March 9, 1943. E. N. JACOBI 2,313,711

COMPARTMENT DOOR LATCH

Filed Aug. 3, 1940 4 Sheets-Sheet 1

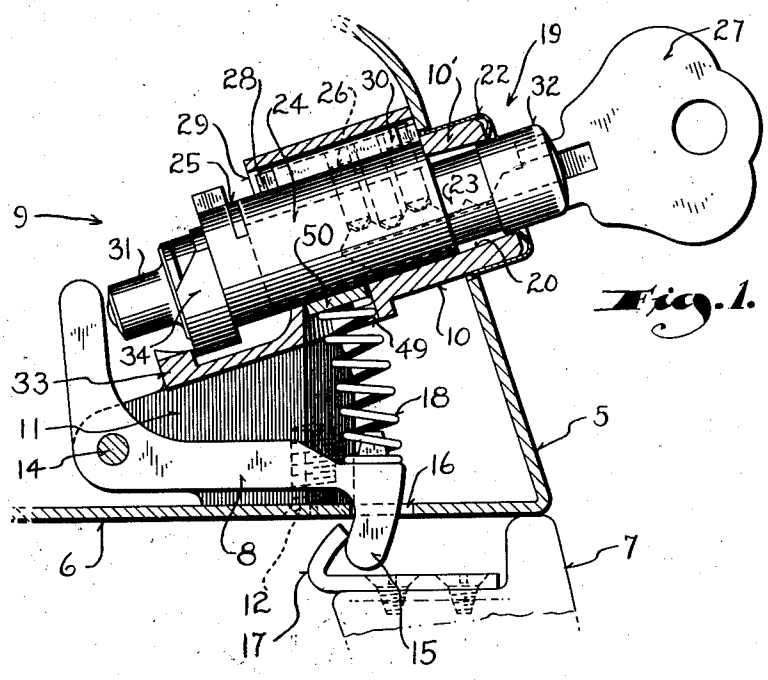


Fig. 1.

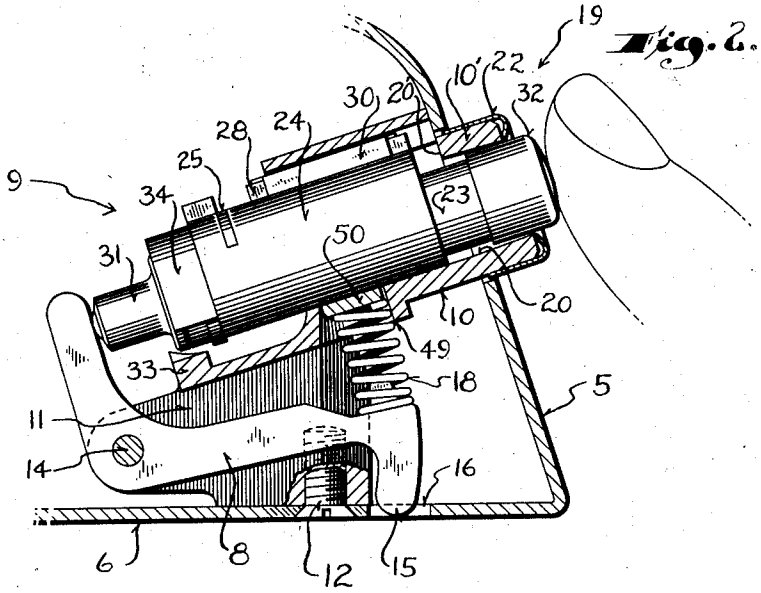


Fig. 2.

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Fig. 4.

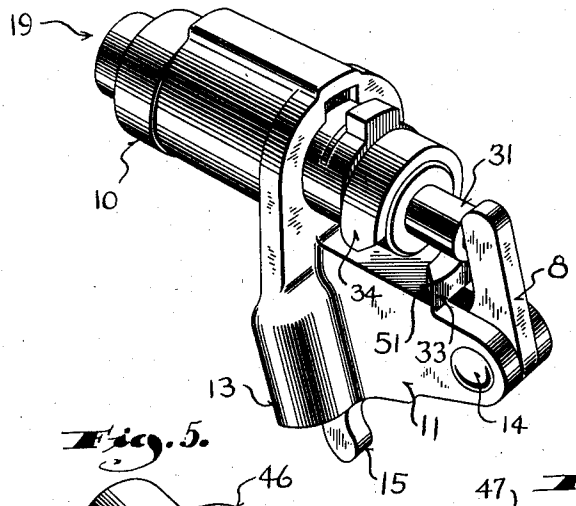


Fig. 3.

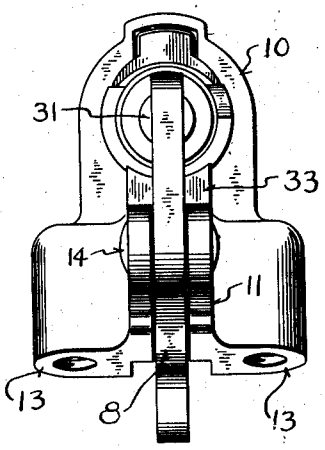


Fig. 5.

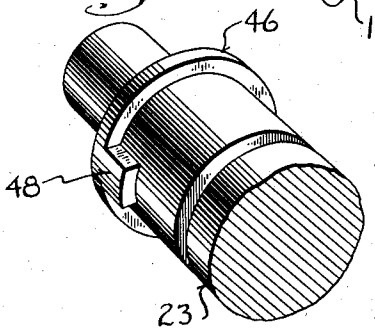


Fig. 6.

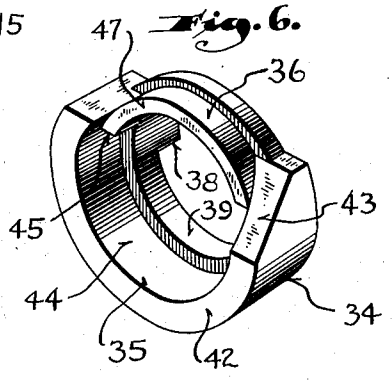


Fig. 7.

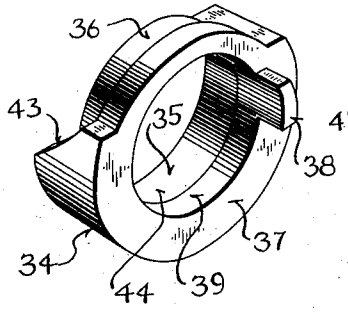
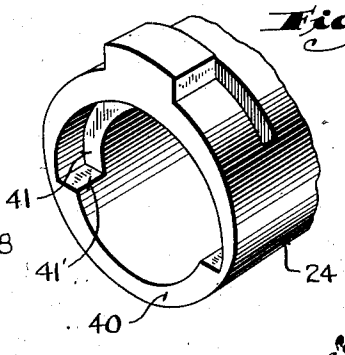


Fig. 8.



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COMPARTMENT DOOR LATCH

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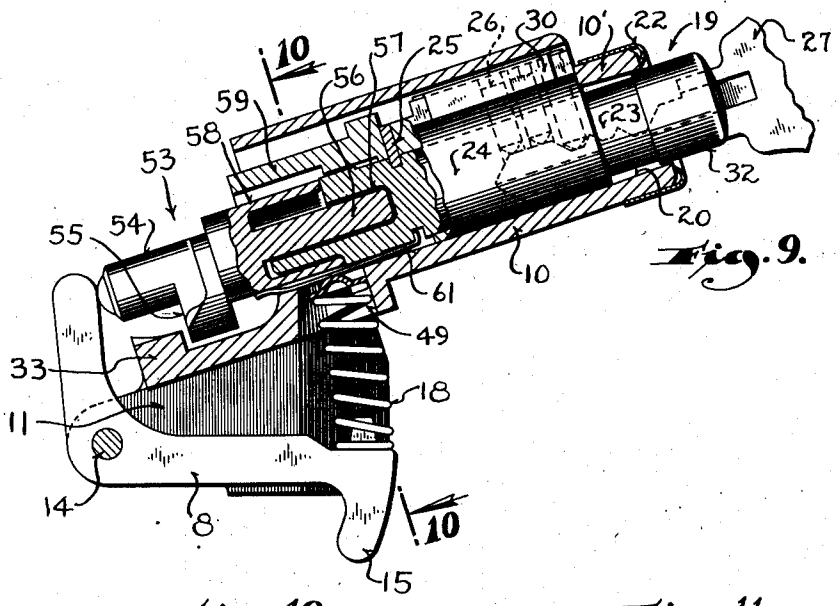


Fig. 9.

Fig. 10.

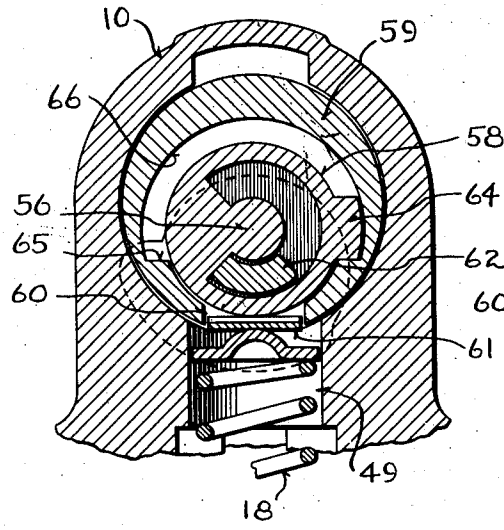
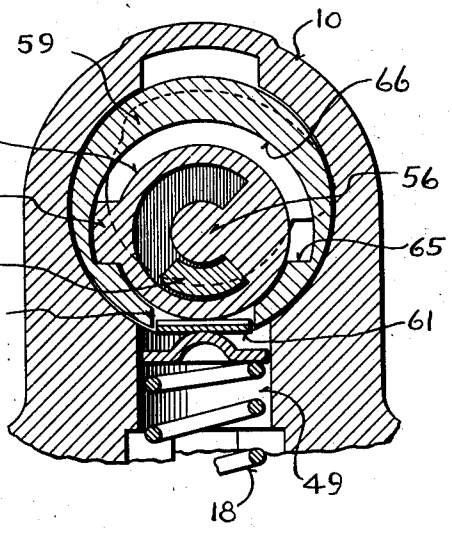


Fig. 11.



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Fig. 12.

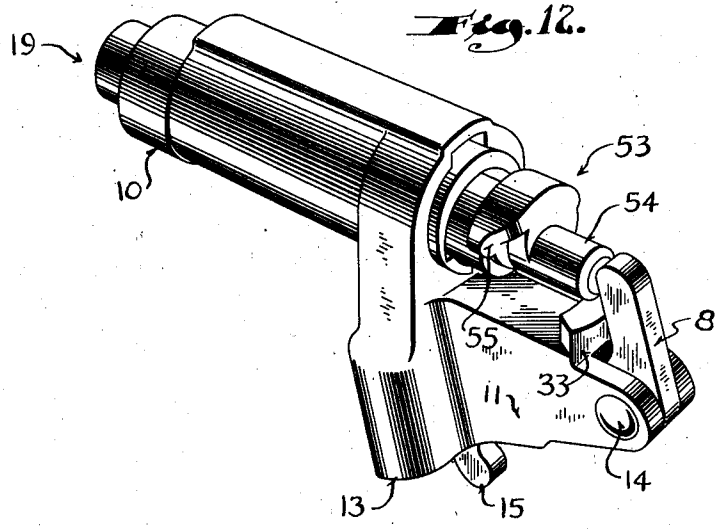


Fig. 13.

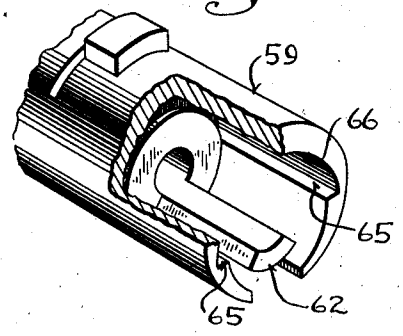


Fig. 14.

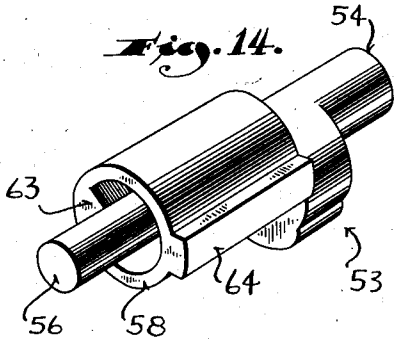
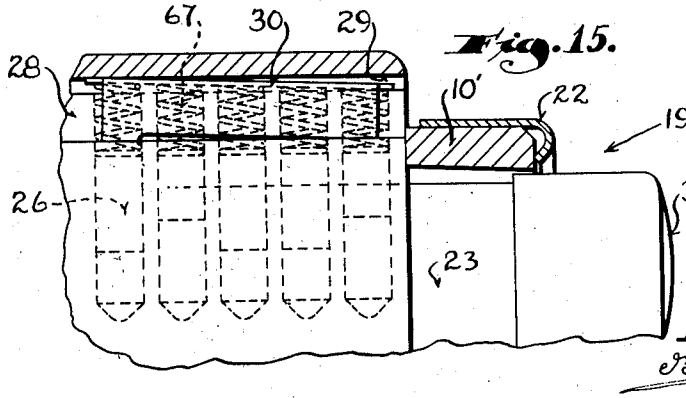


Fig. 15.



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Patented Mar. 9, 1943

2,313,711

UNITED STATES PATENT OFFICE

2,313,711

COMPARTMENT DOOR LATCH

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Application August 3, 1940, Serial No. 350,499

15 Claims. (Cl. 70—145)

This invention relates to automobile glove compartment door latches of the type wherein retraction of the latch bolt is effected by depression of a push button-like actuator and wherein key controlled means operates to block such depression of the actuator and thus lock the compartment door closed.

The broad general purpose of this invention is to improve and simplify the construction of this type of latch device without increasing its cost of production, and to incorporate effective provision against the possibility of developing of rattles.

More specifically it is an object of this invention to provide a novel manner of establishing a lost motion driving connection between the lock cylinder and the movable stop or cam which, in its locked position, blocks latch retracting depression of the cylinder.

In this connection, it is a further object of the present invention to provide a novel manner of effecting a lost motion driving connection between the cylinder and the cam and also defining the limits of rotation of the cylinder by means of abutting stop surfaces formed integrally with the cylinder, its casing, and the cam, which surfaces are located radially outward from the axis of the cylinder a substantial distance to insure accuracy in their stopping functions.

Another object of this invention resides in the provision of a novel manner of assembling the cam with the cylinder and its casing.

With a view toward precluding the development of rattles, it is an object of the present invention to utilize the latch bolt spring for holding the depressible actuator unit or assembly, which includes the cylinder and its casing, firmly against one wall of the bore in which it slides.

Another object of this invention resides in the provision of means whereby the latch bolt spring acts against the lock cylinder and the cam to hold both these parts against rattling.

Still another object of this invention is to utilize the tumbler springs to hold the cylinder against rattling in the bore of its casing.

Inasmuch as security against breaking into the compartment depends to a large extent upon the manner in which the latch device is mounted, the present invention has as another object, the provision of a latch device so constructed that its attachment to its support must be effected from the inside of the compartment so that unless the door is open no access can be had to the attaching means.

With a view toward insuring rigidity in its mounting, it is a further object of this invention to provide a novel manner of mounting the latch device whereby a portion of its body projecting through a hole in the instrument board panel cooperates with a screw secured connection between the roof of the compartment and a bracket on the body.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawings illustrate several complete examples of the physical embodiment of the invention constructed according to the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a sectional view through part of an automobile instrument board and glove compartment illustrating the application of this invention thereto and showing the bolt in its operative position;

Figure 2 is a view similar to Figure 1 but showing the latch bolt retracted;

Figure 3 is a rear end view of the latch device per se;

Figure 4 is a perspective view thereof;

Figure 5 is a perspective view of the rear end portion of the lock cylinder;

Figures 6 and 7 are perspective views of the cam showing respectively the front and rear ends thereof;

Figure 8 is a perspective view showing the rear end portion of the cylinder casing;

Figure 9 is a side view partially broken away and in section of a slightly modified form of latch device;

Figure 10 is a cross sectional view taken through Figure 9 on the plane of the line 10—10 and showing the parts in the positions they occupy in one condition of the lock;

Figure 11 is a view similar to Figure 10 but showing the parts in the positions they occupy in the opposite condition of the lock;

Figure 12 is a perspective view of the latch illustrated in Figure 9;

Figure 13 is a perspective view showing the rear end portion of the cylinder casing used in that form of the invention shown in Figure 9, part thereof being broken away;

Figure 14 is a perspective view of the cam which

is mounted in the inner end of the casing shown in Figure 13; and

Figure 15 is a view partly in side elevation and partly in section through the forepart of the latch device shown in Figure 1 and illustrating the manner in which the tumbler springs may be utilized to provide antirattle protection.

Referring now particularly to the accompanying drawings, in which like numerals indicate like parts, and especially to Figures 1 to 8, inclusive, the numeral 5 designates the instrument board panel of an automobile or the like, behind which a glove compartment is located, only part of the roof 6 of the compartment being shown.

The open front of the compartment is adapted to be closed by a door 7 hinged at its bottom to swing toward and from a closed position illustrated in Figure 1, where it is secured by the bolt 8 of a latch device, indicated generally by the numeral 9.

The latch device 9 is conveniently mounted in the space behind the instrument board panel and above the roof of the glove compartment in a position such that the cylindrical front end portion 10' of its body 10 projects through a hole in the instrument board panel. For this purpose the body 10 has a mounting bracket 11 which is seated on the roof 6 of the compartment where it is secured by screws 12 passed upwardly through the roof and threaded into tapped holes in laterally projecting bosses 13.

This manner of mounting the latch device provides maximum protection against breaking into the compartment by loosening the latch unit, inasmuch as access to the attaching screws may be had only when the compartment door is open.

Attention is also directed to the fact that the projection of the front end portion 10' of the latch body through a hole in the instrument board panel coacts with the screws 12 to locate the latch device and hold it securely in place.

For the sake of appearance, the projecting front end portion 10' of the body is covered by a bezel 22 neatly finished as by plating and polishing.

The bracket 11 is substantially channel shaped in cross section and has the bolt 8 received between its flanges. The bolt is in the form of a bell crank lever pivoted at its apex to the bracket as at 14.

One arm of the latch bolt projects forwardly between the flanges of the bracket and has a downwardly directed hooked end 15 to project through a hole 16 in the roof of the compartment and engage a keeper or striker 17 on the door.

A bolt spring 18 yieldingly urges the latch bolt to its operative keeper engaging position from which it may be retracted by the inward depression of a push button-like actuator indicated generally by the numeral 19. This actuator is slidably mounted in a bore 20 in the body so disposed that the upwardly projecting arm of the latch bolt is substantially in line with the bore.

The actuator unit consists of a lock cylinder 23 rotatably mounted in a casing 24 but secured against endwise movement therein by a cross bar 25 seated in a transverse groove in the casing and engaging in an annular groove in the cylinder.

Key operable tumblers 26 of the pin type serve to hold the cylinder against rotation in its casing except upon the insertion of a proper key 27 into the keyway of the cylinder.

To accommodate the tumblers and their springs, the casing has a substantially rectangular rib or ridge 28 formed thereon through which the tumbler bores pass, and which is slidably received in a groove 29 formed in the body in communication with its bore. The thrust of the tumbler springs is received by a stamped sheet metal cap 30 secured over the rib or ridge 28.

The inner end of the cylinder extends beyond its casing and is reduced in diameter to form a bolt engaging pin 31 which upon inward depression of the assembled casing and cylinder in the manner of a push button rocks the latch bolt about its pivotal mounting to retract the same from its keeper.

To enable such inward depression of the cylinder and casing the outer or front end of the cylinder projects beyond the encased front end portion 10' of the body and for the sake of good appearance, this projecting end of the cylinder is also encased in a finishing shell 32 of plated and polished sheet metal.

By blocking depression of the actuator the latch is secured against retraction and the compartment door is locked closed. For this purpose the bracket portion 11 of the body has a stationary stop abutment 33 positioned between the rear end of its bore and the upwardly projecting arm of the latch bolt.

The stationary stop abutment thus lies in the path of a cam 34 rotatably mounted on the assembled cylinder and casing to block depression of the actuator when the cam is in one position of rotation. In another position of rotation, substantially 180 degrees removed, the cam is ineffective to block depression of the actuator. Rotation is imparted to the cam by key propelled actuation of the cylinder.

However, inasmuch as the cylinder of a pin tumbler lock must be turned 360 degrees to enable the key to be withdrawn in both positions of the lock—locked and unlocked—, it follows that a lost motion driving connection must be established between the cylinder and the cam.

The manner in which this lost motion driving connection is established and the cam held assembled with the cylinder and casing forms an important part of this invention.

As best shown in Figures 6 and 7, the cam is substantially in the form of a collar having a thick walled section 35 for part of its circumference, and a thin walled section 36 for the remainder of its circumference.

One face 37 of the collar-like cam is a flat plane except for a relatively small lug 38 which projects axially therefrom at its bore 39. This flat face of the collar-like cam bears against the flat surface 40 which constitutes the inner end of the cylinder casing and the lug 38 on the cam projects into a substantially semicircular groove or counterbore 41 opening to the inner end of the casing. Engagement of the opposite sides of the lug 38 with the ends 41' of the groove or counterbore 41 limits relative rotation between the cam and the casing as will be readily apparent.

The opposite end of the collar-like cam lies in one plane throughout the thick walled portion 35 and on another inwardly disposed plane throughout the thin walled portion 36 of the collar. At one end of the thick walled portion is an inclined cam surface 43 for a purpose to be later described.

In the thick walled portion of the collar the bore 39 is enlarged to provide in effect a counterbore 44 which however, is not a complete circle due to the decreased axial depth of the thin walled portion 36. At the junctures of the thick and thin walled portions, this counterbore is ab-

ruptly terminated by stop surfaces or shoulders 45.

The diameter of the incomplete counterbore 44 is such as to rotatably receive a flange 46 formed as an integral part of the adjacent portion of the cylinder. The flange 46 abuts against the flat end 47 of the thin walled portion 36 of the collar to confine the collar between it and the end of the cylinder casing.

Projecting forwardly from the flange 46 is a stop lug 48 which rides in the space between the stop shoulders or abutments 45 on the collar and through coaction therewith limits the relative rotation between the cylinder and the collar.

Consequently, through engagement of the lug 48 with one or the other of the stop abutments 45, a lost motion driving connection is established from the cylinder to the collar, and as the arcuate widths of the stop lugs 48 and 38 with relation to their respective stop abutments 45 and 41' may be accurately established during the manufacturing process, as all parts concerned are die castings; it follows that the termini of cylinder rotation may be accurately defined.

Accuracy is also further assured by virtue of the fact that the cooperating stop abutments are disposed a substantial distance radially out from the axis of rotation.

Attention is directed to the fact that the latch bolt spring 18 reacts against the push button-like actuator and consequently holds the same against rattling. This feature is particularly useful as the latch bolt often may be held slightly spaced from the inner end of the cylinder 31 by failure of the door 7 to close fully or any other slight inaccuracy in the location of the keeper or striker 17.

To this end the body 10 has an opening 49 in its undersurface communicating with its bore 20, and seated in this opening is the upper end of the spring 18, a plate 50 being preferably interposed between the end of the spring and the adjacent side wall of the cylinder casing.

Thus, it will be seen that the bolt spring 18 at all times holds the actuator against the stop of the bore 20 in the body.

A frictional force tending to oppose outward sliding of the actuator by the latch bolt spring, results from this antirattle function of the spring, but this frictional force is not sufficient to interfere with the outward propulsion of the actuator by the bolt spring to its normal position defined by the engagement of the front end of the casing with the step 20' in the bore of the body (see Figure 2).

In the event the actuator is held "in" during the turning of the cylinder and cam from unlocked to locked position by means of the key the actuator will be forced forwardly. This is accomplished by the inclined cam surface 43 on the cam engaging a complementary inclined cam surface 51 on the stationary stop abutment 33.

While in the form of the invention just described, manual force applied to the cylinder by depressing its outer end as shown in Figure 2 is transmitted to the latch bolt directly by the cylinder, it is also possible to transmit this force through the medium of the cam and in that embodiment of the invention illustrated in Figures 9 to 14, inclusive, the transmission of the bolt retracting force is effected in that manner.

In many respects the construction shown in Figures 9 to 14, inclusive, is similar to that described and where duplication exists no specific description will be given.

It is to be noted, however, that the bored portion 10 of the body is considerably longer. This means that unless an objectionably long cylinder is to be employed, the bolt retracting force must be transmitted through another element and as the rotating cam is a necessity, it is desirable to utilize the cam for this purpose.

Consequently, in this embodiment of the invention, the cam, indicated generally by the numeral 53, comprises a latch bolt actuating pin 54, the cam proper 55, an axial stem 56 received in a socket or pilot hole 57 in the inner end of the cylinder and a skirt 58 encircling the stem 56.

The inner end portion of the cylinder casing is also different and instead of terminating in a flat end wall it has a skirt portion 59 encircling the skirt 58 of the cam and provided with a longitudinal slot 60 in its undersurface which aligns with the hole 49 through which the spring force is applied in this instance against the cylinder and the cam.

The force of the spring 18 is conveniently balanced against these two elements by means of a bar 61 disposed in the slot 60 with one end bearing against the cylindrical surface of the skirt 58 on the cam and its other end bearing against the cylindrical surface of the cylinder and hooked into its annular groove in which the retainer bar 25 rides.

The bar 61 is preferably slightly bowed so that the force of the spring 18, applied medially of its ends, is imparted to the cylinder and cam in a manner insuring the application of substantially uniform pressure on both of these elements.

The lost motion driving connection between the cylinder and the cam is provided by a longitudinal projection 62 on the inner end of the cylinder which is received within the skirt 58 of the cam to engage one side or the other of a segment-like bridging portion 63 which joins the skirt 58 with the stem 56.

Rotation of the cam is limited to substantially 180 degrees by the engagement of the opposite sides of a ridge 64 on the outer surface of the skirt 58 of the cam with radial stop surfaces 65 defining the circumferential termini of a partial counterbore 66 in the skirt 59 of the casing.

In view of the length of the bearings between the cam and the cylinder with respect to the longitudinal motion of the actuator it is unnecessary to have the cam secured against endwise movement with respect to the cylinder. Moreover, the spring propelled motion of the latch bolt ordinarily causes the actuator unit consisting of the cylinder, its casing and the cam, to move in unison, and in the event frictional force or other obstructions jam the latch bolt and prevent the outward projection of the actuator unit or the cam alone, the interengagement of the inclined cam surfaces on the stationary cam and the rotatable cam in the manner hereinbefore brought out will forcibly project the entire actuator assembly outwardly.

In addition to using the latch bolt spring 18 to guard against the development of rattles, the springs 67 of the tumblers may be utilized. As shown in Figure 15, this is accomplished by having the sheet metal cap 30 which is substantially channel shaped in cross section and fits over the rectangular boss 28 on the cylinder casing, secured only at one end so that the opposite end

thereof is free to be projected outwardly against the bottom of the groove 29.

From the foregoing description, taken in connection with the accompanying drawings, it will be readily apparent that this invention provides a locking type of compartment door latch for the glove compartments of automobiles which incorporates many refinements to insure freedom from objectionable rattles and smoother operation in addition to facilitating production of the latch device, and that through the novel manner of mounting the device in the angle formed by the roof of the compartment and the instrument board panel, exceptional rigidity and security against forced or accidental loosening of the latch device is achieved. The manner of mounting the latch device forms the subject matter of a divisional application, Serial No. 430,542, filed February 12, 1942.

What I claim as my invention is:

1. In a lock device of the character described: a supporting body having a bore; a latch bolt pivotally carried by the body with a part thereof in line with the bore; a cylinder casing slidable in the bore; a lock cylinder rotatable in the casing; key operable means carried by the casing and cylinder for securing the cylinder against rotation except upon the insertion of a proper key into the keyway of the cylinder; an abutment on the body between the inner end of its bore and the latch bolt part which projects into alignment with the bore; a cam encircling the inner end of the cylinder beyond the inner end of the casing, said cam being engageable with the stationary abutment in one position of rotation to block inward latch bolt retracting motion of the cylinder and being shaped to clear the stationary abutment in another position of rotation; and a lost motion driving connection between the cylinder and the cam whereby a full turn of the cylinder in one direction carries the cam from one position to the other and a full turn of the cylinder in the other direction returns the cam to its initial position.

2. In a lock device of the character described: a supporting body having a bored portion and a bracket extending from the inner end thereof; a latch bolt pivotally mounted on the bracket and having a part projecting into alignment with the bore; a stationary stop abutment on the bracket between the bored portion and said part of the latch bolt; a cylinder casing slidable in the bore of the body; a lock cylinder rotatable in the casing bore; key controlled means for securing the cylinder against rotation in the casing, a full turn of the cylinder being required to enable withdrawal of the key in the locked and unlocked positions; a movable stop member rotatable by the cylinder between positions clear of the stationary stop abutment and engageable therewith to block inward depression of the cylinder and casing; means movable axially by inward depression of the cylinder for retracting the latch bolt; and cooperating abutments on the movable stop, the lock cylinder and the casing whereby a lost motion driving connection is established between the cylinder and said movable stop to allow the necessary overtravel of the cylinder in carrying the movable stop from one position to the other and whereby the limits of cylinder rotation are defined.

3. In a lock device of the type wherein inward depression of a lock cylinder is utilized to effect an unlatching function: a bored body; a stationary abutment carried by the body; a cylinder casing slidable in the bore of the body; a lock cylinder rotatable in the casing; key operable means on the cylinder and casing for securing the cylinder against rotation, said means requiring a full turn of the cylinder for withdrawal of the key in both positions of the lock; a rotatable stop member connected with the cylinder and so shaped that in one position of rotation it is engageable with the stationary stop to block inward movement of the cylinder while in the other position of rotation it clears the stationary stop and permits inward depression of the cylinder; and a lost motion driving connection between the cylinder and the rotatable stop member comprising cooperating abutments formed as integral parts of said cylinder and stop member and so positioned angularly with relation to each other as to provide the necessary lost motion in the driving connection between the cylinder and the rotatable stop member.

4. In a lock device of the type wherein inward depression of the lock cylinder effects the unlocking function: a body having a bore; a stationary abutment near the inner end of the bore; a cylinder casing nonrotatably slidable in the bore; a lock cylinder rotatable in the casing but secured against longitudinal movement therein; key operable means for securing the cylinder against turning in the casing, said means requiring a full turn for removal of the key in both positions of the lock; a movable stop rotatably mounted on the inner end of the cylinder and so shaped that in one position of rotation it is engageable with the stationary stop to block inward depression of the cylinder and casing while in another position of rotation it clears the stationary stop to permit inward depression of the cylinder and casing; and means providing a lost motion driving connection between the cylinder and the movable stop and defining the limits of rotation of the movable stop and the cylinder, said means comprising circumferentially spaced stop abutments at the wall of the bore in the casing, cooperating stop means on the rotatable stop member engageable with said casing carried stop abutments to define the limits of permitted rotation of the rotatable stop member, and cooperating driving lugs on the inner end of the cylinder and said rotatable stop member.

5. In a lock device of the character described: a body having a bored portion and a bracket projecting from the inner end thereof; a latch bolt pivoted to the bracket with a part projecting into alignment with the bore; a stationary stop on the bracket between the inner end of the bored portion and said latch bolt part; a cylinder casing nonrotatably slidable in the bore of the body and having a part exposed at the inner end of the bore; a lock cylinder rotatable in the casing but restrained against longitudinal motion therein; key operable means for holding the cylinder against rotation in the casing except upon the insertion of a proper key into the cylinder, said key operable means being so constructed that a full turn of the cylinder is required to enable withdrawal of the key in both positions of the lock; a stop collar mounted on the inner end of the cylinder and so shaped that in one position of rotation it engages the stationary stop to block inward latch bolt retracting depression of the cylinder while in another position of rotation it clears said stationary stop; and a lost motion driving connection between the cylinder and said collar comprising a lug on the exterior of the

cylinder received in a counterbore of the collar, and cooperating stop abutments on the collar projecting into said counterbore for engagement with said cylinder carried lug.

6. In a lock device of the character described: a body having a bored portion and a bracket projecting from the inner end thereof; a latch bolt pivoted to the bracket with a part projecting into alignment with the bore; a stationary stop on the bracket between the inner end of the bored portion and said latch bolt part; a cylinder casing nonrotatably slidable in the bore of the body and having a part exposed at the inner end of the bore; a lock cylinder rotatable in the casing but restrained against longitudinal motion therein; key operable means for holding the cylinder against rotation in the casing except upon the insertion of a proper key into the cylinder, said key operable means being so constructed that a full turn of the cylinder is required to enable withdrawal of the key in both positions of the lock; a stop collar mounted on the inner end of the cylinder and so shaped that in one position of rotation it engages the stationary stop to block inward latch bolt retracting depression of the cylinder while in another position of rotation it clears said stationary stop; a lost motion driving connection between the cylinder and said collar comprising a lug on the exterior of the cylinder received in a counterbore of the collar, and cooperating stop abutments on the collar projecting into said counterbore for engagement with said cylinder carried lug; and cooperating stop abutments on the collar and the casing for limiting rotation of the collar with respect to the casing and thus define the limits of rotation of the cylinder as well as the collar.

7. In a lock device of the character described: a body having a bore; a latch bolt movably mounted on the body with a part substantially in line with the bore; key controlled lock cylinder means slidable in the bore and engageable with the latch bolt upon inward depression of said means for retracting the latch bolt; a stationary stop abutment on the body; a rotatable stop member carried by said key controlled means and so shaped that in one position of rotation said rotatable stop member is engageable with said stationary stop abutment to prevent inward latch retracting depression of said means while in another position of rotation, such inward depression is permitted; and cooperating cam surfaces on said stationary stop abutment and the stop member for forcing the key operable means outwardly away from the latch bolt upon rotation of said key operable means while depressed.

8. In a lock device of the type wherein the unlocking function is effected by the inward axial depression of a lock cylinder: a body having a bore; a stationary stop abutment on the body adjacent to the inner end of the bore; a lock casing nonrotatably slidable in the bore; a cylinder rotatable in the casing but secured against endwise movement therein; key operable means for securing the cylinder against rotation except upon insertion of the proper key into the cylinder, said means requiring a full turn of the cylinder for withdrawal of the key in both positions of the lock; a rotatable stop member supported on the inner end of the cylinder in a manner permitting a degree of lost rotary motion therebetween, said stop member being so shaped that in one position of rotation it is engageable with the stationtry stop abutment to block inward depression of the cylinder and casing while in another position of rotation it clears the stationary stop abutment and enables such inward depression of the cylinder and casing; the connection between said stop member and the cylinder comprising an axial socket in the inner end of the cylinder, and an axial stem on the stop member fitted in said socket; a sleeve on the stop member encircling said stem in spaced relation thereto; a bridging part extending across the space between the sleeve and the stem, the ends of which constitute stop abutments; a lug projecting eccentrically from the inner end of the cylinder and into said space with its side edges engageable with said stop abutments to provide a lost motion driving connection from the cylinder to said stop member, the inner end of the casing being counterbored and having the sleeve of the stop member received therein so that the sleeve forms substantially a continuation of the cylinder; a radially projecting abutment on the exterior of the sleeve disposed in said counterbore; and stop abutments on the inner wall of the counterbore engageable by said radial abutment to define the limits of rotation of the sleeve and consequently the rotatable stop member.

9. In a latch device of the character described: a body having a bore; a latch bolt movably mounted on the body; a push button-like actuator unit slidable in the bore and operable to retract the latch bolt; and a bolt spring confined between the latch bolt and the side of the push button-like actuator unit for yieldingly urging the latch bolt toward operative position and taking up play between the push button-like actuator unit and the wall of the bore in which it slides.

10. In a latch device of the character described: a body having a bore and a hole through the wall thereof; a latch bolt movably mounted on the body with a portion thereof movable toward and from said hole; a push button-like bolt retractor slidable in the bore and operable to move the bolt in a direction causing its said part to approach the hole; and a bolt spring bearing against said part of the bolt and passing through the hole to seat against the side of the bolt retractor so that the bolt spring serves to project the bolt and to hold the retractor against rattling.

11. In a latch device of the character described: a mounting member having a bored portion and a bracket extending therefrom, the wall of the bored portion having a hole therethrough adjacent to its junction with the bracket; a latch bolt pivoted to the bracket with a part arranged to swing toward and from said hole and another part disposed in alignment with the bore; a bolt retractor slidably mounted in said bore and arranged to engage the last named part of the bolt upon inward depression of the retractor; and a bolt spring engaging the first named part of the bolt and passing through said hole to bear against the side of the retractor.

12. In a lock device of the character described: a body having a bore; a latch bolt mounted on the body; a bolt retractor slidable in the bore of the body and operable upon inward depression to retract the bolt; a stationary stop on the body; a movable cam carried by the bolt retractor and operable in one position to engage the stationary stop and block depression of the bolt retractor and in another position to permit such depression; key controlled means including a lock cylinder for moving the cam

from one position to the other; and a spring acting against the bolt and reacting against the cam and the lock cylinder to hold these parts against rattling.

13. In a lock device of the character described: a body having a bore with a hole through the wall thereof; a latch bolt mounted on the body with part thereof arranged to move toward and from said hole; a bolt retracting unit slidable in the bore of the body and comprising a lock cylinder and a rotatable cam movable by rotation of the cylinder to and from an operative position preventing bolt retraction, said cam and the lock cylinder having portions thereof exposed to said hole in the body; a spring seat engaging said portions; and a spring engaging said seat and passing through said hole to engage the adjacent part of the latch bolt.

14. In a lock device of the character described: a body having a bore; a latch bolt movably mounted on the body with a part thereof in line with the bore; a bolt actuator slidable in said bore and engageable with said part of the bolt upon inward depression of the actuator, said actuator comprising a lock cylinder, a casing for the cylinder and a rotatable cam movable by the lock cylinder to and from an operative position blocking inward depression of the actuator, said cylinder casing and cam having coacting surfaces which interdependently hold said parts assembled for relative rotation; and cooperating stops projecting from said surfaces and engageable with each other to limit relative rotation between said parts to the extent that the lock cylinder has an accurately defined 360° rotation while the cam is turned approximately 180°.

15. In a lock device of the character described: a body having a bore and a longitudinal groove opening thereto; a lock casing slidably mounted in the bore and having a substantially rectangular ridge extending longitudinally along one surface thereof and riding in said longitudinal groove to hold the casing against turning in the bore; a lock cylinder rotatable in the casing, said cylinder and the casing portion having the longitudinal ridge having tumbler receiving bores; pin tumblers and drivers disposed in said bores; tumbler springs seated in the bores and acting against the tumblers and drivers; a sheet metal tumbler spring retaining cap fitted over the ridge to cover the outer ends of the tumbler bores; and means loosely holding said cap to the casing so that the tumbler springs are free to press the cap outwardly against the bottom of the groove in the body and thus hold the parts against rattling.

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