

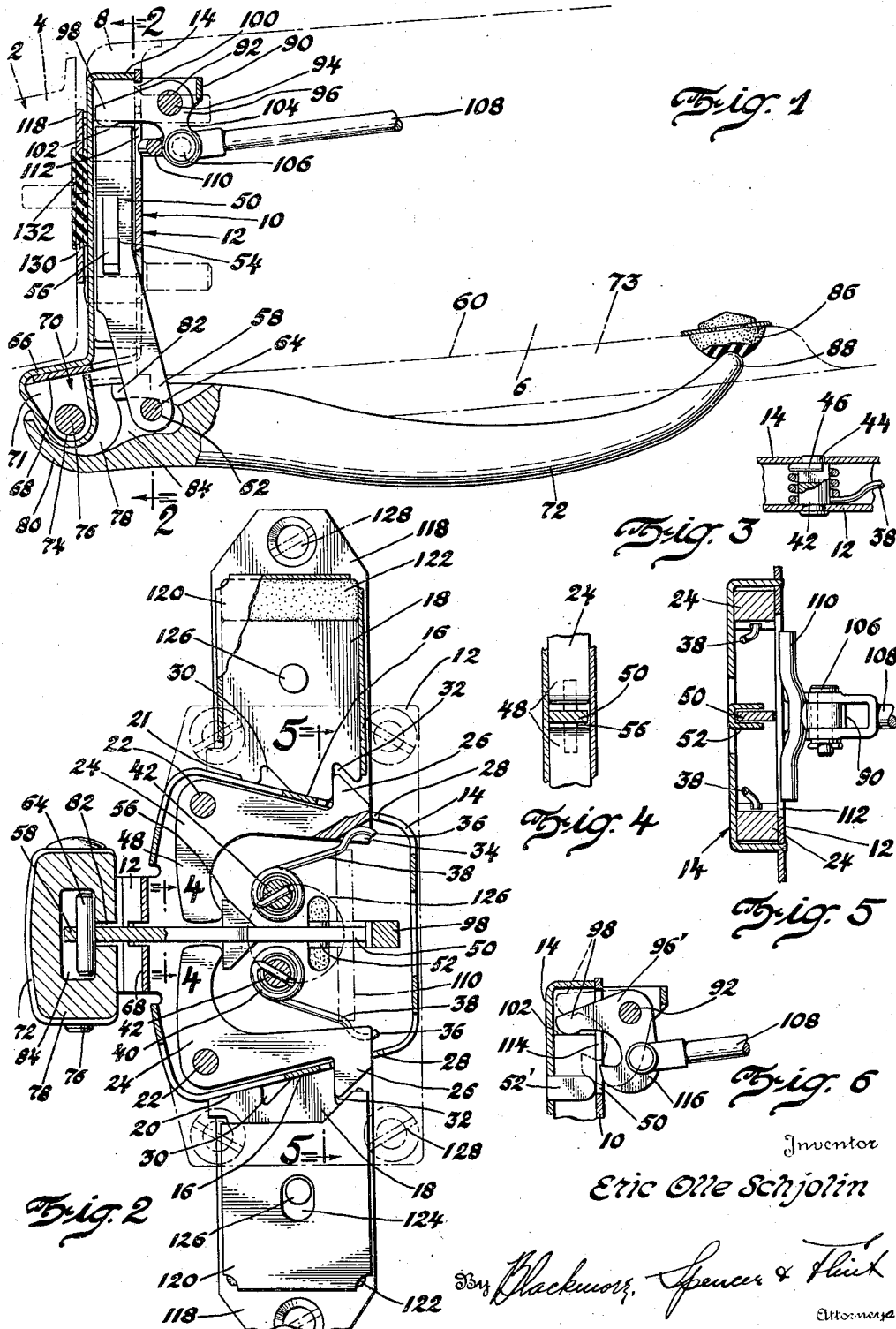
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DOOR LATCH

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DOOR LATCH

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This invention relates to door locks for automotive vehicles.

The object of the invention is to construct an inexpensive latch which is capable of being applied to the door in the plane of its edge in contradistinction to latches of the prior art which are applied in a plane which coincides with the flat portion of the door. By applying the latch in the plane of the door edge it is unnecessary to make allowance for the usual latch housing and all the operable parts are located within the latch casing itself which may be readily removed to allow for replacement or repair. The latch of the invention combines the novel latch mechanism itself in combination with a novel form of striker plate.

The latch in question comprises a shell or housing having a dovetail shape which conforms to the dovetail shape of two oppositely disposed bumper and catch members formed on the striker plate. In the housing there are pivoted two bell crank shaped latches or pawls, one arm of each being formed with a hook adapted to project through openings in the shell to engage the striker plate bumpers, the other ends being brought adjacent to each other and are separated by a bar movably mounted therebetween and which extend throughout the housing for the attachment of an operating handle. The operating handle of the invention is pulled outwardly or away from the door in contradistinction to the usual turning movement. The striker plate combines a buffer member preferably in the form of a chunk of rubber positioned at the middle thereof and adapted to be struck by the casing of the latch when the door is closed. The striker plate also has a rubber block or buffer between the striker bumpers and the end of the bumper housings to cause the striker bumpers firmly to engage the face of the casing when the door is closed.

A suitable mechanism is provided in the interior of the door so that the latch may be operated from the inside of the vehicle, and a suitable latch catch mechanism is provided on the inside of the vehicle to prevent the operation of the latch from the outside.

On the drawing:

Figure 1 is a sectional view through the door pillar and door post of an automotive vehicle showing the latch of the invention.

Figure 2 is a sectional view on the line 2—2 of Figure 1.

Figure 3 is a sectional detailed view of the connection of the spring ends with the pillars inside the latch housing.

Figures 4 and 5 are sectional views on lines 4—4 and 5—5 of Figure 2.

Figure 6 is a sectional detailed view corresponding to the upper portion of Figure 1, but showing a modification.

On the drawing the numeral 2 indicates an automotive vehicle as a whole. The vehicle has the door pillar 4 and the door 6 the edge of which may be provided with a recess 8 in which there is received the latch 10 of the invention. If desired, no recess 8 need be used but the latch applied directly to the door edge. The latch comprises the plate 12 and the shell 14, the two being secured together in any suitable way to form the latch housing.

As is best shown in Figure 2, the shell 14 is dovetail shaped or has inclined sides as indicated at 16, the purpose of the inclined sides being to enable the housing tightly to be received between the blocks 18 of the striker plate 20. The blocks 18 have their sides inclined as indicated at 21, the incline corresponding to the incline 16 of the sides of the shell 14.

Inside the casing there are mounted the stationary pivot pins 22 on each of which there is pivoted a latch member 24 in the form of a bell crank lever. The end of one of the arms of each latch member 24 is provided with hooks 26 which are adapted to project through openings 28 in the inclined sides of the shell 14 and are adapted to engage in recesses 30 and 32 formed in the inclined sides 21 of the blocks 18. The back of each hook 26 is provided with a recess 34 in which there are received the rounded ends 36 of springs 38 the other ends of which are coiled as indicated at 40 about the studs 42 secured in the block housing. The studs 42 (Figure 3) have one end slotted as indicated at 44 in which there is adapted to be received the end 46 of the spring 38 rigidly to hold the spring under tension. With the springs in the position shown in Figure 2 the ends 36 constantly urge the hooks 26 through the openings 28.

The other ends 48 of the bell crank levers 24 extend toward each other and are juxtaposed as best shown in Figure 2. They are spaced apart for the reception of the operating bar 50 which is held in place at its inner end by means of the tongues 52 bent upward from the shell 14. The bar 50 has an opening 54 formed intermediate its length and in this opening there is rigidly mounted the operating block 56 which is adapted to engage with both the ends 48 of the bell crank levers 24. The bar 50 has the end portion 58 which extends outside the housing and outside

the outer edge 60 of the door. This end 58 is provided with an eye 62 in which there is rigidly mounted the pin 64 which projects from both sides of the eye.

5 The housing 14 has the tongue 66 formed thereon and which is bent to the shape shown in Figure 1. This tongue portion 66 mates with a tongue 68 on the plate 12. The tongue 66 and the plate 68 form a mounting member indicated as a whole at 70 for the end of the handle 72. 10 The sides 71 of the mounting member 70 are provided with the openings 74 in which there is received the pin 76 which passes through both openings and through the sides 78 of the hollowed end 80 of the handle 72. The handle 72 is provided with a slot 82 on its underside, the slot leading to a cored or recessed portion 84 in the hollow end 80. The slot 82 is for the reception of the end 58 of the operating bar 50 while the hollowed out portion or recess 84 is to receive the ends of the pin 64.

From the description of the parts thus far described it will be apparent that by pulling on the handle 72 (Figure 1) in the direction of the 25 plane of the paper the handle will pivot on the pin 76 and pull the pin 64 and the bar 50. (In Figure 2 the bar 50 will move to the left.) This movement will cause the block 56 to operate in the ends 48 of the bell crank levers 24 to cause the hooks 26 to be withdrawn from the recesses 30 or 32 and into the shell 14 to allow the door 6 to open. When the operator releases the handle 72 the springs 38 will swing the hooked ends 26 out of the openings 28 and pull the handle 30 back to the position shown in Figure 1.

If desired, the door 6 may be provided with a rubber buffer 86 at the place where the end or point 88 of the handle 72 strikes the door. It is also desirable to provide a recess 73 in the face 40 of the door 6 where the handle is positioned so that a minimum portion of the handle will project from the vehicle. The object of this installation is to reduce wind resistance when the vehicle is in motion.

45 Referring to Figures 1 and 5, means is provided to operate the latch from the interior of the vehicle. On the plate 10 there is secured as by welding or in any other suitable way a U-shaped bracket 90 which has openings 92 in its sides to mount a pivot pin 94. On the pin 94 there is pivoted the bell crank lever 96 one arm 98 of which extends through the plate through an opening 100 and engages with the end 102 of the bar 50. The other arm 104 of the bell crank lever has pivoted thereto at 106 a rod 108 which 55 extends inside the door and has its other end connected to any conventional mechanism (not shown) for operating the latch from the interior of the vehicle. By operating the mechanism in one direction the rod 108 is pulled to the right (Figure 1) which will shift the bar 50 in the same direction as it is shifted when the handle 72 is pulled.

In order to lock the vehicle from the inside the 65 arm 104 of the bell crank lever 96 has welded thereto the member 110 which is in the form of a rod having the ends inwardly bent toward the lock. By moving the operating mechanism to shift the rod 108 to the left (Figure 1) the member 110 will pass through an opening 112 in the plate 12 to cause the member 110 to be positioned between the ends of the bell crank lever 24 having the hooks 26.

75 This will prevent the operation of the lock from the exterior for the reason that when the handle

is pulled to cause the movement of the bar 50 the bar cannot be moved because the inside edges of the hooked ends 26 will strike against the member 110.

Referring to the species in Figure 6, means 5 is shown for locking the mechanism from the interior of the vehicle and at the same time allowing the door to be shut and the hooks 26 to engage behind the recesses 30 or 32 when the lock is locked. In the species of Figures 1 to 5 inclusive, if the member 110 is passed through the opening 112 and positioned between the hooked ends 26 of the bell crank levers 24 it will not be possible to shut the door because the hooks 26 will be unable to move inwardly through the openings 28 to allow the hooks to engage behind the shoulders of the recesses 30 and 32. In the species of Figure 6 the bar 50 is provided with the cut-out portion or recess 114 at its end and the member 110 is replaced by a hook end 116 20 formed on the bell crank lever 96'. When the rod 108 is shifted to the left (Figure 6) the catch or hooked end 116 will engage in the recess 114 to prevent the operation of the bar 50. This interlock, however, will in no way interfere with the operation of the bell crank levers 24, for with the parts in the dotted line position shown in Figure 6 and with the door open, the door may be slammed to cause the hooks 26 to recede into the opening 28 and to engage behind the shoulders of the slots 30 or 32. The tongues 52' are lengthened so that the tops thereof will be behind the end 116 when in the dotted line position.

The novel striker plate 20 of the invention 35 comprises the elongated flat plate 118 to which there are secured at each end the housing portions 120. These housing portions are composed of sheet metal suitably shaped and secured to the plate 118 in any suitable way. They are open at the ends facing each other and receive therein the blocks 18. Between the ends of the housings 120 and the blocks 18 rubber buffer blocks 122 are provided to give resiliency to the striker plate. Each housing is provided with a slot 124 in which there are received the pins 126 45 secured in the blocks 18. The pins 126 project into the slots and hold the striker blocks 18 in position but allow thereto a limited amount of fore and aft movement.

At its midportion between the striker blocks 50 18, the striker plate is provided with a chamfered opening 130 in which there is received the cylindrical rubber block 132. The block projects some distance beyond the surface of the plate 118 and acts as a bumper and sound deadener and anti-rattler for the lock housing.

The plate 12 and the striker plate 118 are provided with suitable openings at their ends for the reception of bolts, screws or other fastening means 128 by means of which they are secured to 60 the door pillar and the door. The striker plate 20 has four spaced fastening means.

I claim:

1. In a latch for automobile doors, a flat housing secured in a recess in the edge of the door 65 and having its plane coincident with the plane of the door edge, a plurality of pawls pivoted in the same plane in the housing, hooks on one end of the pawls adapted to extend through openings in the housing and to be engaged with a keeper on the door pillar, said pawls and hooks being in the plane of the door edge, means urging said hooks through the openings, a pawl operator in the plane of the door edge and between adjacent ends of the pawls, and means to move the 75

operator to cause the movement of the pawls on their pivots to move the hooks into the housing, said first named means being able to move the pawls and last named means from unlatched to latched position upon release of the last named means.

2. In a latch for automobile doors, a flat housing secured to the door edge in the plane of the edge, two pawls pivoted in the housing and adapted to move in opposite directions in the plane of the door edge, a hook on each pawl adapted to move through openings in the casing and adapted to engage a keeper on the door pillar, a spring for each pawl constantly urging the hook end through the opening, an operator in the plane of the door edge and adapted to engage both pawls, and means to move the operator to move the pawls through the opening, said first named means being able to move the pawls and last named means from unlatched to latched position upon release of the last named means.

3. In a latch for vehicle doors, said latch having all parts in the plane of the door edge, a lock housing secured to the door edge, two bell crank pawls pivoted in the housing and adapted to move simultaneously in opposite directions, hooks on one arm of the pawls, said hooks projecting through openings in the housing and adapted to engage with a keeper on the door pillar, the other arms of said pawls being adjacent each other, a pawl operator slidably mounted in the housing between the adjacent ends, means outside the door to move the operator to cause the hooks to be withdrawn into the housing, and a lever pivoted to the housing and engaging the operator to move the same to release the hooks, said lever being operated from the inside of the vehicle.

4. In a vehicle door latch adapted for cooperation with a striker plate secured to the door pillar, all of the parts of said latch and striker plate being in the plane of the edge of the door, said latch comprising a housing having a part which is adapted to be received in the striker plate, said housing having two openings in the part received in the striker plate, two pawls pivoted in the housing, one end of each pawl having a hook, each hook adapted to project through one of said openings and to be engaged by the striker plate, the other ends of said pawls extending adjacent each other, means movably mounted between the hooks and adapted to engage the adjacent ends, a handle attached to and adapted to move said means to cause the movement of the pawls to cause the hooks to be disengaged from the keeper, said springs mounted in the housing and constantly urging said hooks through said openings, said springs being capable of returning the parts to latched position when the handle is released.

5. In a vehicle door latch, said latch having its parts in the plane of the edge of the door, a housing having two openings, two spaced pawls pivotally mounted in the housing and adapted to project through the openings to engage a striker plate secured to the door pillar, means in the housing engaging the pawls to move the same, a handle for operating said means to cause the pawls to become disengaged from the striker plate, and means operable to engage the said means to prevent operation of the handle and the movement of said first named means.

6. In a vehicle door latch, said latch having its parts in the plane of the edge of the door, a housing having two openings, two spaced pawls

pivotally mounted in the housing and adapted to project through the openings to engage a striker plate secured to the door pillar, means in the housing engaging the pawls to move the same, a handle for operating said means to cause the pawls to become disengaged from the striker plate, said means having a notch, a catch pivotally mounted on the housing, and means to operate the catch to cause it to engage the notch to prevent the operation of said means.

7. In a vehicle door latch, said latch having its parts in the plane of the edge of the door, a housing having two openings, two spaced pawls pivotally mounted in the housing adapted to project through the openings to engage a striker plate secured to the door pillar, means in the housing engaging the pawls to move the same, a handle for operating said means to cause the pawls to become disengaged from the striker plate, means connected with the latch and operable in one direction to operate the pawls from the inside of the door, said mechanism operable in the other direction to engage with the latch to prevent movement of the handle to operate the pawls.

8. In a vehicle door latch, said latch having its parts in the plane of the edge of the door, a housing having two openings, two spaced pawls pivotally mounted in the housing adapted to project through the openings to engage a striker plate secured to the door pillar, means in the housing engaging the pawls to move the same, a handle for operating said means to cause the pawls to become disengaged from the striker plate, mechanism connected with the latch and operable in one direction to operate the pawls from the inside of the door, said mechanism operable in the other direction to engage the pawls to prevent their movement and thereby prevent the operation of the handle to operate the lock.

9. In a latch for a door, a housing, pawls pivoted in the housing, studs in the housing, a spring secured to each stud, one spring for each pawl and pressing thereagainst to urge the end of the pawl through an opening in the housing to engage a catch, a pawl operator slidable between the pawls and the studs, and means to move the operator to cause the pawls to swing on their pivots to withdraw the ends thereof into the housing, said springs being so arranged and mounted that they will return the parts to latched position upon release of said means.

10. In a latch for a door, a housing, pawls pivoted in the housing, studs in the housing, a spring secured to each stud, one spring for each pawl and pressing thereagainst to urge the end of the pawl through an opening in the housing to engage a catch, a bar slidable between the pawls and the studs, a block secured to the bar and engaging with the ends of the pawls, means to move the bar to cause the block to swing the pawls on their pivots to withdraw the pawl ends into the housing, said springs being so arranged and mounted that they will return the parts to latched position upon release of said means.

11. In a latch for a door, a housing, pawls pivoted in the housing, hook ends on the pawls adapted to extend through openings into the housing and adapted to engage with a catch, a recess in the hook end of each pawl, a plurality of springs secured in the housing and having one of their ends in the recesses, said springs adapted to urge said recessed ends through the housing openings, a pawl operator slidable between the pawls, and means on the operator to cause the

pawls to swing on their pivots to withdraw the ends of the pawls into the housing.

12. In a latch for automobile doors, a housing secured to the door, a plurality of bell crank pawls pivoted in the housing, a hook on the end of one arm of each pawl, said housing having openings to enable the hooks to project outside the housing to engage a keeper, said pawls having the ends of their other arms adjacent each other, means urging said hooks through the openings, a pawl operating member slidable be-

tween and adapted to engage the adjacent ends, a handle pivoted to the latch, and a sliding connection between the handle and the operating member, the movement of said handle causing the movement of the operator to cause the pawls to recede into the openings in the housing, said means moving the pawls, block and operator from unlatched to latched position when the operator is released.

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