Jan. 11, 1938. A. J. LEONARD 2,104,838

AUTOMOBILE DOOR LOCK

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Fig. 1

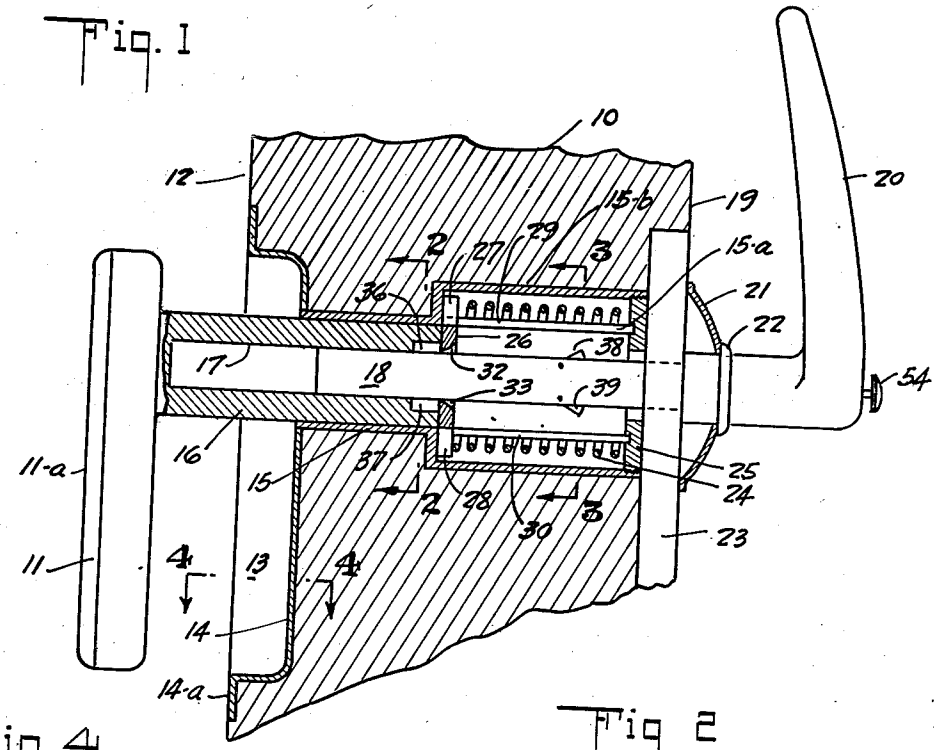


Fig. 4

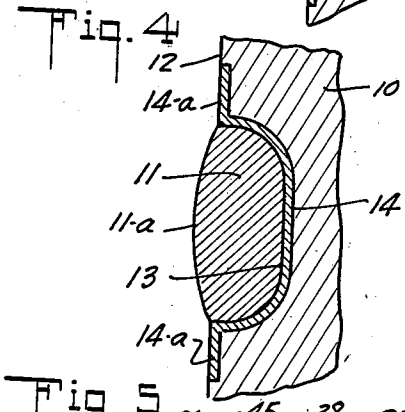


Fig 2

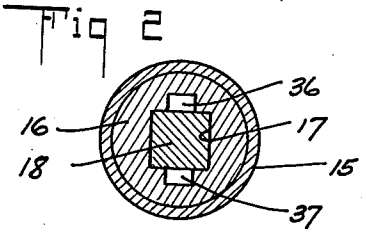


Fig. 3

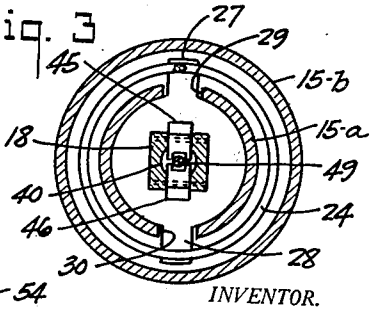
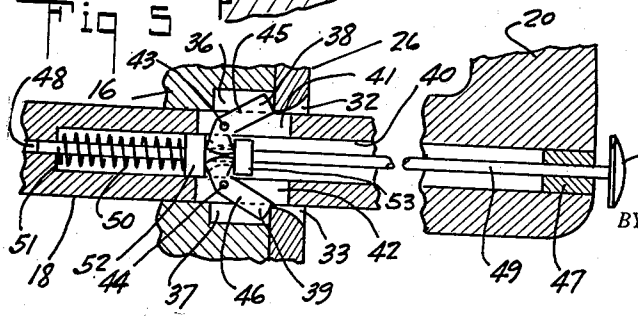


Fig 5



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Fig. 6

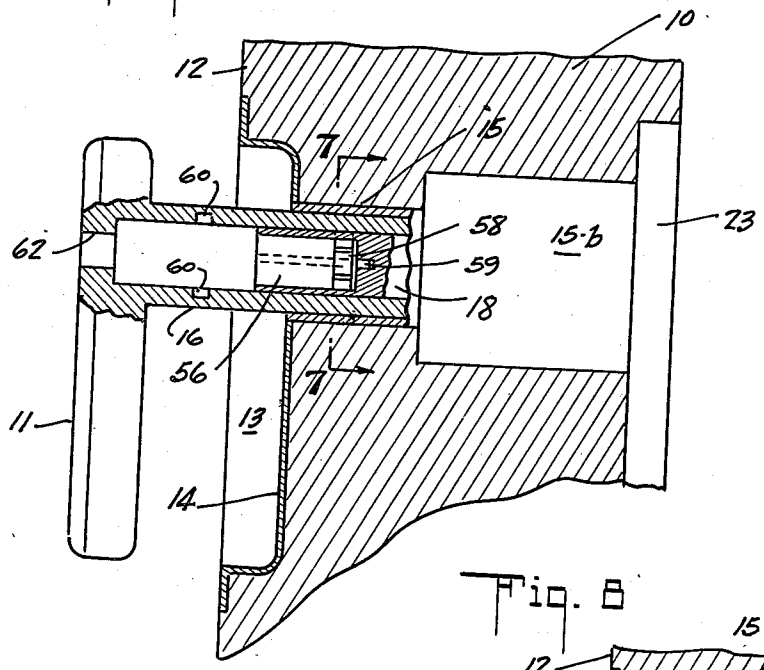


Fig. 7

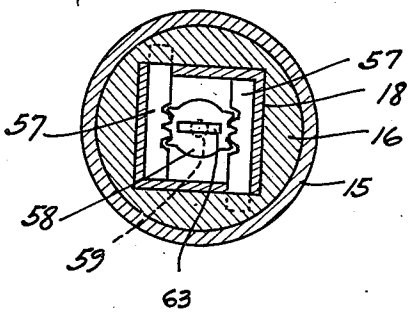
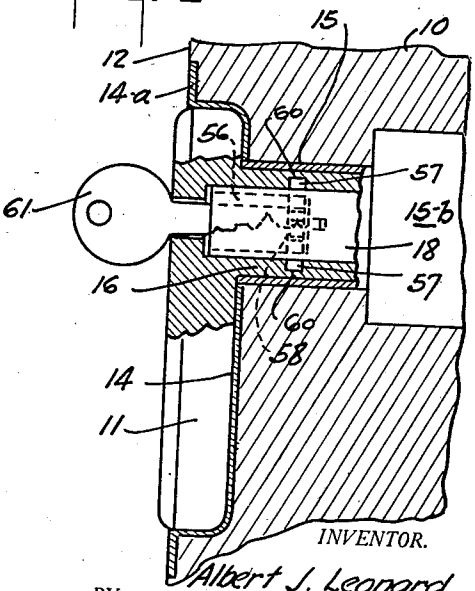


Fig. 8



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UNITED STATES PATENT OFFICE

2,104,838

AUTOMOBILE DOOR LOCK

Albert J. Leonard, La Canada, Calif.

Application August 29, 1935, Serial No. 38,409

4 Claims. (Cl. 292—1)

My invention relates generally to means for latching and locking doors of closed bodies of motor vehicles, and particularly to such a device in which the outside actuating handle of the door may be pushed, under spring tension which normally urges it outward, into a snug-fitting recess in the outside surface of the door, where it is restrained by detent means until released; so that it may not be manipulated to open the door until the means retaining it in recessed position are released from within the car, when the normal spring tension will cause it to leave its recess so as to enable usual manipulation from without.

It is a common practice among petty thieves to endeavor to gain access through locked automobile doors by forcibly turning the door handles against their locking mechanism. A short piece of pipe concealed in a rolled magazine or newspaper slipped over one end of the door handle supplies sufficient leverage, with the result that usually the lock is broken and frequently the handle twisted off.

It is a principal object of my said invention to render it impossible to secure a hold on the automobile door handle after locking, until such handle is released from its recess by means manipulated from within the car.

It is a further object of my said invention to provide the automobile door with a handle adapted to be pushed into a recess in the outside surface of the door without radically departing from conventional designs of handles, or of mechanisms adapted for latching and locking.

Simplicity, economy of construction, and, consequently, low cost, neatness of appearance, and efficiency in effecting the objects of its design, are also important objects of said invention.

Further objects will be readily understood from the following description and the accompanying drawings which show one embodiment of said invention, in which—

Fig. 1 is a view of principal parts in longitudinal section, contained within a cross section through the door;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a section on line 4—4 of Fig. 1;

Fig. 5 is an enlarged detailed sectional view of one form of detent and releasing means;

Fig. 6 is a view partially in longitudinal section and partially in elevation, showing an adaptation of principal features of said invention to the key-locked door;

Fig. 7 is a transverse section on line 7—7 of Fig. 6;

Fig. 8 is a sectional view of a key-lock handle in its locked position.

Referring specifically to the drawings in which like numerals indicate similar parts throughout the several views, 10 designates a section through an automobile door. 11 is a door handle, which in normal operating position is spaced from the outer wall 12 of the automobile door, but which, for locked position, is adapted to be pushed into recess 13, so that, except for its outer rounded surface 11*a*, it is sunk within said recess. 14 indicates the wall or lining of said recess, which wall or lining may be secured in any suitable manner in the outer surface of the door, preferably with its outer flanged edges 14*a* flush therewith.

Referring particularly to Figs. 1 to 5, inclusive, showing details of construction of the means controlling positioning of the door handle 11 in or out of its recess 13: Preferably integral with handle 11, and adapted to extend inwardly partially through the door within cylindrical sleeve 15 is a cylindrical shank 16 of said handle 11. Shank 16 is provided with a bore 17, square in cross section, adapted to receive the outer end of a latch-operating shaft 18, which is also square in cross section to fit into bore 17, and which operating shaft 18 extends through the inner surface 19 of the door 10 and is there attached in any suitable manner to latch-operating handle 20, said latch-operating shaft 18 being secured against longitudinal movement by boss 21 secured to the inner surface of the door and having a central aperture, the edge of which engages an annular boss 22 on the outer surface of the shank of operating handle 20.

Said latch-operating shaft 18 has a limited range of rotative movement when actuated by its handle 20 in the usual manner to operate the latch mechanism within the housing 23, later to be referred to.

Surrounding inner portion 15*a* of cylindrical sleeve 15 and within an enlarged cylindrical extension 15*b* of said sleeve 15 is a helical expansion spring 24, having a bearing 25 at its inner end, which bearing 25 is rigidly secured to the surface of housing 23 of the door-latching means,—which latching means being old in the art, and their form not being part of the present invention, are not herein illustrated or described. A bearing member 26 is provided having lateral projecting lugs 27 and 28, each, respectively, extending through slots 29 and 30

through opposite sides of the inner extension 15a of sleeve 15, said lugs 27 and 28 being adapted to receive the thrust of expansion spring 24. Bearing member 26 is provided with a square opening through its center, through which extends latch-operating shaft 18, two opposite sides of said square opening through member 26 being notched as indicated at 32 and 33 to enable it during compressive movement of spring 24 to more easily ride over and press inward ratchet teeth of the detent means later to be described.

Notches 32 and 33 in the outer surface of bearing 26 adjacent opposite sides of the square aperture through said member 26, register with similarly placed notches 36 and 37 at the inner end of shank 16, and said shank 16 is firmly attached in any suitable manner to member 26. To permit engagement by notches 32 and 33, and 36 and 37, teeth 38 and 39 extend through opposite openings in latch-operating shaft 18, forming part of the detent mechanism next to be described.

Referring particularly to Figs. 3 and 5, it will be seen that the inner portion of latch-operating shaft 18 is cylindrically and concentrically bored to provide a chamber 40 for the detent and release mechanism by which handle 11 is held within its recess 13 or released therefrom as desired. Pivoted in oppositely disposed slots 41 and 42 through the wall of operating shaft 18, so as to provide operating levers within chamber 40, fulcrumed at 43 and 44 in the wall of said slots 41 and 42 are two dogs 45 and 46, outer ends of which are normally adapted under spring tension later to be described to protrude through said slots and to form ratchet teeth 38 and 39 normally extending beyond the outer surface of latch-operating shaft 18 for purposes hereinafter described.

Longitudinally slidable with a limited range of movement through bearing 47 in latch-operating handle 20, (the opposite end of chamber 40 being concentrically bored as indicated at 48 to form the inner bearing therefor) is a release operating shaft 49. Referring to Fig. 5, a helical expansion spring 50, having a bearing on the annular shoulder 51 forming the inner end of chamber 40 and also bearing against an annular boss 52 on said release operating shaft 49, normally tends to urge said shaft towards said inner latch-operating handle 20, thus by leverage on the inner ends of dogs 45 and 46 resiliently holding their teeth 38 and 39 in projected position through slots 41 and 42. To enable retraction of teeth 38 and 39 into slots 41 and 42, release-operating shaft 49 is provided with an inner boss 53. Release-operating shaft 49 extends through and beyond bearing 47, a button 54 being provided to enable spring 50 to be manually compressed, the longitudinal movement caused by said manual operation acting through boss 53 to retract teeth 38 and 39 into their respective slots, thus releasing ratchet engagement of said teeth with cooperating detent mechanism for holding spring 24 under compression.

It will be obvious that when handle 11 is pushed into its recess 13, shank 16 of said handle will move member 25 inward, extending lugs 27 and 28 operating to compress the spring.

When notches 32 and 33 in member 25 reach protruding ratchet teeth 38 and 39, the inclined surfaces of said notches will slide over said teeth, forcing them into retracted position against their resilient outward urge. When member 25 is passed over teeth 38 and 39, said teeth will snap outward into notches 36 and 37, thus holding spring 24 under compression, door handle 11, of course, being housed within its recess 13.

To release spring 24 from compression and permit the handle to snap out of its recess, button 54 may be manually pressed inward through its short range of movement as measured by the length of the operating shaft protruding beyond the face of latch-operating handle 20.

It will be quite obvious that when released from its recess 13, door handle 11 may be moved to operate any ordinary form of latch such as is usually found on automobile doors, the square bore 17 of said door handle shaft 16, acting as a wrench fitting over the outer end of latch-operating shaft 18, which passes through the usual latching mechanism comprised within housing 23, the details of construction of which being old, and not forming part of the present invention, being only diagrammatically illustrated. The latch-operating handle also may be operated in the usual manner from whithin the car for unlatching purposes, all without affecting or interfering with the mechanism above fully explained for permitting the optional pushing of the door operating handle into its recess or releasing its therefrom.

In Figs. 6 to 8, inclusive, I have illustrated a common form of key-operated locking mechanism applied to my invention. In these last mentioned figures, there are shown only the outside of the housing of the spring arrangement including a bearing member with projecting lugs, as before described, whereby the spring 24 urges shank 16 and handle 11 outwardly. The spring detent mechanism is, however, omitted and a key-operated lock is used to hold the handle in retracted position. The end of latch-operating shaft 18 has a cylinder lock 56 of any preferred form mounted therein. Behind the cylinder lock on opposite sides of shaft 18 are bolts 57 adapted to be projected in opposite directions by rotation of a toothed member 58 rotatably supported on a pivot 59. This is a common form of locking mechanism. Recesses 60 are provided in shank 16, these being so positioned as to line up with bolts 57 when the handle 11 is in recess 13. After the handle is pushed into the recess, a key 61 is inserted through opening 62 provided in handle 11 into lock 56, the parts being so proportioned that the key projects through the lock and enters a slot 63 in member 58. Upon turning the key, bolts 57 will be projected into engagement with recesses 60 (see Fig. 8). The key may now be removed, leaving the door securely locked. When it is desired to unlock the door, the key is reinserted through the lock and turned in the opposite direction, retracting bolts 57 from recesses 60. This leaves the handle free to be returned to its outer position by spring 24.

In the foregoing description and in the drawings therein referred to, I have illustrated two embodiments of my invention, and it will be obvious that with the principles thereof so disclosed, details of construction may be easily modified by any of skill in this art without departing from the essence thereof. For instance, inside and outside latch-operating handles are shown in the disclosed embodiment directly operating a shaft in the same vertical and horizontal plane. In common and preferred forms now in use, the inside handle is not usually so placed, by suitable connections being located at a more convenient point in the inner surface of the door. Connec-

tions to illustrate well known ways and means for placing the inside handle with respect to that on the outside of the car being old and well known are not shown. Again, the designs of such handles with their recesses may be readily changed to meet the esthetic fancies of the manufacturer. Endless variations of spring and detent mechanism may also be devised. I consider all such changes obvious to those of skill in the art in the use and application of my invention, and to be within the scope thereof.

Having described my invention, I claim,—

1. In means for operating door latching mechanism, the combination of a hollow latch-operating shaft, a handle provided with a hollow shank adapted to slide over said latch-operating shaft so as to alter its position with respect to said shaft, means to releasably maintain said shank and said shaft in relatively contracted position comprising a tooth pivoted in a slot in said shaft, resilient means to normally urge said tooth against the inner bore of said shank, a shoulder in said shank to engage said tooth, and means extending through the bore of said shaft adapted for manual operation to retract said tooth against the tension of said resilient means.

2. A latch mechanism for a door having a recess therein, said latch mechanism comprising a latch-operating shaft, a latch-operating handle having a shank adapted to be moved longitudinally relative to said latch-operating shaft and to telescope therewith, resilient means tending normally to resist telescopic movement between said shank and said shaft but resiliently permitting such relative movement, a tooth pivotally fulcrumed in a slot in said shaft, and resilient means pressing against one end of said tooth so as to urge the opposite end of said tooth from the slot in said shaft.

3. A latch mechanism for a door having a recess therein, said latch mechanism comprising a handle, a latch-operating shaft having a sliding engagement with a shank forming part of said handle, means to normally urge said handle to a latch-operating position out of said recess, but resiliently permitting said shank to be manually pushed into said recess, means to releasably maintain said shank and shaft in relatively contracted position comprising a tooth pivoted in a slot in said shaft, resilient means to normally urge said tooth against the inner bore of said shank, a shoulder on said shank to engage said tooth, and a rod longitudinally movable within said shaft to move said tooth from contact with said shoulder.

4. A latch mechanism for a door having a recess therein, said latch mechanism comprising a latch handle adapted to be manipulated to a position within said recess, said handle having a shank integral therewith, a hollow member connected to the door adjacent said shank, a tooth pivoted to said member adapted to engage said shank, resilient means to urge said tooth into engagement with said shank, and means extending through said member adapted for manual operation to retract said tooth against the tension of said resilient means.

ALBERT J. LEONARD.