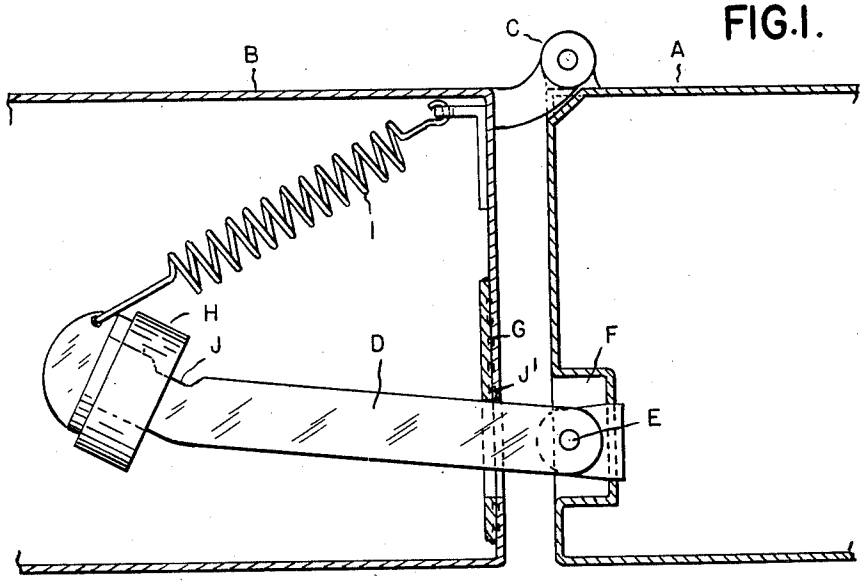
May 26, 1953 P. H. TRAVIS 2,639,458

COMBINED CHECK AND OPENER FOR CLOSURES

Filed Jan. 25, 1950

FIG.1.



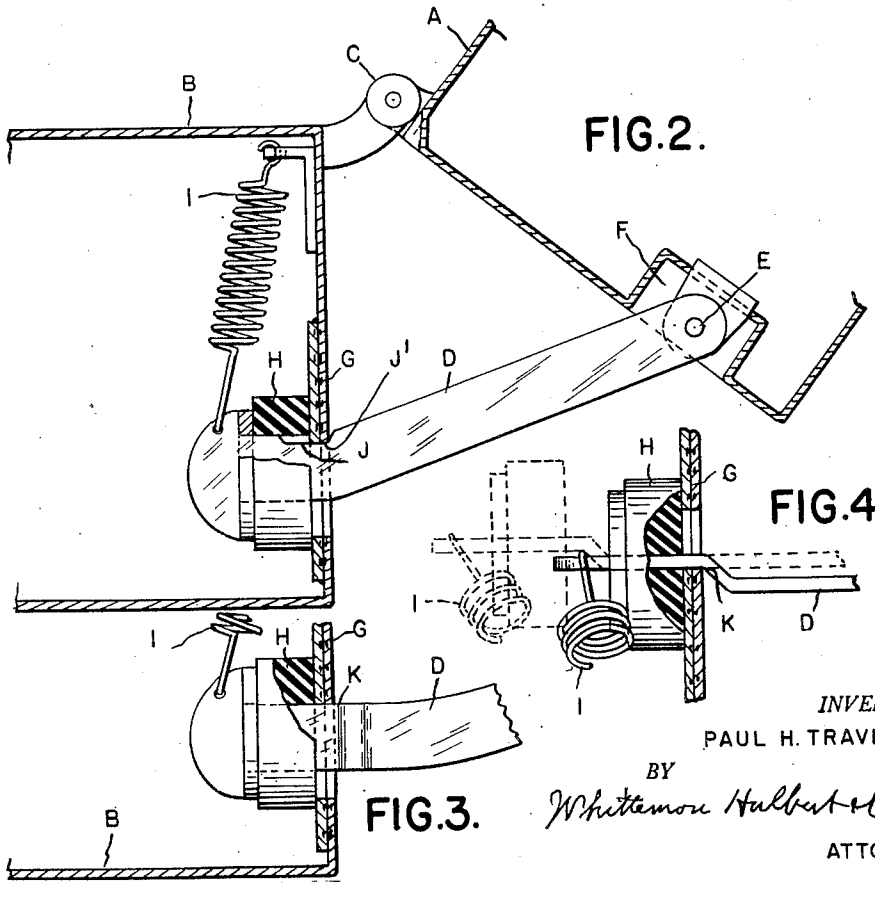


FIG.2.

FIG.4.

FIG.3.

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COMBINED CHECK AND OPENER FOR CLOSURES

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9 Claims. (Cl. 16—1)

1

The invention relates generally to closures and has more specific reference to closures for motor vehicle bodies such as doors, rear deck lids, etc.

It is the object of the invention to obtain a construction which combines the functions of a check for limiting the opening of a closure, means for assisting such opening, and means for yieldably holding the closure in open position.

To this end the invention consists in the construction as hereinafter set forth.

In the drawings:

Fig. 1 is a sectional plan view showing my improvement as applied to the door of a motor vehicle in closed position;

Fig. 2 is a similar view with the door in open position;

Fig. 3 is a plan view of a modified construction; and

Fig. 4 is a side elevation of the construction shown in Fig. 3.

In my former Patent No. 2,200,567, "Door Check," issued May 14, 1940, there is shown a check construction for limiting the opening of a door including an arm pivotally mounted on the door to extend therefrom into a recess in the body member, the free end of said arm being provided with a buffer for contacting with an abutment on said body to limit and cushion the outward movement of the door.

The instant invention combines with this former construction resilient means for assisting the opening movement of the door together with means for yieldably holding the door in such open position. My improvement is not, however, limited to this specific application but may be applied to any form of closure member.

As specifically illustrated in Figs. 1 and 2, A is a hollow door and B a portion of the body member to which said door is attached by a hinge C. D is an arm, preferably a flat metal bar, one end of which is pivotally anchored to the member A. As shown it is attached to the member A by a pivot E engaging a recessed bearing F in the end portion of the door. From the pivot E the arm D projects into the hollow body B passing through a slotted striker plate G mounted in the door post portion of the body. Sleeved on this arm adjacent its free end is a buffer member H formed of resilient material such as rubber, and when the door is opened this buffer will contact with the striker plate G to limit the opening movement. It also forms a shock absorber which cushions the impact.

In order that the door A may automatically open when unlatched from the body, I have provided resilient means extending between the free end of the arm D and an anchor bearing within the hollow body B. As shown this is a coil spring I, which in the closed position of the door is placed under tension and with its axis extending in a direction to swing the door towards open position. Such open position is illustrated in Fig. 2 which shows the spring I contracted in length.

2

It is also an object of my invention to hold the closure open against any accidental force tending to close the same. This is accomplished by providing the arm D with a notch J adjacent to the cushion H which forms a shoulder J' for engaging one edge portion of the slotted striker plate G. This shoulder J' is so positioned with respect to the axis of the spring I that the latter will tend to draw the arm into engagement with the notch J when in registration with said striker plate. However, the shoulder J' does not constitute an absolute lock but is more in the nature of a cam which, when sufficient closing force is applied to the door, will be released from the striker plate G permitting of retraction of the arm D and the closing of the door. The shoulder J' may be formed by a notch on either edge of the flat bar D, or it may be formed as shown in Figs. 3 and 4 by bending the arm D to form an offset therein with a shoulder K intermediate the two offset portions. Where this construction is used the spring must have its axis extending in a direction to apply a lateral stress to the arm for engaging the shoulder K with the slotted bearing.

While in the illustrated embodiment of the invention the arm D is illustrated and described as being pivotally anchored to a hollow door A, it will of course be apparent that the relationship of parts may be reversed and the arm D may be pivotally anchored to the body and extend through a slotted striker plate carried by the door. The action in either case is the same, the important thing being the establishment of relative forces between the door and body.

It is believed unnecessary to illustrate other specific applications of my improvement, because it will be readily understood that it may be applied to any form of closure.

What I claim as my invention is:

1. A combined check and opening and holding means for a closure member comprising an arm adapted to extend between said closure member and the member on which it is mounted, said arm adapted to be pivotally anchored at one end to one of said members and to extend through a slotted passage in a striker plate attached to the other of said members, a buffer mounted on said arm adjacent to its free end, a latch shoulder on said arm adjacent to said buffer for engaging said striker plate in the open position of said closure, and resilient means secured at one end to the free end of said arm and adapted to be secured at the other end to said striker plate for biasing said arm towards latching engagement with said striker plate.

2. A combined check and opening and holding means for a closure member comprising an arm adapted to extend between said closure member and the member on which it is mounted, said arm adapted to be pivotally anchored at one end to one of said members and to extend through a slotted passage in a striker plate attached to the other of said members, a buffer mounted on said arm adjacent to its free end, a latch shoulder on said arm adjacent to said buffer for engaging said striker plate in the open position of said closure, and a spring secured at one end to the free end of said arm and adapted to be secured at the other end to said striker plate for biasing said closure member towards open position and said latch shoulder into engagement with said striker plate.

3. A combined check and opening and holding means for a closure member comprising a flat bar arm adapted to extend between said closure member and the member on which it is mounted, said arm adapted to be pivotally anchored at one end to one of said members and to extend through a slotted passage in a striker plate attached to the other of said members, a buffer mounted on said arm adjacent to its free end, said arm having a notch in one edge thereof forming a latch shoulder for engaging said striker plate in the open position of the closure, and a spring secured at one end to the free end of said arm and adapted to be secured at the other end to said striker plate for biasing said closure member toward open position and said latch shoulder into engagement with said striker plate.

4. A combined check and opening and holding means for a closure member comprising an arm adapted to extend between said closure member and the member on which it is mounted, said arm being a flat bar having portions thereof offset into different planes to form a shoulder therebetween, said arm adapted to be pivotally secured at one end to one of said members and to extend through a slotted passage in a striker plate attached to the other of said members, a buffer mounted on said arm adjacent to its free end and also adjacent to the offset or shoulder in said arm, and a spring secured at one end to the free end of said arm and adapted to be secured at the other end to said striker plate for biasing said closure member towards open position and said shoulder into latching engagement with said striker plate.

5. A combined check and opening and holding means for association with a stationary frame member having an opening therein and a closure member hinged to said frame member to swing between open and closed position, said means comprising an arm adapted to extend between said frame and closure members, and to be pivotally anchored at one end to one of said members and to extend through a slotted passage in a striker plate attached to the other of said members, a buffer mounted on said arm adjacent its free end and engageable with the striker plate to limit opening movement of said closure member, a spring secured at one end to the free end of said arm and adapted to be secured at its other end to said other member at a point so located that when said closure member is in closed position, the line of action of said spring is such as to establish a substantial component of force longitudinally of said arm to produce forces tending to swing the closure member toward open position, the point being so located that when the closure member is in open position, the line of action of said spring makes a larger angle with said arm and thereby urges said arm laterally, and latch means on said arm at the side thereof toward said spring rendered effective to hold the closure member in open position by lateral movement of said arm by said spring.

6. Means as defined in claim 5 in which said latch means comprises a recess in said arm adjacent the free end thereof engageable with a lateral surface of the striker plate.

7. For use with a pair of hinged members relatively swingable between open and closed positions, the first of which members has a slotted part adjacent the hinge connection between said members, an arm adapted to be pivoted at one end to the second of said members and to extend through the slot, a buffer on said arm adjacent its free end and engageable with the slotted part to limit relative opening movement between said members, a latch recess in said arm adjacent said buffer engageable with a side of the slot to latch the members in relative open position, a tension spring connected at one end adjacent the free end of said arm and adapted to have its other end secured to said first member at a point such that said spring is extended and extends from the free end of said arm at a small angle thereto generally in the direction of the pivoted end thereof, and such that upon relative opening movement between the members the angle between said spring and arm increases thereby pulling said arm against a side of the slot, said spring being disposed at the recessed side of said arm to cause the recess to engage the side of the slot when the members reach relative open position.

8. Structure as defined in claim 7 in which the first member is hollow, and the slotted part is in an edge thereof, and the end of said arm carrying said buffer is adapted to be located within the hollow interior of the first part.

9. Door check apparatus comprising an arm adapted to be connected at one end to a first member and to extend through a slot in a second member hinged to said first member, a buffer on the free end of said arm, a latch abutment on said arm adjacent the free end thereof and engageable with a side of the slot in latching relation, and a single spring connected to the free end of said arm and adapted to be connected at its other end to the second member to develop door opening forces generally longitudinally of said arm when the door is closed, and latching forces generally transversely of said arm when the door is open.

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