July 11, 1933. C. E. STRAND 1,917,740

DOOR STABILIZING CATCH

Filed Jan. 25, 1933

Fig. 1.

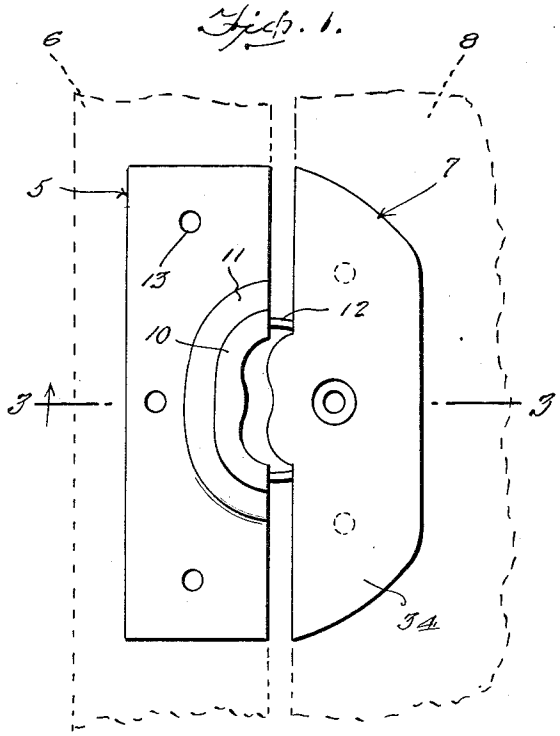
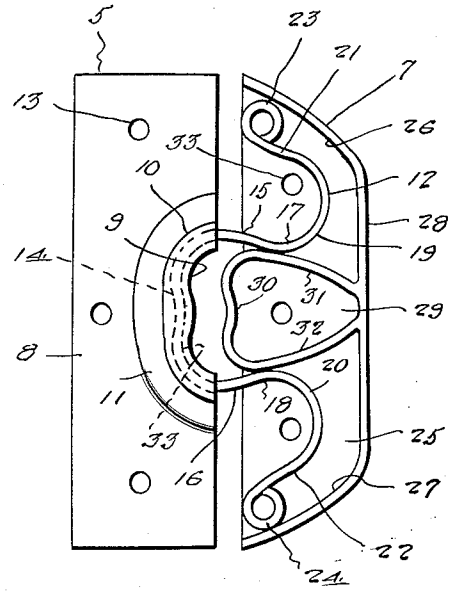


Fig. 2.



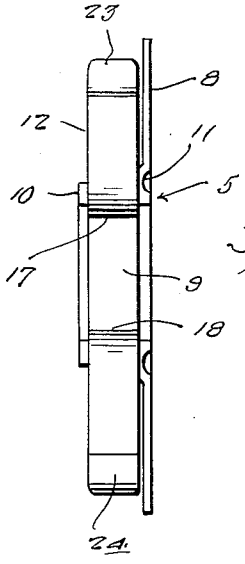


Fig. 4.

Fig. 5.

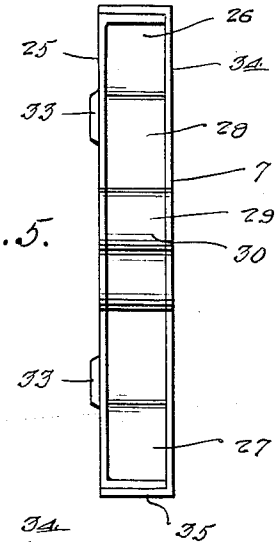
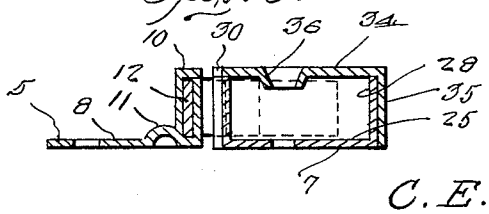


Fig. 3.



Inventor

C. E. Strand

By Clarence A. O'Brien

Attorney

Patented July 11, 1933 1,917,740

UNITED STATES PATENT OFFICE

CARL EMIL STRAND, OF EAST CLEVELAND, OHIO

DOOR STABILIZING CATCH

Application filed January 25, 1933. Serial No. 653,487.

My invention relates generally to devices for maintaining a door properly aligned, and prevented from rattling, when closed, and particularly to a door catch which will maintain a door when closed, properly aligned and held against rattling, even though the door may not be accurately hung and may be subject to rattling when in the open position.

It is an important object of my invention to provide a device of the character described above which will take from the door hinges and lock thereon a considerable amount of the strain which is ordinarily imposed totally thereon by reason of motion of the door or of the door frame in which the door is hung, especially in a door construction of a vehicle.

It is also an important object of my invention to provide a simplified, easily manufactured and installed device of the character described which can be made with a few stamping operations by forming only three parts.

Other objects and advantages of my invention will be apparent from a reading of the following description in connection with the drawing, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawing:—

Figure 1 is an elevational view of the device of the invention showing the same installed in the operative position, the door being closed.

Figure 2 is a view similar to Figure 1 showing the cover member removed.

Figure 3 is a sectional view taken approximately on the line 3—3 of Figure 1 and looking in the direction of the arrows.

Figure 4 is an end elevational view taken from the right, of the door element.

Figure 5 is an end elevational view taken from the left of the body or frame element.

Referring in detail to the drawing, wherein like numerals refer to like parts throughout the same, the numeral 5 refers generally to the door element mountable on the door 6, and the numeral 7 refers generally to the body or frame element mounted on the body 8.

The door element 5 comprises a flat plate 8 vertically elongated and provided in one edge, that is the edge facing the body 8, with an opening 9 formed by turning over a semi-tubular portion 10 in a stamping operation. An embossed portion 11 bounds the inner edge of the semi-tubular portion 10 and forms with the semi-tubular portion 10 an enclosure for a portion of the spring element generally designated 12. Suitable spaced openings 13 are made in the plate 8 for accommodating screws or other attaching means for attaching the plate to the door 6.

Held in the chamber or semi-tubular portion 10 by cooperation of the raised portion 11 is the double curved portion 14 of the spring element 12. Legs 15, 16 lead outwardly from the ends of the portion 10 and then converge gradually toward each other to the points 17, 18 whence they continue into substantially semi-circular portions 19, 20 on whose ends are divergently curved portions 21, 22 which terminate in outwardly formed closed convolutions 23, 24. The formations of the legs 15, 16 described are substantially essential to their proper operation and cooperation with the frame element 7 as will be evident.

The frame element 7 comprises a plate 25 which has gently and uniformly curved ends 26, 27. An outwardly projecting wall 28 on one side of the plate bound the vertical edge thereof at one side and also the curved end portions 26, 27. Leading across the plate 25 from the vertical portion of the wall 28 and over the opposite edge of the plate is a heart shaped formation generally designated 29, the overhanging portion 30 of which is double curved in conformity to the double curving of the opening 9 in the door element 5. Opposed similar wall portions 31, 32 lead in the opposite direction across the plate 25 from the ends of the double curved portion 30 and join the wall 28 at an intermediate point thereof as shown in Figure 2. Suitable openings 33 are distributed in the plate 25 for properly accommodating screws or other attaching means for securing the body element to the body 8.

If desired a cover generally designated 34 for the body element 7 may be provided which has substantially the plan of the body member and has an outer wall 35 for overhanging and side by side relationship with the wall 28. The cover is provided with a countersunk opening 36 for securing a screw for holding the cover on the body element, the

opening 36 being preferably registered with a suitable opening located within the heart-shaped formation 29. The cover, of course, is not considered necessary to the functioning and operation of the invention.

The aperture between the portions 17, 18 of the spring element 12 is such that when the door element is brought toward and into initial engagement with the body element 7, the portions 19, 20 will be met by the curved portions at each end of the double curved portion 30 of the heart-shaped element 29 so that a spreading of the spring takes place which results in an enforced separation of the portions 17, 18 which follow the portions 19, 20 into engagement with the heart-shaped element 29. As the legs of the spring element progress into engagement with the body member 7, the closed convolutions 24 are brought within and against the curved end walls 26, 27. As they move toward the far side of the plate 25, the closed convolutions 23 are compressed toward each other, causing a stress and bending of the spring portions 19, 20 which is transmitted to the portions 17, 18 and causes the portions 17, 18 to move toward each other, resisted by the curved side walls 31, 32 of the heart-formation 29. This stress upon the portions 17, 18 is a maximum as the spring element is engaged progressively with the door element 7 and reaches the fully engaged position wherein the portions 17, 18 engage portions of the side walls 31, 32 of the heart-formation 29 at points which are considerably closer together than the ends of the wall portions 31, 32 near the double curved formation 30.

Fully engaged, the parts prevent up and down relative movement of the door and body, as well as sidewise movement, and also relative horizontal movement.

The portions 17 and 24 are supported by the body element in such a way that they relieve the door hinges of considerable of the weight thereon, and hold the door in proper horizontal alignment with the body.

The aperture furnished by the divergent curved formations 19, 20 of the spring element 12 is sufficiently wide to permit perfect engagement with the heart-formation 29 even though the door be out of alignment either depressed or elevated above a mean position. As soon as the engagement of the spring 12 with the body element takes place, the door is lifted and then held in the mean aligned position.

As shown in the drawing, the spring 12 is preferably of flat material, and has a central hump 33 which is conformed to seat in the double curved portion 9 whereby it is prevented from shifting longitudinally. This arrangement eliminates the necessity for welding the spring in place, which operation would destroy the temper of the spring element 12.

The portions 17, 19, 21 and 18, 20, 22 of the legs of the spring may act as catches for the bolt or bolts of a suitably arranged door lock.

It is believed to be obvious that the device of the invention functions as a door stabilizer and anti-rattler, as a door catch, and as a door aligner, and comprises only three necessary parts, which can be produced and assembled very cheaply on a quantity production basis, and are very easily installed and operated.

Though I have shown and described herein a preferred embodiment of my invention, it is to be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in material and structure and arrangement of parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. A catch of the class described comprising a support, a substantially U-shaped spring having its bight connected with the support, with its limbs convergently arranged, each limb being bent outwardly into U-shape, a keeper member having a part thereon of substantially wedge shape with its base toward the spring supporting member, with its sides engaged by the limbs of the spring and means on the keeper member for engaging the extremities of the U-shaped parts of the limbs for placing said U-shaped parts under tension whereby the portions of the limbs which engage the wedge member are pressed against the sides of said wedge member.

2. A catch of the class described comprising a supporting plate, a substantially U-shaped spring having its bight connected with the plate, with its limbs convergently arranged and said limbs being bent outwardly to provide U-shaped extensions, reversely arranged to the U-shaped spring, the extremities of said U-shaped extensions being rolled outwardly, a keeper casing having a substantially heart-shaped part therein, the base of which is located adjacent the supporting plate and the sides of which are engaged by the convergent limbs of the U-shaped spring, said keeper casing having end parts sloping outwardly to that face of the casing which receives the spring, said sloping ends engaging the rolled extremities and exerting pressure on the U-shaped extensions of the spring for forcing portions of the converging limbs of the spring against the sides of the heart-shaped part.

In testimony whereof I affix my signature.

CARL EMIL STRAND.