May 21, 1940. A. WARTIAN 2,201,963

DOOR HANDLE ASSEMBLY

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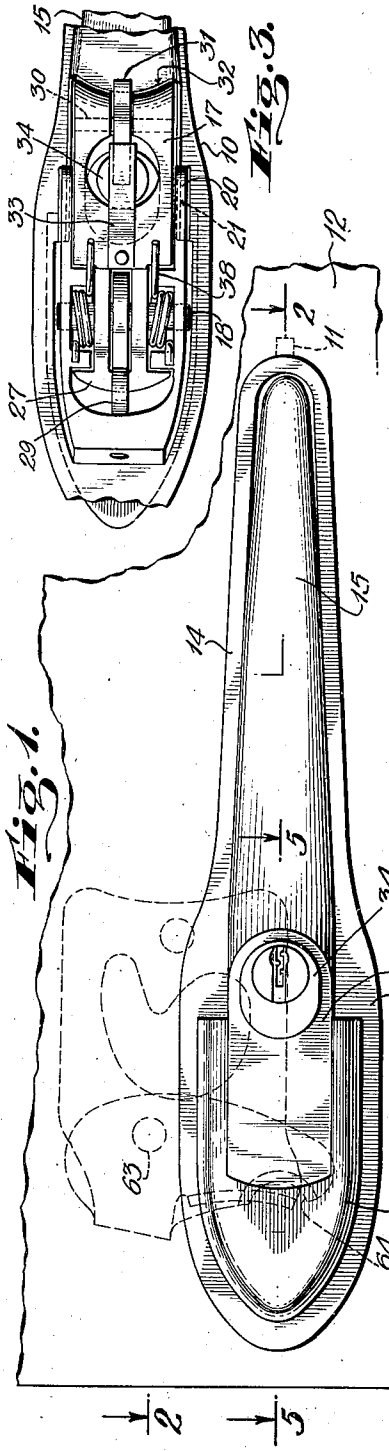


Fig. 1.

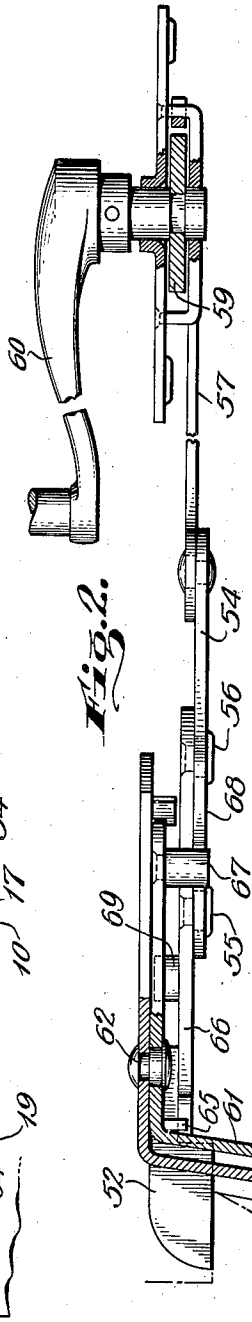
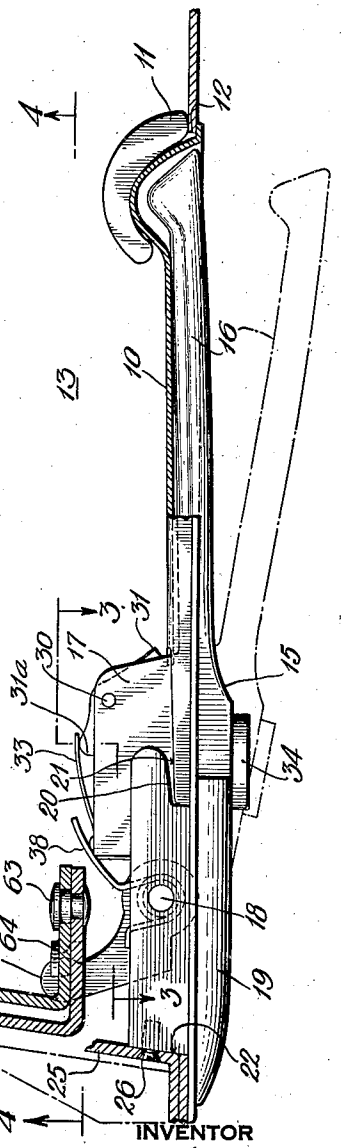


Fig. 2.

Fig. 3.



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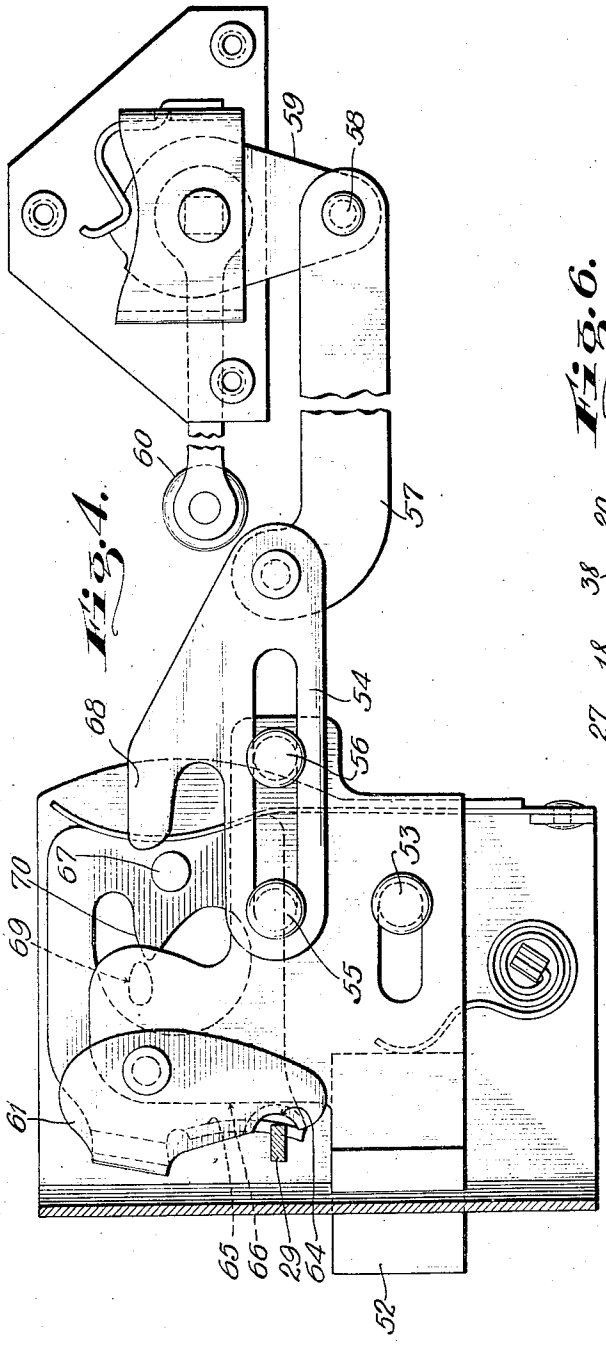


Fig. 4.

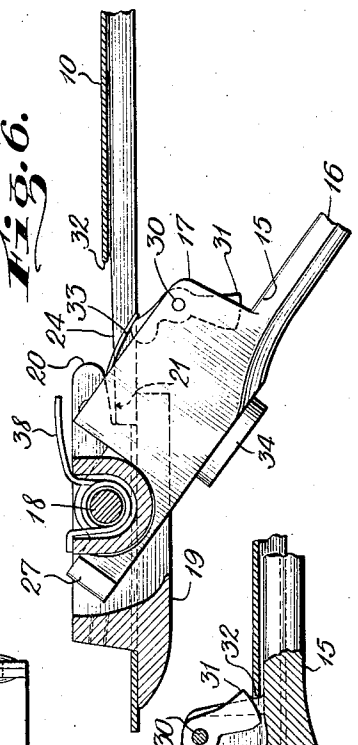


Fig. 6.

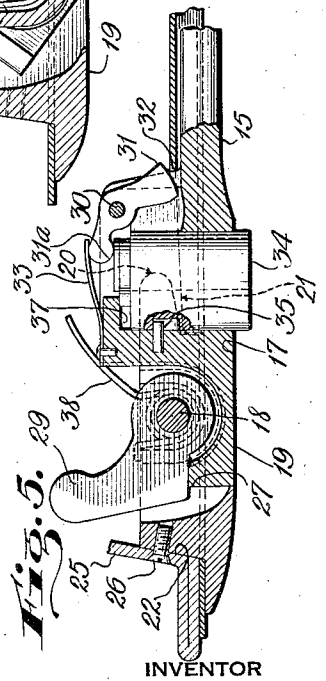


Fig. 5.

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DOOR HANDLE ASSEMBLY

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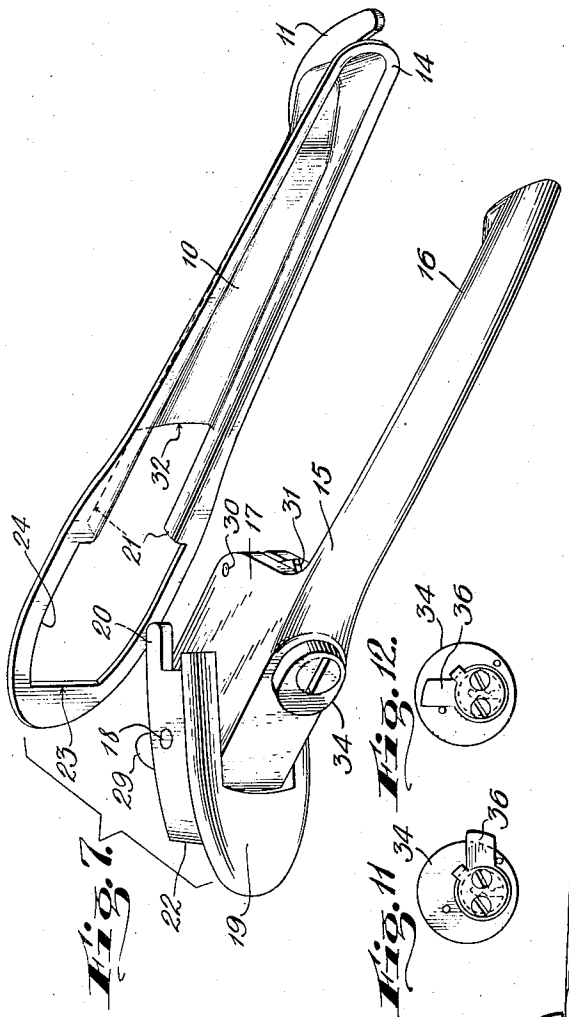


Fig. 7.

Fig. 12.

Fig. 11.

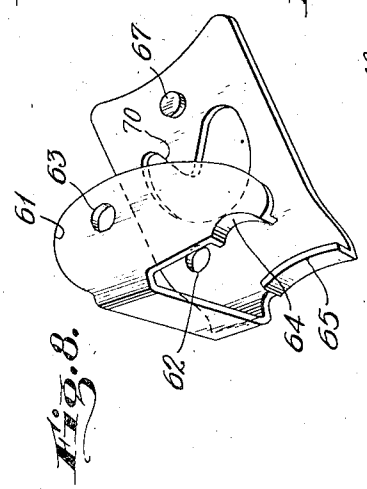


Fig. 8.

Fig. 9.

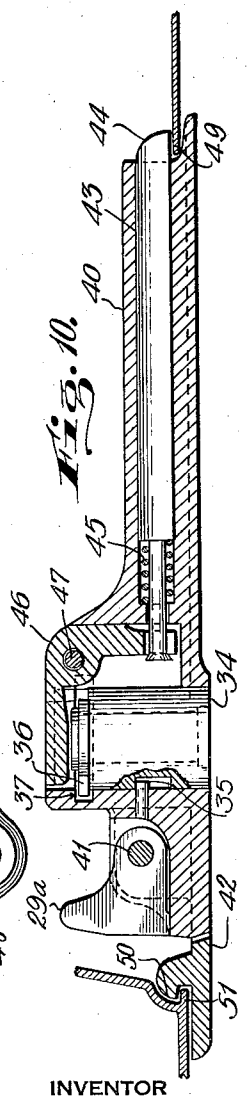


Fig. 10.

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UNITED STATES PATENT OFFICE

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DOOR HANDLE ASSEMBLY

Avagim Wartian, Detroit, Mich., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn., a corporation of Connecticut

Application February 26, 1937, Serial No. 127,945

24 Claims. (Cl. 70—208)

This invention relates to a handle assembly for mounting on a door having a recess, the handle assembly being of a type in which the handle normally lies substantially flush with the surface of the door when assembled relatively thereto. In this class belong also those handle assemblies in which the handles must first be pivoted away from the door surface and then rotated.

In this application, I shall describe and claim two modifications of my invention, one modification being divided out of my application for patent, Serial No. 90,125, filed July 11, 1936. Each modification may be used in handle assemblies in which the handle lies in various flush or semi-flush positions relatively to the door on which the assembly is mounted.

One form of my handle assembly comprises in general, a recess outlining member which is so mounted in the recess of a door as to outline that recess and form a decorative and protective support for a pivoting handle. The handle moves on its pivot out of the recess when operated to retract a latch bolt maintaining the recessed door locked. Means are provided for locking the handle within the recess outlining member against unauthorized operation, and it is impossible to remove the handle from the recess outlining member until the said handle locking means have been released. Similarly, it is impossible to remove the recess outlining member from the door recess until the handle locking means are operated. In this way, unauthorized removal of the handle assembly will, of course, be prevented.

More particularly, the form of my invention which utilizes a recess outlining member utilizes also an escutcheon member to which my handle is pivoted. This escutcheon may or may not be integral with the recess outlining member. A single means is provided for securing the recess outlining member and the escutcheon to the door, the said means being accessible only after the door is opened through authorized operation of the handle.

As a further important feature of this modification of my invention, the recess outlining member has a cut-away portion with which cooperates a latch bolt carried by the handle. This latch bolt locks the handle to the recess outlining member and against pivoting movement on the escutcheon, the latch being operable to release the handle by a push button or push cylinder carried by the handle. It is desirable to use a latch bolt for locking the handle within its recess so that the handle may be easily pressed into its recess and automatically locked therein. Since usual forms of latch bolts do not have the security I require I have arranged a novel way of mounting my latch bolt so that when it latches the handle within the recess, it is placed in a dead center position so that it really functions quite effectively to maintain the handle within the recess thereafter.

As a further feature of this modification of my invention, I so design my handle that that portion extending laterally from the latch carrying portion for hand operation is relatively thin, so that if force is exerted thereon in an attempt to break the latch bolt, it is the handle which will be broken first. This, of course, prevents a forcing of the door lock, as will be appreciated by those skilled in the art.

In the modification of my invention, divided out of my application supra, I do not show a recess outlining member, although one could readily be used, should I so desire. In this modification of my invention, the latch bolt locking the handle within the recess so cooperates with means for securing the escutcheon on which the handle is pivoted, that the handle cannot be removed from its recess, nor can the escutcheon be released from its recess and the entire assembly be removed until an authorized person operates the cylinder lock or other means to release the handle from the recess. It is only thereafter that the assembly may be removed.

For a description of my invention, I shall refer to the drawings, wherein Fig. 1 is a view of my handle applied to a door, certain parts on the inside of the door constituting a part of the lock being shown in phantom dotted lines. Fig. 2 is a partial section along lines 2—2 of Fig. 1. Fig. 3 is a partial view of part of Fig. 2 along the lines 3—3 of Fig. 2. Fig. 4 is a section along lines 4—4 of Fig. 2. Figs. 5 and 6 are partial sections along lines 5—5 and 6—6 of Fig. 1, showing the handle in two of its positions relatively to the escutcheon and the recess outlining member.

Fig. 7 is an exploded view in perspective of the handle assembly utilizing the recess outlining member. Fig. 8 is a perspective view of the bolt retracting cam of my invention. Fig. 9 is a front view of a modification of my invention forming a division of my application supra. Fig. 10 is a section along lines 10—10 of Fig. 9. Figs. 11 and 12 are views illustrating the cam action of the sliding cylinder utilized in the handle of my invention.

Referring now more particularly to the drawings, and especially to Fig. 7, one form of my

handle assembly comprises a recess outlining member 10 having an extended portion 11 adapted to fit under the end surface 12 defining a door recess 13, as is probably best shown in Fig. 2. A bead 14 formed on the recess outlining member 10 is adapted to overlie the face of the recess 13, as is best illustrated in Fig. 1. A handle 15 having a long thin hand grasp 16 and a main body portion 17, is pivoted at 18 to an escutcheon member 19. Ears 20 on the escutcheon member 19 fit behind shoulders 21 of the recess outlining member 10, while end surface 22 of the escutcheon 19 fits against the flat surface 23 at the end of a cut out portion 24 of the recess outlining member 10. The remainder of the escutcheon overlies the recess outlining member and secures it in position.

Surface 22 of the escutcheon member 19 lies against a plate 25 forming the outer edge of the door on which the assembly is mounted. A screw 26 traverses the edge plate 25 of the door and enters a screw threaded bore leading into the escutcheon 19 from its surface 22, thus securing the escutcheon to the edge of the door. It will be appreciated that because of the relation of the escutcheon to the recess outlining member as previously indicated, the end of the recess outlining member adjacent the edge of the door will be held securely in the recess of the door. At the same time, the portion 11 of the recess outlining member will hold the other end of said member within the recess 13. In effect, what I have is an interlocking overlapping connection 11, 12 which has somewhat the character of a bayonet joint. This connection is held against release by the screw 26, which is accessible only when the door is opened. Since the door may not be opened except by an authorized person, as will be indicated later, I obtain a very effective locking of my assembly relatively to the recessed door, as will be readily appreciated.

For convenience in manufacturing, which, incidentally, I consider a forward step in the art, I form the recess outlining member 10 of sheet metal while escutcheon 19 is made a separate die casting. I can readily, as a step backward, form the recess outlining member and the escutcheon of one piece.

I shall now refer to Figs. 5 and 6 for a description of the operation of my handle. There it will be seen that the handle 15 has a portion 27 extending beyond pivot 18 on which the handle is mounted relatively to the escutcheon 19. Portion 27 of the handle is adapted to operate a bolt retracting cam 29 when the handle is swung from its position of Fig. 5 to its position of Fig. 6. The handle 15 has mounted on a pivot pin 30 thereof, a latch bolt 31 which cooperates with the surface 32 of the opening 24 of the recess outlining member 10 for securely locking the handle against movement outwardly from the recess outlining member. Furthermore, the pivot 30 is so arranged relatively to the latching surface of latch 31 that the said latch will be maintained in an effective dead center relation to resist the release of the handle from the recess outlining member 10, as will be readily understood by those skilled in the art.

A spring 33 carried by the main body 17 of the handle tends to maintain the latch 31 in its dead center locking position, while also forcing the arm 31*a* of the latch 31 against the end of a cylinder lock 34. This cylinder lock 34 is adapted for sliding movement relatively to the main handle body 17, this movement being controlled by a pin 35. A cam 36 carried on the end of the cylinder 34 and rotatable under the control of a key in a manner well understood by those skilled in the art, cooperates with a slot 37 in the handle body 17 in one position thereof for maintaining the cylinder against sliding movement. This is probably best illustrated with reference to Fig. 12. In three handles of an automobile a simple push button will be used, but on the fourth handle a key operated cylinder is used, as is usual in this art.

When a key is inserted in cylinder 34 and the cam 36 rotated from the position of Fig. 11 to the position shown in Fig. 12, the cylinder 34 will be freely slidable so that it may act on the arm 31*a* of latch 31, to rotate the latch into release position against the force of spring 33. Immediately upon the release of the latch 31 from the recess outlining member, a spring 38 acts on the said handle to eject it from its recess, the degree of movement imparted being substantially that shown in dotted lines in Fig. 2. Thereafter, the handle may be grasped and a full rotation imparted thereto so that the bolt retracting cam 29 may function to retract the lock bolt, as will be indicated presently.

It will be readily appreciated that a simple push of the handle from the dotted line position of Fig. 2 or the position of Fig. 6 back into the recess outlining member 10 will automatically cause a relatching of the latch 31 for locking the handle within the recess. It should also be indicated at this time that the hand grasp 16 of the handle 15 is made of such strength that should anyone attempt to jimmy the handle out of the recess, the said hand grasp 16 will break before the latch bolt 31 will give way.

In Figs. 9 and 10, I show a modification of my invention in which no recess outlining member 10 is utilized. There, a handle 40 is pivotally secured at 41 to an escutcheon plate 42. The handle has a relatively long hand grasp which is drilled out as at 43 for housing a latch bolt 44, which is spring pressed outwardly by a spring 45 and locks under the surface 49 of one end of the recess. The latch bolt 44 is retracted somewhat in the same manner as latch bolt 31 in my first modification, there being a latch retracting bell crank lever 46 pivoted at 47 to the handle and operated by the pushing in of a cylinder 34, which is the same cylinder as used in the previous modification, and being locked to the handle by a locking cam 36 in the same way as in the first modification.

The escutcheon 42, instead of being secured through an end surface to the edge of the door as in Figs. 2 and 5, is secured by a pair of screws at the front of the door, the screws cooperating with holes 48 in the said escutcheon. In addition, it has an ear 50 fitting under the surface 51 of the end of the recess opposite the end cooperable with the nose of the latch bolt 44. It is obvious that with the latch bolt 44 locked under the surface 49 at one end of the recess of the door, and with the ear 50 of the escutcheon under the surface 51 at the other end of the recess, endwise movement of the assembly as a whole relatively to its recess will be impossible.

Therefore, even though the screws fitted through the holes 48 be loosened and removed, it will be impossible to remove the assembly from the door. Only upon the authorized retraction of the latch bolt 44 by operation of the cylinder 34, will it be possible to release one end of the assembly from the end surface 49 of the recess.

Thereafter, endwise movement will release the member 50 from the other end 51 of the recess, and the handle assembly will then be removable, as will be quite clear.

The lock with which my handle functions is not an invention to be claimed in this application, being described and claimed in my application supra. It will be well, however, to describe the said lock somewhat generally, and to illustrate its cooperation with the bolt retracting cam 29 in the modification of Fig. 5, and the bolt retracting cam 29a of the modification of Fig. 10.

My lock utilizes a bolt 52 mounted for sliding movement on pin 53 and adapted to be retracted through a link 54 cooperating with its pin 55. The link 54 is further mounted on a guide pin 56 carried by the bolt 52. The link 54 is in turn actuated through a link 57 pivoted at 58 to a lever 59 operated by the inside handle 60. This operation is, of course, conventional.

A retracting member 61 (Fig. 8) is pivoted for rotation at points 62 and 63 on the body of the lock, and has a rounded portion 64 which is contacted by either of the bolt retracting cams 29 or 29a, so as to be rotated. When so rotated by the cam 29, its further portion 65 abuts the surface 66 of the door bolt 52, and retracts that bolt in a manner similar to the way in which the bolt is retracted by the link 54 through operation of the inside handle.

It will be observed that there is a substantial space between the cam 29 and the cam actuated portion 64 of the retracting member 61, as will be apparent from viewing Fig. 4. This space is arranged to allow a slight pivoting of the handle 15 from its full line position of Fig. 2 to the dotted line position of Fig. 2, under the influence of spring 38, so that the handle may thereafter be grasped and full force applied thereto to retract the bolt.

It will be observed in Figs. 4 and 8 that the retracting member 61 carries a pin 67, this pin cooperating with a shouldered portion 68 of the link 54. When the inside handle is moved in a direction reverse to the direction in which it retracts the latch bolt through link 54, the shouldered portion 68 operates on pin 67 to rotate the retractor 61 so as to bring surface 64 solidly against the cam 29. This taking up of the space between the cam 29 and the member 64 prevents the handle from moving out of its recess, even though latch 31 be released. In this way, three doors of the car on which a key operated lock 34 will not be used, may be locked from the inside. The pin 56 cooperating with link 54 prevents the locking out of the operator if the lock is set with the door open, the pin 56 throwing the link 54 into the position of Fig. 4 as the bolt 52 is retracted when the door is slammed shut.

A still further feature of the lock, shown best in Fig. 4, resides in the automatic movement of the handle into its recess outlining member, when the bolt 52 is retracted as by the slamming of the door. In such a case, a lug 69 on the bolt will contact a surface 70 on the retracting member 61 and rotate it in somewhat the same manner as it is rotated by the shouldered portion 68 cooperating with its pin 67. This rotation of the retractor is quite forceful and rapid because of the rapid retraction of the bolt upon the slamming shut of the door. Therefore, a somewhat rapid movement is imparted to the retractor 61 and this movement is sufficient, through the coaction of surfaces 64 and 29 to force the handle into its recess, acting to lock it within the recess thereafter. As I indicated previously, the lock construction is claimed in my application supra and is only outlined here to facilitate an understanding of the invention herein disclosed.

While I have shown two specific embodiments of my invention, it should be understood that my invention is susceptible of many forms of construction, and I do not wish to be limited in my monopoly except as may be required by the state of the art.

I now claim:

1. A recessed handle assembly for a door having a recess, comprising an escutcheon, a handle pivoted to said escutcheon and adapted to lie in said recess, a bolt retractible by pivotal movement of said handle out of said recess, latch means for locking said handle against pivoting movement relatively to said escutcheon and outwardly of said recess, a key operated cylinder carried on said handle and adapted to operate said latch means to release said handle for pivoting movement, readily accessible means for securing said escutcheon in said recess, and means cooperable with said latch means whereby said readily accessible means are inoperative to release said escutcheon when said handle is maintained locked in said recess by said latch means.

2. A recessed handle assembly for a door having a recess, comprising an escutcheon, a handle pivoted to said escutcheon and adapted to lie in said recess, a bolt retractible by pivotal movement of said handle out of said recess, latch means for locking said handle against pivoting movement relatively to said escutcheon and outwardly of said recess, a cylinder lock in said assembly for operating said latch means to release said handle, and readily accessible means for securing said escutcheon in said recess accessible for operation only upon the opening of said door.

3. A recessed handle assembly for a door having a recess, comprising an escutcheon, a handle pivoted to said escutcheon and adapted to lie in said recess, a spring normally urging said handle out of said recess, latch means for locking said handle against pivoting relatively to said escutcheon and therefore against moving out of said recess under the influence of said spring, a cylinder lock in said assembly for operating said latch means to release said handle, and readily accessible means for securing said handle assembly in said recess, accessible for operation only upon the opening of said door.

4. A recessed handle assembly for a door having a recess, comprising a recess outlining member, means at one end of said recess outlining member adapted to fit in behind the edge of the recess, the other end of said recess outlining member fitting into said recess adjacent the edge of the door, and a readily accessible retaining member operated from the edge of the door for locking the said other end of said recess outlining member in said recess.

5. A recessed handle assembly for a door having a recess, comprising a recess outlining member, fastening means between said recess outlining member and said recess forming an overlapping interlocking connection for securing said recess outlining member in said recess, a readily accessible retaining means operated from the edge of the door for retaining the recess outlining member against removal, and a handle fitting

into said recess outlining member and adapted to swing outwardly relatively thereto.

6. A recessed handle assembly for a door having a recess, comprising a recess outlining member having one end entering under an end surface of the recess, while the other end of said outlining member fits against the other end of said recess, retaining means for securing the said other end of the recess outlining member against removal from said recess, and a handle fitting into said recess outlining member and adapted to swing outwardly relatively thereto.

7. A recessed handle assembly for a door having a recess, comprising a recess outlining member having one end entering under an end surface of the recess, a portion of said recess outlining member lying adjacent the edge of the door, means in said door edge securing the recess outlining member against removal, and a handle fitting into said recess outlining member and adapted to swing outwardly relatively thereto.

8. A handle assembly for a door having a recess, said assembly having one end entering under an end of the recess and releasable therefrom by endwise movement, securing means operated from a portion of the door inaccessible from the outside when the door is closed for preventing said endwise movement, and a handle fitting into said recess outlining member and adapted to swing outwardly relatively thereto.

9. A handle assembly for a door having a recess, said assembly comprising a recess outlining member having one portion thereof entering under a surface outlining the said recess, an escutcheon and a handle pivoted to said escutcheon fitting into said recess outlining member, means for locking said handle to said recess outlining member, and means cooperable with said escutcheon for securing said recess outlining member in said recess and said escutcheon in said recess outlining member.

10. A handle assembly for a door having a recess, comprising a handle pivoted to said assembly and having a hand grasp extending from a main handle body portion on which the said handle is pivoted, a cylinder lock in the said handle body portion and mounted for sliding movement when released, a latch carried by said main body portion of the handle for locking said handle against pivotal movement relatively to said assembly, said latch being releasable by sliding movement of said cylinder lock.

11. A handle assembly for a door having a recess, comprising a recess outlining member, an escutcheon at one end of said recess outlining member, a handle having a body portion pivoted to said escutcheon and a hand grasp extending the length of said recess outlining member and normally lying therein, a bolt retracted by pivotal movement of said handle, and a latch member carried by the body portion of said handle for locking said handle in said recess outlining member.

12. A handle assembly for a door having a recess, comprising a recess outlining member, an escutcheon at one end of said recess outlining member, a handle having a body portion pivoted to said escutcheon and a hand grasp extending the length of said recess outlining member and normally lying therein, a latch carried by the body portion of said handle for locking said handle in said recess outlining member, and a sliding cylinder in said body portion for actuating said latch to release the handle.

13. A handle assembly for a door having a recess, comprising a recess outlining member, an escutcheon portion at one end of said recess outlining member, a handle having a body portion pivoted to said escutcheon portion and a hand grasp extending the length of said recess outlining member and normally lying therein, a pivoted latch carried by the body portion of said handle, said recess outlining member having a surface with which said latch cooperates to lock said handle in said recess outlining member, the pivot of said latch being so placed relatively to said surface as to cause said latch to assume a dead center position opposing the movement of said handle out of said recess outlining member.

14. A handle assembly for a door having a recess, comprising a recess outlining member, an escutcheon at one end of said recess outlining member, a handle having a body portion pivoted to said escutcheon and a hand grasp extending the length of said recess outlining member and normally lying therein, a pivoted latch carried by the body portion of said handle, said recess outlining member having a surface with which said latch cooperates to lock said handle in said recess, the pivot of said latch being so placed relatively to said surface as to cause said latch to assume a dead center position opposing the movement of said handle out of said recess outlining member, a spring urging said latch into said dead center position, and a cylinder in said handle for moving said latch out of said dead center position whereby to release the handle for movement out of said recess outlining member.

15. A handle assembly for a door having a recess, comprising a recess outlining member, an escutcheon at one end of said recess outlining member, a handle having a body portion pivoted to said escutcheon and a hand grasp extending the length of said recess outlining member and normally lying therein, means for locking said handle in said recess, and a spring between said escutcheon and said handle normally pressing said handle from said recess outlining member.

16. A door lock including an outside handle mounted for movement into and out of a recess in the outer side of a door to which said lock is applied, an escutcheon inserted into said recess with said handle, means securing said escutcheon at one end of said recess with an edge of said escutcheon overlying part of the edge of said recess, means mounting said handle for pivotal movement relatively to said escutcheon, and a spring for swinging said handle on said mounting means and out of said recess.

17. A door lock including an outside handle mounted for movement into and out of a recess in the outer side of a door to which said lock is applied, an escutcheon inserted into said recess with said handle, means securing the escutcheon in said recess at one end of said recess, means securing the handle in said recess at the other end of said recess, said escutcheon securing means being releasable only upon movement of the handle out of the recess, whereby said handle and escutcheon are locked against removal from said recess until said handle is released from its end of the recess.

18. A door lock including an outside handle mounted for movement into and out of a recess in the outer side of a door to which said lock is applied, an escutcheon inserted into said recess with said handle, said escutcheon forming an endwise overlapping joint with said recess, and readily accessible means locking said handle in

said recess in posiiton to prevent endwise movement of said handle and escutcheon in said recess to prevent separation of said escutcheon and handle from said recess.

19. A handle assembly for a door having a recess, comprising a recess outlining member, a handle pivoted on said recess outlining member, a latch carried by said handle for securing it against movement out of said recess outlining member, means for retracting said latch and thus releasing said handle for pivoting movement out of said recess outlining member, a spring for projecting said handle when said latch is released, a bolt retracting cam movable by said handle to retract a latch bolt, said bolt retracting cam limiting to a predetermined degree the projection of said handle from said recess by said spring.

20. A handle assembly for a door having a recess, comprising an escutcheon, a handle pivoted at one end to said escutcheon and adapted to lie in said recess, a latch for securing said handle against movement out of said recess, means for retracting said latch and thus releasing said handle for movement out of said recess, a spring for projecting said handle from said recess when released from said latch, a bolt retracting cam connected to and movable by said handle to retract a latch bolt as said handle rotates on its pivotal mounting, said bolt retracting cam limiting to a predetermined degree the projection of said handle from said recess by said spring.

21. A handle assembly for a door having a recess, comprising an escutcheon, a handle having a main body portion and a hand grasp portion, means mounting said handle through its main body portion for rotation relaitvely to said escutcheon, a sliding cylinder lock in the main body portion of said handle adapted for inward sliding movement in said main body portion, means for locking said cylinder lock against said sliding movement relatively to said handle, and a latch carried by said handle for locking said handle against rotation releasable by the sliding movement of said cylinder lock.

22. A handle assembly for a door having a recess, comprising an escutcheon, a longitudinally extending handle, means mounting said handle at one end thereof for rotation relatively to said escutcheon, a sliding cylinder lock in the said handle near the end thereof rotatably mounted on said escutcheon and adapted for inward sliding movement in said handle, means for locking said cylinder lock against said sliding movement relatively to said handle, and a latch carried by said handle for locking said handle against rotation releasable by the sliding movement of said cylinder lock.

23. A handle assembly for a door having a recess, comprising an escutcheon, a handle having a main body portion and a hand grasp portion, means mounting said handle through its main body portion for rotation relatively to said escutcheon, a push button in the main body portion of said handle adapted for inward sliding movement in said main body portion, and a latch carried by said handle for locking said handle against rotation releasable by the sliding movement of said push button.

24. A handle assembly for a door having a recess, comprising an escutcheon, a longitudinally extending handle, means mounting said handle at one end thereof for rotation relatively to said escutcheon, a push button in the said handle near the end thereof rotatably mounted on said escutcheon and adapted for inward sliding movement in said handle, and a latch carried by said handle for locking said handle against rotation releasable by the sliding movement of said push button.

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