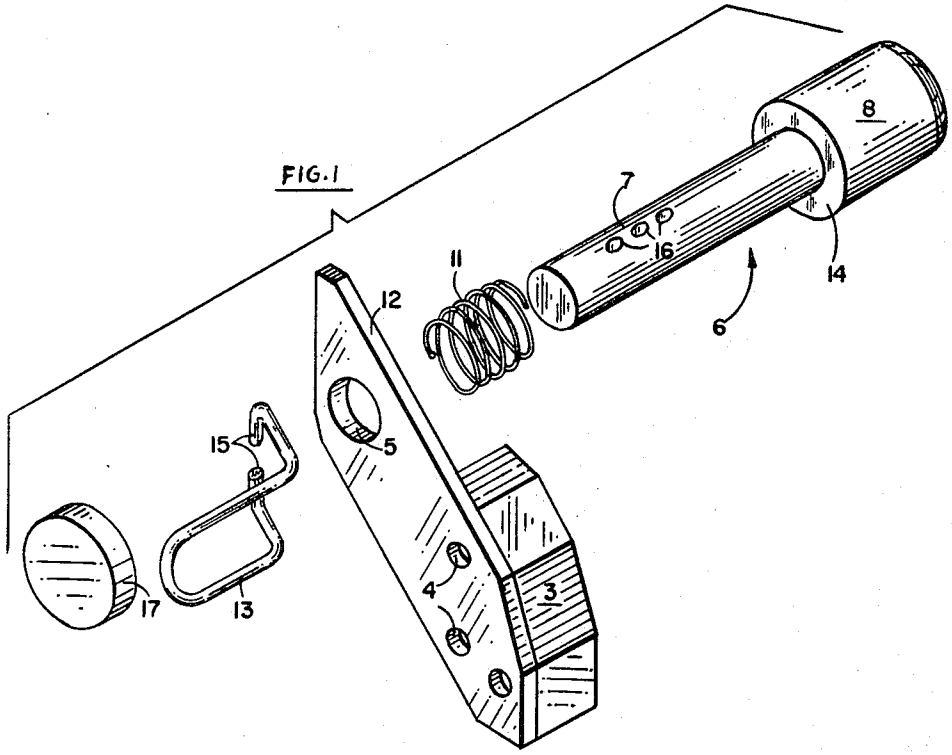
Aug. 15, 1967 W. B. LOVELACE 3,335,453

SAFETY DEVICE FOR DOORS

Filed June 15, 1965

FIG. 1



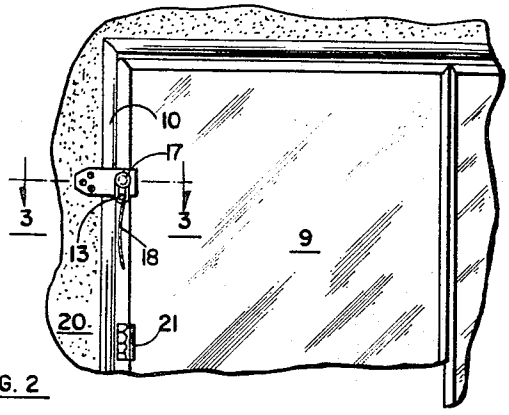


FIG. 2

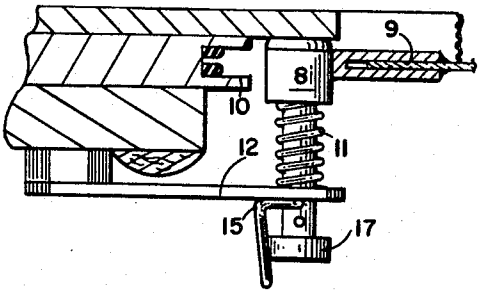


FIG. 4

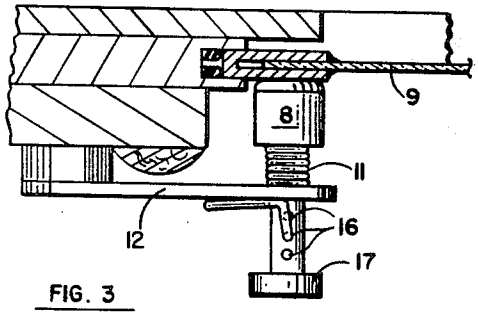


FIG. 3

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SAFETY DEVICE FOR DOORS

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ABSTRACT OF THE DISCLOSURE

A plunger with slots in the neck portion and with a ball portion on the end of the plunger which inserts between the edge of a sliding door and the door jamb to prevent complete closing of the sliding door against the jamb. A rod with protrusions inserts into selected series of slots for adjusting the depth to which the ball portion inserts. As a result, the ball portion can be accurately positioned between the door and door jamb.

This invention relates to a safety device usable with doors and more specifically to a spring-actuated plunger combination for preventing doors from closing.

The untimely closing of doors has been a constant source of injury to small children who get their fingers and limbs caught between the door jamb and the door itself. On closing sliding doors, the child will unintentionally brace himself with, for example, the right hand on the door jamb and close the door with his left. The right hand, or at least the fingers thereof, often are crushed by the force of the door slamming against the door jamb. The same thing is true for doors which swing on hinges.

In addition, often the latch used in connection with sliding glass doors becomes closed while the door is open, so that when the door is closed, the latch is bent against the mating mechanism.

There is a need for a device which permits opening of the doors, but which can prevent complete closing of the doors.

The present invention, comprises a device for overcoming the existing problems and provides economical means for preventing any injuries to children due to crushed fingers and the like, and damage to latching mechanisms of the doors. Briefly, the invention comprises a bracket means for joining to a mounting surface adjacent to a door jamb. The bracket includes one portion for joining to a mounting surface and a second portion placed near the area where the door closes against the door jamb. The second portion includes a means such as an opening for permitting a plunger to move or slide at right angles to the bracket. The plunger includes a first narrow neck portion and a second ball portion which presses against the door surface when the door is closed, and which is slid into the opening provided when the door is opened. The ball means can be stationary so that it slides along the door surface when the door is opened, or it may be a rollable device for rolling when the door is opening.

The ball means is comprised of a tough, resilient material for resisting the impact of the door surfaces forced against it, and for not damaging the surface of the door and door jamb.

The plunger includes handle and withdrawal means at the other end of its narrow portion for withdrawing the plunger from between the door and the door jamb when it is necessary or desirable to completely close the door. The withdrawal and handle means also includes means for adjusting the depth to which the plunger is moved in the opening provided by the opened door. The adjustable feature also prevents the plunger from becoming completely dislocated from the bracket. A string may be attached to the withdrawal means, if desired, so that the plunger can be withdrawn from the opening from the outside.

A force is provided against the ball means and the bracket means to force the plunger into the plane of the door so that the plunger is urged into the opening when the door is opened. The force is provided by a spring means.

In one embodiment, the adjustable means included as part of the withdrawal means may be a spring clip which may be manually moved from one slot on the plunger neck portion to another slot so that the effective length of the plunger is increased or decreased. In a second embodiment, the adjustable means may be a collar means including a set screw which slides along the neck portion of the plunger in a channel. The collar may be moved along the neck portion to adjust the effective length of the plunger.

The bracket, plunger, springs, withdrawal and handle means including the adjustable means may be designed into various configurations to meet particular needs. The bracket, plunger, and adjustable means may be comprised of metal, plastics, hard rubber, or similar materials which can withstand repeated shocks and impacts. If the plunger is comprised of metal, a plastic or rubber coating may be used to prevent marring the door surface. The spring may be comprised of a metal, such as steel, or the entire device may be comprised of metal or a combination of metals and materials specified.

Therefore, it is an object of this invention to provide for a safety device for preventing closure of doors on children's fingers and hands.

It is another object of this invention to provide a spring-actuated plunger device which moves into the opening provided when the door is opened. A still further object of this invention is to provide an adjustable safety device for intercepting the motion of a closing door before it closes.

Still another object of this invention is to provide a safety device for preventing damage to locking mechanisms on doors.

These and other objects of this invention will become more apparent in connection with the description contained herein, and drawings of which, FIGURE 1 is an exploded perspective view of one embodiment of the safety device including a second adjustable means embodiment. FIGURE 2 is a front view of the device mounted to a mounting surface adjacent to a sliding glass door. FIGURE 3 is a partial section, partial elevation, of the device mounted adjacent to a closed door.

FIGURE 4 is a partial section, partial elevation, of the device mounted near a door adjacent to the door with the door open.

Referring now to FIGURE 1, wherein one embodiment of the safety device is shown comprising bracket means to attaching the device to a mounting surface such as a wall or door facing adjacent to a door and door jamb. The bracket includes base means 3 which is the portion of the bracket attached to the mounting surface. It has a height so that the bracket clears the moulding normally present around a door opening. Holes or openings 4 may be provided in the portion of the bracket means in the area of the base means for attaching the bracket by screw means or other means to the mounting surface. In addition, an adhesive glue may be used in lieu of screw means. Also, other means for attaching the bracket, obvious to those skilled in the art, are contemplated for use with the device.

The bracket has an opening 5 at the other end thereof which is extended over the area where the door mates with the door jamb. The opening is shown circular and is at right angles or in a plane orthogonal to the plane in which the door opens and closes.

The plunger means **6**, comprising a first narrow neck portion **7** and a second ball-like portion **8**, is adapted for moving or sliding through opening **5**. The motion of the plunger is at right angles to the broad surface of the door in the area where the door mates with the door jamb.

The ball-like portion **8**, located at one extreme of the plunger, has a larger diameter than the neck means and sufficient length for preventing a door from closing against the door jamb when the plunger is inserted into the space between the door and the door jamb.

As shown in FIGURE 4, ball-like means **8** is inserted between the door **9** and door jamb **10** to prevent the door from closing against the door jamb.

The ball-like portion is urged into the opening provided by the opened door by spring means **11**. In the embodiment shown, the spring means is shown as a coil spring placed on the neck portion of the plunger between the ball portion and the bracket surface **12**. The spring means, when the spring is compressed, exerts a force on the ball means to force the plunger into the opening between the door and the door jamb. In other embodiments, the plunger may be made so that the neck portion is comprised of two parts which move relative to each other. The parts may be hollow so that the spring means may be placed inside. The size of the spring is determined by the length to which the plunger may be inserted. For example, the spring is selected to provide a force for inserting the plunger to its maximum depth as determined by the maximum effective length of the plunger.

In still other embodiments, the spring means could be located on the opposite side of the bracket means between the handle means **13** and the bracket.

In different embodiments, the ball means and the neck portion of the plunger may be provided with thread means so that the ball means can be rotated to adjust the location of the ball means on the neck portion.

The size and configuration of the ball means, as well as the size and configuration for the neck portion of the plunger, are not limited to the configuration shown; the ball means may be tubular, round, square, elliptical, or other shapes. The neck portion is circular, although it is within the scope of this invention to include other configurations. The ball portion is selected preferably with a diameter at least as large as children's fingers and hands to prevent doors closing on them.

The portion **14** of the ball means is preferably made flat, although not limited to a flat surface so that the spring does not easily slip over or off the plunger.

When the ball means is shown in a stationary embodiment in the figures, it is within the purview of this invention to provide a rollable or slideable ball means comprising a rollable ball embodiment. For example, the plunger could be provided with a cup-like area where ball means **8** is shown on the figure. The cup may be provided with threads at the edges thereof. A ball may be placed in the cup and the second threaded ring member screwed into the threads for securing the ball in the cup. The second threaded member may be provided with a lip extending inward for securing the ball in the cup. The material used for the ball means must be selected so that blows from the door would not impair its operability.

At the other end of the plunger means is withdrawal or handle means **13** for pulling the plunger from the door opening when it is necessary to close the door. In the simple embodiment shown, handle means **13** is no more than a bent metal rod having members **15**, which insert into slots or openings **16** provided in the neck portion of the plunger. Manual force may be applied to pull the plunger from the opening. For the embodiment shown, as shown in FIGURE 4, if it becomes necessary to close the door, thumb pressure could be applied to handle or withdrawal means **13**, forcing the handle downward away from the plunger. The bent portion **15** provides a brace at a rotating point so that the plunger is pulled from within the door and door jamb, thereby permitting the door to close. In a second embodiment, string **18** may be attached and the plunger withdrawn from the outside, thereby permitting the door to be closed.

It is pointed out that the withdrawal means is rotated downward in FIGURE 2 so that the string movement can pull the plunger from between the door jamb and the door from the outside.

In FIGURES 3 and 4, the withdrawal means is rotated to the side for better illustration of the invention.

In various door, door jamb embodiments, it may be necessary to have the plunger penetrate to a depth greater than that shown in FIGURES 3 and 4. Therefore, it is necessary to provide some adjustability to the plunger so that the door would not close, for example, on the narrow portion of the plunger. The adjustability feature may be incorporated into the handle means and withdrawal means **13**, for example, as shown in FIGURES 1, 2, and 3 by openings **16** in the neck portion of the plunger. If the effective length of the plunger is desired to be reduced, the withdrawal means is moved into holes **16** closer to the ball means so that, in effect, the length of the plunger is reduced.

Cap **17** may be incorporated in the end of the plunger, if desired.

In a second embodiment, the adjustable means may be separate and apart from the handle means and may be provided by a collar with a set screw. In the second embodiment adjustable means, the collar may be placed on the neck portion of the plunger means on the side of the bracket opposite the spring. A grooved area may be incorporated into the neck portion of the plunger into which the set screw may be forced. In operation, the collar may be slid to different locations along the plunger, and the set screw tightened to adjust the depth of penetration of the plunger.

Referring now to FIGURE 2, the device comprised of bracket **2**, handle **13**, and other elements, is shown mounted on mounting surface **20** adjacent to door jamb **10** and door **9**. Handle **21** for the door is also shown.

In FIGURE 3, the partial section partial elevation of FIGURE 2 is shown in which the ball means **8** is shown pressed against door **9**, when the door is engaged in the door jamb **10**. The pressure is provided by spring **11** which is compressed.

The component parts of the device may be formed or produced from various materials. For example, the bracket including the brace means may be molded from a plastic or rubber. In an alternative embodiment, a metal such as aluminum may be used. It could be stamped out by a press as an integral unit or in more than one part and subsequently assembled. Combinations of metals, plastics, and rubber materials are within the scope of the invention. The plunger could also be molded from plastic, rubber, or stamped from a metal or produced from combinations of both.

The spring means ordinarily will be comprised of a metal, such as steel, and may be in a coiled embodiment, although flexible plastics and rubber are considered within the scope of the invention.

The withdrawing means, or handle means, including the adjustable means, may be produced as indicated above, or the bracket and ball means and may be comprised of the same material.

Preferably, the withdrawal means is a simple triangular shaped bent metal bar or rod which inserts into openings along the neck portion of the plunger.

It will be understood that it is intended to cover all changes and modifications of the embodiments of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the sphere and scope of the invention.

Having described the invention, what is claimed is:

A safety device for preventing complete closing of doors and causing damage and injury comprising bracket means having a relatively thick first portion

for joining to a wall surface adjacent a door and a door jamb, and a relatively thin, flat second portion, there being an opening in said second portion, said first and second portions being at opposite ends of said bracket means, said first portion being joined to the wall surface and having a thickness sufficient to permit the bracket to pass over door mouldings; plunger means having a first neck portion including slots along the length thereof, and a second ball portion, said ball portion having a diameter larger than the diameter of said neck portion and being located at the termination of the plunger; said neck portion being adapted for sliding in the opening of the bracket;

a coiled spring located around the neck portion of said plunger between said ball portion and one surface of said second portion for urging the plunger away from said one surface when the spring is compressed;

handle means connected to the neck portion of said plunger between the opposite surface of said second portion and the end of the plunger for withdrawing

the plunger and for adjusting the slideable length of the plunger, said handle means comprising a rod including extended portions for inserting into said slots for adjusting the effective length of the plunger for permitting the ball portion to be accurately inserted between a sliding door and a door jamb for preventing complete closing of the sliding door across the door jamb.

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