is each and separately independent of the other thus rendering the device equally efficient on all doors, i.e., whether or not the doors are in true or perfect alignment.

A further object of my invention is to provide a door aligning device which automatically compensates for any wear which might occur incident to the repeated opening and closing of the car door.

A still further object of my invention is to provide such a device which is simple of construction, of few parts adapted to be easily assembled and economically manufactured.

Other objects and advantages in details of construction and operation will be obvious as the description proceeds, reference being had to the figures of the accompanying drawings wherein like reference numerals indicate like parts.

In the drawings:

Figure 1 is a diagrammatic plan view showing a door partially closed with respect to the jamb and the position of the tongue thereon relative to my improved aligning and anti-rattle device.

Figure 2 is a detail perspective view showing my improved device mounted in the door jamb.

Figure 3 is a side view taken substantially on the line 3--3 of Figure 1 with the door shown in phantom and just about to be closed, certain parts being broken away for clearness.

Figure 4 is a view similar to Figure 3 but with the door shown in its final or closed position.

Figure 5 is a rear view of my improved device, certain parts being broken away for clearness.

Figure 6 is a detail sectional view taken on the line 6--6 of Figure 3.

It will be understood, of course, that vehicle doors are provided with suitable latch means for locking the door in its closed position, such means being herein omitted from the illustration for clearness.

The reference numeral 1 indicates the door jamb of the frame in which is suitably mounted my improved aligning device generally indicated at 2. The door 3 is provided longitudinally along its free edge with the usual overlapping flange 4 and there is suitably secured on the inner surface of the free edge of the door the tongue 5. The tongue 5 of the door is, of course, positioned thereon relatively to the device 2 of the jamb that upon closing movement of the door the tongue 5 will cooperatively enter into the device as will be described later in detail.

Referring now to Figures 2 to 6 inclusive, it will be seen that this device 2 comprises a two piece casing, one piece thereof being suitably formed with a flat rectangularly shaped portion 6 the forward edge 7 of which is bent inwardly at right angles thereto and is provided at its inner edge with a right angularly disposed flange 8 whereby this
piece of the casing is adapted to be snugly fitted into the rabbet of the jamb 1 and is securely held in such position by any suitable means as by the screws 9 passing through suitable openings provided therein into engagement with said jamb. The outer edges of the rectangular portion 6 of this plate are curled over and inwardly as indicated at 10 in Figures 5 and 6 to snugly receive the second piece 11 of the casing which is a trifle smaller in size and has substantially the same outer contour of the flat portion 6 whereby the same nests securely within the piece 6, the outer edges thereof meeting flush with the inner surfaces of the curled rim 10 of the piece 6. Openings 12 are suitably provided in this second piece 10 corresponding to the openings provided in the piece 6 whereby the screws 9 may pass therethrough into engagement with the jamb 1 as previously described.

The forward edge of the piece 11 terminates flush with the right angular inwardly extending portion 7 of the plate 6 and suitably depressed centrally of same is a wedge retaining pocket 13, the upper and lower sides of said pocket being angularly convergent from the forward edge toward the rear thereof as at 14 and 15 respectively. A flange 16 is struck upwardly adjacent the rear edge of the piece 11 whereby the pocket 13 is completely enclosed since the depth thereof is approximately the width of the portion 7 of the plate 6. It will be understood, of course, that the jamb 1 is suitably recessed to accommodate this inwardly extending pocket when the device is mounted thereon as shown in Figure 2.

Slidably mounted within this pocket 13 are wedging blocks 17 and 18, the upper side of the block 17 being parallel with the sloping upper side 14 of the pocket and the lower side of the block 18 correspondingly conforming with the sloping lower side 15 thereof. The inner surfaces of these blocks 17 and 18 respectively in normal position extend a trifle below and above the upper and lower edges of a slot 19 suitably provided in the portions 7 and 6 of the outer piece of the casing. This slot 19 is a trifle greater in width than the thickness of the tongue 5 of the door whereby when the door 3 is swung inwardly, the tongue will be freely accommodated therein as clearly shown in Figure 3. Rearwardly of the blocks 17 and 18 and between the rear surfaces thereof and the upturned flange 16 of the pocket 13 is interposed a flat split leaf spring 20, one leaf 21 of which engages against the block 17 and the other leaf 22 of which engages against the block 17 whereby to resiliently and normally urge said blocks forwardly in the pocket 13 to the position shown in Figure 3 wherein as before described the tongue 5 of the doorway will freely enter therebetween. It will, of course, be understood that any suitable spring or resilient means may be employed for the purpose, the type shown being illustrative only.

Angularly disposed convergent elongated slots 23 and 24 parallel with the convergent angular sides 14 and 15 of the pocket 13 are suitably provided in the inner wall of same and are adapted to slidably receive pins or lugs 25 and 26 carried by the blocks 17 and 18 whereby to maintain said blocks against the sloping sides 14 and 15 constantly and to impart smooth and regular sliding action thereto as same are actuated therein.

Centrally within the forward ends of these blocks 17 and 18 there are provided spring pressed plungers 27 and 28, the extreme outer ends of which extend outwardly through vertically disposed elongated slots or openings 29 and 30 respectively, suitably provided in the portion 7 of the plate 6. These plungers pins 27 and 28 are preferably provided intermediate their ends with flanged shoulders 31 of greater diameter than the slots 29 and 30 whereby to maintain the pins within the blocks 17 and 18 when the parts are assembled.

Coil springs 32 are provided in suitable recesses within the blocks for normally urging these pins 28 to their outermost position as shown in Figure 3 wherein the flange 4 of the door 3 will engage thereagainst when said door is swung inwardly toward closing position.

Obviously from the foregoing description and with reference to Figure 3 as the door 3 is pushed inwardly the plunger pins 27 and 28 and likewise the wedging blocks 17 and 18 respectively will be moved rearwardly, and simultaneously inwardly by virtue of the converging sides 14 and 15 of the pocket 13 into engaging position with upper and lower surfaces of the tongue 5, against the tension of first the relatively light flat leaf spring 20 and then the relatively heavier coil springs 32, when the tongue 5 is firmly secured between said wedges as clearly shown in Figure 4. Thus it is clear that the wedges move to locking position with respect to the tongue and thereafter any further inward movement, of the door is absorbed by the coil springs 32.

In this position the latch of the door 3 (not shown) will have securely locked same and it will be clear that the double spring action upon the wedges and the door will serve to firmly hold same in its aligned position and will thus likewise preclude any possibility of it becoming loose or rattling while in such position.

Releasing of this latch to open the door will naturally result in a forward thrust upon the flange 4 thereof by the plunger pins 27 and 28 of the wedge blocks and likewise said blocks will be simultaneously thrown forward by virtue of the spring 20 thus instantly, smoothly and easily releasing the tongue 5.
and imparting to the door an initial outward starting movement.

It will, of course, be understood that because of the independence of the wedge block and plunger pin units each to the other that regardless of the angle or tilt at which the flange of the door meets and acts upon same as described, the action of the device will be equally effective. In other words, these individual units operating each independently of the other and by the movement of the door rather than by the tongue will automatically compensate for any imperfections or inaccuracies of the hinging of said door.

Any frictional wear which might possibly occur to these movable parts of the device will also automatically be compensated for by virtue of the springs 32 and 20.

Of course, it will be understood that the embodiment herein shown and described is the preferred form only and that it is susceptible to various changes in details of construction and operation without departing from the spirit and scope of my invention.

I do not limit myself, therefore, other than by the appended claims.

I claim:

1. In combination, a door having a tongue thereon, a pair of spaced movable members for cooperation with said tongue as the door is closed, said tongue being adapted to freely enter between said members, cooperating means, independent of said tongue, between said door and said members to move said members into binding engagement with said tongue as the same enters between said members, resilient means normally urging said members out of binding position, and resilient means interposed between said members and said moving means.

2. In combination, a door having a tongue thereon, a pair of sliding, spaced members for binding engagement with said tongue as the door is closed, said tongue being adapted to enter freely between said members, and resiliently mounted means carried by said members and cooperating with said door independently of said tongue, for moving said members into binding engagement with said tongue.

3. In combination, a door having a tongue thereon, a pair of slidable spaced members for binding engagement with said tongue as the door is closed, said tongue being adapted to enter freely between said members, and means carried by said members and cooperating with said door independently of said tongue, for moving said members into binding engagement with said tongue, resilient means interposed between said members and said moving means extending outwardly from said members into the path of said door, said pins being yieldably mounted in said members.

4. An aligning and anti-rattle device for a door comprising a casing having rearwardly convergent upper and lower sides, spaced slidable wedge members correspondingly cooperating each and separately with said sides in opposed relation therein, resilient means interposed between the rear wall of the casing and the rear ends of said wedge members for normally urging same forwardly, a tongue on said door adapted to freely enter between said wedge members, resilient members in said wedge members extending forwardly through said casing into the plane of said door, whereby closing movement of said door will impart independent resilient rearward movement to said wedge members to thus simultaneously force same inwardly upon said tongue, and means for guiding the sliding movement of said wedge members as they are so actuated.

5. A door aligning and anti-rattle device comprising a pair of movable spaced binding members, a tongue adapted to freely enter the space between said members, means for moving said members into binding engagement with said tongue as the same moves into position between said members, said means being resilient to permit movement of said doors beyond the binding point of said members.

In testimony whereof, I affix my signature.

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