March 16, 1937. H. I. WOLF 2,074,008

CHECK FOR DOORS AND THE LIKE

Filed Oct. 17, 1936

Fig. 1.

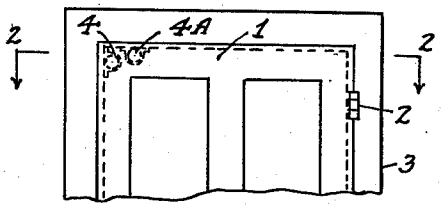


Fig. 2.

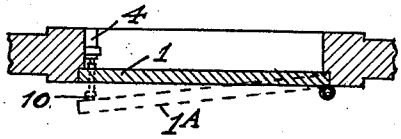


Fig. 3.

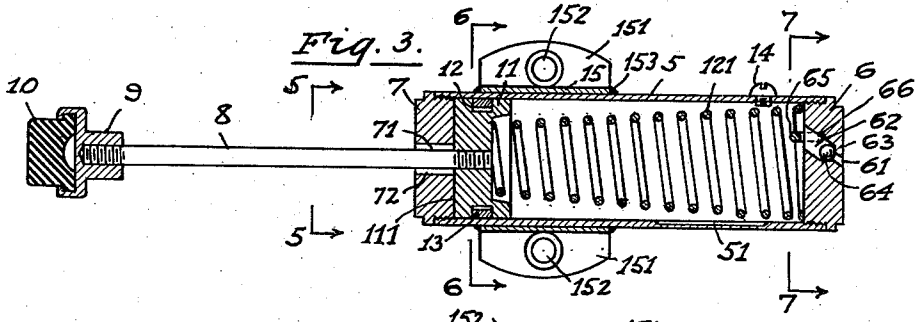


Fig. 4.

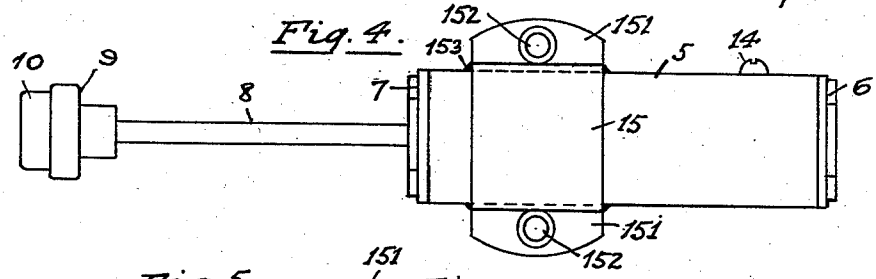


Fig. 5.

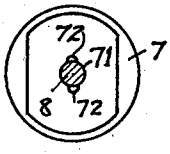


Fig. 6.

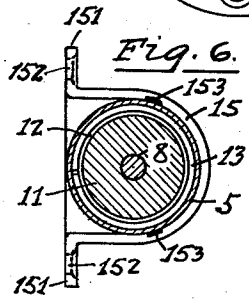
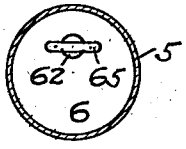


Fig. 7.



INVENTOR –

Henry I. Wolf

Patented Mar. 16, 1937 2,074,008

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2,074,008

CHECK FOR DOORS AND THE LIKE

Henry I. Wolf, Detroit, Mich.

Application October 17, 1936, Serial No. 106,164

2 Claims. (Cl. 16—84)

My invention relates to a check or impact-receiving device which, while chiefly applicable to doors, may be also applied to a variety of purposes such as, for example, the bumpers of an automobile, and its principal object is to provide a simple and efficient mechanism which, when attached to the jamb of a door will absorb the momentum of the same when slammed violently against it and at the same time will allow the door to close under the action of the usual spring hinge or analogous means.

A further object of my said invention is to provide a device of the character referred to which is simple in construction and economical to manufacture and which will continue to function in an efficient manner for long periods without attention.

With these and other objects in view, the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, reference being had to the accompanying drawing, which illustrates a preferred embodiment thereof, in which drawing—

Figure 1 is a fragmentary elevational view showing the upper portion of a door provided with my improved check.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a vertical section of my improved check taken upon the vertical centerline.

Figure 4 is an elevational view of the same.

Figure 5 is a section on line 5—5 of Figure 3.

Figure 6 is a section on line 6—6 of Figure 3, and

Figure 7 is a section on line 7—7 of the same figure.

Like characters designate corresponding parts.

Referring more particularly to Figures 1 and 2, 1 is the door supported on two or more hinges 2 secured to the jamb or frame 3. 4 indicates my check as applied to the lateral inner face of the jamb, while 4A shows the same as applied to the under side of the lintel, the check being capable of being used in either position as desired.

Referring now to Figures 3 to 7, inclusive, 5 is the body of my device which consists essentially of a tubular member provided with internal screw threads at both ends. Into one end of the body is screwed a closure member 6 and into the other end a similar member 7. The member 7 is provided with a central aperture 71 adapted to slidably receive a rod 8, and upon this rod is secured by screw threads or other means a member 9 of hollow construction within which is secured a buffer 10 of rubber or other soft material which receives the impact of the door. Slidably mounted within the body 5 and secured to the rod 8 by screw threads or other means is a piston 11 having therein a groove 12 in which is provided a piston ring 13 of any usual construction, and within the body is also provided a helical compression spring 121, one end of which presses against the face of the piston 11 while the other end re-acts upon the inner face of the closure member 6. In the outer face of the member 6 is provided a small opening 61 which communicates with a larger opening 62 in the inner face thereof, the juncture of the two openings being formed as a frusto-conical seat 63 adapted to receive a spherical valve member 64, the arrangement being such that air can enter the body from the outside but is prevented from escaping in the opposite direction. In order to secure efficient operation of the valve 64 without the use of springs, the openings 61, 62 are arranged upon an inclined axis, as clearly shown in Figure 3, and upon the inner face of the member 6 there is provided a substantially U-shaped guard 65 of round wire, the free ends of which are pressed tightly into openings 66. This guard is positioned across the opening 62 and prevents the valve 64 from escaping therefrom when the device is turned around in various directions, as in shipment or storage.

In the upper periphery of the body 5 and positioned diametrically thereof is a screw 14 by the removal of which oil or other lubricant may be introduced into the interior of the same.

The opening 71 in the member 7 is for the most part made a sliding fit upon the rod 8, but in order to allow the free ingress and egress of air to the adjacent side of the piston 11 there are provided semi-circular grooves 72, as shown in Figures 3 and 5, and in order that the check may be secured to the door jamb or other support in various positions, there is provided a clip member 15 of U-shape having upon its free ends feet 151 having therein openings 152 adapted to receive screws by which the device may be secured to the support. Since the openings in the member 6 and the screw 14 must at all times be positioned in a vertical plane while the clip member 15 must sometimes be mounted upon a horizontal surface and sometimes upon a vertical surface, the member 5 is ordinarily furnished separate from the clip member, the two parts being secured in the proper relative position after assembly upon the supporting surface by any suitable means such as solder 153 indicated in Figures 3 and 6. In the inner surface

of the member 5 and diametrically opposed to the screw 14 is a longitudinal groove 51 extending through a part only of the length, for a purpose to be hereinafter explained.

The operation of my device is as follows: The door 1, being impelled in the closing direction by any force such as a gust of wind or by a spring hinge or other mechanical closing means, not shown, moves inwards until it reaches the position indicated at 1A in Figure 2 at which point it impinges upon the buffer 10 of the check, the parts at this time occupying the relative positions as shown in Figure 3. The impact of the door upon the member 10 forces the piston 11 inwards against the action of the spring 121 and creates an air pressure which cushions the movement of the door and prevents it from closing in a violent manner. This movement continues until the face 111 of the piston 11 passes the beginning of the groove 51 and the compressed air then is allowed to escape through the said groove so as to pass the piston and to allow the same to move more easily and rapidly towards the end of its stroke until the door is closed and the spring 121 is reduced to its shortest working length. When the door is again opened, the piston then moves outwards under the action of the spring 121, carrying with it the rod 8 and buffer 10, causing air to be admitted through the opening 61 through raising of the valve 64 from its seat in the well known manner, air in front of the piston escaping freely through the grooves 72 in the closure 7.

By proper proportioning of the several parts and more especially the grooves 72 and the groove 51, impact of the heaviest door is absorbed in a smooth and efficient manner, preventing damage to the parts and breakage of glass panels where such exist. Furthermore, the small quantity of lubricant contained within the body 5 is sprayed during each movement of the piston 11 so as to thoroughly lubricate the parts.

It will be understood from the foregoing description and by reference to the drawing that I have provided a device which is simple in construction, economical to manufacture, and eminently adapted to the purpose in view, and while I have herein described and shown a preferred embodiment of my invention, it will be understood by those skilled in the art to which the same relates that various modifications in detail may be made to suit any particular or peculiar requirements without departing from the spirit of my invention as defined in the appended claims. For example, in some cases one or both of the closure members 6 and 7 may be pressed or otherwise secured within the body 5 instead of being screwed therein as above described. Furthermore, when adapting my invention to an automobile, means other than the clip member 15 may be employed for securing it to the chassis frame, and two or more of the devices may be employed, being connected by a bumper member extending transversely of the vehicle, which takes the place of the members 9 and 10 upon the respective rods 8.

Having thus described my said invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A device of the character described comprising a cylinder having a closure at each end, a piston reciprocable in said cylinder having a piston rod slidably mounted in one of said closures and projecting therebeyond, an impact-receiving member on the outer end of said rod, a spring within said cylinder adapted to normally urge said piston and rod in an outward direction, an opening in the other of said closures, a valve positioned in said opening and adapted to permit ingress of air to said cylinder and prevent egress of air therefrom, said opening being inclined at an angle to the axis of said cylinder, whereby said valve is closed by gravity, and a longitudinal groove in the bore of said cylinder adapted to allow air to pass said piston during the inner portion of its stroke.

2. A device of the character described comprising a cylinder having a closure at each end, a piston reciprocable in said cylinder having a piston rod slidably mounted in one of said closures and projecting therebeyond, an impact-receiving member on the outer end of said rod, a spring within said cylinder adapted to normally urge said piston and rod in an outward direction, an opening in the other of said closures, a valve positioned in said opening and adapted to permit ingress of air to said cylinder and prevent egress of air therefrom, said opening being inclined at an angle to the axis of said cylinder, whereby said valve is closed by gravity, a longitudinal groove in the bore of said cylinder adapted to allow air to pass said piston during the inner portion of its stroke, and an aperture in said first-mentioned closure for allowing air to pass freely back and forth therethrough.

HENRY I. WOLF.