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2,759,351

LATCH ACTUATING AND LOCKING MECHANISM

Original Filed Nov. 30, 1946

2 Sheets-Sheet 1

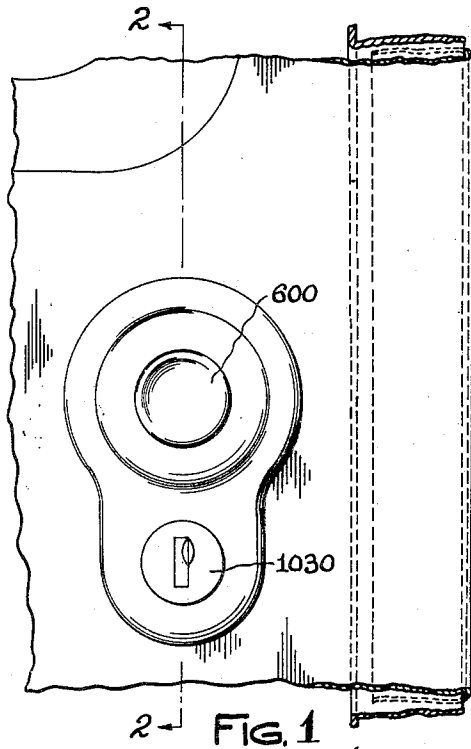


FIG. 1

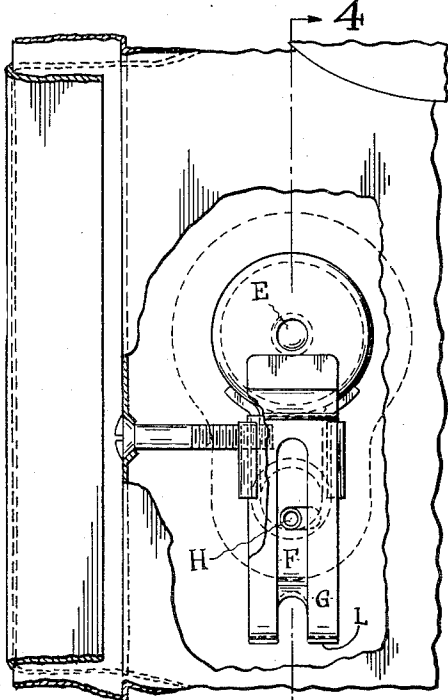


FIG. 3

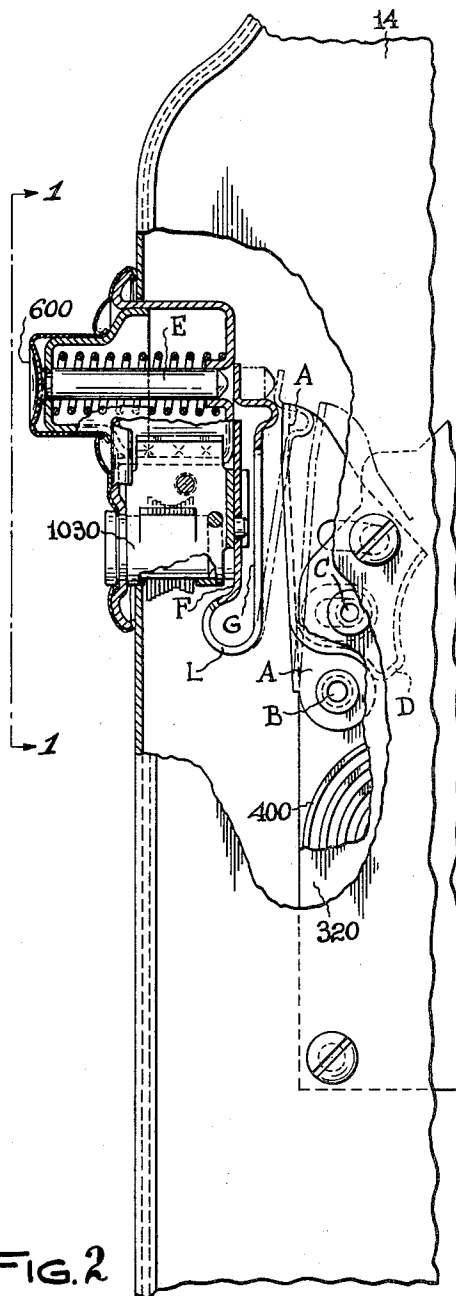


FIG. 2

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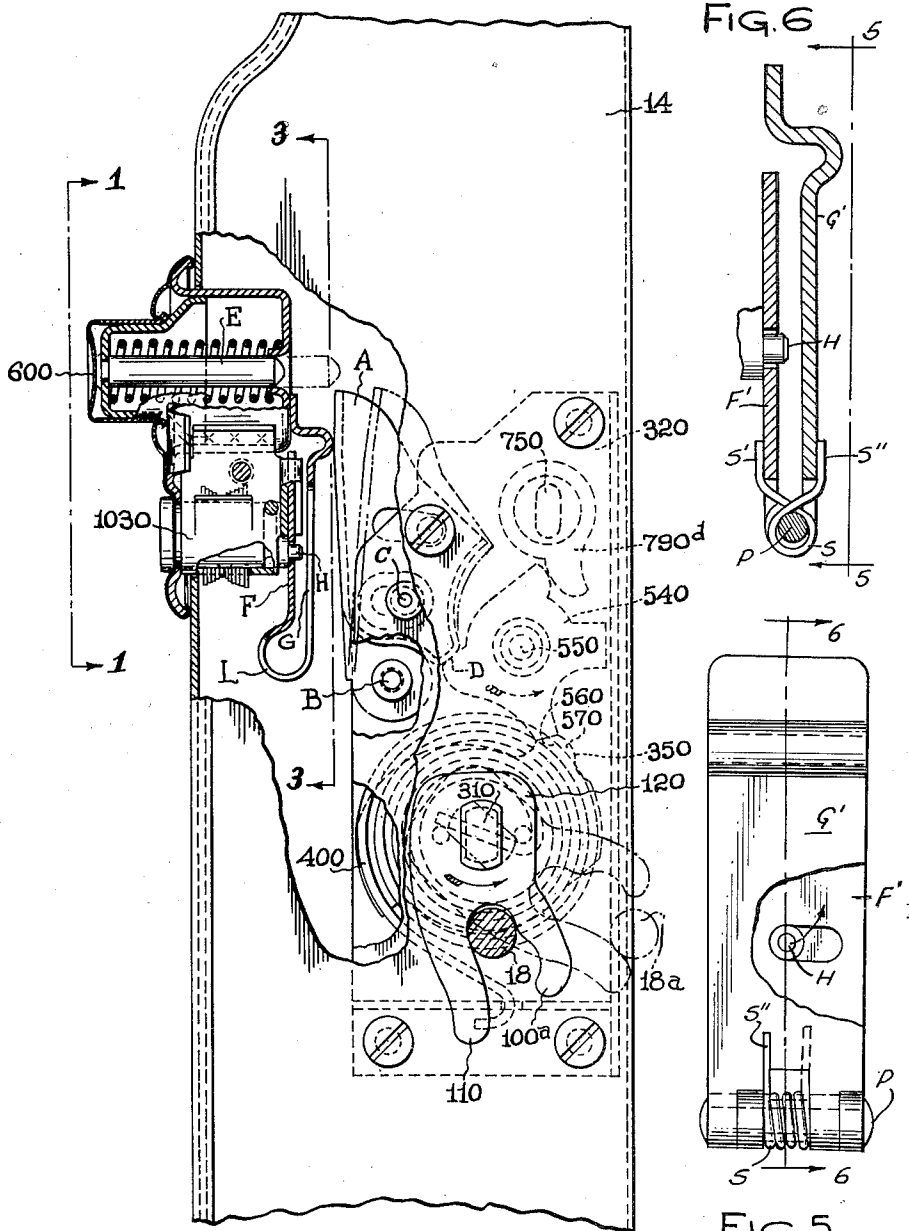


FIG. 4

FIG. 5

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## LATCH ACTUATING AND LOCKING MECHANISM

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Original application November 30, 1946, Serial No. 713,220, now Patent No. 2,658,782, dated November 10, 1953. Divided and this application March 18, 1953, Serial No. 343,100

5 Claims. (Cl. 70—141)

This invention relates to door control mechanisms and more particularly to an improved door latch actuating and locking apparatus. The present application is a division of applicant's United States patent application, Serial #713,220, filed November 30, 1946, now Patent No. 2,658,782.

Although the present invention is particularly adapted for use with door latches of the type shown in the Rudolph I. Schonitzer Patent No. 2,094,413, dated September 28, 1937, and is illustrated herein in connection with a door latch mechanism of type shown, described and claimed in my copending U. S. patent application, Serial #746,521, filed May 7, 1947, now Patent No. 2,658,783, it will be understood that it is also adapted for use with various other types of door latch devices.

In automobile door control mechanisms, it is sometimes desirable to provide an outside operating device, such as a handle or push button, which will be movable through its normal path when the door is locked to prevent opening thereof, but during such movement the push button or handle is ineffective to trip or release the latch mechanism. This is sometimes referred to as a "free wheeling" handle or push button arrangement and it is an object of the present invention to provide an improved outside door latch operating mechanism which, when unlocked, may be moved to effect release of the latch mechanism and which, when locked, may have substantially the same movement of its manually operable portion but without effecting release of the latch unit. Other objects of my invention include the provision of a compact, rugged and economically manufactured latch actuating and locking device which may readily be installed in an automobile door structure and which is adapted for use with various types of latch mechanism.

The above and other objects of my invention will appear from the following description of one embodiment thereof, reference being had to the accompanying drawings in which:

Figure 1 is a fragmentary side elevation looking at the outside of an automobile door in which my latch actuating and locking unit is installed.

Figure 2 is a vertical cross-sectional view taken substantially on line 2—2 of Figure 1 and illustrating the latch actuating and locking device in its unlocked or operating position.

Figure 3 is a fragmentary side elevation from the inside of the door on which the device is installed, a portion of the inner door panel being broken away to show the latch actuating and locking device in its locked or inoperative position.

Figure 4 is a vertical cross-sectional view generally similar to Figure 2 but taken on line 4—4 of Figure 3 and illustrating the latch actuating and locking mechanism in inoperative or locked position.

Figure 5 is a detached elevational view of a modified form of support member and latch actuating member in which a hinge pin and independent spring are employed

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for connecting the parts together, the view being taken substantially on line 5—5 of Figure 6.

Figure 6 is a vertical cross-sectional view of the support member and latch actuating member shown in Figure 5 taken substantially on line 6—6 of Figure 5.

As shown in Figures 1 to 4, the door latch, spring, and detent assembly is combined as a single latch unit, and the outside actuating means (push button, handle, or the like), the means for predetermining its tripping effectiveness, and the lock therefor are combined in a second latch actuating and locking unit, the two units being separately mounted in the door 14, for subsequent cooperation.

In the latch unit, 120 is a latch member, having a latch arm 100a and a throwout arm 110, secured upon the stub shaft 310 at the outside of the free edge of the door, the stub shaft carrying a latch cam element 350 on the inside of the door. The latch member 120 and element 350 are yieldably urged in counterclockwise direction (Figure 4) as a unit by the spring 400.

A detent 540 is rotatably mounted at 550. The element 350 and the detent 540 have cooperative shoulders 570 and 560 respectively, whereby when the parts are positioned as in Figure 4 the detent serves to hold or block the latch member 120 against the action of the spring 400. The detent has suitable associated spring means yieldably urging it clockwise (Figure 4) but not appearing in the drawings.

A rock shaft 750, carrying an arm or pawl 790d engageable with a projection at the top of the detent, is arranged to move the detent counterclockwise (Figure 4) as indicated by the arrow thereon, for its tripping operation, to unlatch the latch member 120 to the action of the spring 400. The shaft 750 may be arranged for such operation by any suitable means, such as by a push button located on the inside face of the door as disclosed in the Schonitzer patent above identified.

For similar unlatching operation, by an operator outside of the door as will appear, a lever A, pivoted at B and of limited motion as by the pin C and cooperative slot illustrated, is provided with a shoulder cooperative at D with a suitable projection on the detent 540, the lever A being movable to the position indicated in phantom lines in Figure 4 to move the detent to unlatching position, the detent under the action of its spring serving for return of the lever A to its full line position.

The latch arm 100a and throwout arm 110 of the latch member 120 cooperate with a keeper pin 18 mounted on the corresponding edge of the wall structure complementary to the door structure, the pin and latch member having relative movement between fully closed position of the door, as indicated in full lines, and released position of the door as indicated in phantom lines, wherein the pin is indicated at 18a, all as fully disclosed in the said Schonitzer patent. Briefly, as the door closes and the pin 18 therefor moves relatively from its broken to full line position, the throwout arm 110 is engaged and moves against the spring 400 until the latch member 120 is latched by the detent 540, the latch arm 100a meanwhile moving downwardly back of the pin to secure the door in closed position.

It will be apparent that movement of the lever A into its phantom line position will move the detent to release the latch member 120 to the action of the spring 400, so that the door will be unlatched and urged openwise. The latch unit per se described above does not form a part of the present invention but is fully described and claimed in my said copending U. S. application, Serial #746,521, now Patent No. 2,658,783.

For control of the door from the outside, a latch actuating and locking unit having a spring-returned push

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button generally indicated at 600 and having a plunger E is provided. This unit also, according to this invention, includes means, effective between the plunger E and the lever A, for selective disposition to predetermine the tripping effectiveness of operation of the push button 600 and plunger E as manually operable actuating means for effecting movement of detent 540, through the intermediate lever A, from latch restraining to latch released position. Moreover, lock means are provided for accomplishing such selection.

To these ends a support member F and associated latch actuating or transmitting member G are arranged for sliding adjustment subject to an eccentrically mounted crank pin H under control of a rotatable cylinder type lock generally indicated at 1030, the support member F being provided with a suitable opening into which the pin H projects for the purpose. The member G is carried by and articulately related to the member F to have sliding adjustment therewith under control of the lock 1030 and also to have swinging movement relative thereto as indicated in phantom lines in Figure 2; the connecting means between member G and member F as here shown being a spring biased hinge in the form of a spring loop L interconnecting the members, but other structure, such as a more conventional hinge and spring arrangement, might obviously be employed for the purpose. In Figures 5 and 6 such a more conventional arrangement is illustrated, the support member F' and latch actuating member G' being hinged together at their lower ends by hinge pin P. The center portions of members F' and G' at the hinge ends thereof are cut away to provide a recess to accommodate the spring S which encircles and is supported by the pin P and has one of its end portions S' extending upwardly and engaging the support member F' and its other end S'' in similar engagement with the latch actuating member G'. The spring S normally urges the members F' and G' together while permitting the latch actuating member G' to be moved by the push button operated pin E into latch actuating position.

The sliding adjustment of the actuating member G is such that it may have the effective position illustrated in full lines in Figure 2, wherein it will be engageable by the plunger E of the push button 600 to be swung upon depression of the push button, or it may have the ineffective position of Figure 4, wherein it is clear of the plunger path. Also the arrangement is such that when the member G is moved by the plunger E, as from the full line position to the phantom line position of Figure 2, it will engage the lever A for detent tripping operation thereof.

Thus, by the lock means 1030, the operator may select the disposition of the actuating or transmitting member G to predetermine the tripping effectiveness of operation of the pushbutton 600 and plunger E upon the detent 540 and thus upon latch member 120.

It may be noted, as appears from the drawings, that the latch member 120; the lever A, the parts effective therebetween and their associated parts are all mounted on the base 320 for assembly as a unit at the free edge of the door. Also, the push button 600; lock 1030, the members F and G and the parts effective therebetween are interconnected as a unitary assembly for mounting at the face of the door. The two units thereafter are cooperative in the manner and for the purposes described.

As noted above, certain features of the door control mechanism herein shown and described are claimed in my copending United States patent application, Serial #746,521, filed May 7, 1947, now Patent No. 2,658,783, and cross-reference is hereby made thereto.

Although I have described the illustrated embodiment of my invention in considerable detail, it will be understood that modifications and variations may be made in the specific form and arrangement of the elements of my device without departing from the spirit of my in-

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vention. Accordingly, I do not wish to be limited to the exact structure herein shown and described, but claim as my invention all embodiments thereof coming within the scope of the appended claims.

I claim:

1. A latch actuating and locking mechanism including a base member, a support member carried by said base member for movement relative thereto between an effective or unlocked position and an ineffective or locked position, a plunger movably supported on said base for in and out movement relative thereto, a latch actuating member carried by said support member and movable therewith between said locked and unlocked positions, hinge means connecting said actuating member to said support member for in and out movement independently of said support member and relative thereto in substantially the same direction as said in and out movement of said plunger, spring means for urging said plunger outwardly relative to said base member, said hinge means including spring means effective between said support member and said latch actuating member for urging said latch actuating member in the same direction as said plunger is urged, said latch actuating member being disposed in the path of travel of said plunger when said support member is in said unlocked position and being disposed out of the path of travel of said plunger when said support member is in said locked position, and key operable rotatable means carried by said base member and having an eccentrically mounted pin, said support member having a slot extending transversely of the direction of movement of said support member, said pin extending into said slot and providing operating connection between said key operable means and said support member for selectively moving same in either direction between said locked and unlocked positions.

2. A latch actuating and locking mechanism including a base member, a support member carried by said base member for movement relative thereto between an effective or unlocked position and an ineffective or locked position, a plunger movably supported on said base for in and out movement relative thereto, a latch actuating member, resilient hinge means connecting said latch actuating member to said support member for in and out movement independently of said support member and relative thereto in substantially the same direction as said in and out movement of said plunger, spring means for urging said plunger outwardly relative to said base member, said resilient hinge means being effective to urge said latch actuating member in the same direction as said plunger is urged, said latch actuating member being disposed in the path of travel of said plunger when said support member is in said unlocked position and being disposed out of the path of travel of said plunger when said support member is in said locked position, key operable rotatable means carried by said base member, and means on said rotatable means engaging said support member and adapted to move same in one direction when said rotatable means is turned in one direction and in the opposite direction when said rotatable means is turned in the other direction.

3. A latch actuating and locking mechanism including a base member, a support member carried by said base member for movement relative thereto between an effective or unlocked position and an ineffective or locked position, a plunger movably supported on said base for in and out movement relative thereto, a latch actuating member, spring biased hinge means connecting said latch actuating member to said support member for in and out movement independently of said support member and relative thereto in substantially the same direction as said in and out movement of said plunger, spring means for urging said plunger outwardly relative to said base member, said hinge means being effective between said support member and said latch actuating member for urging said latch actuating member in the same direction as said plunger is urged, said latch actuating member

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being disposed in the path of travel of said plunger when said support member is in said unlocked position and being disposed out of the path of travel of said plunger when said support member is in said locked position, and key operable rotatable means carried by said base member and having operating connection with said support member for selectively moving same between said locked and unlocked positions.

4. A latch actuating and locking mechanism including a base member, a support member carried by said base member for movement relative thereto between an effective or unlocked position and an ineffective or locked position, a plunger movably supported on said base for in and out movement relative thereto, a latch actuating member, spring biased hinge means connecting said latch actuating member to said support member for in and out movement relative thereto in substantially the same direction as said in and out movement of said plunger, spring means for urging said plunger outwardly relative to said base member, said hinge means urging said latch actuating member in the same direction as said plunger is urged, said latch actuating member being disposed in the path of travel of said plunger when said support member is in said unlocked position and being disposed out of the path of travel of said plunger when said support member is in said locked position, and key operable rotatable means carried by said base member and having operating connection with said support member for selectively moving same between said locked and unlocked positions.

5. A latch actuating and locking mechanism including a base member, a support member carried by said base member for movement relative thereto between an effective or unlocked position and an ineffective or locked position, said support member having a flat portion in

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sliding engagement with a flat portion of said base member, a plunger movably supported on said base for in and out movement relative thereto, a latch actuating member carried by said support member and movable therewith between said locked and unlocked positions, said latch actuating member having a flat portion extending generally parallel to said flat portion of said support member, hinge means connecting one end of said actuating member to one end of said support member for in and out movement independently of said support member and relative thereto in substantially the same direction as said in and out movement of said plunger, spring means for urging said plunger outwardly relative to said base member, said hinge means including spring means effective between said support member and said latch actuating member for urging said latch actuating member in the same direction as said plunger is urged, said latch actuating member being disposed in the path of travel of said plunger when said support member is in said unlocked position and being disposed out of the path of travel of said plunger when said support member is in said locked position, and key operable rotatable means carried by said base member and having an eccentrically mounted pin, said flat portion of said support member having a slot extending transversely of the direction of movement of said support member, said pin extending into said slot and providing operating connection between said key operable means and said support member for selectively moving same in either direction between said locked and unlocked positions.

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