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E. H. CHRISTENSEN

1,960,410

AUTOMOBILE DOORLOCK

Filed Feb. 27, 1933

2 Sheets-Sheet 1

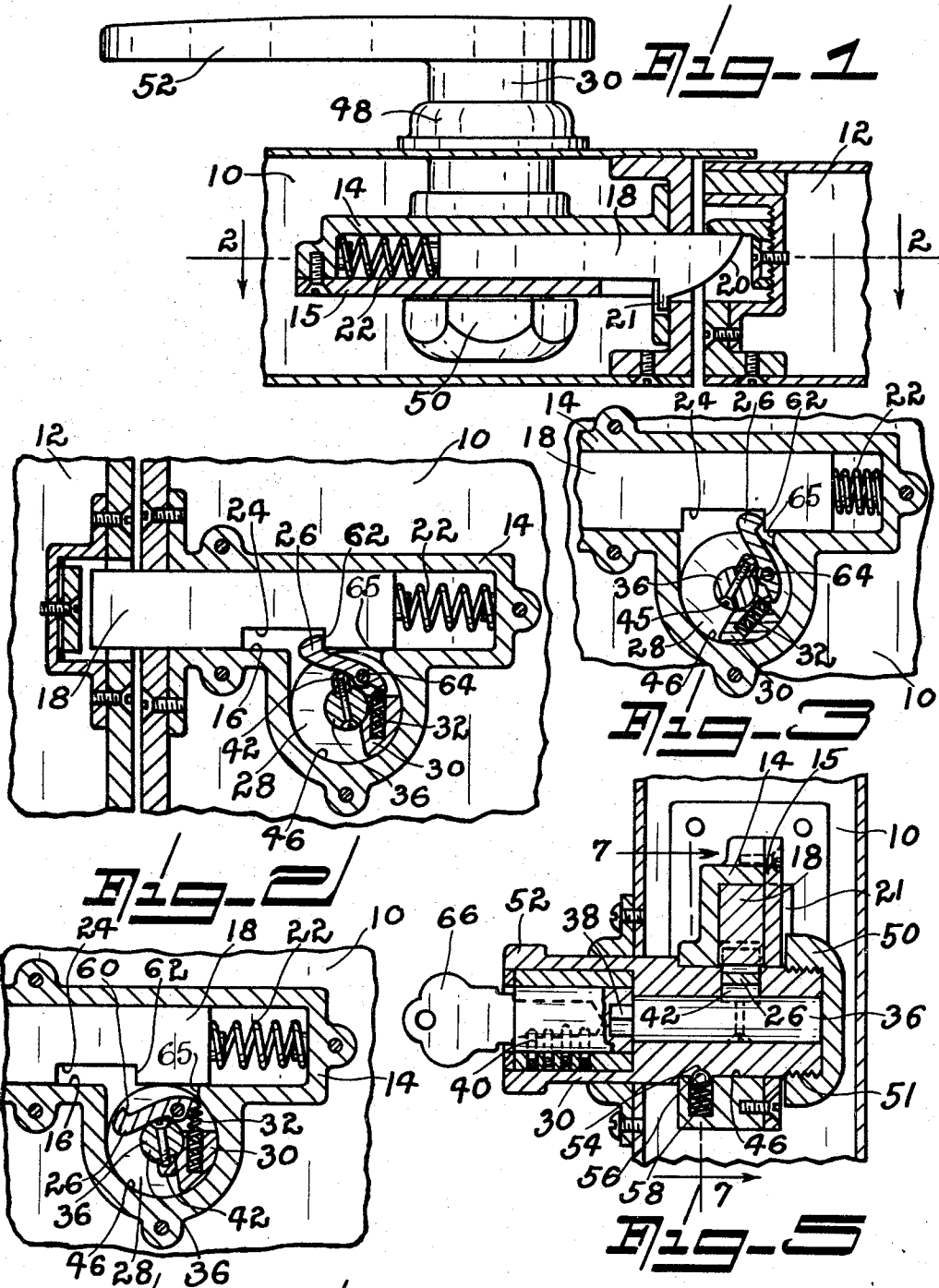


Fig. 4 **Eugene H. Christensen**
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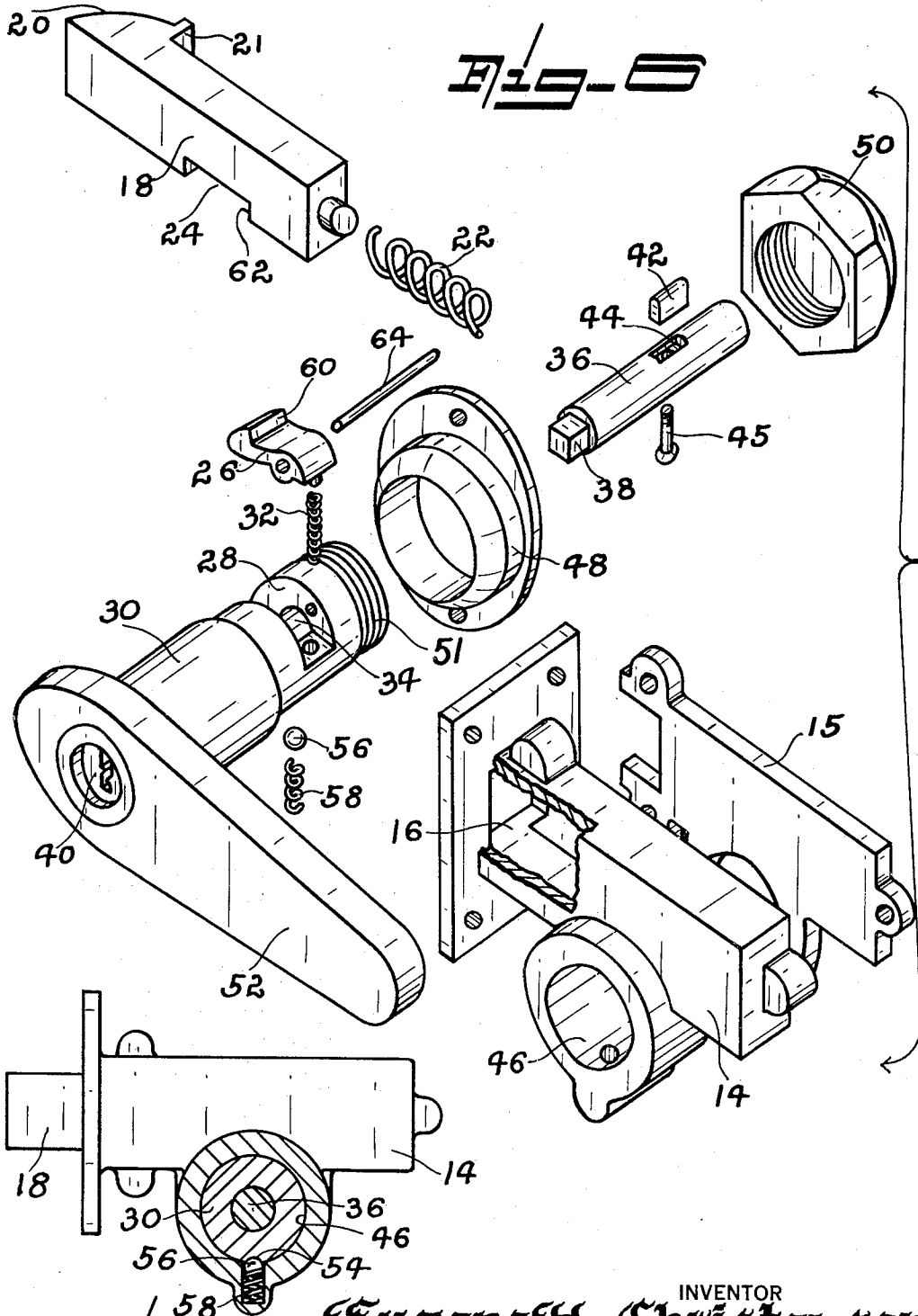


Fig. 15-B

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AUTOMOBILE DOORLOCK

Eugene H. Christensen, Seattle, Wash.

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4 Claims. (Cl. 70—91)

My present device relates to the art of locking devices and more particularly to a lock which is designed especially as an automobile door lock.

It has recently come to the general notice of automobile users that the ordinary type of automobile lock does not give the full measure of security it was intended to provide. It has been found that in so many instances it is possible for a person wishing to gain unlawful entrance to a closed car for them to slip a piece of tubing or gas pipe over the end of the door operating handle and by applying an unusually strong twisting effort, which their pipe will make possible, they can shear the rather small tumblers used on the ordinary door lock and in this way open the door. The ease with which a piece of pipe can be concealed up the sleeve of such a person makes it quite a favorite method of gaining entrance to a closed car as so often the car owner feeling secure in the fact that he has locked his door will quite often leave the ignition unlocked. It is to provide means for preventing this unlawful entry into a closed car particularly that I have provided my present locking arrangement. Therefore the principal object of my present invention is to provide a locking mechanism which is so arranged that no amount of externally applied pressure or twisting efforts can force the lock mechanism.

A further object of my present invention is to provide simplified means whereby the operating handle is disconnected from the latch mechanism of the car door.

A further object of my present invention is to provide with a free turning operating handle a bolt which is normally urged into the locked position so that if the locking mechanism is disturbed the door will still remain locked.

A further object of my present invention is to provide a latch operating pawl which is also normally urged into the unoperative position so that again if the external parts of the locked mechanism were to be destroyed or damaged in any way the entire device would become inoperative and the door remain in the locked condition.

A final object is the provision of means which will secure a free turning operating handle in its normal position so that it cannot be determined without inspection whether or not the door is provided with this type of lock.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings, wherein,

Figure 1 is a horizontal sectional view showing

in fragmentary form a portion of an automobile door and the door jam.

Figure 2 is a vertical cross sectional view taken along the line 2—2 of Figure 1.

Figure 3 is a fragmentary view similar to Figure 2 but showing the latch in its retracted or unlocked position.

Figure 4 is a view similar to Figure 3 but showing the latch operating pawl in its locked or free position.

Figure 5 shows in vertical sectional view the same parts shown in Figures 2, 3 and 4 except that the cutting plane has been revolved 90 degrees.

Figure 6 is a perspective view showing in exploded form the various parts incorporated in this present invention.

Figure 7 is a cross sectional view taken along the line 7—7 of Figure 5.

Referring to the drawings, throughout which like reference characters indicate like parts, 10 designates a door and in the present instance particularly an automobile door such as used on a closed car. 12 is the door jam or car frame which encloses the door and with which the lock mechanism engages. Secured within door 10 is the lock frame 14 with its corresponding cover member 15. Frame 14 is provided with a guide 16 adapted to receive the reciprocable latch member 18. This latch member may be of any suitable design, normally being provided with the cam face 20 so that it will be automatically closing, a retaining lug 21 and is preferably urged into its locked position by a spring such as the coil spring 22. Spring 22 is housed within guide 16 after the showing of Figures 1 to 4 inclusive.

One face of latch 18 is provided preferably with a recess portion 24 which is adapted to be engaged by a latch operating pawl 26. Pawl 26 is preferably pivotably secured within a recess 28 cut in the cylindrical body of the operating handle 30. It has been found most desirable to employ a spring as 32 which engages pawl 26 after the showing of Figures 2, 3 and 4 in such a manner as to normally retract it from engagement with latch 18.

Disposed in a preferably axial bore 34 of handle 30 is a retracting lock spindle 36. This bolt should have one end as 38 suitably machined so as to engage the operating means of the key locking mechanism proper, 40. Secured in one face of lock spindle 36 is an operating lug 42 which in the present instance I have indicated as being adapted to seat within recess 44 and be secured therein by means of screw 45.

The cylindrical portion of handle 30 is adapted for revolving within bore 46 which is arranged to underlie, normally, guideway 16 and to be freely communicative therewith after the showing of Figures 2, 3 and 4.

When my locking mechanism is assembled in place as in Figure 1, I provide outside of the door an enclosing collar 48 and after the handle member passes thru bore 46 and thru cover plate 15 the retaining nut 50 engaging the threaded portion 51 of handle 30 holds the entire assembly in operative position.

It is found desirable to normally retain hand grasp portion 52 of handle member 30 in the normal position it would be secured in when the device is in its locked position. To accomplish this I provide as shown in Figures 5 and 7 a shallow recess 54 in the cylindrical portion of handle 30 and adapted to seat therein a ball or plug arrangement 56. This should be constantly urged into the engaged position by some means as by the spring 58.

Method of operation

In operating my mechanism let it first be assumed that the door mechanism is in its unlocked position such as would be encountered if the car were in use. When so used the operating pawl 26 assumes the position shown in Figures 2 and 3 in which the retracting lock spindle 36 has been revolved by the locking mechanism 40 so that lug 42 presses upwardly on the free end of pawl 26, thus causing it to engage recess 24 in latch 18. Pawl 26 is provided with the hook-like engaging face 60 which engages a squared end as 62 in recess 24. Now by turning handle 30 lock spindle 36 with its lug 42 and latch and pawl 26 which is attached, as by pin 64, to member 30 revolves with it, thus retracting the latch 18 as shown in Figure 3. It will be apparent it is believed that when the bolt is fully retracted pawl 26 will limit further rotary movement of handle 30 in the unlocking position by engaging abutment 65 of frame 14, and if an attempt were made as in Figure 2 to turn handle 30 in the reverse direction pawl 26 would engage frame 14 so as to arrest any such movement. At all times it is to be understood that latch 18 is independently urged by spring 22 into its locked position.

When it is desired to place my locking mechanism in its locked position the lock mechanism 40 is revolved by means of key 66 thus turning with it the retracting lock spindle 36 and turning lug 42 downwardly out of engagement with pawl 26 after the showing of Figure 4. In this position handle 30 is free to revolve except for the restraining influence of lock member 56. If any appreciable force is applied however the handle can be turned against this locking means which is only for the purpose of holding the handle in its normal position. No matter how much handle 30 is revolved pawl 26 will not interfere with the normally locked position of latch 18.

Let it be assumed that nut 50 has been loosened from handle 30, handle 30 can be then retracted entirely from the mechanism but it carries with it pawl 26 which is a necessary operative means and the lock mechanism is in no way affected. This is a condition which could be easily prevented by adequately securing nut 50 onto the threaded portion 51. It will be clearly understood it is believed that any damage directed against handle 30 or any unusual twisting action could in no way

release latch 18 and it is believed that a very secure locking means has been provided yet one which adds little if any additional cost to the locking mechanisms at present employed.

The foregoing description and the accompanying drawings are believed to clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims.

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

1. In a door lock, the combination with a spring pressed slide-bolt having a bottom mortise, and a housing for the bolt, of a transversely arranged rotary, tubular operating handle and its housing, a rotary lock spindle journaled in the tubular handle, a spring pressed, pivoted pawl mounted in a recess of the rotary handle, an actuating lug on the rotary lock spindle whereby the pawl is engaged in said mortise, and a key-actuated rotary locking mechanism mounted in the handle for co-action with said rotary lock spindle.

2. In a door lock, the combination with a spring pressed slide-bolt having a mortise, and a housing for the bolt, of a transversely arranged rotary tubular operating-handle and its housing, means for preventing longitudinal movement of the handle and a spring-pressed detent for retaining the handle against rotary movement, a rotary lock spindle journaled in the handle, a key-actuated rotary locking device mounted in the handle for co-action with said lock spindle, an actuating lug on the lock spindle, a pawl pivoted in a recess of the handle in the path of said lug and adapted to be projected into said mortise, and a spring for retracting the pawl.

3. In a door lock, the combination with a spring-pressed slide-bolt having a mortise and a housing for the bolt, of a transversely arranged, rotary, tubular operating handle and its housing, a retaining nut on said handle exterior of the housing, a rotary lock spindle mounted in the handle and a head thereon, key-actuated rotary locking mechanism in the handle co-acting with said head, a pawl pivoted in the handle adapted to engage a recess in the slide bolt and a spring for retaining said pawl in retracted position, and a lug on said rotary lock spindle adapted to engage and project the pawl into said recess.

4. In a door lock, the combination with a spring pressed slide-bolt having a mortise and a housing for the bolt, of a transversely arranged, rotary, tubular operating handle and a housing therefor rigid with the first housing and open thereto, a retaining nut on the handle exterior of its housing, a rotary lock spindle mounted in the handle and a head thereon, a key-actuated locking device in the handle for co-action with the said head, a spring-pressed detent mounted in the second housing for engagement with the handle, a pawl pivoted in the handle adapted to engage said mortise and a spring for retaining said pawl in retracted position, a lug on the rotary lock spindle for frictionally engaging and projecting said pawl into the mortise, and said housings having an abutment for co-action with the pawl to limit rotary movement of the handle when the pawl is projected.

EUGENE H. CHRISTENSEN.