Aug. 4, 1953 B. J. CRAIG 2,647,781

LATCH

Filed Sept. 12, 1949

Fig. 1.

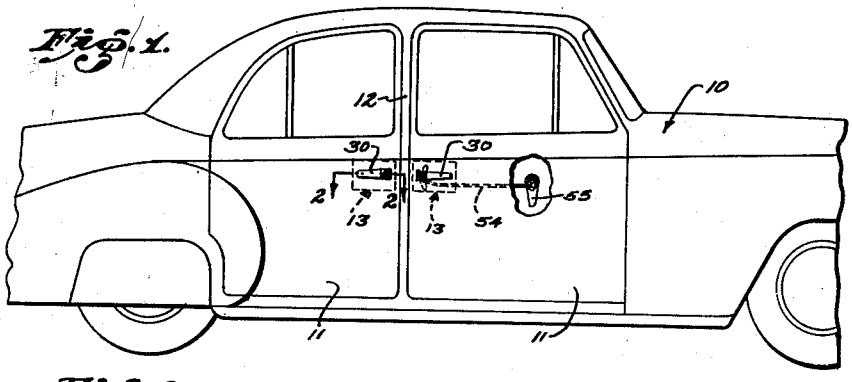


Fig. 2.

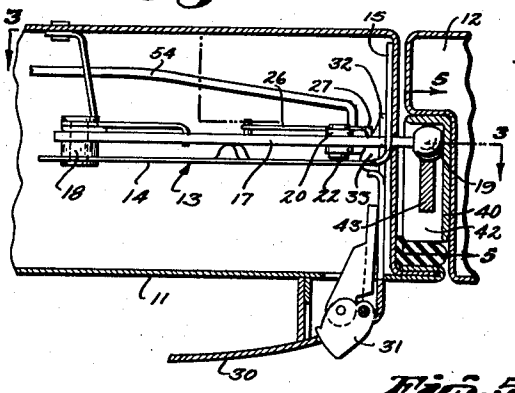


Fig. 3.

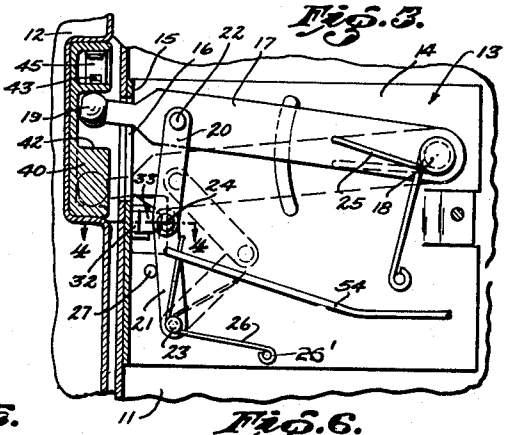


Fig. 4.

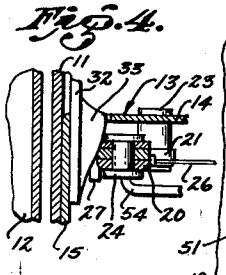


Fig. 5.

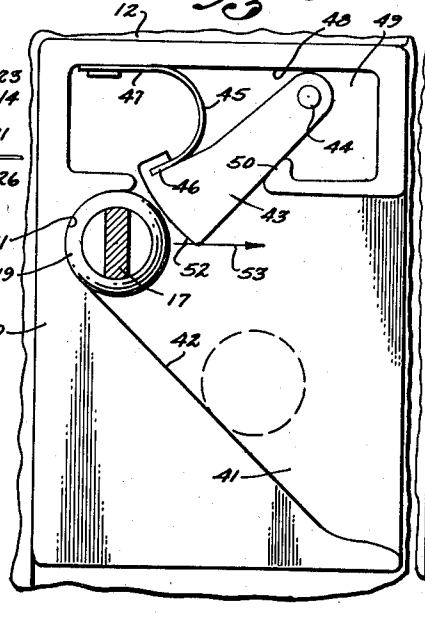
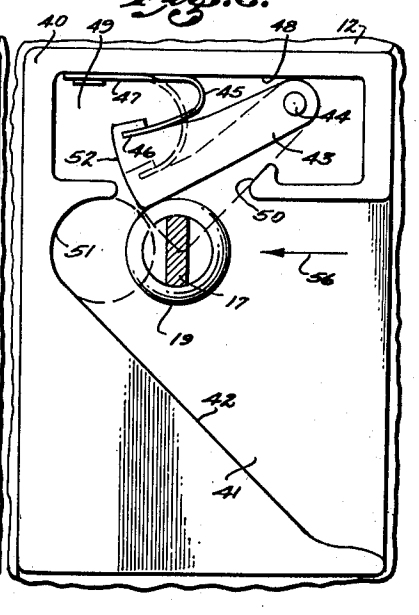


Fig. 6.



INVENTOR.

B. J. Craig.

Patented Aug. 4, 1953

2,647,781

UNITED STATES PATENT OFFICE

2,647,781

LATCH

Burnie J. Craig, Los Angeles County, Calif.

Application September 12, 1949, Serial No. 115,290

4 Claims. (Cl. 292—229)

1

This invention relates to latches.

The general object of the invention is to provide an improved vehicle door latch of the type wherein a pivoted bolt is mounted on a vehicle door and a strike is mounted upon the vehicle body, and wherein the bolt in moving from disengaged to engaged position normally moves over a cam surface on the strike until the bolt is home, whereupon suitable means operates to hold the bolt in engaged position.

A more specific object of the invention is to provide a vehicle door catch wherein a bolt pivoted on the door normally is moved to engaged position behind an abutment by contact with a cam surface on the strike and wherein should the bolt be accidentally or otherwise moved to engaged position before the door is closed there is means provided on the strike to permit the bolt to move to engaged position behind the abutment.

A further object of the invention is to provide a vehicle door catch wherein there is a cam surface across which the bolt normally moves in its path to engaged position behind an abutment and wherein if the bolt is already in engaged position the abutment will swing about a pivot to permit the bolt to pass and will thereafter be moved to bolt engaging position.

An additional object of the invention is to provide a latch wherein a pivoted bolt member has means to hold it in engaged and disengaged position and wherein a strike plate carries means permitting the bolt to move to door securing position and be held in such position regardless of the position of the bolt when the door is being closed.

Another object of the invention is to provide a latch having a cam surface over which a bolt moved to engaged position and wherein a pivoted dog or abutment is mounted on the strike with the end of the dog or abutment disposed in position to prevent the bolt from moving to door opening position.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a fragmentary side elevation showing a vehicle having the present latch;

Fig. 2 is a fragmentary, enlarged section taken on line 2—2, Fig. 1;

Fig. 3 is a section taken on line 3—3, Fig. 2;

Fig. 4 is an enlarged, fragmentary section taken on line 4—4, Fig. 3;

Fig. 5 is an enlarged section taken on line 5—5,

2

Fig. 2, showing the strike and associated parts, and

Fig. 6 is a view similar to Fig. 5, showing the parts in another position.

Referring to the drawing by reference characters, the invention is shown as embodied in an automotive vehicle which is indicated generally at 10. As shown the vehicle has doors 11 thereon and includes a pillar 12.

On each door a latch, indicated generally at 13, is mounted. Each latch includes a base member 14, having a flange 15 extending at right angles thereto. The flange has a slot 16 therein, through which a bolt 17 pivotally mounted at 18 on the base 14 protrudes. The free end of the bolt includes a roller 19.

The bolt moves from disengaged position (shown in broken lines in Fig. 3) to engaged position (shown in full lines in the same figure). To hold the bolt in engaged position a pair of toggle links 20 and 21 are provided. The link 20 consists of two parallel members and is pivoted at 22 to the bolt while the link 21 is pivoted at 23 to the base 14. The two links are pivotally connected together as at 24. When the toggle is broken, as shown in Fig. 3, in the broken line position, the bolt is in disengaged position. When the toggle straightens the bolt advances to engaged position.

As shown in the drawings, spring 25, engaging the bolt and the base and disposed about the pivot 18, normally urges the bolt to disengaged position while a spring 26, having one end about a pin 26' on the base and arranged about the pivot pin 23, engages the toggle to normally hold the toggle in "made" position. A pin 27 on the base is provided to prevent the toggle from passing too far over center.

The bolt is moved to engaged position in a manner to be hereinafter described.

To release the bolt so that it may be moved from engaged to disengaged position by the spring 25, a release member including a handle assembly 30 is provided. This handle assembly is similar to the handle shown at 105 of the applicant's prior Patent 2,450,372, granted September 28, 1948, and a further description of the handle and its associated parts is unnecessary except to state that the release means includes a finger tip operated push member 31 which moves a release member 32. This release member 32 carries a cam 33 which, when the bolt is in engaged position, is disposed adjacent to the pivot 24 of the toggle so that when the member 31 is depressed in the act of opening the door

the member 32 will be moved inwardly and the cam 33 will engage the toggle as shown in Fig. 4 and will move the toggle over center, thus allowing the spring 25 to move the bolt to disengaged position. The spring 26 merely holds the toggle in "made" position and as shown as the toggle is "broken" the stronger spring 25, which is constantly urging the bolt to disengaged position, moves the bolt to its disengaged position.

As shown in Figs. 5 and 6, the strike includes a body 40 which has a base 41. An inclined cam surface 42 is arranged so that it is engaged by the roller 19 on the bolt when the door is closed. In this manner the bolt is forced along the cam surface 42 from the broken line position of the bolt (Fig. 5) to the full line position of the bolt, in which last position the bolt is in engaged position. When the bolt is in engaged position, the toggle straightens to the position shown in Fig. 3, whereupon the bolt will be held in the fully engaged position.

In this position the bolt is held against outward movement so long as the toggle is straight by an abutment or dog 43, which is pivoted as at 44 to the strike body and is normally urged to engaged position by a spring 45, the end 46 of which engages the dog while the end 47 engages the wall 48 of a recess 49 in which the dog is arranged. A shoulder 50 limits outward movement of the dog by the spring.

In normal operation when the door is closed the bolt roller 19 runs along the inclined surface 42 to fully engaged position against an arcuate stop portion or wall 51 in which position the toggle has straightened, thus holding the bolt in engaged position. The bolt engaging the end 52 of the dog 43 cannot move outwardly in the direction of the arrow 53, Fig. 5, and thus the door is held closed.

To release the bolt the push button 31 is pushed inwardly, thus moving the release member 32 and causing the cam 33 on the release member to engage the toggle adjacent to the pivot 24, thus breaking the toggle to thereby permit the spring 25 to move the toggle to the broken line position in Fig. 3 as the door moved to open position.

A rod 54, shown as pivotally connected to the toggle link 21 and to the remote control handle 55, Fig. 1, in the vehicle permits the remote control handle to be operated to break the toggle and permit door opening.

Should by any chance, through inadvertence or otherwise, the bolt 17 be moved to engaged position and the toggle straightened before the door is closed, the bolt, as shown in Fig. 6, would move horizontally in the direction of the arrow 56 during the door closing operation and when the door is fully closed would move to a position adjacent to the shoulder 51. During this motion the roller 19 would engage the dog 43, as shown in full lines in Fig. 6, and would move the dog against the tension of the spring 45 until the roller clears the end 52 of the dog, whereupon the spring would force the dog to the dotted line position in Fig. 6, thus holding the door closed.

Thus it will be apparent that the door may be closed and the bolt engaged by the dog 43 regardless of whether the bolt is in engaged position or in disengaged position at the time the door is moved to closed position.

Having thus described my invention, I claim:

1. In a latch construction, a base plate adapted to be secured to the inner wall of a hinged vehicle door, a bolt, means to pivotally mount an end portion of the bolt upon the base plate for movement about an axis which is horizontal and is perpendicular to the inner wall of a vehicle door, the free end portion of the bolt extending beyond the end of the base plate and being adapted to extend beyond the free end of the door and being movable about its pivot from engaged to disengaged position and vice versa, spring means normally urging the bolt to disengaged position, the free end portion of the bolt which extends beyond the base plate including a strike engaging portion, a toggle device including a toggle link mounted on a fixed pivot on the base plate, a second toggle link pivotally mounted on the bolt at a location intermediate the strike engaging portion of the bolt and the pivoted end of the bolt and pivot means connecting the toggle links to form a toggle, the toggle device being operable when made to hold the bolt in engaged position, a latch releasing member, means independent of the toggle to mount the latch releasing member for movement to latch releasing position, and means normally holding the latch releasing member in inoperative position, said latch releasing member having a portion thereon disposed adjacent the toggle device and adapted to break the toggle when the latch releasing member is moved to latch releasing position, said spring means being operable when the toggle is broken to move the bolt to disengaged position.

2. In a latch construction, a base plate adapted to be secured to the inner wall of a hinged vehicle door and having a flange at one end thereof adapted to be disposed at the free end of a door, a bolt, means to pivotally mount one end of the bolt upon the base plate for movement about an axis which is horizontal and is perpendicular to the inner wall of a vehicle door, the flange having a slot, the free end portion of the bolt extending through the slot and being movable about its pivot from engaged to disengaged position and vice versa, the free end portion of the bolt including a strike engaging portion, a toggle link mounted on the base plate, a second toggle link mounted on the bolt at a location intermediate the strike engaging portion of the bolt and the pivoted end of the bolt, pivot means connecting the toggle links to form a toggle, the toggle being operable when made to hold the bolt in engaged position, a handle member, and a latch releasing member slidably carried by the handle member, means normally holding the latch releasing member in inoperative position, said latch releasing member having a portion thereon disposed adjacent the toggle pivot means and adapted to break the toggle when the latch releasing member is moved to operative position and spring means operable when the toggle is broken to urge the bolt to disengaged position.

3. In a vehicle door latch construction, a base plate, a bolt, means to pivotally mount one end of the bolt upon the base plate to move about a horizontal axis which is perpendicular to the inner face of a hinged door, the free end portion of the bolt being mounted to move from engaged to disengaged position and vice versa, the free end of the bolt projecting beyond the free end of the door, resilient means normally urging the bolt to disengaged position, a toggle link mounted on the base plate, a second toggle link mounted on the bolt, pivot means connecting the toggle links to form a toggle, said toggle when made serving to hold the bolt in engaged position, the bolt being disposable in either engaged or disengaged position while the door is open, a movable latch releasing member, said latch releasing

member having means thereon adapted to break the toggle when the latch releasing member is operated, a strike for the bolt, said strike having an inclined face engageable by the free end of the bolt as the door is closed to cause the bolt to move to a position to permit the toggle to be made to thereby hold the bolt in engaged position.

4. In a vehicle door latch construction, a base plate, a bolt, means to pivotally mount one end of the bolt upon the base plate to move about a horizontal axis which is perpendicular to the inner face of a hinged door, the free end portion of the bolt being mounted to move from engaged to disengaged position and vice versa, the free end of the bolt projecting beyond the free end of the door, resilient means normally urging the bolt to disengaged position, a toggle link mounted on the base plate, a second toggle link mounted on the bolt, pivot means connecting the toggle links to form a toggle, said toggle when made serving to hold the bolt in engaged position, the bolt being disposable in either engaged or disengaged position while the door is open, a handle member, a latch releasing member movably carried by the handle member, said latch releasing member having a cam thereon disposed adjacent the toggle and adapted to break the toggle when the latch releasing member is operated, a strike for the bolt, said strike having an inclined face engageable by the free end of the bolt as the door is closed to cause the bolt to move to a position to permit the toggle to be made to thereby hold the bolt in engaged position, a dog pivoted on the strike, said dog having a free end portion normally disposed to be engaged by the bolt when the bolt is held in engaged position by the toggle to prevent opening of the door, the free end of the dog being out of the path of the bolt as the bolt moves along the inclined face of the strike from disengaged position to engaged position as the door is closed, said dog having an inclined outer face portion disposed in the path of the bolt, and adapted to be rocked by the bolt when the bolt is in engaged position while the door is moved to closed position, and means normally urging the dog into the last mentioned path of the bolt.

BURNIE J. CRAIG.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,078,964	Slattery	Nov. 18, 1913
1,542,916	Skogerson	June 23, 1925
2,013,285	Mooney	Sept. 3, 1935
2,259,670	Voorhees	Oct. 21, 1941
2,405,027	Feuerlein	July 30, 1946