Sept. 7, 1954 B. W. NELSON 2,688,164

BUMPER DOOR

Filed July 21, 1952 2 Sheets-Sheet 1

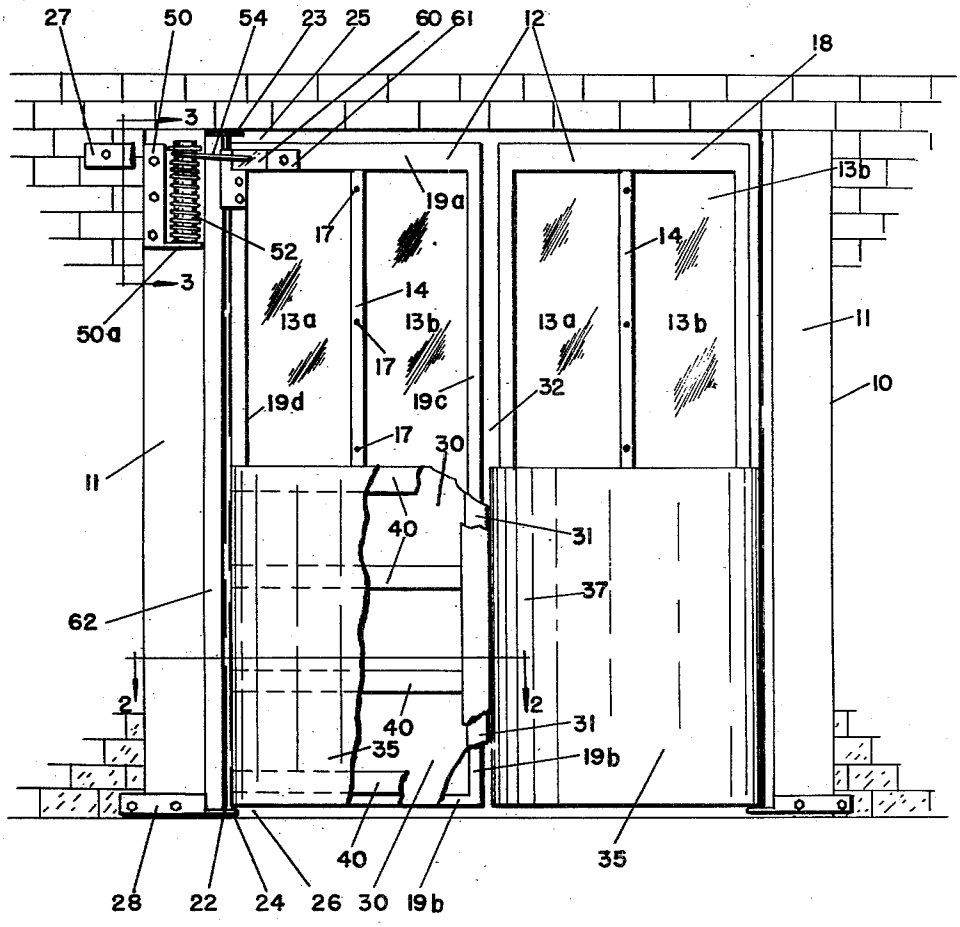


Fig. 1

INVENTOR.
BERNARD W. NELSON
BY
ATTORNEY

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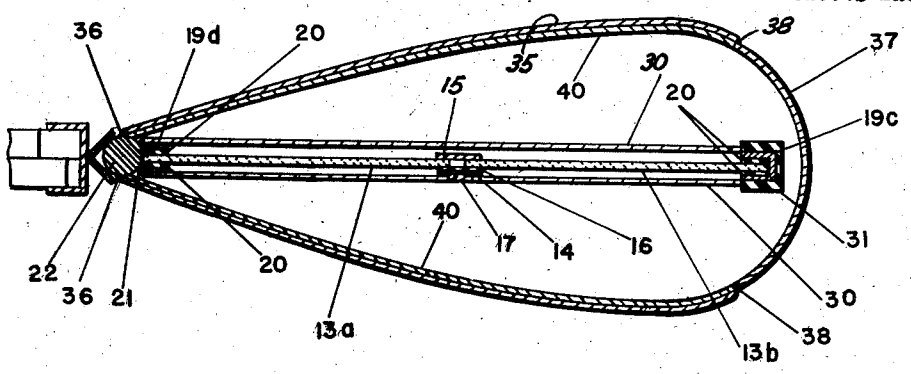


Fig. 2

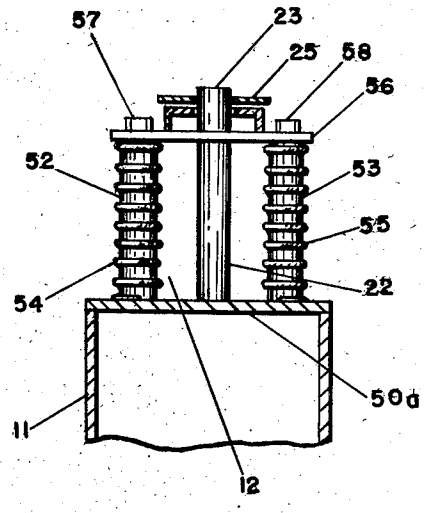


Fig. 3

INVENTOR.
BERNARD W. NELSON
BY
ATTORNEY

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BUMPER DOOR

Bernard W. Nelson, Holden, Mass., assignor of one-half to Paul R. Grosjean, Woodstock, Conn.

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2 Claims. (Cl. 20—16)

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This invention relates to a bumper door, and more particularly to such a door which may be swung open by the impact of a vehicle or a human body thereagainst, without the necessity of digital manipulation of a latch or the like.

A primary object of the invention is the provision of an improved bumper door of this nature, particularly characterized by a novel bumper which is secured only at its end to the hinge post of the door, and spaced from the door at all other points, whereby force exerted on the bumper is transmitted directly to the hinge post, thus avoiding damage to or strain on the door.

A further object of the invention is the provision of a bumper of this character, having a resilient characteristic, whereby any contact of the bumper with the door is of a minor nature.

Still another object of the invention is the provision of resilient buffer strips between the door and possible points of impact of the bumper thereagainst.

As conducive to a clearer understanding of this invention, it may be here pointed out that in many industrial and commercial establishments goods are transported from one part of a building to another, or between buildings on mechanized vehicles of various sorts, and that under such conditions it is desirable to provide swinging doors which may be opened directly by the impact of the vehicle thereagainst, thus effecting a saving of time in stopping and restarting the vehicle to open and close conventional types of doors. Such bumper type swinging doors are now used, but are subject to damage when repeatedly struck by moving vehicles.

An important object of this invention is to obviate the above difficulties by means of the provision of a bumper strip or element which completely surrounds the portion of the door normally subject to impact, but which is spaced from and unconnected with the door, the connection being directly between the ends of the bumper and the hinge post of the door, whereby such strain as may be exerted on the bumper is directly transmitted to the pivot point of the door, thus minimizing the strain.

Other objects will in part be obvious and in part be pointed out as the description of the invention proceeds, and shown in the accompanying drawing wherein there is disclosed a preferred embodiment of this inventive concept.

In the drawing:

Figure 1 is a front plan, partially broken away, of a pair of doors showing one form of device embodying the instant inventive concept.

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Figure 2 is an enlarged horizontal section taken substantially along the line 2—2 of Figure 1, and

Figure 3 is an enlarged vertical section taken substantially along the line 3—3 of Figure 1.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Having reference now to the drawing in detail, there is generally indicated at 10 a door frame, including a pair of oppositely disposed door jambs 11, and a pair of identical but oppositely disposed swinging doors, each generally indicated at 12. In the illustrative embodiment of the invention shown, each door has, as best shown in Figures 1, 2 and 3, a rectangular frame including top and side channel members 19*a*, 19*b*, 19*c* and 19*d*. A pair of transparent panels 13*a* and 13*b* are mounted on this frame and are held in position by a pair of vertically positioned metal reinforcing strips 14 and 15. These strips are positioned on opposite sides of the panels 13*a* and 13*b*, a rubber gasket 16 being positioned between strip 14 and panels 13*a* and 13*b*. Bolts 17 connect strips 14 and 15 and secure the parts in related asssembly. The outer edges of panels 13*a* and 13*b* fit into the channels in channel members, 19*a*, 19*b*, 19*c* and 19*d*, and are held in position therein by rubber gaskets 20. The lower portion of the door in the illustrative embodiment is provided with spaced metallic side panels 30 which are suitably secured in any desired manner (not shown) to channel members 19*b*, 19*c* and 19*d*.

Channel member 19*d* is fixedly secured in any manner, as by welding 21, to relatively heavy rigid metal hinge post 22, which extends the full length of the door and is provided with projecting ends 23 and 24 at its upper and lower ends respectively. These projecting ends are journalled in suitable apertures in projecting flanges 25 and 26 carried by brackets 27 and 28 secured to door jamb 11. Both doors are mounted in similar manner and are free to swing with their hinge posts.

Referring now to the bumper guard piece, the device is comprised of a pair of curved side plates 35 of semi-resilient metal which are secured along their inner edges by welding 36 to opposite sides of hinge post 22. The outer positions of the plates 35 curve toward the free end of each door and their outer edges are welded to the vertical edges of a rigid semi-circular steel end plate 37. The bumper guard thus is U shaped

and is connected to the door only through the edges at the ends of each of its legs.

Each side plate **35** is reinforced by a plurality of relatively heavy leaf springs **40**, which are welded to post **22** at their inner ends and to the vertical edges of end plate **37** at their outer ends. The outer or free edge of the portion of door **12** covered by the bumper guard is provided with a rubber bumper member **31** which completely surrounds and is mounted on the outer edge of the door. The outer surface of member **31** is spaced from the inner surface of end plate **37**. It will be thus seen that the bumper side plates **35** and end plate **37** completely surround the lower portion of door **12** spaced thereupon, being connected to door **12** only through hinge posts **22**, thus the outer portions of bumper guards can move relatively with respect to each door, the shock of each blow on the bumper guards being transmitted to each door through the hinge posts. Rubber bumper **31** serves to minimize any contact between end plate **37** and the end of door panel **12** when the door is struck an excessively hard blow.

Suitable means are provided for returning door **12** to closed position. To accomplish this, as best shown in Figures 1 and 3, a bracket **50** is secured to door jamb **11**. Bracket **50** includes a flange **50***a* on which are mounted a pair of cylindrical posts **52** and **53**. Posts **52** and **53** are mounted on opposite sides of door **12** and each extends through the centers of coil springs **54** and **55**. The upper ends of posts **52** and **53** are connected by a plate **56** which is fastened to the posts by screws **57** and **58**. The lower ends of springs **54** and **55** are connected to flange **50***a* to prevent their turning with respect to the posts when the springs are under tension. The upper ends of each spring extend inwardly along channel member **19***a* and have pressure plates **60** (Fig. 1) connected to their outer ends. The coil springs resiliently press their pressure plates against the opposite sides of member **19***a*, so that when door **12** is opened in either direction, either spring **54** or **55** is further tensioned. When pressure on the door is relieved, the spring under tension acts through its pressure plate to close the door. When the door is closed each pressure plate applies equal pressure to opposite sides of the door. Thus, the springs on each door resiliently resist movement of the doors in either direction and close them when pressure on the bumper guards is released.

From the foregoing the operation of the device should be readily apparent. A vehicle approaching the door assembly from either direction strikes the bumper guards. The resilient bumper guard plates **35** and springs **40** absorb the shock and act through the hinge posts **22** to open the doors **12**. The coil springs resiliently press the door against the side of the vehicle and after the vehicle passes, swings the doors to a closed position. The bumper guards are designed by the type of vehicle which is going to pass through the doors so that the bumpers on the vehicle always strike the guards. Thus, they always absorb the initial strike, and then protect the doors as vehicles pass between them.

Bumper guards, as disclosed herein, may be easily adapted to and mounted on existing double swinging doors. Hinge posts **22** may be substituted for conventional hinges and the bumper units welded thereto with suitable springs added to urge the doors to a closed position. Thus the shock of a blow by a vehicle would be transmitted to the hinge post and the doors protected thereby.

It will now be seen that there is herein provided an improved bumper door assembly which accomplishes all of the objects of this invention and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept and as many modifications may be made in the embodiments hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

What I claim is:

1. In a bumper door, in combination, a door, said door including a portion forming a hinge post extending along one vertical edge of said door, hinge means for pivotally connecting said post to a door jamb, said hinge permitting the free swinging movement of said door in both directions with respect to the opening in which said door is mounted, a bumper member surrounding the lower portion of said door, said bumper member being U-shaped in horizontal cross section and having its vertical edges secured to said hinge post, said bumper member being free to move with respect to said door at all other points, and a plurality of resilient reinforcing strips horizontally secured to the leg portions of said bumper member and connected by their ends to said hinge post.

2. In a bumper door assembly, a door jamb, a door, a hinge post extending the full length of said door and having projecting ends, journals secured to said jamb for the accommodation of said end to permit free swinging movement of said panel in either direction, a bumper member surrounding the lower portion of said door panel, said bumper comprising a metallic sheet secured at its ends to said hinge posts and unsecured to and spaced from the sides and free ends of said panel, resilient reinforcing strips secured to the inner side of said sheet, and a resilient bumper strip secured to the end of said panel and spaced from the end of said bumper.

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