Aug. 6, 1929. H. E. SIPE 1,723,305

DOOR CLOSURE

Filed July 25, 1927

Fig. 1.

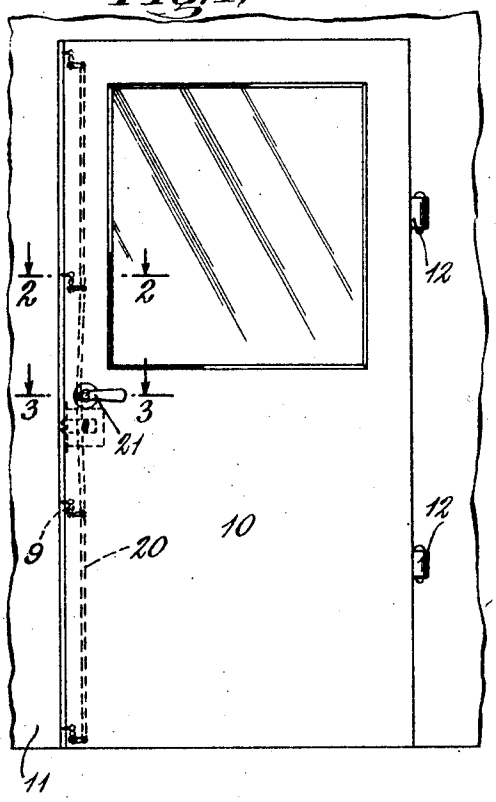


Fig. 2.

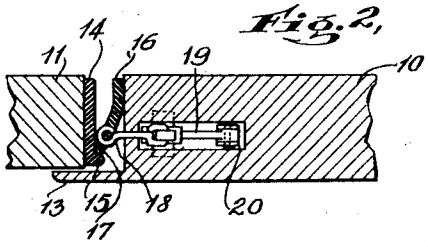


Fig. 3.

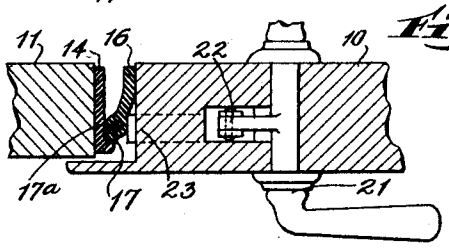


Fig. 4.

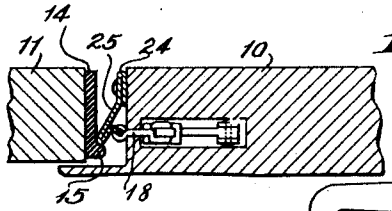


Fig. 5.

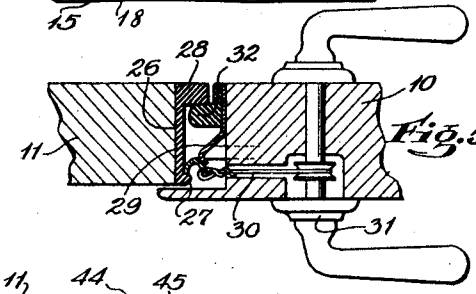


Fig. 6.

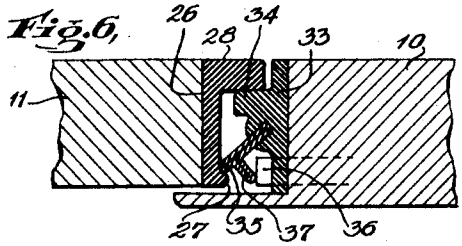


Fig. 8.

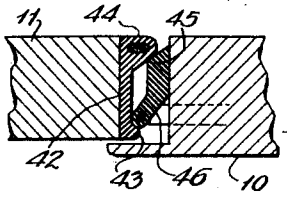


Fig. 7.

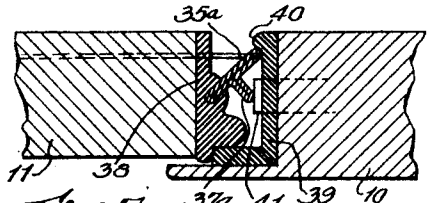
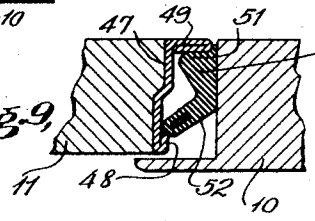


Fig. 9.



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UNITED STATES PATENT OFFICE.

HARRY E. SIPE, OF NEW YORK, N. Y.

DOOR CLOSURE.

Application filed July 25, 1927. Serial No. 208,130.

This invention relates to closure devices and particularly to devices of this class for use in connection with doors or other swinging members; and the object of the invention is to provide the door or door frame, either or both of them, with resilient strips on the free edge portion of the door and on that part of the door frame in connection with which the free edge of the door operates to provide a secure lock or engagement of the door in connection with the door frame when in closed position and to resiliently support the door in the door frame; a further object being to provide means involving a manually actuated member for releasing the door to permit of the opening thereof, said means engaging a metallic, rubber or combination metal and rubber strip flexibly supported to permit of its movement into operative and inoperative positions, said strip engaging a projecting portion on the other part of the door and door frame construction when said parts are secured together; a further object being to provide means involving a lock structure cooperating with said strip for retaining the same in operative position; and with these and other objects in view, the invention consists in a device of the class and for the purpose specified, which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Fig. 1 is an outside view of the door of a motor vehicle, indicating one form of my invention mounted in connection therewith.

Fig. 2 is a section on the line 2—2 of Fig. 1 on an enlarged scale.

Fig. 3 is a section on the line 3—3 of Fig. 1 on an enlarged scale; and,

Figs. 4 to 9 inclusive are views similar to Fig. 2 but showing modifications.

In all of the several views in the accompanying drawing, 10 represents the door or swinging member, and 11 the door frame or that part of the door frame in connection with which the free edge portion of the door operates. The door is hinged to the frame as seen at 12, in Fig. 1 of the drawing, and its free edge is provided with a projecting flange 13 which overlaps the door frame 11.

As seen in Figs. 1 to 3 inclusive, the door frame 11 is provided longitudinally of its side face adjacent the side edge of the door 10 with a strip 14 of rubber, rubber and canvas or other suitable resilient material, said strip having at its outer edge an enlarged bead or inwardly extending flange 15. Another strip 16 is secured to the free side edge of the door 10 adjacent the inner face thereof, and the free end 17 of said strip is free to flex inwardly and outwardly with reference to the side edge of the door, and is normally under such tension as to flex outwardly of the direction of the door frame and to engage the flange 15 to retain the door 10 in closed position. The strip 16 is also preferably composed of rubber, rubber and canvas or composition rubber, and may be reinforced in any desired manner to give strength and durability thereto. The free end 17 of said strip has coupled therewith, a plurality of rods 18 which extend into the door 10 and are coupled with one arm of bell-cranks 19 spaced vertically of said side of the door. The other arms of said bell cranks are coupled with an operating rod 20 arranged vertically of the door, and with which the handle or knob structure 21 of the door is coupled as seen at 22, whereby the rotation of the knob in one direction will cause said bell cranks to rotate on their pivots, and draw the free ends 17 of the strip 16 in the direction of the door to release it from engagement with the flange 15 in the operation of opening the door.

As above stated, the free edge of the strip 17 normally flexes outwardly and springs over the flange 15 in the operation of closing the door. The rods 18 are coupled with a vertical rod 17^a which constitutes a part of the strip 16 or the free edge 17 thereof, so that in the operation of opening the door, the entire strip is drawn inwardly in its movement out of engagement with the flange 15. It will be apparent that any effort to open the door, when the strip 17 is in engagement with the flange 15, will be prevented by virtue of the structure of the flange, and the door will be locked in position by means having resilient or cushioning properties which will operate to prevent the breaking of glass that may constitute part of the door structure, or in eliminating the noise resulting from the slamming of a door.

As seen in Fig. 3 of the drawing, the lock bolt 23 is movable into engagement with the free end 17 of the strip 16 which might be termed a lock strip, when the door is in locked position. This prevents the operation of said lock strip to release or open the door in the operation of the knob 21. The lock bolt 23 is controlled from the lock mechanism of the door in the usual manner.

In Fig. 4 of the drawing, I have shown a slight modification, wherein the metallic strip 24 is substituted for the strip 16, said strip having a freely flexible end portion 25 with which the operating rods 18 are coupled. The free edge of the end portion 25 of the strip 24 engages the flange 15 of the strip 14 secured to the door frame. Otherwise, the structure shown in Fig. 4 is identical with that shown in Fig. 3, it being understood that the metallic strip 24 is substituted for the rubber strip 16.

In Fig. 5 of the drawing, I have shown a modification wherein a strip 26 secured to the door frame and having a beaded flange 27 at its outer edge, is provided at its inner edge with a comparatively heavy stop wall 28, the strip 26 being preferably composed of rubber or composition rubber, the same as the strip 14. In this construction, the metallic lock strip 29 is mounted in connection with the door, and its free end portion is adapted to engage the flange 27 and to be moved out of engagement therewith by a pull cord or cable 30 actuated from the handle or handles 31 of the door 10. Associated with the strip 29 is a stop block or strip 32 arranged adjacent the inner face of the door 10 and adapted to cooperate with the part 28 of the strip 26 to check the inward movement of the door, and to aid in the resilient suspension or mounting of the door.

In Fig. 6 of the drawing, I have shown a strip 26 secured to the door frame, said strip being of the same structure as the strip 26 shown in Fig. 5 and having the flange 27 and enlarged stop portion 28; but, in this construction, a strip of rubber, composition rubber, or like resilient material 33 is secured to the door 10 and is provided with an extending body portion 34 adapted to engage the enlargement 28 to limit the inward movement of the door. Supported in the enlarged portion 34 is a rigid metallic lock strip 35, the free edge of which is adapted to engage the flange 27. Said lock strip has a flexible mounting in the strip 33 to permit of its disengagement with the flange 27 by knob actuated means similar to that shown in the other figures. In like manner, the lock bolt 36 of the door is adapted to engage the strip 35 or an offset portion 37 thereon, to retain said strip in locked position whenever desired.

In Fig. 7 of the drawing, I have shown a reversal of the structure shown in Fig. 6 wherein a lock strip 35^a similar to the strip 35 is supported in connection with a strip 38 of rubber secured to the door frame instead of the door. The door is provided with a strip 39 having a projecting beaded flange 40 at its inner edge in connection with which the lock strip 35^a operates. A lock bolt 41 of the door engages the offset portion 37^a on the strip 35^a and the means for actuating or releasing the lock strip 35 in this construction, extends into the door frame rather than into the door. It will be understood, however, that the lock strip 35^a may be released through means actuated by the knobs of the door and supported in the door.

In Fig. 8 of the drawing, I have shown another modification wherein a strip 42 is secured to the door frame and is provided with a flange 43 at its outer edge and with a stop wall or enlargement 44 at its inner edge. A strip 45 is secured to the door and provided with a flexible tongue 46 adapted to engage the flange 43. This structure is substantially the same as that shown in Fig. 2 of the drawing, except that the inner end of the strip 45 is adapted to strike the enlargement 44 of the strip 42 to limit the inward movement of the door in the operation of closing the same.

In Fig. 9 of the drawing, I have shown a metallic strip 47 supported in connection with the door frame, one edge of the strip being folded upon itself to form the projecting flange 48, and the other edge is folded upon itself and at right angles to the door frame to form a stop wall 49. A rubber strip 50 is secured to the door and is provided with an enlarged inner portion 51 adapted to engage the wall 49 to limit the inward movement of the door. The front end of said strip is provided with a flexible tongue or lock portion 52 which engages the flange 48 in securing the door in closed position.

From the foregoing, it will be apparent that my improved door locking construction may consist of rubber, composition rubber, or reinforced bodies of rubber secured to the adjacent faces of the door and door frame, or may consist of one metallic body and another rubber body, cooperating to produce the desired result. The metallic body is arranged on either the door or door frame, and still further, the metallic body may be supported in the resilient body, and retains its flexibility by virtue of such support to permit of its movement into different positions.

In all forms of construction, a resilient and cushion mounting and latch engagement of the door in the door frame is provided to retain the door against accidental opening. Suitable means is provided in all forms of construction shown, to move the lock member into inoperative position to permit of the opening of the door as well as to the pro-

vision of a lock bolt actuated from a conventional key lock and engaging the lock strip for retaining it in its operative position.

With my improved construction, it will be understood that the door is secured and locked in the door frame throughout the entirety of its free side edge. By virtue of this construction, the possibility of jimmying the door is eliminated, especially in that the entire strip must be withdrawn and moved into inoperative position by the operative means employed, before the door can be opened. As previously pointed out, the operation of closing the door, even though the same may be slammed, is produced in a quiet and cushioned manner, eliminating noise, and preventing breakage to window panels, that may constitute part of the door structure.

It will also be understood that while I have shown and described my improved lock construction as applied to a motor vehicle door, that my invention is not necessarily limited in these respects, as the same may be applied to doors or swinging members of any kind or class, or any particular type of a closure wherein a locking or securing means is desired, it being understood that my improved lock or latch construction may be substituted and used for locks and latches of any kind or class and in the several uses thereof. Various other changes in and modifications of the construction herein shown and described, may be made within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A resilient closure for retaining a movable member in connection with a stationary member, one of said members having a projecting flange portion extending substantially throughout the length thereof, and the other of said members having a movable lock part extending substantially throughout the length of said member, and adapted to tensionally pass over said flange portion and engage the same in securing the movable member to the stationary member and one of said members involving a body of rubber.

2. A resilient closure for retaining a movable member in connection with a stationary member, one of said members having a projecting flange portion extending substantially throughout the length thereof, the other of said members having a movable lock part extending substantially throughout the length of the said member and adapted to tensionally pass over said flange portion and engage the same in securing the movable member to the stationary member and one of said members involving a body of rubber, and means for moving the entirety of said lock part out of engagement with said flange portion to permit of the disengagement of the movable member from said stationary member.

3. A closure for retaining a movable member in connection with a stationary member, one of said members having a projecting flange portion extending substantially throughout the length thereof, the other of said members having a movable lock part extending substantially throughout the length of said member and adapted to tensionally pass over said flange portion and engage the same in securing the movable member to the stationary member, means for moving the entirety of said lock part out of engagement with said flange portion to permit of the disengagement of the movable member from said stationary member, and a key actuated lock bolt engaging said part to prevent the operation thereof by said last named means.

4. A closure for retaining a movable member in connection with a stationary member, one of said members having a projecting flange portion extending substantially throughout the length thereof, the other of said members having a movable lock part extending substantially throughout the length of said member and adapted to tensionally pass over said flange portion and engage the same in securing the movable member to the stationary member, means for moving the entirety of said lock part out of engagement with said flange portion to permit of the disengagement of the movable member from said stationary member, a key actuated lock bolt engaging said part to prevent the operation thereof by said last named means, and at least one part of said closure constituting a body of resilient material.

5. A door closure comprising two parts, one of which is adapted to be secured to the door frame and the other to the door, one of said parts having an elongated flange, and the other of said parts a freely flexible strip adapted to engage said flange to retain the door in closed position, said strip being angularly disposed with reference to the longitudinal plane of the door, one of said parts involving a body of rubber and means involving a manually actuated member for moving said strip into inoperative position to permit of the opening of the door.

6. A door closure comprising two parts, one of which is adapted to be secured to the door frame and the other to the door, one of said parts having an elongated flange, and the other of said parts a freely flexible strip adapted to engage said flange to retain the door in closed position, said strip being angularly disposed with reference to the longitudinal plane of the door, means involv-

ing a manually actuated member for moving said strip into inoperative position to permit of the opening of the door, a lock mechanism mounted in the door and the lock bolt of said lock mechanism cooperating with said strip to retain the same in operative position.

7. A door closure comprising two parts, one of which is adapted to be secured to the door frame and the other to the door, one of said parts having an elongated flange, and the other of said parts a freely flexible strip adapted to engage said flange to retain the door in closed position, said strip being angularly disposed with reference to the longitudinal plane of the door, means involving a manually actuated member for moving said strip into inoperative position to permit of the opening of the door, a lock mechanism mounted in the door the lock bolt of said lock mechanism cooperating with said strip to retain the same in operative position, and one of the parts of said closure consisting of a body of rubber.

8. A door closure of the class described comprising two strips, one of which is adapted to be secured to the free edge of the door, and the other to the adjacent edge of the door frame, one of said strips having a projecting flange and the other a flexibly supported lock strip adapted to engage the flange of the first named strip in securing the door in closed position.

9. A door closure of the class described comprising two strips, one of which is adapted to be secured to the free edge of the door, and the other to the adjacent edge of the door frame, one of said strips having a projecting flange and the other a flexibly supported lock strip adapted to engage the flange of the first named strip in securing the door in closed position, and one of said strips being composed of rubber, and means involving interengaging bodies on said strips for limiting the inward movement of the door in the operation of closing the same.

10. The combination with a door, of a latch strip involving a rubber body extending longitudinally of the free edge of the door and adapted to engage and tensionally pass over a retaining member on the door frame in securing the door in closed position.

11. The combination with a door, of a latch strip extending longitudinally of the free edge of the door and adapted to engage and tensionally pass over a retaining member on the door frame in securing the door in closed position, and manually operated means mounted in the door and in operative connection with said strip for moving the same into inoperative position to permit of the opening of said door.

12. The combination with a door, of a latch strip extending longitudinally of the free edge of the door and adapted to engage and tensionally pass over a retaining member on the door frame in securing the door in closed position, manually operated means mounted in the door and in operative connection with said strip for moving the same into inoperative position to permit of the opening of said door, and said strip including a body of rubber.

13. The combination with a door, of a latch strip extending longitudinally of the free edge of the door and adapted to engage and tensionally pass over a retaining member on the door frame in securing the door in closed position, manually operated means mounted in the door and in operative connection with said strip for moving the same into inoperative position to permit of the opening of said door, said strip including a body of rubber, and a key actuated lock bolt mounted in the door and cooperating with said strip to retain the same in locked position.

14. The combination with the free edge portion of a door and the adjacent part of the door frame, of means extending longitudinally of the free edge portion of the door and door frame for coupling the door with the door frame to prevent the opening of said door.

15. The combination with the free edge portion of a door and the adjacent part of the door frame, of means extending longitudinally of the free edge portion of the door and door frame for coupling the door with the door frame to prevent the opening of said door, and manually operated means for moving said first named means into inoperative position to permit of the opening of the door.

16. A closure and lock strip interposed between adjacent faces of members to be secured together, said strip being composed of cushioning material, and manually operated and controlled means whereby said strip may be released in the separation of said members.

17. A closure of the class described interposed between two members to be coupled together and comprising a lock strip, a rubber body yieldably supporting said strip in connection with one of said members, and said strip engaging a projection on the other of said members in securing said members together.

In testimony that I claim the foregoing as my invention I have signed my name this 20th day of July, 1927.

HARRY E. SIPE.