Oct. 17, 1933. H. G. SIMMONS 1,931,271

DOORCHECK

Filed July 2, 1930

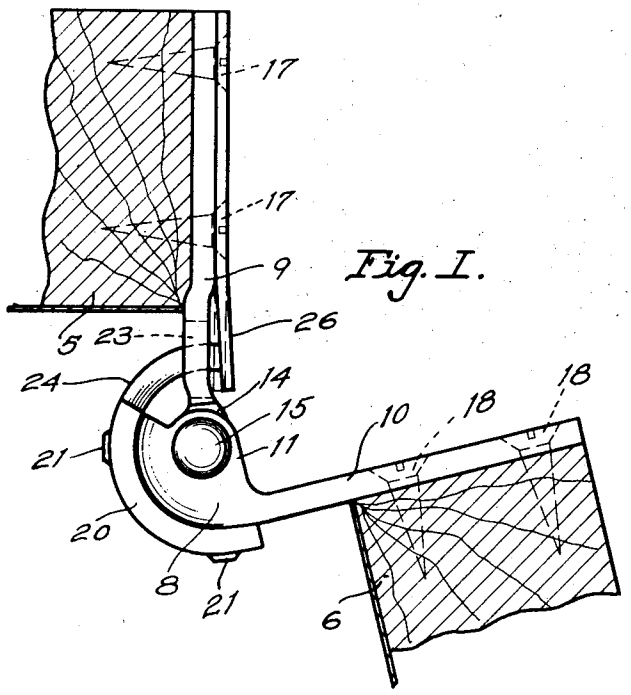


Fig. 1.

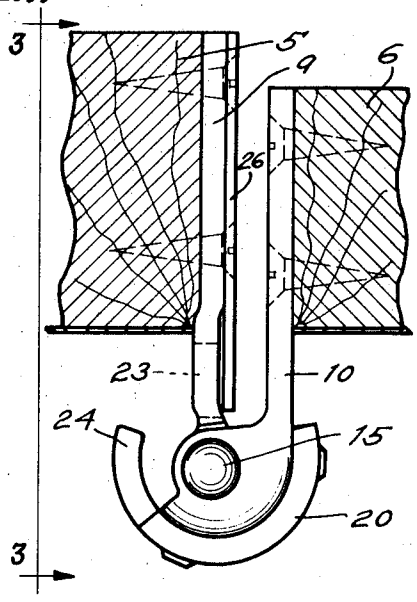


Fig. 2.

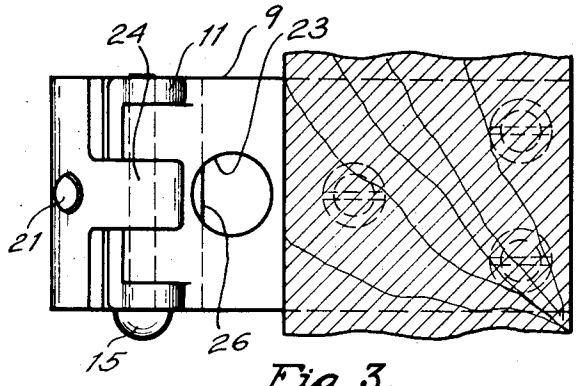


Fig. 3.

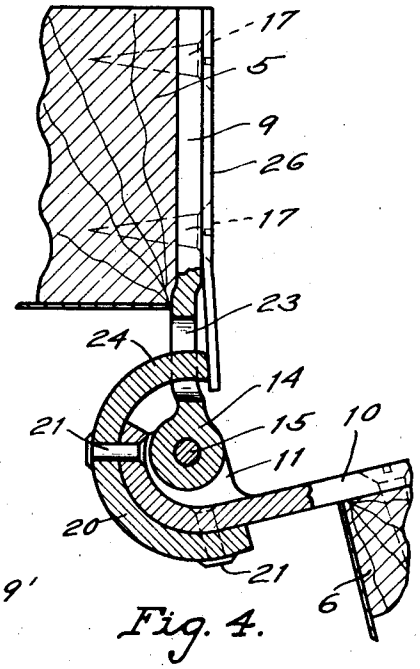


Fig. 4.

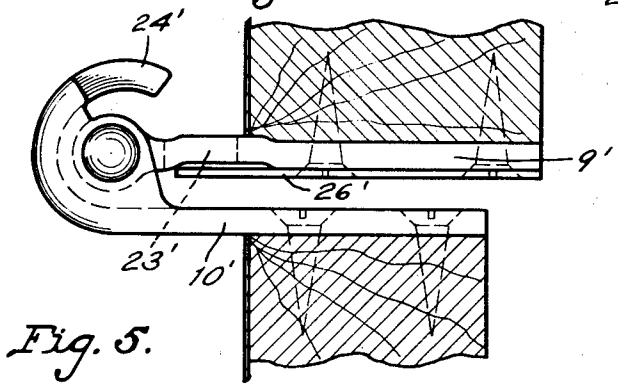


Fig. 5.

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DOORCHECK

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4 Claims. (Cl. 16—191)

This invention relates to door limiting devices and particularly to those for use in yieldingly checking the movement of doors of the swinging type.

This invention has for an object the provision of a simple and effective door checking arrangement particularly for use with doors forming a part of vehicle body installations and further embraces a device of this character particularly adapted for association or cooperation with a supporting hinge of a swinging door.

The invention contemplates the provision of a device adapted to be made a part of or associated with a supporting hinge of a door of the swinging type for yieldingly opposing the opening movement of the door beyond the predetermined position.

The invention embraces the provisions of a yielding means for gradually absorbing the shock when a door is swung open and at the same time acting to limit the swinging movement of the door by means of the inherent resistance of the door checking member and its associated elements to resist distortion of flexion.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawing of a form of the invention, which may be preferred, in which:

Figure 1 is a top plan view of the device of my invention showing the door swung to a position of maximum open movement;

Figure 2 is a view showing the door hinge and check member substantially in closed position;

Figure 3 is an elevational view of the hinge showing the checking member of my invention;

Figure 4 is a transverse sectional view through the hinge in open position showing the general arrangement of parts;

Figure 5 is a view showing a modified form of the door checking arrangement.

Referring to the drawing in detail, I have illustrated the device of my invention as operating in conjunction with a door hinge of the double leaf type particularly for use in supporting vehicle doors, but it is to be understood that I contemplate the use of my invention with any structure wherein the same may be found to be applicable.

With reference particularly to Figures 1 to 4, the numeral 5 designates the stationary pillar post or stile which supports a swinging door 6 through the medium of a hinge member 8. The hinge member illustrated comprises a pair of relatively movable members or leaves 9 and 10. The leaf 9 has an enlarged end or head portion 14 projecting between ear portions 11 formed upon the leaf 10. The ear portions 11 of the latter and the enlarged head 14 of the leaf 9 are provided with aligned openings adapted to receive a pivot pin or pintle 15 which serves to hold the parts together. The leaf 9 of the hinge is secured to the body post 5 by means of screws 17 and the relatively movable leaf 10 is secured to the door 6 by means of screws 18.

It is important that adequate means be provided for limiting the outward swinging movement of doors of automotive vehicles and at the same time yieldingly or gradually absorb the shock resulting from such swinging movement. To this end I have provided a simple and effective shock absorbing and door movement limiting device which may be incorporated as a part of or associated with the door hinge proper. In the structure illustrated in Figures 1 to 4 inclusive, a member 20 snugly surrounds the enlarged end of the hinge leaf 10 and is suitably fastened to the leaf by means of rivets 21 or other suitable means as, for example, by spot welding.

The leaf 9 of the hinge is provided with an opening 23 or cut away portion to accommodate a projection 24 forming a part of the member 20. Positioned parallel and coextensive with the leaf 10 is a resilient plate 26 preferably formed of spring steel or other suitable flexible material which is held in place by means of the screws 17 which also serve to hold the leaf of the hinge in place. When the door is opened as particularly illustrated in Figure 1, the projection 24 extends through the opening 23 and engages the plate 26, the latter acting as a stop member to limit the opening of the door, yet it has sufficient resilience and inherent resistance to distortion so that it yieldingly limits the actual swinging movement of the door. It is to be understood that the resilient plate or member may be formed as an integral portion of the hinge leaf.

In the form of my device shown in Figure 5, the leaf 10′ is formed with an integral finger or projection 24′ which is adapted to project through an opening 23′ in the leaf 9′ to engage the resilient plate 26′. In this form of device the stop member on one portion of the hinge is made integral therewith instead of being fabricated of a separate piece as herein described.

It is apparent that, within the scope of the invention modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What I claim is:—

1. In combination, a hinge adapted to support a door and comprising a stationary leaf; a movable leaf pivotally connected therewith; checking means for limiting the opening movement of said leaves comprising a projection associated with one of said leaves, the other of said leaves having an opening adapted to accommodate said projection; and resilient means coextensive with one of said leaves and arranged adjacent said opening and adapted for cooperation with said projection to limit the relative movement of said leaves.

2. A door check hinge comprising a stationary member adapted to be secured to a door frame having an aperture formed therein; a resilient plate co-extensive with and superimposed upon one surface of said stationary member; a relatively movable member pivotally connected to said stationary member and secured at one end to a door; a projection extending from the opposite end of said movable member and adapted upon opening movement of the door to extend through said aperture into contact with said resilient plate whereby the opening movement of said door is yieldingly limited.

3. A door check hinge comprising a stationary member having an aperture, a relatively movable member, a projection on said movable member, a yielding stop member adjacent the side of said stationary member remote from said projection whereby upon relative movement of said members in one direction said projection will extend through said aperture and engage said stop member to yieldingly limit said movement.

4. A door check hinge comprising a pair of relatively movable members, one of said members having an aperture, a yielding stop member adjacent said aperture, and a projection extending from said other hinge member adapted upon relative movement of said members to extend through said aperture and engage said stop member to yieldingly limit relative movement of said members.

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