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L. MAIER

2,116,444

COMBINATION DOOR BUMPER AND HOLDER

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Fig. 1.

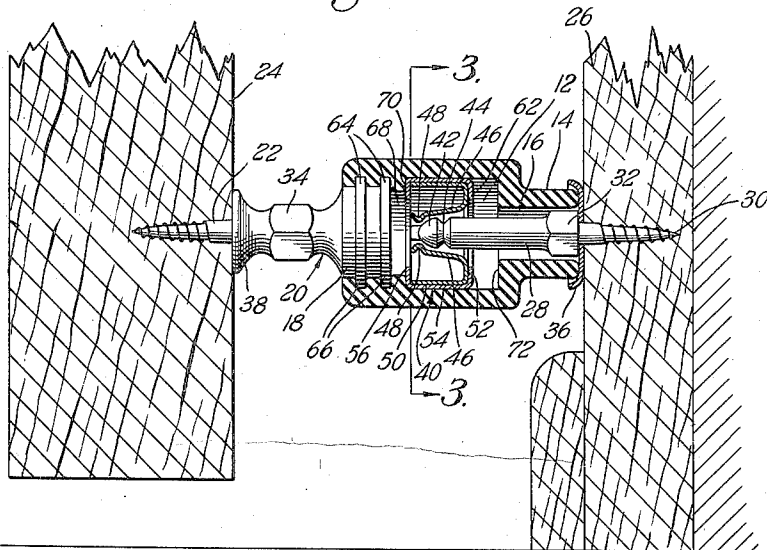


Fig. 2.

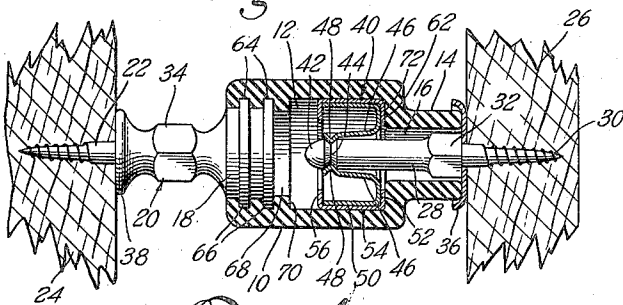


Fig. 3.

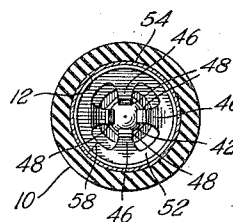
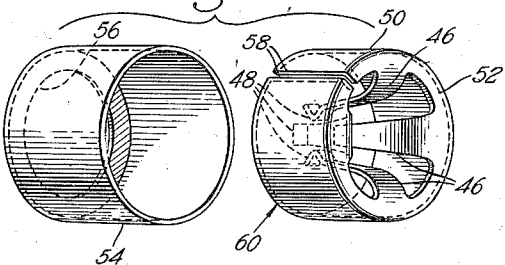


Fig. 4.



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UNITED STATES PATENT OFFICE

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COMBINATION DOOR BUMPER AND HOLDER

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3 Claims. (Cl. 292—17)

My invention relates to doors, and includes among its objects and advantages the provision of an improved combination bumper and door holder.

5 An object of my invention is to provide a combination bumper and door holder in which the bumping and holding features are combined in a single unit and in which the bumper feature functions independently of the holder feature
10 in response to limited bumping impacts of the door, but in which the holder feature is brought into play upon the application of abnormal forces to the door.

15 Another object is to provide a resilient bumper for the door and in which means is incorporated for positively latching the door in an open position, but in which the latching feature will release in response to the application of predetermined forces on the door.

20 Another object is to provide a door bumper of resilient material such as rubber and in which positive door latching means is incorporated for holding the door in an open position and in which the tension of the rubber part co-operates with
25 the latch feature to hold the door in a sturdy manner so as to eliminate lost motion, rattling, and the like.

In the accompanying drawing:

30 Fig. 1 is a sectional view of my invention showing the manner in which it may be applied to a door and wall trim;

Fig. 2 is a view illustrating the application of the holder feature;

35 Fig. 3 is a sectional view along the line 3—3 of Fig. 1; and

Fig. 4 is a perspective view of a portion of the holder feature with the parts separated for the sake of clearness.

40 In the embodiment selected to illustrate my invention, I make use of a rubber body 10 having a large bore 12 and provided with a neck 14 having a smaller bore 16 communicating with the bore 12. The head 18 of a shank 20 is anchored
45 in one end of the body 10 and is provided with a screw 22 which may be anchored in the door 24.

To the baseboard or wall trim 26 I connect a shank 28 which is provided with a screw 30 threaded into the board 26. Shank 28 is axially aligned with the bore 16 and includes a flat sided
50 reach 32 to which a wrench may be applied for turning purposes. Shank 20 is also provided with a flat sided reach 34 for the application of a wrench. I prefer to mount a metallic washer 36 adjacent the bolt 26, which washer is provided
55 with an opening for the reception of the screw

30, while the end of the reach 32 has pressure relation with the washer for pressing it against the board 26. Washer 36 is slightly dished and constitutes a bumping surface for the end of the neck 14. Shank 20 includes a flange 38 which
5 has pressure relation with the door 24.

Within the bore 12 I mount a latch unit 40 which is designed to have latching connection with the shank 28 for positively holding the door in an open position. I provide the shank 28 with
10 a curved end 42 and a circumferential groove 44. Latch element 40 is provided with four resilient fingers 46 bent to provide V-shaped offsets 48 arranged to lie within the groove 44 for positively holding the door in an open position, as
15 illustrated in Fig. 2.

In Fig. 4 I illustrate the latch element 40 as comprising a split sleeve 50 provided with a flange 52 integrally connected with the fingers 46 which
20 are bent inwardly of the sleeve and arranged in angular relation with respect to each other as illustrated in Fig. 4. Sleeve 50 is inserted in an outer sleeve 54 having a flange 56. Sleeve 50 is shaped to have a normal outside diameter slightly greater than the inside diameter of the sleeve 54.
25 The ends 58 of the sleeve 50 are spaced sufficiently far to permit the sleeve 50 to be flexed to such a diameter as to be insertible in the sleeve 54. Sleeve 50 is pressed inwardly of the sleeve 54 to bring its end 60 into pressure relation with the
30 flange 56 of the sleeve 54, after which the latter sleeve is deformed to provide a flange 62 which connects the two sleeves as a unit. The latch element 40 moves freely in the bore 12.

The rubber body 10 may be formed by molding 35 and may be provided with grooves 64 for the reception of flanges 66 formed on the head 18 so as to provide a good connection between the shank 20 and the body 10. The material of the body 10 is sufficiently flexible to permit the body
40 to be stretched sufficiently far for accommodating the head 18, after which the tension of the material draws the body firmly about the head 18. The latch element 40 may be positioned in the bore 12 by stretching the body 10 to enlarge
45 the bore 68 for the reception of the latch element.

Fig. 1 illustrates consummation of the bumping action only, while Fig. 2 illustrates application of the holder feature. In operation, the shank 28 is axially aligned with the bore 16 as well as
50 the bore 12, while the fingers 46 are concentrically arranged with respect to the bore 12. As the door is swung open, its travel is stopped when the neck 14 strikes the washer 36. Since the latch element 40 is loosely mounted in the bore 12, any engage- 55

ment between the curved end 42 and the V-shaped elements 48 will merely advance the latch element 40 in the groove 12. Thus, the latch feature is not brought into play until sufficient forces are applied to the door for collapsing or buckling the neck 14.

In applying such forces, the neck 14 will shorten in such a degree as to permit the curved end 42 to be pushed beyond the V-elements 48 for positioning the latter within the groove 44. Relative movement of the latch element 40 within the bore 12 is limited through its engagement with the surfaces 70 and 72. After latching relation has been established between the V-elements 48 and the groove 44, cessation of abnormal forces on the door will permit extension of the neck 14, at which time the latch element 40 takes the position of Fig. 2. In this position the neck 14 is still under slight compression but the fingers 46 have such pressure relation with the grooved part of the shank 28 as to prevent its withdrawal until additional forces are applied to the door in a closing direction. It will thus be seen that the door is effectively supported in its open position and that the slightly compressed neck 14 absorbs lost motion and prevents rattling of the door.

To close the door, the latch feature is released by merely exerting a pull on the door, at which time the fingers 46 are flexed for releasing the shank 28. Upon release of the latch feature the latch element 40 will lie adjacent the wall 27, but it fits with such a degree of looseness within the bore 12 as to move in the direction of the wall 70 upon engagement of the curved end 42 with the V-elements 48 so as not to bring the door holder into operation until abnormal forces are applied thereto.

In my invention I utilize resilient material such as rubber for bumping purposes, while the latch or holder feature comprises metal. The rubber part will last indefinitely since it is subjected to compression forces only, while the metallic parts will wear indefinitely. The holder feature is incorporated in the chamber so as to provide a compact unit of simple construction, one which may be manufactured at a relatively

low cost. While I have illustrated the shank 20 as being connected with the door 24, and the shank 28 connected with the board 26, the parts may be reversed depending upon the desires of the user, since the operation will remain the same.

Without further elaboration, the foregoing will so fully explain my invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A combination door bumper and holder comprising a resilient body having a bore, a latch part for entering said bore, said resilient body and said latch part being arranged for connection with a door and a fixed support, and means movable in said bore and co-operable on said latch part for latching the door in an open position upon predetermined compression of the resilient body.

2. A combination door bumper and holder comprising a resilient body having a bore, a latch part for entering said bore, said resilient body and said latch part being arranged for connection with a door and a fixed support, and means movable in said bore and co-operable on said latch part for latching the door in an open position upon predetermined compression of the resilient body, said means being releasably related to said latch part and yielding upon the application of predetermined forces upon the door for releasing the latch part.

3. A combination door bumper and holder comprising a resilient body having a bore, a latch part for entering said bore, said resilient body and said latch part being arranged for connection with a door and a fixed support, and means movable in said bore and co-operable on said latch part for latching the door in an open position upon predetermined compression of the resilient body, said means being releasably related to said latch part and yielding upon the application of predetermined forces upon the door for releasing the latch part, said resilient body being held under compression with said means in latched relation with said latch part.

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