June 24, 1924. 1,499,155

A. CHRISTIANSON

CAR DOOR LATCH

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FIG. 2

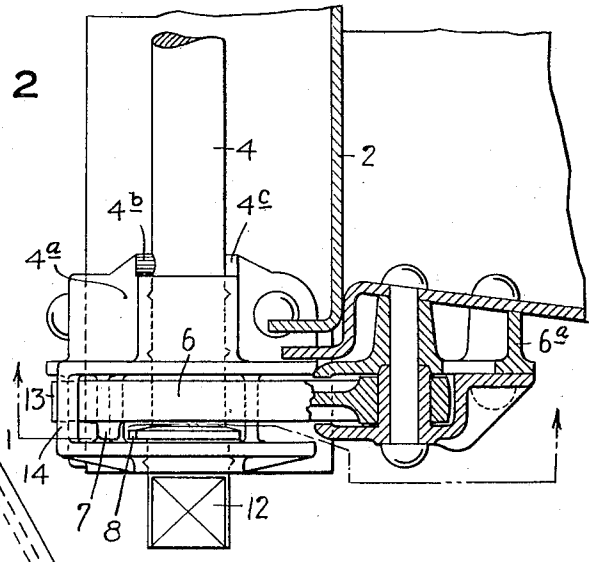


FIG. 1

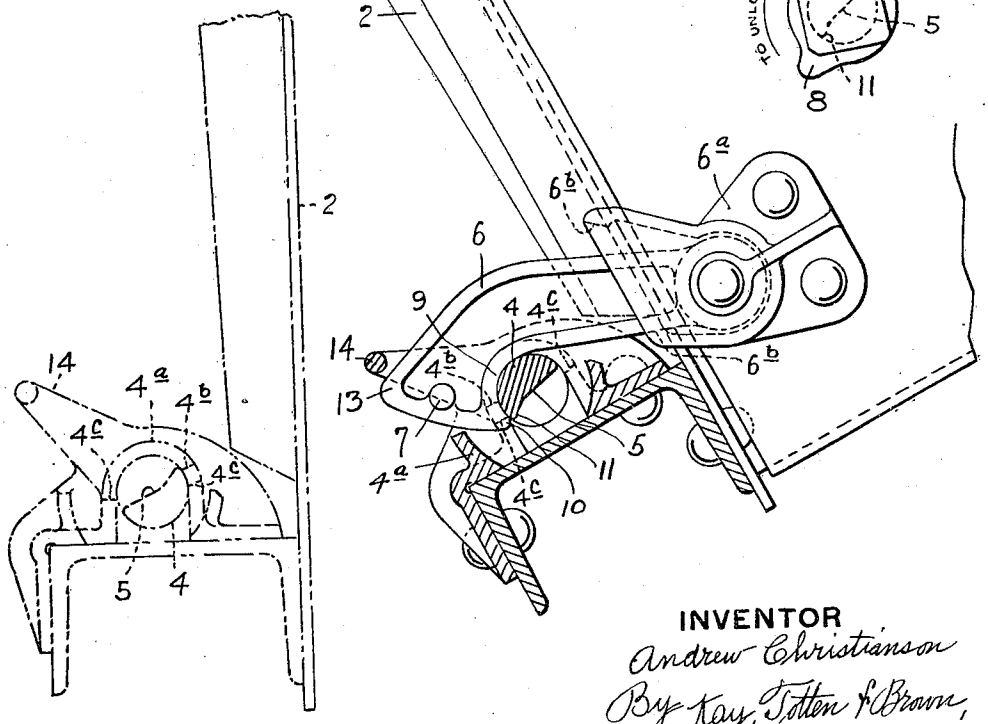


FIG. 3

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FIG. 4

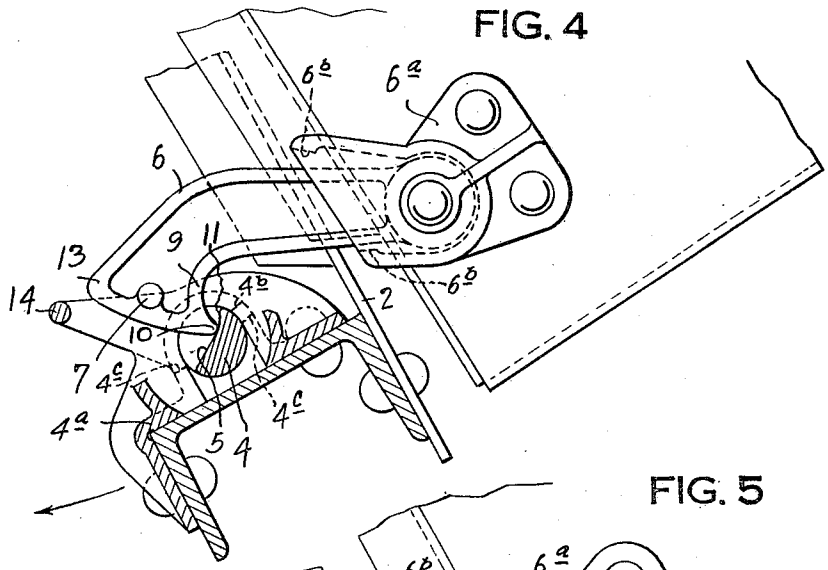


FIG. 5

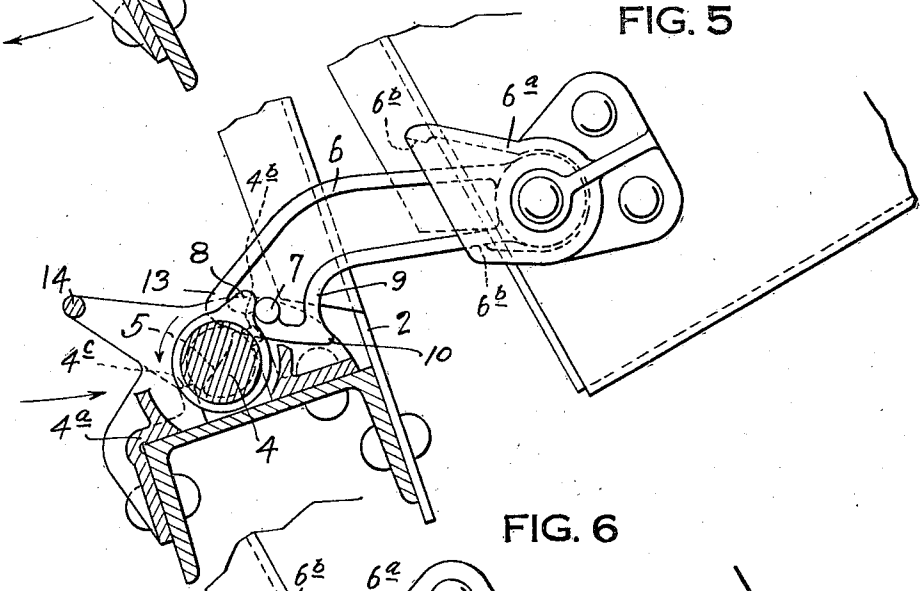
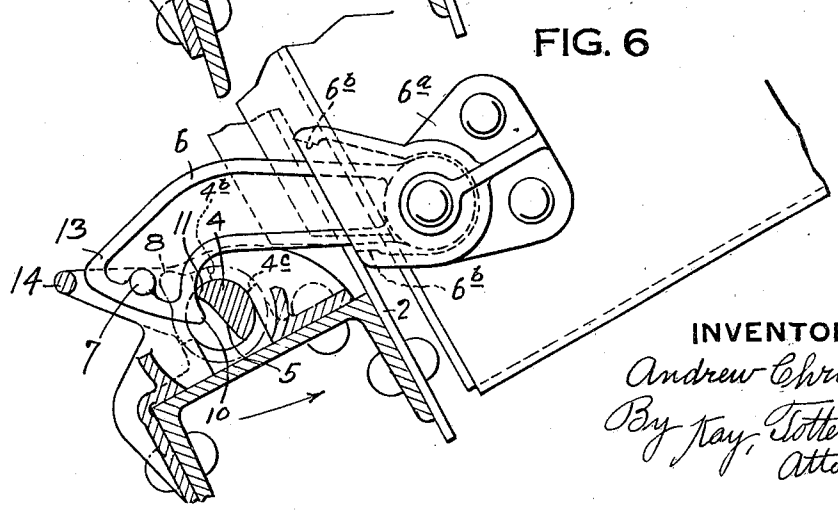


FIG. 6



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UNITED STATES PATENT OFFICE.

ANDREW CHRISTIANSON, OF BUTLER, PENNSYLVANIA.

CAR-DOOR LATCH.

Application filed November 28, 1923. Serial No. 677,548.

To all whom it may concern:

Be it known that I, ANDREW CHRISTIANSON, a citizen of the United States, and resident of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Car-Door Latches; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a car door-latch, particularly adapted for hopper-bottom cars, although the invention may be applied in any connection where it will work to advantage.

The object of my invention is to provide a door-latch which will be simple in construction, and which will act to hold the door tightly in position when latched, and one which can be quickly released.

In the accompanying drawings, Fig. 1 is a side view, partly in section, of a portion of a car showing the door in closed position and the position of the parts of the latch when the door is closed, said view being taken substantially along the line 1—1 of Fig. 2; Fig. 2 is a plan view, partly in section; Fig. 3 is a detail of the locking shaft; and Figs. 4, 5 and 6 are enlarged details showing the different positions of the parts in opening and closing the door.

In the drawings the numeral 2 designates a door adapted to swing from the stationary door-frame 3 on the hinge 2^a. Mounted in bearings 4^a secured to the door 2 is the shaft 4 which may extend entirely across the car, or if desired, may be made in two short sections, one at each side of the car.

The shaft 4 is cut away as at 5, and said shaft has a limited amount of rotary movement which is controlled by the stop-pin 4^b which engages the shoulders 4^c on the bearings.

A bracket 6^a is secured to the door-frame, and pivotally mounted in said bracket is the latch-member 6, said bracket having the shoulders 6^b which control the amount of swinging movement of said latch-member.

A laterally extending lug 7 on the latch-member extends into the path of a lug 8 on the shaft 4. The latch-member 6 also has a hook-portion 9 adapted to conform to and engage the uncut portion of the periphery of the shaft 4 as indicated in Fig. 1, the outer portion of said hook-portion forming the nose 10.

When it is desired to unlock the door, a wrench is applied to the squared end 12 of shaft 4, and the shaft rotated in clockwise direction until brought to a stop by stop pin 4^b engaging a shoulder 4^c in the shaft bearing 4^a. Rotation of the shaft in this manner reverses the latch holding portion of the shaft, and places the cut-out portion 5 of the shaft in a position which frees the latch from holding engagement with the shaft, as clearly shown in Fig. 4.

When the door is in the open position indicated in dotted lines, Fig. 1, and it is desired to close the same, the door is swung toward the door-frame, and as it moves in this direction, the cut-away portion of the shaft 4 being uppermost, the lug 8 on the shaft strikes the lug 7 on the latch, and the continued closing movement of the door rotates the said shaft 4 until the nose 10 of the latch passes beyond the corner 11 on the cut-away portion 5 of said shaft. This permits the nose of the latch to drop into said cut-away portion of the shaft as clearly indicated in Fig. 6. The door is thus held in this manner in partly closed position, and in order to close the door, a wrench is then applied to the squared outer end 12 of the shaft 4, said shaft being turned counter-clockwise, Fig. 6, which causes the corner 11 of the cut-away portion 5 to ride down past the nose 10 of the latch-member, acting to force the door into closed position until the latch-member finally assumes the position indicated in Fig. 1 where the hook-portion 9 fits around the solid portion of the shaft, and the door is then in locked position.

To prevent the displacement of the latch when in locked position, a yoke-member 14 is provided which forms part of the door-casting, and when the parts are in closed position the outer end 13 of the latch-member is beneath said yoke-member, and consequently said latch cannot be raised from engagement with the shaft 4 until said shaft is again turned by the wrench to unlocked position by turning said shaft in the direction indicated in Fig. 3. In this manner provision is made for preventing the latch being loosened accidently as when cars are being unloaded by automatic dumping machines.

What I claim is:

1. In a door latching mechanism, the combination of a swinging door, a pivotally mounted latch-member, a shaft on said door

having a cut-away portion, engaging means between said shaft and said latch-member for turning said shaft, whereby said latch-member is brought into engagement with the cut-away portion of said shaft, and means for limiting the rotation of said shaft, whereby on further rotation of said shaft said latch-member engages the periphery of said shaft in locking position.

2. In a door latching mechanism, the combination of a swinging door, a pivotally mounted latch-member having a hook-portion, a shaft on said door, means for limiting the rotary movement of said shaft, said shaft having a cut-away portion, engaging means between said latch-member and said shaft, whereby said shaft is partially rotated to bring the hook-portion of said latch-member into engagement with the cut-away portion of said shaft, and upon a further rotation of said shaft, said hook-portion is brought into engagement with the periphery of said shaft.

3. In a door latching mechanism, the combination of a swinging door, a pivotally mounted latch-member having a hook-portion, a shaft on said door, means for limiting the rotary movement of said shaft, the said shaft having a cut-away portion, a projection on said shaft, a projection on said latch-member in the path of movement of the projection on said shaft, whereby a rotary movement is imparted to said shaft to bring the hook-portion into engagement with the cut-away portion of said shaft, and by further movement of said shaft, said hook portion is brought into engagement with the periphery of said shaft.

4. In a door latching mechanism, the combination of a swinging door, a pivotally mounted latch-member, means for controlling the downward swing of said latch-member, said latch-member having a hook-portion, a shaft on said door, means for limiting the rotary movement of said shaft, said shaft having a cut-away portion, and engaging means between said shaft and said latch-member whereby said shaft is given a rotary movement to bring said hook-portion into engagement with said cut-away portion of said shaft, and upon further rotation of said shaft, said hook-portion is brought into engagement with the periphery of said shaft.

5. In a door latching mechanism, the combination of a swinging door, a pivotally mounted latch-member, means for limiting the downwardly swinging movement of said latch-member, said latch-member having a hook-portion, a shaft on said door, means for limiting the rotary movement of said shaft, said shaft having a cut-away portion, engaging means between said shaft and said latch-member, whereby a rotary movement is imparted to said shaft to bring said hook-portion into engagement with the cut-away portion of said shaft, and on further rotary movement of said shaft, said hook-portion is brought into engagement with the periphery of said shaft, and means for holding said latch-member against upward movement when in latched position.

6. In a door latching mechanism, the combination of a swinging door, a pivotally mounted latch-member having a hook-portion, means for controlling the downward swing of said latch-member, a shaft on said door, means for limiting the rotary movement of said shaft, said shaft having a cut-away portion, engaging means between said shaft and said latch-member, whereby rotary movement is imparted to said shaft to bring said hook-portion into engagement with the cut-away portion of said shaft, and by further movement of said shaft, said hook-portion engages the periphery of said shaft, and a yoke on said door in the path of the upward movement of said latch-member.

In testimony whereof I, the said ANDREW CHRISTIANSON, have hereunto set my hand.

ANDREW CHRISTIANSON.