May 26, 1931. D. M. WINANS 1,807,113

DOOR BUFFER AND RETAINER

Filed March 20, 1930

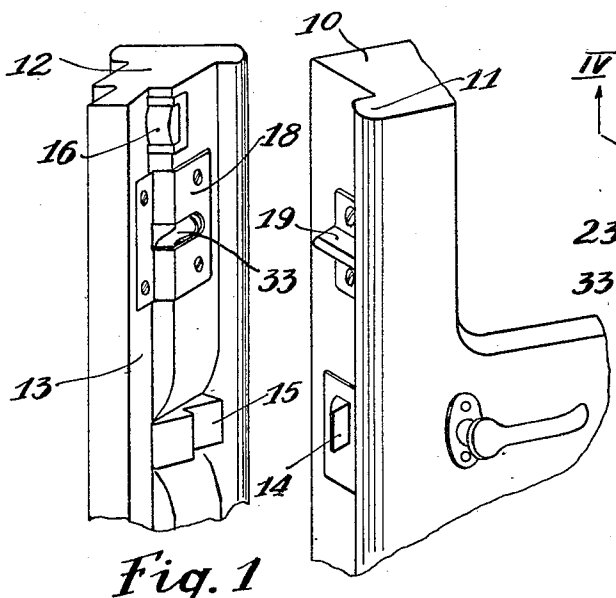


Fig. 1

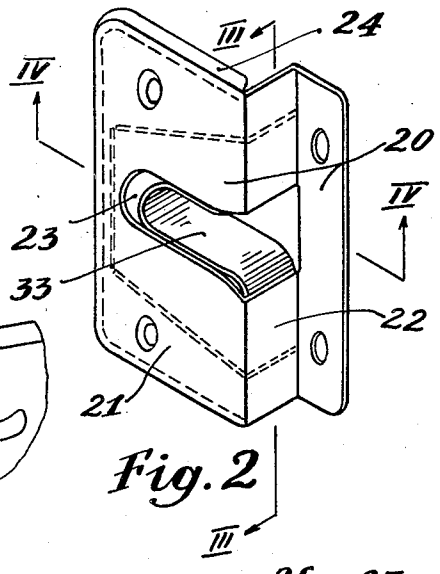


Fig. 2

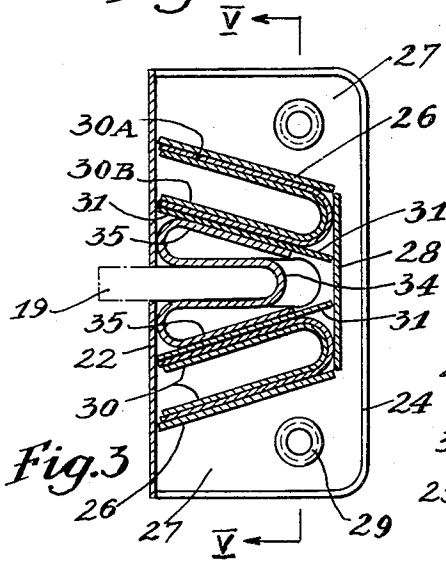


Fig. 3

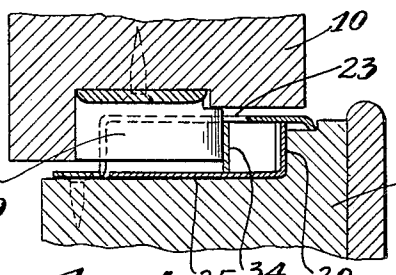


Fig. 4

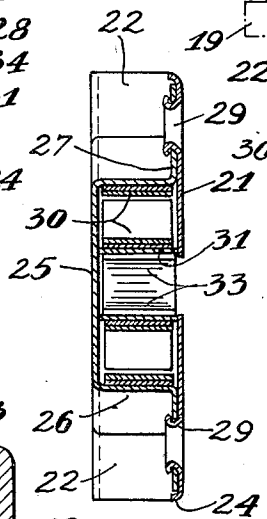


Fig. 5

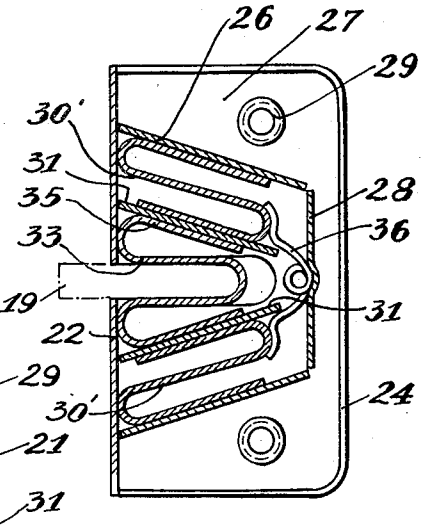


Fig. 6

INVENTOR.
Daniel M. Winans
BY Louis Selmer,
HIS ATTORNEY.

Patented May 26, 1931 1,807,113

UNITED STATES PATENT OFFICE

DANIEL M. WINANS, OF BINGHAMTON, NEW YORK, ASSIGNOR TO THE BREWER-TITCHENER CORPORATION, OF CORTLAND, NEW YORK, A CORPORATION OF NEW YORK

DOOR BUFFER AND RETAINER

Application filed March 20, 1930. Serial No. 437,504.

This invention pertains to buffers for doors or the like, and more particularly has reference to an improved bumper and antirattler device for silencing automobile doors. The primary object is to provide for a simple and effective retaining fixture of this character serving to guide the door latch into proper engagement with its striker plate, also one adapted to absorb shock when the door is slammed shut and to releasably hold the swinging edge of a closed door against obnoxious rattling effects.

A further object is to provide for a suitable casing adapted to mount a pair of retractable female jaws that are adapted to slidably yield in the path of the entered male or dovetail member. These spaced jaws are arranged to clampingly receive the cooperating dovetail whenever the door is brought into its fully closed position. An outstanding feature of my bumper embodiment resides in so disposing of said clamping jaws that in closing the door, the male member is caused to enter therebetween against an intensified resistance and still allowing said member to withdraw from the jaws without requiring a correspondingly heavy pull or drag to be exerted in opening the door.

My door bumper device is entirely devoid of rubber as a buffer medium, hence the casing interior may be freely lubricated without detriment to the resilient element. In addition, this buffer casing together with the vehicle body to which it is usually assembled, may be baked for a prolonged period in japanning ovens without impairing the buffer medium. Embodied herein are also other structural features designed to accomplish the foregoing and related purposes, all of which will be more explicitly set forth hereinafter.

Reference is had to the annexed one sheet of drawings which are illustrative of certain specific embodiments of my invention, like characters of reference indicate like parts, and in which drawings:

Fig. 1 is a perspective view depicting a portion of an automobile door and jamb post therefor, with a form of my invention applied thereto.

Fig. 2 represents an exterior view of an assembled female casing that carries spaced resilient jaw members.

Fig. 3 shows a sectional view of the assembled casing as taken along the vertical plane III—III of Fig. 2.

Fig. 4 illustrates a transverse sectional view of said casing as taken along the horizontal plane IV—IV of Fig. 2 but including associated portions of the jamb and door members.

Fig. 5 is a sectional view as taken along the transverse vertical plane V—V of Fig. 3.

Fig. 6 shows a sectional assembly of modified female clamping members.

Proceeding now to a description of the drawings, Fig. 1 is intended to indicate certain conventional motor car elements indirectly associated with my buffer device, of which 10 represents the swinging edge of a suitably hinged door provided with a marginal ledge 11 while the stationary door jamb 12 is rabbeted at 13 and adapted to overlappingly receive said ledge in the usual manner. The door is further shown equipt with a latch 14 and the jamb provided with a cooperating striker plate 15; said jamb may also be provided with a stop pad 16.

The numeral 18 indicates in its entirety, the preferred style of female member of my improved buffer device as applied exteriorly of the door jamb while the numeral 19 represents the cooperating dovetail or male member thereof that may be applied immediately behind the door ledge as shown. As will be understood, the described order of attachment may also be reversed without changing the intended function of my device.

Figs. 2 to 5 inclusive show the details of said female member 18 which may comprise a cross-sectionally Z shaped trim plate 20 having a flat facing flange 21 and a transversely disposed web wall 22, which are centrally slotted at 23 and adapted to receive a cooperating male member in the fashion disclosed in Fig. 4. The free perimeter of the flange 21 may be provided with an upturned marginal ridge 24 that is preferably shaped up in the manner indicated. Each free corner region of the facing flange 21 is provided

with an integrally formed thimble-like extension 29 that is raised out of inner flange face; these apertured grommets are used for screwing the assembled casing in place.

My device further includes a unitary sheet-metal housing or casing comprising a backing plate 25 equipt with a pair of offset foot flanges such as 27 adapted to be centered within said ridge 24 and also having two oppositely disposed side walls or fixed abutments such as 26 which are preferably set in angular relation. Each casing flange 27 is perforated in registry with the respective grommets 29 and serves to secure said housing behind the trim plate. The projecting grommet ends are intended to be exteriorly upset or riveted after all the working parts have been assembled therein. Said housing may also be provided with an inturned tail flange 28.

Mounted within said housing, are oppositely disposed yieldable clamping members such as 30, each of which may be made up from laminated strip-like metallic spring stock or similar resilient material that is here shown bent up into a U shaped shoe or block, of which one leg 30A is set in an abutting relation to the respective housing side walls 26. Each innermost shoe leg 30B may be faced with a fibre wearing strip such as 31 although this is not an essential feature. A wedge-shaped space may be formed between said inclined strips with their converging edges located in a remote relation to the assembled web flange 22 as indicated in Fig. 3. The compelmentary blocks are here confined between the web-plate 22 and the tail-flange 28, but their inclined free legs 30B are still free to spread apart when the male member is forced therebetween.

Cooperating with said complementary shoes, is a wedge piece or clip preferably but not necessarily made up from strip spring material and which is here shown as formed into a triple loop-like shape of which the center fold comprises complementary spaced jaws such as 33 disposed to constitute a substantially parallel dovetail receiving socket. Said jaws are shown interconnected by an integral resilient yoke 34 while the respective wing ends such as 35, are each given a close return bend with the free terminal portion thereof resting in immediate adjacency to the yoke 34 in the fashion shown in Fig. 3. Said wings are oppositely sloped in order to lie contiguous to the respective inclined abutment faces 31 after the various working parts are operatively assembled. It is preferred to so form the complementary wings 35 that they will have to be initially forced into place and thus resiliently press apart and maintain the spaced shoes 30 against their respective fixed sloping abutment walls.

Fig. 6 discloses a preferred structure type of the clamping members in that the respective resilient shoes 30′ are each given a double U or S shaped contour. For certain purposes, it may prove expedient to augment the degree of longitudinal shoe movement and to this end the overall length of this particular spring is kept somewhat shorter than the spacing provided between the web plate 22 and the casing tail flange 28. An interposed actuating spring 36 is now resorted to in urging the slidably mounted shoes 50′ forwardly against the entering dovetail and away from the flange 28. The operation of the assembled parts is still essentially similar to that described in connection with the previous alternative disclosure, except that said pair of slidable shoes is given a limited reciprocative movement having a component that aligns with the path given to the swinging dovetail member 19.

Fig. 4 shows the manner in which the male and female members of my buffer are intended to coact while the door is being closed. The relatively long dovetail tongue 19 may be made to initially enter more or less freely between the pair of socket jaws 33 to the extent indicated in said view where the door still stands ajar. In this initial operative position, the leading edge of said tongue first comes into abutment with the clip yoke 34 but upon continued door closure movement, said yoke will thereupon be pressed bodily inward toward the spaced housing tail flange 28 and into final or wedged position where the tongue becomes releasably retained between the converging ends of the inclined buffer abutments; the resulting shift on part of the clip will in turn glidingly carry the wings 35 along their respective inclined shoe faces, thus causing the gripping jaws 33 to squeeze together and exert an augmented pressure upon the opposite side faces of the dovetail 19.

The cited double frictional grip serves to snugly hold the closed door members against rattle. After the door is brought home against the stop pad 16 and the latch 14 has become engaged with the striker plate 15, the resilient clip will be tightly wedged between the inclined shoe facings 31 whereby the wing ends of the clip become sprung inwardly to reenforcingly rest upon the interposed yoke 34. While this wedging action causes the resilient shoes 30 to be compressed to a certain extent, the spring reaction causes the spaced jaws 33 to tightly clamp the entered male member 19 therebetween.

It is preferred to keep the wings of my slidable clip in close relation to the spaced jaws in order to provide for a compact resilient jaw formation adapted to exert the minimum of bending effect and consequent distortion upon the yoke 34.

By virtue of the disclosed inclined block face disposition, there is set up a counter-

acting force that assists in opening the door immediately upon its being unlatched, notwithstanding that the door might have been tightly slammed shut and the buffer members carried by momentum into tight frictional engagement. In my device, the effort needed to reopen the door is materially reduced as compared to that required to close the same. This outstanding feature represents a decided advantage over conventional practice where the door is commonly hard to reopen and requires a pull substantially equal to the push or slam imposed in closing the door; in the cited practice, the buffer jaws are usually set close together and not adapted to freely receive the male member without initial jaw spreading action. In my self opening buffer device on the contrary, the clamping members only grip the entered male member after the latter has been almost wholly entered; in addition, provision is made to hold the door latch in rattle-proof engagement with its striker plate.

It is to be understood that the disclosed buffer device also finds application to purposes other than automobile uses, and that various changes in the details and mode of attachment may be resorted to in likewise carrying out my illustrative embodiments, all without departing from the spirit and scope of my invention, heretofore described and more particularly pointed out in the appended claims.

I claim:

1. In a buffer fixture of the all-metal type, the combination of complementary spaced abutments, a faced inherently resilient clamping member of the metallic leaf-spring type for each of the abutments and which members have their respective faces placed inwardly to cooperatively provide for a laterally expansible wedge-shaped spacing therebetween, wedge-like clip means mounted wholly within said spacing and having oppositely disposed surfaces adapted to be shifted lengthwise of the respective member faces, and means serving to forcibly wedge the clip between said clamping members.

2. In a door buffer device comprising cooperating male and female parts, the combination of a housing having spaced side-wall means, a separate laminated clamping member of the resilient spring type associated with each of the side-walls and which members are faced to provide for a wedge-shaped spacing therebetween, and tongue means adapted to be progressively entered between said members and serving to impose an increasing clamping pressure upon opposite sides of the tongue.

3. In a door buffer device comprising in combination a pair of fixedly spaced abutments, a separate retractable clamping member interiorly associated with each of the abutments and the respective innermost faces of which members are provided with spaced glide faces defining a wedge-shape therebetween, a protective fibrous wear strip for each of said oppositely inclined glide faces; a resilient wedge piece provided with a pair of inclined surfaces that respectively cooperate with and are slidable lengthwise of said oppositely inclined strips, and wedge actuating means forcibly carrying said piece toward the convergent region of said inclined strips.

4. In a retaining fixture for a latchable door, the combination of a female part comprising fixedly spaced abutments, a separate inherently resilient member of U shaped contour cooperatively associated with each of said abutments, said members each comprising spaced complementary legs of which one such is mounted in a contigous relation to the abutment with which it cooperates while the opposite member legs are respectively disposed inwardly therefrom to constitute a pair of inclined glide faces defining a wedge-shaped space therebetween with the respective ends of the innermost legs terminating in the divergent region of said inclined glide faces, a socketed wedge piece having inclined surfaces that are respectively slideable lengthwise of said pair of glide faces and yieldably received therebetween, and actuating means adapted to enter the socket of said wedge piece and to be gripped therein when said piece is forcibly carried toward the convergent region of said wedge-shaped space.

In testimony whereof, I have herewith set my hand this 18th day of March, 1930.

DANIEL M. WINANS.