

Sept. 16, 1947.

A. CLAUD-MANTLE

2,427,386

DOOR LATCH

Filed June 5, 1944

2 Sheets-Sheet 1

Fig. 1.

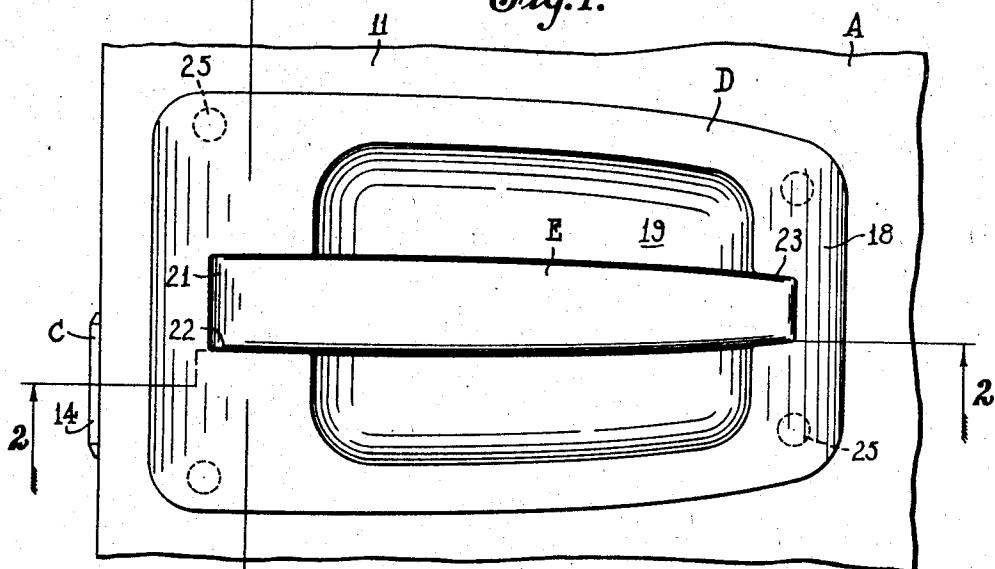


Fig. 2.

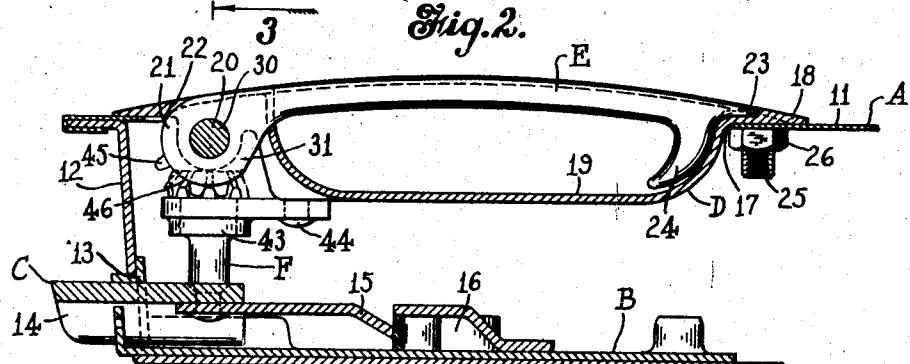
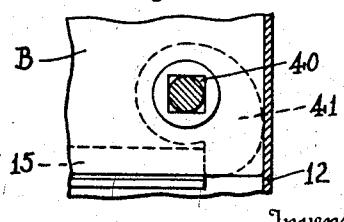
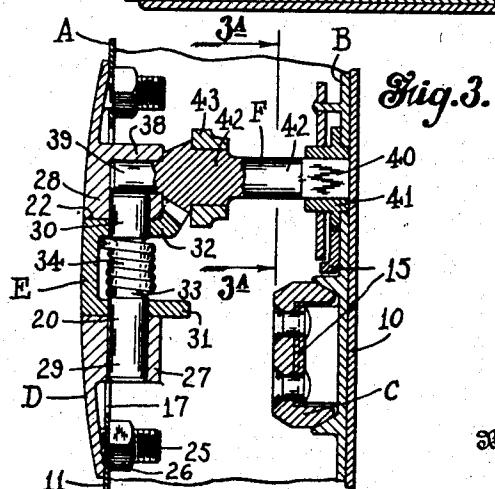


Fig. 3A.



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## A. CLAUD-MANTLE

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2 Sheets-Sheet 2

Fig. 4.

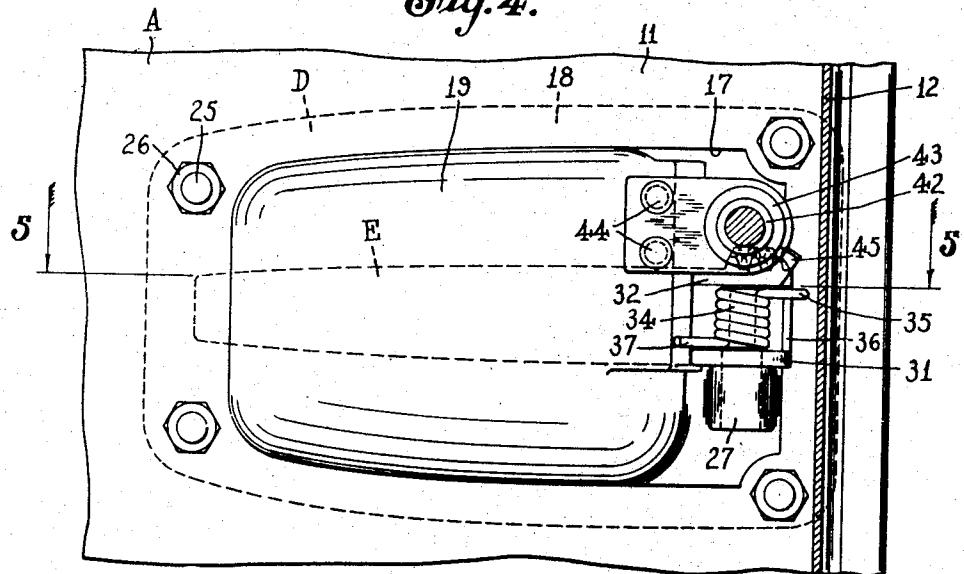


Fig. 5.

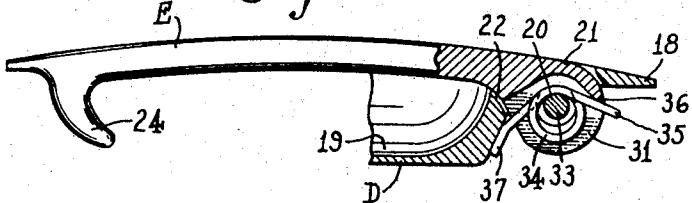


Fig. 6.

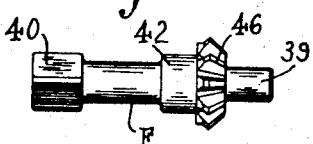


Fig. 7.



Fig. 8.



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## UNITED STATES PATENT OFFICE

2,427,386

## DOOR LATCH

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Application June 5, 1944, Serial No. 538,815

3 Claims. (Cl. 292—169)

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This invention relates to door latches, and has particular reference to latches for automobile doors.

One of the objects of the invention is to furnish an improved door latch structure particularly suited for use on the doors of sedans and other passenger cars.

Another object is to furnish an improved door latch structure of the kind in which manipulation of the latch from the outer side of the door is effected through a swinging operating handle or lever switch which, when the door is closed, is received within the lines of the door so that it does not have a projecting position, and is therefore safer and more sightly.

A further purpose of the invention is to provide a door latch of the kind just mentioned, in which the swinging lever or handle has an improved mounting and has simple and effective connections to the latch bolt whereby the latter can be retracted by an outward pull on the lever or handle.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and finally pointed out in the claims.

In the accompanying drawings:

Fig. 1 is a fragmentary elevation of an automobile door equipped with a door latch embodying my improvements, the latch bolt being in the protracted position which it assumes when the door is in the closed position, the casing of the door and the strike plate being omitted;

Fig. 2 is a section on line 2—2 of Fig. 1, certain parts being broken away;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 3A is a section on line 3A—3A of Fig. 3;

Fig. 4 is a vertical section looking from the rear of the escutcheon or cup plate in which the operating handle is received;

Fig. 5 is a detail view, partly in section, on line 5—5 of Fig. 4;

Figs. 6 and 7 are details of the transverse spindle that retracts the latch; and

Fig. 8 is a partial plan view of the operating handle.

In the drawings, there is shown a portion of an automobile door to which the door latch is applied, the frame of the door and the strike plate being omitted. In the form selected for illustration the door latch proper is of the type in which a sliding latch bolt is normally projected by a suitable spring, and the latch structure in general may be of the type shown in my application, Serial No. 536,235, filed May 19, 1944. The

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subject matter of the present invention is particularly concerned with the provisions for operating the latch bolt from the outer side of the door by means of a horizontally swinging handle in the form of a lever which, when the door is in the closed position, is within the lines of the door, or substantially so, in order that it may not project from the door to catch on external objects. The operating handle is mounted upon 10 an escutcheon or plate generally of cup shape, across which a portion of the handle extends in such a manner that it can be readily grasped and manipulated by the hand of a person desirous of opening the door. This escutcheon 15 plate has provisions whereby the handle is pivoted to it, the pivot means being well concealed and protected, and from the pivoted end of the handle connections go to a transverse spindle arranged between said escutcheon and the case 20 or frame of the bolt mechanism or latch proper, so that the bolt is properly actuated for retraction.

In the drawings, the door is shown at A, the latch case or frame at B, the latch bolt at C, the 25 cup-shaped escutcheon at the outer face of the door at D, and the swinging operating handle at E. The handle E is connected, by connections hereinafter described, to a transverse spindle F operating a rollback in the manner hereinafter 30 described for the purpose of retracting the latch bolt.

Referring now to the details, the door A is constructed of metal and has a metal plate 10 at the inner side of the door, a metal plate 11 at 35 the outer side; and a transverse plate 12 at the free edge of the door suitably connected to the face plate 13 of the latch case. The bolt C is illustrated as an ordinary sliding bolt having a head 14 connected to a shank 15, the shank 15 being under the control of a bolt-projecting 40 spring 16. The provisions for controlling the latch bolt from the inner side of the door form no part of the present invention, and they are therefore not illustrated.

45 The cup-shaped escutcheon D is of approximately rectangular shape and is received within an opening 17 cut within the plate 11, the escutcheon plate having a rim portion 18 which extends over the edges of this opening in the 50 manner indicated in Fig. 2, and the rim portion of the plate preferably being chamfered, as shown. This plate is provided with a depressed portion 19, said depressed portion being relatively shallow but of a size sufficient to permit 55 a person's hand to be introduced for grasping

the handle E. Preferably the marginal portion of the plate is wider at the left-hand side (Figs. 1 and 2), which is the side toward the free edge of the door, for it is at this side of the plate that the handle E is pivoted, the pivoting provisions including an upright spindle 20 behind the marginal portion of the plate, the handle having an end portion 21 in embracing relation to the spindle 20. The pivoted portion of the handle, when the door is in the closed position, lies within a cut-out portion or kerf 22 which is provided partly in the cup portion of the escutcheon plate and partly in the rim portion, as shown in Fig. 2. At its other end, that is to say its free end, the handle has a portion received within a depressed part 23 in the rim portion of the escutcheon, the depressed portion being in communication with the cup portion, as appears from Fig. 2. It is also preferred to provide the handle E with a curved prong 24 disposed near its free extremity and adapted to project into the cup portion in the manner shown in Fig. 2, said prong enabling the operator to obtain a better grip upon the handle.

The escutcheon plate D may be fastened to the door plate 11 in any suitable manner, as by means of threaded attaching shanks 25 projecting inwardly from the escutcheon plate and engaged by nuts 26.

Adjacent its pivoted end the handle preferably lies substantially flush with the escutcheon plate when the door is in the closed position, as shown in Fig. 3. The surface of the plate at the outer side of the door may have a slight bow or camber therein, both transversely, as shown in Fig. 2, and longitudinally, as indicated by the dotted line in Fig. 2, and the handle is preferably bowed to some degree in a lengthwise direction so as to conform to the lengthwise bowing of the plate.

The spindle 20 above mentioned is mounted in suitable bearings provided upon the escutcheon plate, and in Fig. 3 are shown a lower bearing 27 and an upper bearing 28, these being formed in suitable projections formed at the inner side of the plate below and above respectively the handle E. The spindle 20 has a lower end portion 29 engaging bearing 27, and an upper end portion 30 engaging bearing 28. In the adjacent part of the handle the latter is provided with an inwardly projecting horizontal web 31 having an opening in which part 29 is engaged, and similarly an upper horizontal web 32 of the handle has an opening in which the part 30 is engaged. Between the parts 29 and 30 the spindle 20 is cut away or reduced in cross section to provide a portion 33 around which is disposed a spring 34 in the form of a helix of spring wire. This spring has an extremity 35 projecting therefrom, which is engaged with a part of the handle indicated at 36, and at its opposite end the spring has an extremity 37 which is engaged with the rear portion of the escutcheon plate. The tendency of this spring, as will be apparent, is to maintain the handle in an inwardly swung position in which it is seated in the cup-shaped plate at the free extremity of the handle in the position previously described.

After the spring 34 has been placed in position around the reduced portion of the spindle 20, it will also act to prevent vertical displacement of the spindle 20 by reason of the fact that the spring is eccentric to the spindle, as shown in Fig. 5.

Above the bearing 28 previously mentioned, the rear part of the escutcheon plate is provided with

a bearing 38 in which is received the forward end portion 39 of the transverse spindle F. The rear end portion of this spindle F is squared, as shown at 40, and projects into a rollback or hub 41, of any preferred kind, which is journaled in the latch case B in the manner shown in Fig. 3, and adapted upon turning to retract the latch bolt. Intermediate of its ends the spindle F is provided with an enlarged cylindrical portion 42 having a bearing in a plate 43. This plate 43 is attached to and carried by the escutcheon D at the rear portion of the latter, and preferably the plate 43 is in the form of a bracket secured to the escutcheon D by means such as rivets 44, 15 the body of the plate 43 having a round opening so that it can act as a bearing for the spindle F.

For transmitting motion from the handle E to the spindle F, a connection is provided in the nature of interengaging gear members, and the 20 structure is preferably as shown in the drawings, the upper web 32 of the handle being provided with upwardly projecting bevel gear teeth 45 which are engaged with similar teeth 46 provided upon the spindle F in a region between the 25 bearing plate or bracket 43 and the bearing portion 39. It will be understood that by this arrangement the outward swinging of the handle E from its seat in the escutcheon plate will cause the spindle F to be rotated in a direction to 30 retract the latch bolt.

It will be understood that the handle is swung outwardly from its recess against the action of the spring 34, and that upon the handle being released by the hand of the operator the handle 35 will be restored to its initial position, the latch bolt being in the projecting position as usual.

It will be seen that by the present invention an operating handle is provided which, in the 40 position corresponding to the closing position of the bolt, does not project from the door, but on the other hand lies substantially within the lines of the door. This provides a much safer structure for use on automobiles. On the other hand, however, there is ample availability of the 45 handle in the closed or inner position for grasping and manipulating. In other words, there is permitted a firm grasp of the handle by the hand closed around the same and accommodated in the clearance recess or cup in the escutcheon.

50 In the closed position of the door the handle bridges this recess from one end of it to the opposite end, the arrangement being such that the handle can be readily grasped with a good firm grip and strongly pulled. The connections from 55 the handle to the bolt are very simple and inexpensive, and yet operate very effectively and satisfactorily. The device as a whole can be produced at relatively low cost. Moreover, the use of a handle and escutcheon plate such as 60 herein described permits the latch to have a streamlined character and attractive appearance.

It will be understood from the foregoing description that the invention provides among other things a portable unit adapted to be used with 65 door latches, said unit comprising a cupped escutcheon adapted for application to the outer metal plate of a door in such a manner that the cup of the plate extends within the lines of the door, said plate having an operating handle pivoted thereto at one side of the cup and adapted to extend across and bridge the cup, said handle having an operative gear connection with a transverse spindle carried by the plate at the rear portion thereof and rotating in a bracket carried 75 by the plate, said spindle being adapted to co-

operate with a suitable latch-retracting hub or rollback. It will be seen from the foregoing that the rotary operating spindle carried by ahe plate at the rear portion thereof is a part of the unit applied to the outer face of the door. To assemble this unit with reference to the latch structure, it is merely necessary to enter the free end of the spindle in the rollback of the latch, and the telescopic engagement between the spindle and rollback permits adjustment to doors of varying thickness within certain limits. It is also to be noted that the operating spindle can be located quite close to the edge of the door so as to permit the construction of a so-called narrow pillar door, which will take a glass window of maximum width.

A single form of the invention is illustrated, but it is to be understood that the invention can take many different forms, and that various modifications and changes in the details are within the principles of the invention and the scope of the claims.

What I claim is:

1. In a door latch structure, a unit for operating a door latch from one side of the door comprising a cupped escutcheon plate applicable to one side of the door and having a shallow cup portion extending within the lines of the door, said plate having a rim for application to the door surface, a handle pivoted behind the rim at one side of the cup portion to swing horizontally, and adapted in one position to bridge the cup portion of the plate intermediate of the height of the plate and in another position to be swung outwardly from the plate, a horizontal transverse latch-operating spindle mounted from the plate at the rear portion of the latter, and means of connection including intergeared portions between the pivoted end portion of said handle and said spindle whereby the spindle is turned as the handle is pulled outwardly from the escutcheon plate.

2. In an automobile door latch, the combination with a metal door having outer and inner plates and a latch structure having a sliding latch bolt mounted upon the inner plate, of an

escutcheon plate mounted on the outer plate and having a cup-like portion extended within the lines of the door adjacent the free edge of the door, a handle pivoted to said escutcheon plate at the rear of the latter and at that side of said cup-like portion which is disposed toward the free edge of the door, said handle adapted to lie across said cup-like portion in bridging relation thereto so as to be substantially flush with said escutcheon plate and to swing outwardly from the escutcheon plate, a spring normally holding said handle in its innermost position, and a rotary spindle having geared engagement with said handle operable by said handle for retracting the latch bolt.

3. In an automobile door latch, the combination with a metal door having outer and inner plates and a latch structure having a sliding latch bolt mounted upon the inner plate, of an escutcheon plate mounted on the outer plate and having a cup-like portion extended within the lines of the door adjacent the free edge of the door, a handle pivoted to lie across said cup-like portion in bridging relation thereto and to swing outwardly from the escutcheon plate, said handle being pivoted to the escutcheon plate at one side of said cup-like portion, and a rotary spindle operable by said handle for retracting the latch bolt, the pivoted end portion of the handle being provided with bevel gear teeth and the latch-actuating spindle being horizontally and transversely disposed and provided with bevel gear teeth meshing with the first-mentioned gear teeth.

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The following references are of record in the file of this patent:

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