W. H. APPLEBY.

HINGE.

APPLICATION FILED SEPT. 7, 1916.

1,257,572.

Patented Feb. 26, 1918.

3 SHEETS—SHEET 1.

Fig. 1.

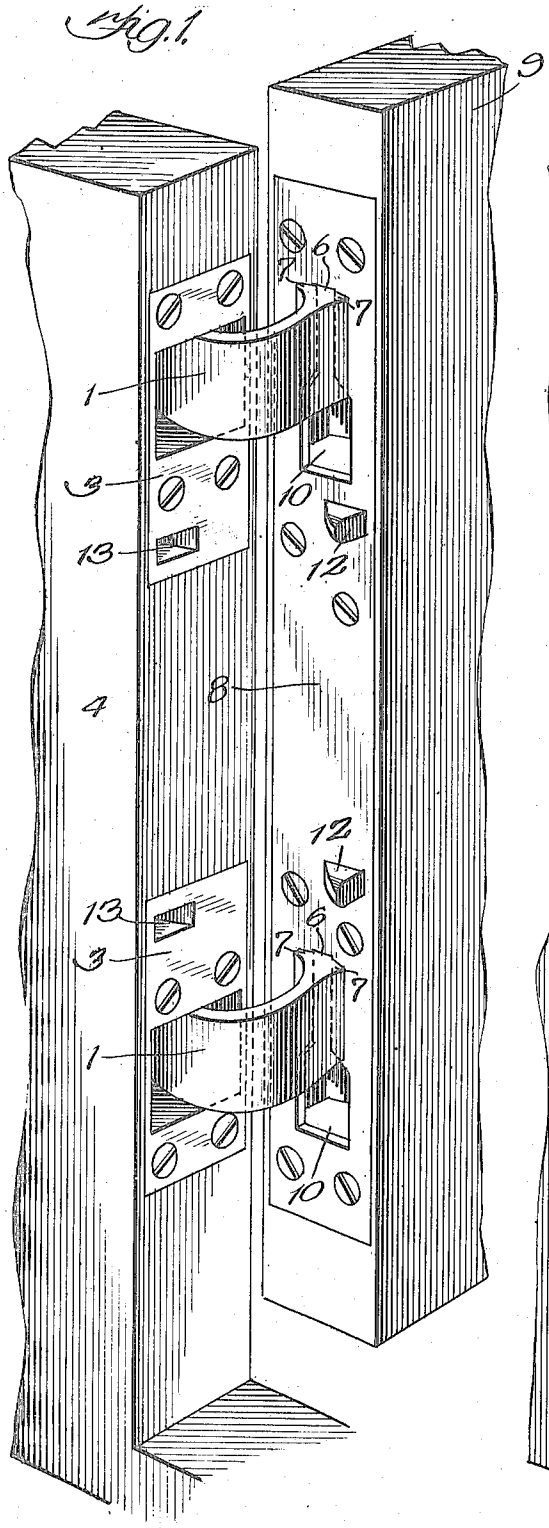
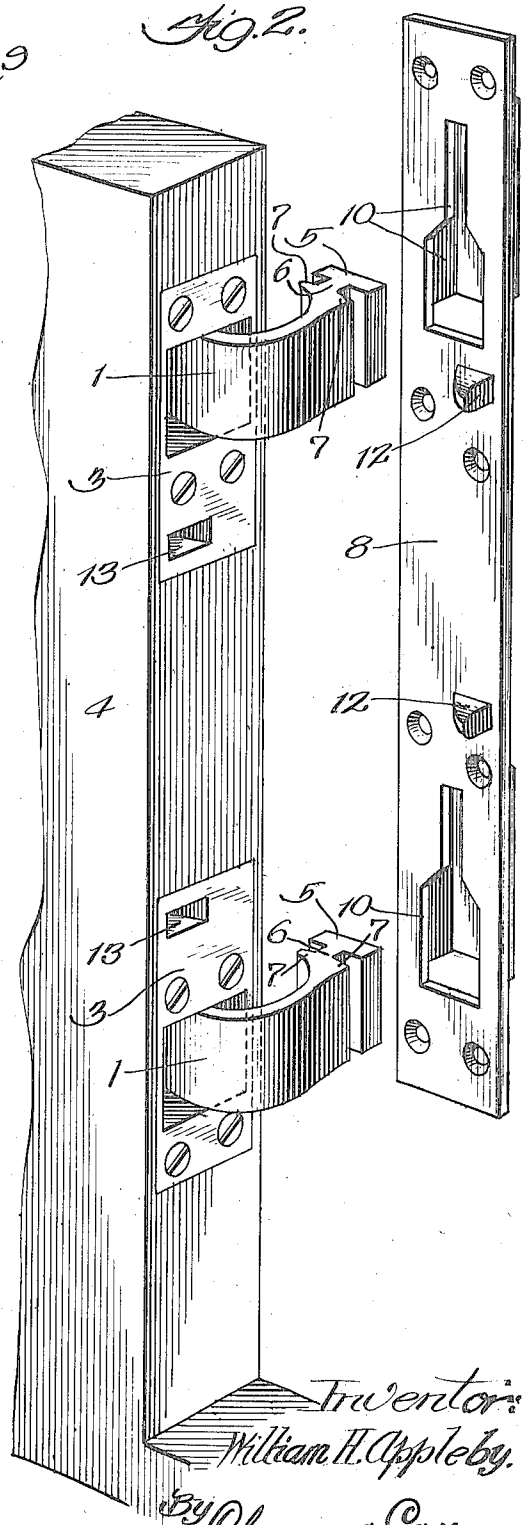


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 5

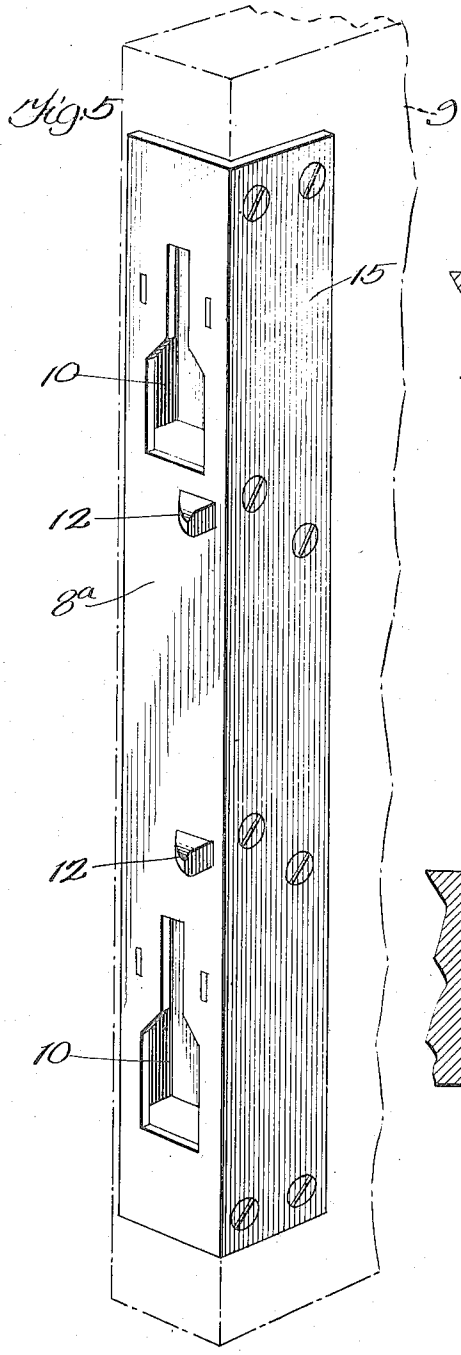


Fig. 3.

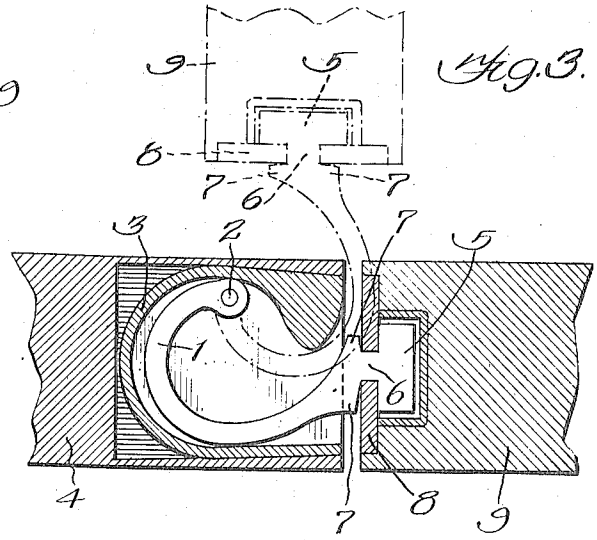
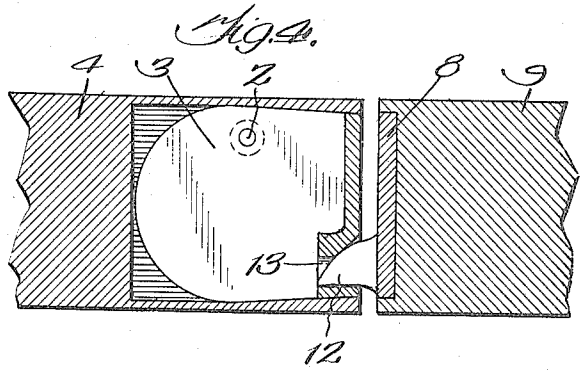


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 6.

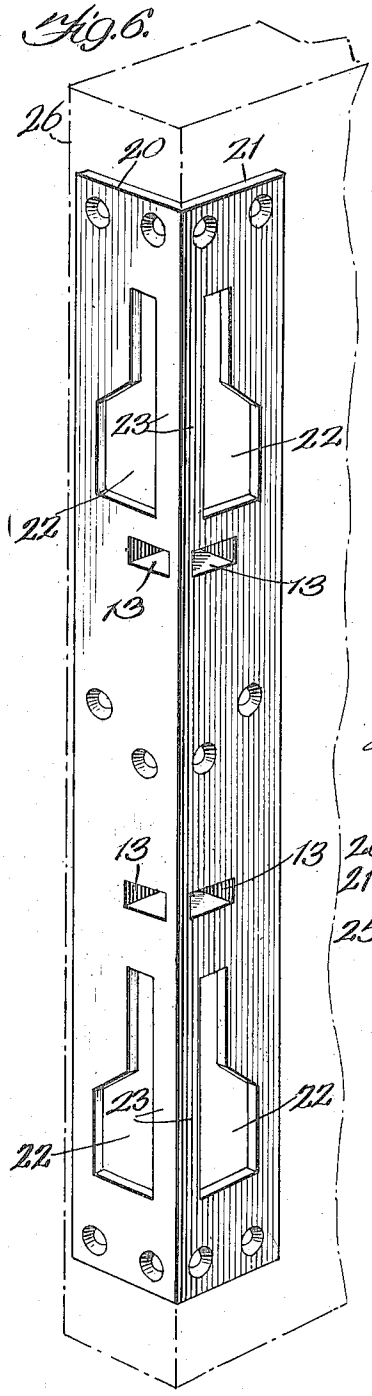


Fig. 7.

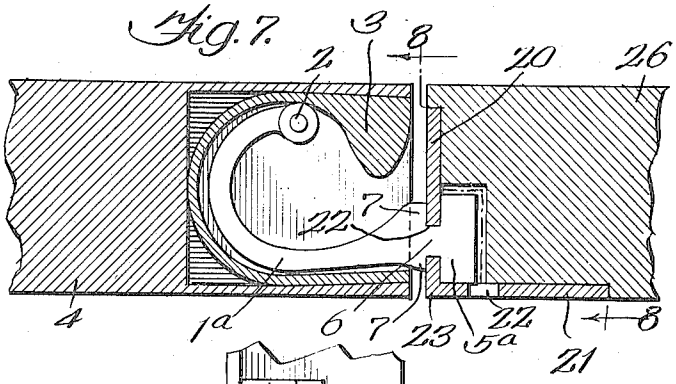


Fig. 8.

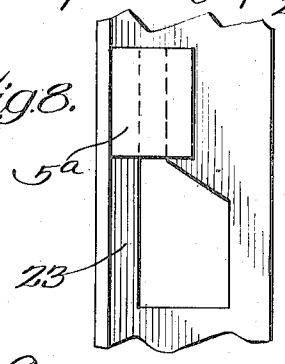
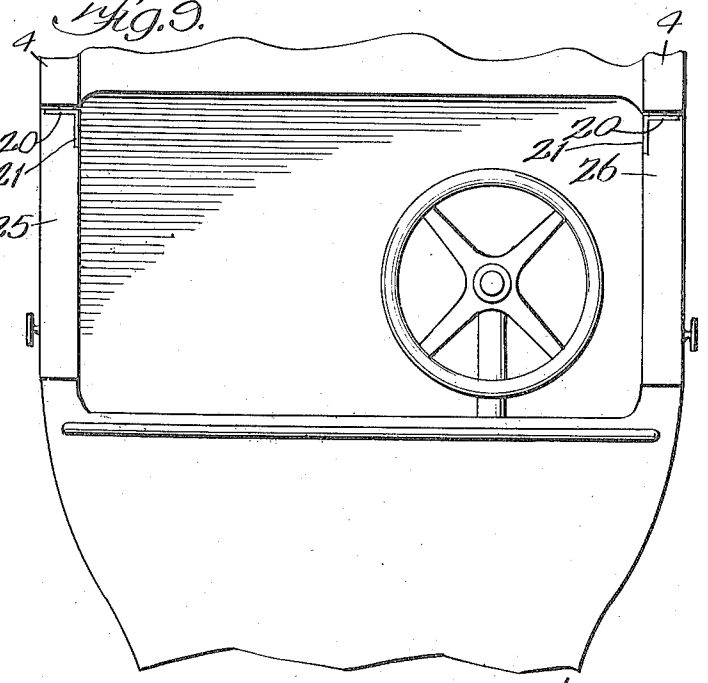


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM H. APPLEBY, OF CHICAGO, ILLINOIS.

HINGE.

1,257,572. Specification of Letters Patent. Patented Feb. 26, 1918.

Application filed September 7, 1916. Serial No. 118,917.

To all whom it may concern:

Be it known that I, WILLIAM H. APPLEBY, a subject of the King of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Hinges, of which the following is a specification.

My invention relates to hinges and is especially useful in connection with the doors of motor vehicles. One of the objects of the invention is to provide a construction by which the door may be readily attached and detached, and when attached will be firmly held against rattling. Another object is to provide, in a hinge of this character, means whereby the door may be detached when in open position, but will be locked when swung to closed position. Another object is to provide a hinge which is reversible, so that the same parts may be used for a door swinging to the right or a door swinging to the left.

I accomplish my objects by the construction illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of a hinge embodying my invention, the parts being shown assembled and mounted.

Fig. 2 is similar to Fig. 1, except that it shows one of the hinge plates detached.

Fig. 3 is a plan section taken just above one of the pivotally supported arms of the hinge.

Fig. 4 is a plan section taken just above the locking pin.

Fig. 5 is a perspective view of a form of hinge plate in which the plate has two flanges arranged at right angles, one flange being set against the butt of the door, and the other flange being set against the inside surface of the door.

Fig. 6 is a perspective of a modified form of hinge plate, the plate being in the form of an angle iron and being reversible so as to be used on a right or a left door.

Fig. 7 is a plan section taken just above one of the hinge arms, designed to be used in connection with the angle plate shown in Fig. 6.

Fig. 8 is an assembly view taken on the broken line 8—8, Fig. 7.

Fig. 9 is a plan view of part of a motor vehicle showing the reversible angle plate as applied to a right and to a left-opening door.

Similar numerals refer to similar parts throughout the several views.

Referring first to the form shown in Figs. 1 to 4 inclusive, the swinging arms 1 are pivotally supported upon the pintles 2 connected in the hollow casing 3, in accordance with present known practice. Casing 3 is let into the door jamb, which in the present case, is part of the body of the vehicle. At the free end, each arm has a head 5 connected by a neck 6 to the shoulders 7.

A plate 8, which is adapted to be secured to the butt end of the door 9, is provided with one or more slots 10 for receiving and retaining the head of the arm. These slots are here shown in the form of T slots. They have a wide portion at the lower end for receiving the head of the arm and a narrow portion at the upper end which fits closely to the neck of the arm and retains the head of the arm.

The parts are so constructed that when the door is in open position, it may be detached by lifting it until the narrow part of the slot has risen above the head and the wide portion of the slot is opposite the head, whereupon the door is free to be moved away bodily in a horizontal direction, the head passing out through the wide part of the slot. The narrow part of the slot is narrow enough to closely fit the sides of the neck and thereby prevent rattling when the vehicle is in motion. The length of the neck is substantially equal to the thickness of the plate 8, and hence the plate is securely held between the head and the shoulders 7.

The plate 8 has one or more dowels 12, which, when the door is swung closed, enter corresponding sockets 13 in the face plate 3^a of the casing 3, after which the dowels prevent the door from moving up or down or in any direction. Thus the dowels and their sockets perform the dual function of preventing rattling and locking the door against upward movement which might permit the door to become detached from the swinging arms. The dowels and sockets may assume various forms, an advantageous form, however, being shown in detail in Fig. 4 of the drawings. In any event, when constructed in the best manner, the dowels will fit snugly in the sockets and serve both to prevent rattling and prevent accidental detachment of the door.

In operation, the weight of the door will tend always to keep the plate 8 seated upon the swinging arms and there will be little likelihood of the door becoming accidentally

detached. If, however, through any remote possibility, the door should become detached, little harm will be done, for in practice the door of the vehicle will be open only when the vehicle is standing still. When the vehicle is in motion, the door will be closed and, when closed, will be positively locked by the hinge itself against upward motion.

The principle of operation of the angle plate shown in Fig. 5 is the same as in the case of the plate shown in Figs. 1 to 4. The only difference is that in this angle form, there is an additional flange 15 arranged at right angles to the slotted portion 8^a and this additional flange comes against the inner surface of the door. It constitutes a convenient means for attaching the plate to the door.

Referring now to the form shown in Figs. 6 to 9 inclusive:

The swinging arms and their supports are constructed upon the same general principle as before. The slotted plate, however, is modified as shown especially in Fig. 6. In this form, there are two flanges 20 and 21, each having one or more slots 22. These slots, as before, have both wide and narrow parts, the narrow part being uppermost to retain the head 5^a of the arm 1^a. The slots are arranged in pairs, as shown, leaving a corner section 23 between them. In this form, the arm 1^a and the head 5^a are so designed that one corner of the head engages the two inner surfaces of the corner section 23. This relation of the parts is clearly shown in Figs. 7 and 8.

By considering the form of angle plate shown in Fig. 6, it will be seen that the same plate may be used for either a right or a left door. The positions the plate will occupy in the doors are shown in Fig. 9, wherein the door 25 may be considered as the door opening toward the right, and the door 26 as one opening toward the left. According to the present design, all that is necessary is to place the angle plate right end up and place one flange adjacent to the inner surface of the door and the other flange adjacent to the door butt.

In general principle of operation, the parts shown in Figs. 6 to 9 are the same as in the other figures of the drawings, except for the additional feature of reversibility.

In Figs. 1 and 2, I have shown the two swinging arms as supported upon individual casings, disconnected from each other. It will be understood, however, that two or more casings may be formed integral.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A door hinge having two plates and a connecting element pivoted to one of them, the connecting element having a neck surmounted by a head and the free plate having a slot having a wide part for receiving said head and a narrow part for retaining it, the narrow part of the slot extending in an axial direction whereby the plates are capable of a considerable amount of relative movement in an axial direction while remaining connected, the plates being face to face and practically in contact when the door is closed, one of said plates having a recess and the other a projection adapted to enter it for preventing relative movement in an axial direction when the door is closed, said projection registering with and entering said recess only when the head is forced to the limit of the narrow part of the slot.

2. A hinge for connecting two relatively movable parts, said hinge having an arm pivotally attached to one of the relatively movable parts and an angle plate attached to the other relatively movable part, the arm having a head and the angle plate having in each angle or flange a slot which is wide at one part and narrow at another part, the wide part for receiving the head and the narrow part for retaining it, the slots in the two angles or flanges being arranged symmetrically with respect to the corner of the angle plate, whereby the angle plate is reversible.

3. A hinge for automobile doors having an arm pivotally attached to the body of the machine and an angle plate applied to the inside corner of the door, said angle plate having two slots, one in each flange, the arm having a head, and each slot having a wide and a narrow part for respectively receiving and retaining the head, said slots being arranged symmetrically with reference to the corner of the plate, whereby the plate is reversible and may be applied to either a right open or a left open door.

In witness whereof, I have hereunto subscribed my name.

WILLIAM H. APPLEBY.