March 24, 1936. R. C. JACOBS 2,034,905

DOOR CHECK

Filed Aug. 29, 1935

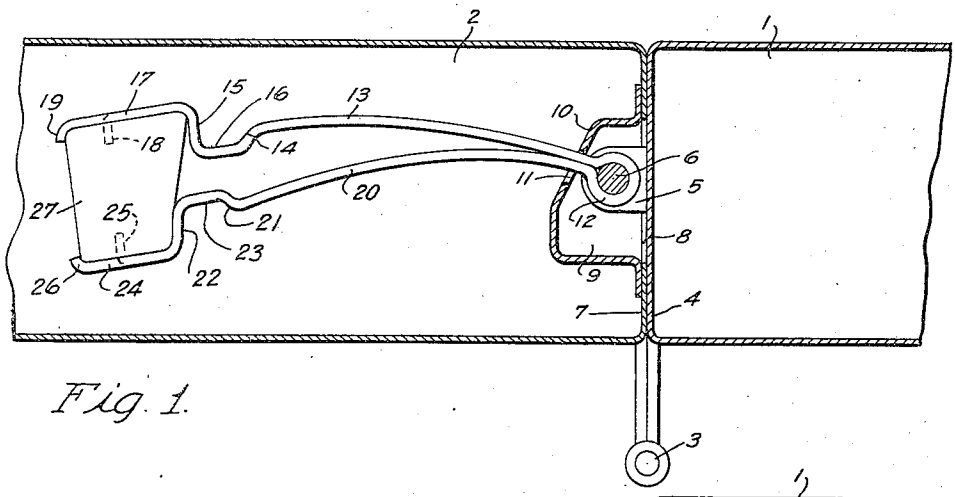


Fig. 1.

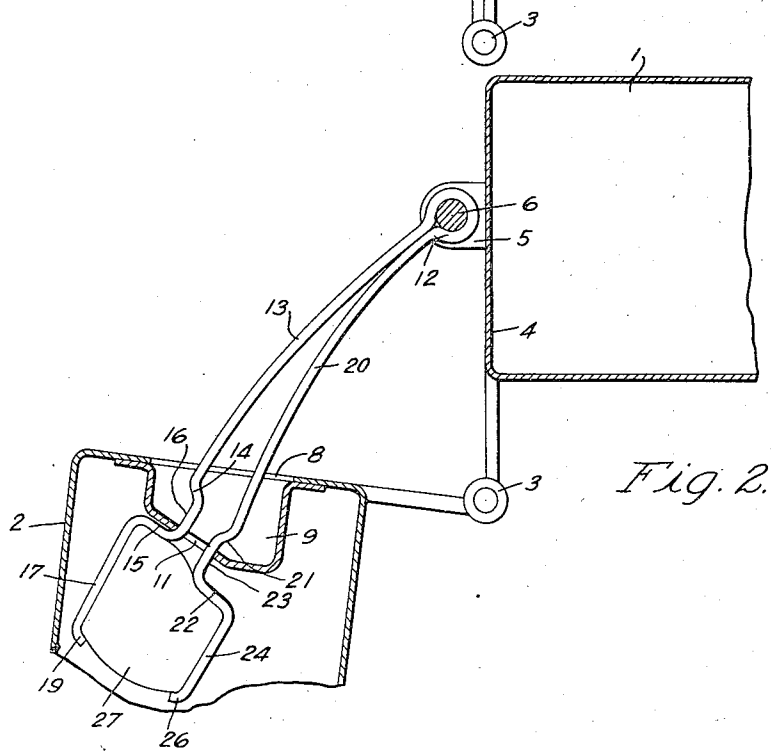


Fig. 2.

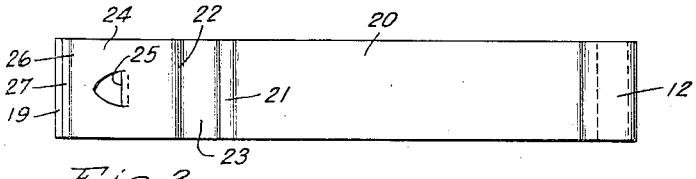


Fig. 3.

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DOOR CHECK

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9 Claims. (Cl. 16—85)

This invention relates to door checks for the purpose of limiting the swinging movement of doors, the present check being particularly adapted for use in combination with automobile doors.

The primary object of the invention is to provide a check for limiting the outward swinging movement of a door, the check embodying cushioning means for absorbing shocks set up by stopping the movement of the door.

Another object of the invention is to provide a door check having yieldable means for holding a door in an open position.

Still another object of the invention is to provide a metallic door check which is tensionally resilient and which is laterally resilient, the tensional resiliency serving to cushion the checking action of the door and the lateral resiliency serving to retard the outward movement of a door in a manner whereby the retarding action progressively increases as the door is moved outwardly. In addition the lateral resiliency serves to hold abutment means in a position yieldably opposing closing movement of the door.

In my co-pending application Serial No. 23,352 filed May 25, 1935, I have disclosed a door check embodying both the tensional and lateral resiliency referred to above, the lateral resiliency being attained by forming the check with an integral spring portion. Due to the rather severe treatment that door checks receive when used in combination with automobile doors this spring portion is repeatedly strained beyond its elastic limit and obviously the forces and strains vary greatly in amount. The result is that the metal becomes fatigued.

Still another object of the present invention is to increase the useful life period of door checks such as shown in the above referred to co-pending application. This object is accomplished by substituting for the integral spring part, above referred to, a cushion of resilient material such as rubber.

With the above and other ends in view the invention is more fully disclosed with reference to the accompanying drawing, in which—

Figure 1 is a cross section of a door with the present check attached thereto;

Fig. 2 is a similar section illustrating another stage in the operation of the check, and

Fig. 3 is an elevation of the check.

Like characters of reference are employed throughout to designate corresponding parts.

In the drawing the numeral 1 designates a wall and 2 a door attached thereto by a hinge 3. The edge 4 of the wall has a pair of brackets 5 (one of which is shown) supporting a pin 6. The edge 7 of the door has an opening 8 over which is secured a bracket 9. The bracket 9 is socket shaped and has its rear wall 10 angularly disposed with respect to the door edge 7 and provided with an aperture 11.

The present door check, which is received in the above described assembly, is formed of a spring metal strip bent intermediate its ends to provide a loop 12 through which the pin 6 extends to connect the check to the wall 1. From the loop 12 extends a bowed run 13 which is bent adjacent to its outer end to provide a pair of oppositely disposed shoulders 14 and 15 defining a depression 16. From the shoulder 15 the strip extends to provide an arm 17 having a prong 18 struck inwardly thereof and a retainer portion 19 at the extremity thereof.

Also extending outwardly from the loop 12 is a bowed run 20 having a pair of oppositely disposed spaced apart shoulders 21 and 22 defining a depression 23. From the shoulder 22 the strip extends outwardly to form an arm 24 having a prong 25 struck inwardly thereof and a retainer part 26 on the extremity thereof.

Between the two arms 17 and 24 is placed a block 27 of resilient material such as rubber. The arms are pressed together so as to imbed the prongs 19 and 25 in the block 27. The retainers 19 and 26 serve as an additional means for holding the rubber in place. The block 27 is of a width whereby it holds the outer ends of the runs 13 and 20 apart and so that they diverge outwardly with respect to the loop 12.

In describing the operation of the check it will be assumed that the door 2 is moved from the position shown in Fig. 1 to that shown in Fig. 2. During such movement the runs 13 and 20 are drawn through the aperture 11 and inasmuch as said runs diverge a distance greater than the width of the aperture 11 they frictionally engage the sides of the aperture and offer a resistance to such movement. The runs 13 and 20 are compressed together and both their natural resiliency and the resiliency of the block 27 oppose such compression. As the door reaches the position shown in Fig. 2 the side walls of the aperture 10 enter the depressions 16 and 23 with the result that the shoulders 15 and 22 oppose further swinging movement and the shoulders 14 and 21 oppose movement of the door in the opposite direction.

If it is assumed that the door movement is

quite rapid there is a severe impact between the shoulders 15 and 22 and the wall 10. At this time an additional movement is possible by straightening of the bowed runs 13 and 20. This straightening action, in other words, provides the check with tensional resiliency and due to this resiliency the normal tendency of the door is to rebound toward its closed position. Due to the fact that at this time the side walls of the aperture 10 extend into the depressions 16 and 23 the shoulders 14 and 21 check the rebound.

In cases of severe impact, such as above described, the shoulders 15 and 22 tend to straighten and pull through the aperture 10. The resilient block 27 opposes such a tendency. However, in the event the impact is so severe that either the check or the door hinges must be severed the block 27 may be compressed to such an extent that it permits the shoulders 15 and 22 to straighten and pull through the aperture 11.

Although a specific embodiment of the invention has been illustrated and described it will be understood that various changes may be made within the scope of the appended claims without departing from the spirit of the invention, and such changes are contemplated.

What I claim is:—

1. A door check comprising a spring metal strip bent to provide a retainer receiving loop, a pair of diverging arms extending outwardly from said loop and formed with depressions adjacent to the outer ends thereof, and resilient means interposed between the outer extremities of said arms.

2. A door check comprising a spring metal strip bent to provide a retainer receiving loop and a pair of outwardly extending arms, and resilient means interposed between said arms and holding them in a diverging relationship, said arms having depressions formed therein adjacent to their outer ends.

3. A door check comprising a pair of flexible arms, means uniting said arms at one end, resilient means interposed between and holding the other ends of said arms spaced apart, and an abutment on at least one of said arms.

4. A door check comprising a pair of flexible arms, means uniting said arms at one end, resilient means interposed between and holding the other ends of said arms spaced apart, at least one of said arms having a pair of oppositely disposed spaced apart shoulders providing a depression therein.

5. A door check comprising a pair of flexible arms, means uniting said arms at one end, resilient means interposed between and holding the other ends of said arms spaced apart, both of said arms having a pair of oppositely disposed spaced apart shoulders providing a depression therein.

6. A door check comprising a pair of flexible arms, means uniting said arms at one end, resilient means interposed between and holding the other ends of said arms spaced apart, and an abutment on at least one of said arms, said abutment being located between said first named means and said resilient means.

7. A door check comprising a pair of flexible arms, means uniting said arms at one end, a rubber cushion interposed between said arms to hold their free ends spaced apart, and check means on said arms between said first named means and said rubber cushion.

8. A door check comprising a pair of flexible arms, means uniting said arms at one end, a rubber cushion interposed between said arms to hold their free ends spaced apart, and check means on said arms between said first named means and said rubber cushion, said check means comprising a pair of oppositely disposed spaced apart shoulders.

9. A door check comprising a spring metal strip bent to provide a retainer receiving loop, a pair of diverging arms extending outwardly from said loop and formed with depressions adjacent to the outer ends thereof, and resilient means interposed between the outer extremities of said arms, said diverging arms being normally bowed to provide tensional resiliency.

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