July 8, 1924. 1,500,167

H. G. VOIGHT

LOCK

Filed July 3, 1918 3 Sheets-Sheet 1

Fig. 1.

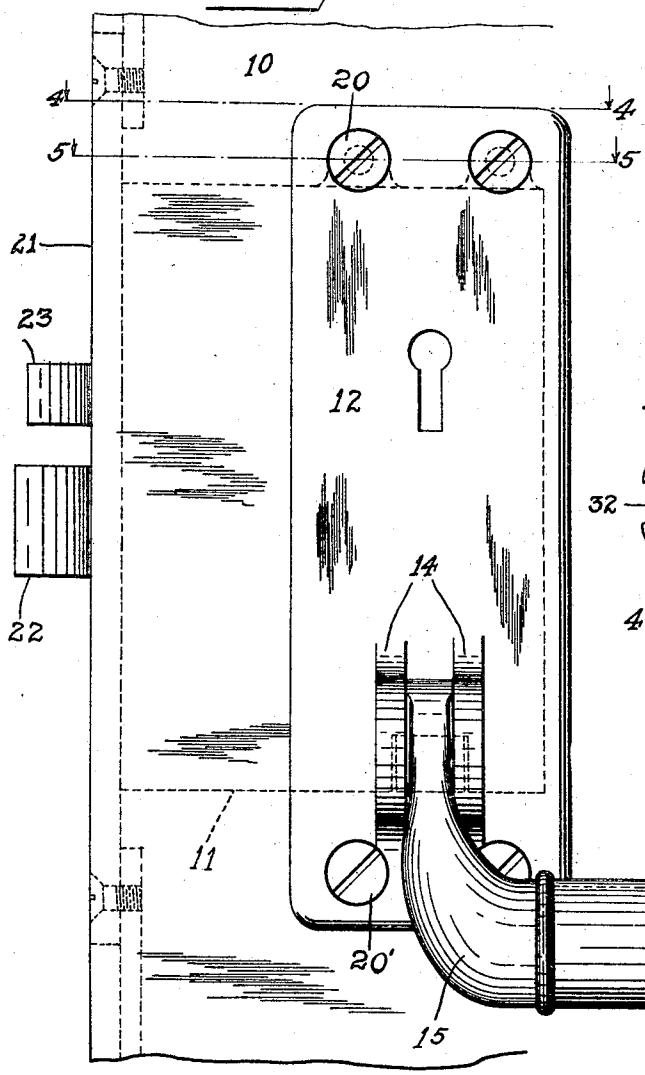


Fig. 9.

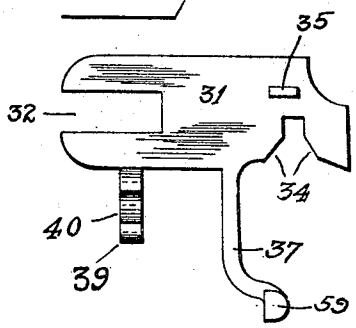
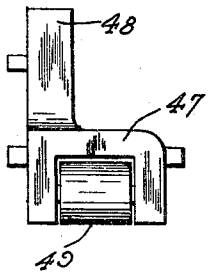


Fig. 8.



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Filed July 3, 1918 3 Sheets-Sheet 2

Fig. 2.

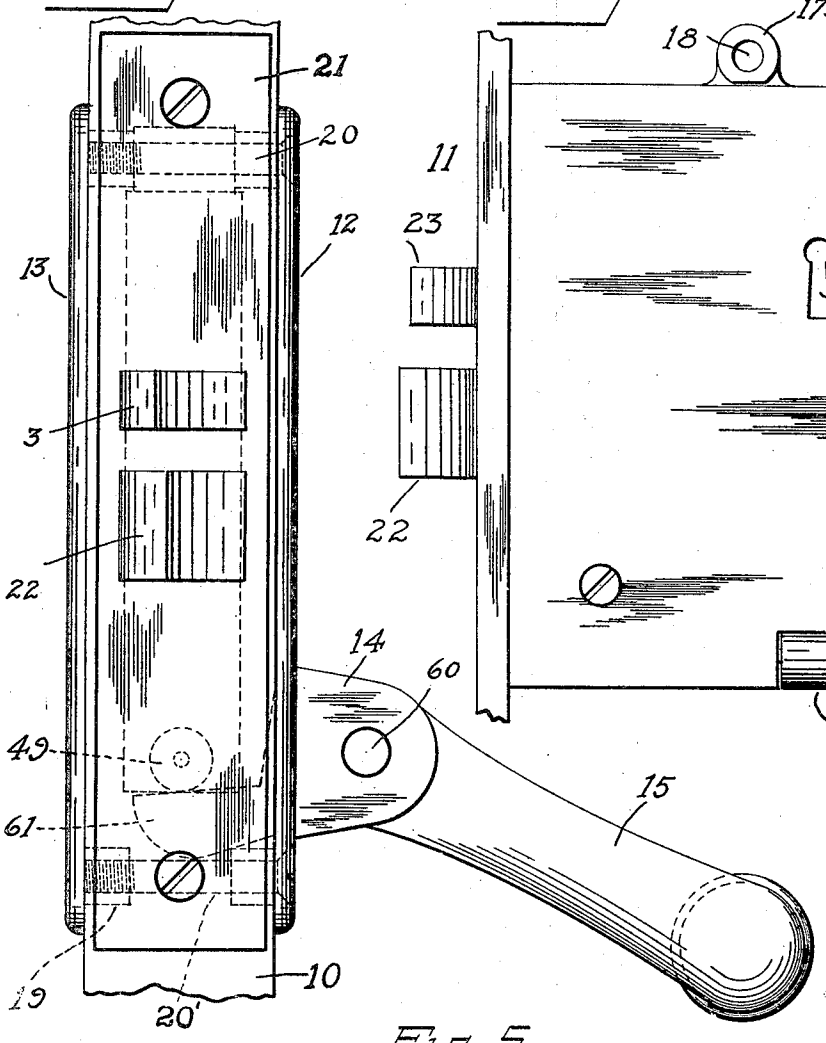
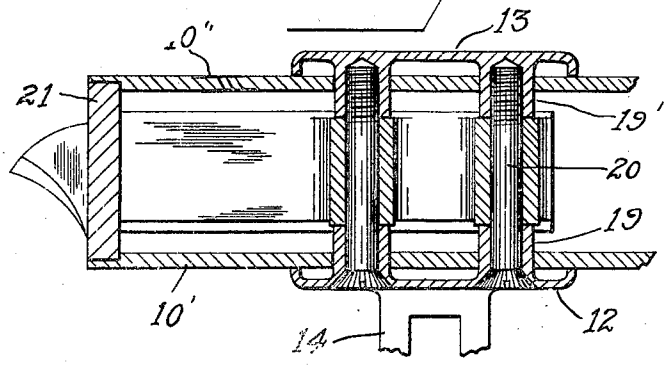


Fig. 3.

Fig. 5.



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Filed July 3, 1918 3 Sheets-Sheet 3

Fig. 6.

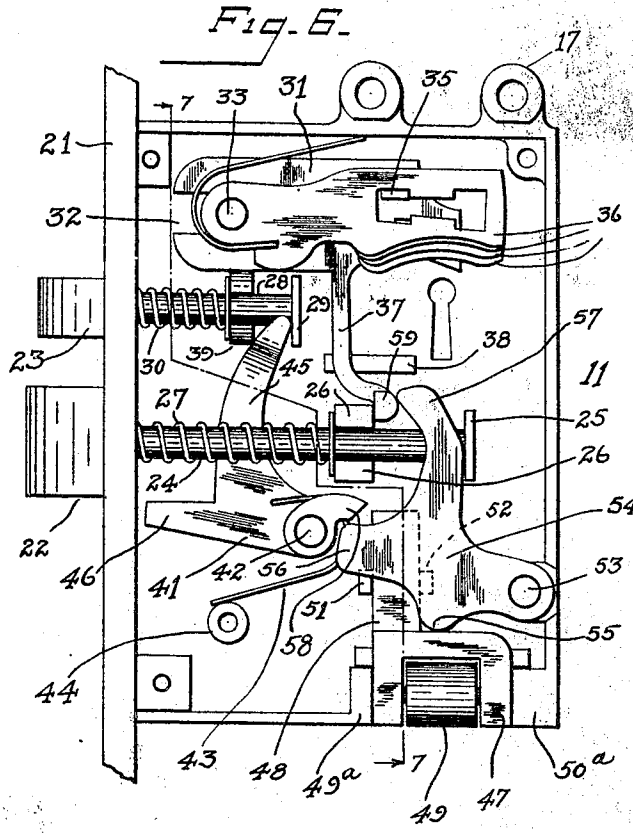


Fig. 7.

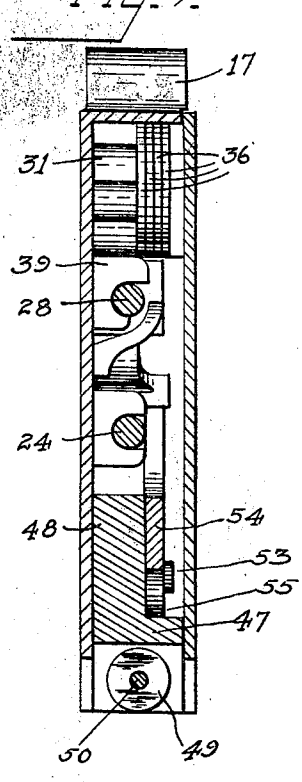
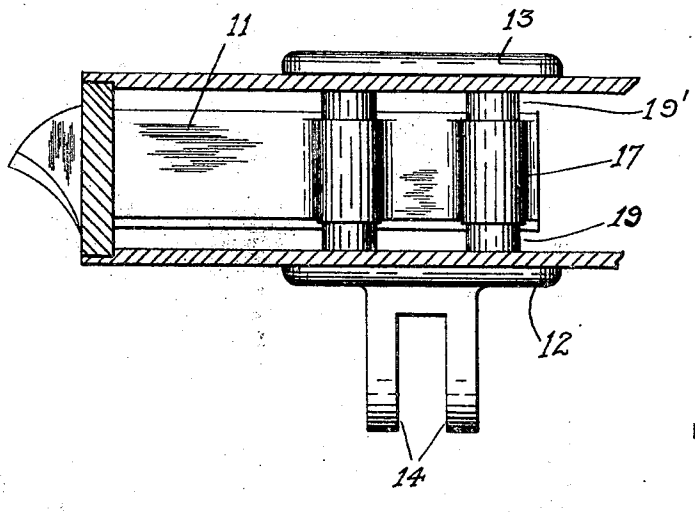


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY G. VOIGHT, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO SARGENT & COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LOCK.

Application filed July 3, 1918. Serial No. 243,126.

To all whom it may concern:

Be it known that I, HENRY G. VOIGHT, of New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

This invention relates to locks, and more particularly to an emergency exit or so-called "panic" lock of the mortise type.

In applying to doors emergency exit locks of the mortise type provided with a separate escutcheon plate upon which the emergency lever bar or so-called "panic" bar is pivotally mounted, considerable difficulty has been encountered heretofore in mounting the escutcheon upon the face of the door and retaining the same in proper alignment with the lock which is mortised within the door. Since the emergency lever bar which is pivotally mounted upon the escutcheon plate cooperates with a sliding element of the mortise lock to retract the latch bolt, it is important, in order that the parts may operate properly, that the escutcheon plate be positioned and maintained in proper alignment with its mortise lock.

The principal object of the present invention is to provide an emergency exit lock and its escutcheon plate upon which an emergency lever bar is pivotally mounted with cooperating means for properly positioning the escutcheon plate relatively to the lock and for retaining this plate in proper alignment with its lock.

Another object of the invention is to provide an anti-friction roller between the emergency lever bar and the element within the mortise lock which this bar engages and operates.

Still another object of the invention is to improve the construction of the operating elements within the emergency exit lock and to reduce the number of parts within the lock required to perform the desired functions.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings,

Fig. 1 is a side elevation of a fragmentary portion of a door having my emergency exit lock applied thereto;

Fig. 2 is an edge view of the portion of the door shown in Fig. 1, having my lock applied thereto;

Fig. 3 is a side view of my improved mortise lock removed from the door;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1, looking in the direction of the arrows;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1, looking in the direction of the arrows;

Fig. 6 is a side view of the lock shown in Fig. 3 with the cap plate removed;

Fig. 7 is a sectional view taken substantially on the line 7—7 of Fig. 6, looking in the direction of the arrows; and

Figs. 8 and 9 are plan views of detail features of my lock.

The drawings may be briefly described as disclosing a fragmentary portion of a door, designated by the numeral 10, in which door is mounted an emergency exit lock 11 of the mortise type. Upon the inside of the door 10 is mounted an escutcheon plate 12, and upon the outside of the door a second escutcheon plate 13. The inner escutcheon plate 12 is provided with a pair of spaced lugs 14, between which the emergency exit lever 15 is pivotally mounted. The principal object of my invention, as above briefly stated, is to provide cooperating means between the mortise lock 11 and the inside escutcheon plate 12, which will insure that when the lock and the plate are mounted upon a door, these elements will be properly positioned relative to each other and will be rigidly secured in this position so that the emergency exit lever 15 will have its inner end properly positioned relative to the mortise lock, and so that the escutcheon plate 12 will not be worked loose upon the door by the numerous severe strains to which it may be submitted when heavy pressure is exerted upon the emergency exit bar or panic bar 16 which operates the lever 15.

The means which I have provided for properly positioning the escutcheon plate 12 relative to the lock 11 consists of a plurality of lugs such as 17 which preferably are formed integrally upon the upper edge of the lock casing and project upwardly therefrom, as shown more particularly in Figs. 3 and 6. These lugs have drill holes 18 formed therethrough. Upon the inner face of the inner escutcheon plate 12

are formed a corresponding number of bosses 19 having drill holes formed therethrough, as shown more particularly in Fig. 5, and upon the inner face of the outer escutcheon plate 13 are formed similar bosses 19′ having threaded sockets therein. These escutcheon plates are adapted to be rigidly secured to the opposite sides of the door by bolts 20 which extend through the plate 12 and the bosses formed thereupon, through the drill holes formed in the bosses 17 upon the lock 11 and have threaded engagement with the threaded sockets formed in the bosses 19′ upon the outer escutcheon plate, as shown particularly in Fig. 5, the arrangement being such that the workman mounting the lock upon the door must get the mortise lock and the escutcheon plates in proper alignment before he will be able to insert the bolts 20 through the drill holes formed in the inner escutcheon plate and the lugs 17, thereby insuring that when the plates and lock are secured in place upon the door by the bolts 20, they will be in proper alignment and rigidly secured in this position. The lock and escutcheon plates herein disclosed may be applied either to a hollow metal door or to a solid wooden door. I have illustrated my lock as applied to a hollow metal door having the metal walls 10′ and 10″. When my lock is applied to this type of door, the bosses 19 and 19′ should be of sufficient length to contact with the lugs 17 upon the lock 11 when the escutcheon plates 12 and 13 are held in their proper engagement with the faces of the door upon which they are mounted, so that when the parts are assembled, the lock 11 will be held by the ends of the bosses from moving transversely within the hollow metal door, as shown particularly in Figs. 4 and 5. It is not necessary to provide lugs upon the lower face of my lock 11, similar to the lugs 17, as the lugs upon the upper edge of the lock will be sufficient to properly position the escutcheon plates, and, furthermore, such lugs formed upon the lower face of the lock would, in some cases, be in the way of the proper operation of the finger which is formed upon the emergency lever bar 15. I therefore provide upon the lower portion of the escutcheon plates 12 and 13, bosses 19 and 19′ similar to those formed upon the upper portions of these plates. The plate 12 and the bosses 19 have drill holes formed therethrough adapted to receive the bolts 20′ which extend through this plate and have threaded engagement with the sockets formed in the bosses 19′.

The lock 11 consists preferably of the usual type of hollow casing provided with a face plate 21, upon which is pivotally mounted in a well known manner a latch bolt 22 and a dog-controlling plunger 23. The latch bolt is provided with a latch bolt stem 24 for operating the same. The outer end of this stem, which is not shown, is pivotally secured to the latch bolt 22, and the rear end is provided with a cross-head 25, by means of which the bolt may be retracted. This stem is mounted to slide between a pair of spaced stumps 26, which are rigidly secured to the lock casing, and the latch bolt is normally retained in its protracted position by a coiled spring 27 which reacts against the stumps 26. The dog-controlling plunger 23 is provided with a bolt stem 28 and with a cross-head 29. The dog-controlling plunger is normally held in its protracted position by a coiled spring 30. The latch bolt 22 and the dog-controlling plunger 23 may be retained in their retracted position by a key-operated sliding bar 31, the forward end of which is provided with a slot 32, which slidably receives a post 33 rigidly secured to the lock casing. The slot 32 and post 33 cooperate to guide the forward end of the sliding bar so that it will move in a longitudinal path when operated by its key. The rear portion of the sliding bar 31 is provided with the usual talons 34 and with a stump 35 mounted upon a lateral face of this slide. The sliding bar 31 is provided with the usual type of tumblers 36, which are pivotally mounted upon the post 33 and cooperate with the stump 35 upon the sliding bar to retain this bar in either its protracted or retracted position, in a well-known manner. The sliding bar 31 is provided with a downwardly projecting, relatively long finger 37, one face of which rests upon and has sliding engagement with a lug 38 formed upon the lock casing. The sliding bar 31 is provided with a second downwardly directed finger 39, having a notch or seat 40 therein, as shown more particularly in Fig. 9. This seat is adapted to slidably receive the stem 28 which operates the dog-controlling plunger 23 and also serves to retract this plunger by contacting with the cross-head 29 when the sliding bar 31 is retracted. The spring 30, which normally retains the plunger 23 in its protracted position, reacts against one face of this finger 39.

The latch bolt 22 is normally dogged in its protracted position by a dogging lever 41 which is pivotally mounted upon a post 42 rigidly secured to the lock casing. This dogging lever is normally urged to its latch-dogging position by a spring 43 which reacts against a post 44. The dogging lever 41 is provided with a projecting arm 45, the outer end of which is retained in contact with one face of the cross-head 29 by the spring 43, the arrangement being such that when the dog-controlling plunger 23 is in its protracted position, the cross-head 29, through the arm 45, swings the lever 41 about its pivot so that the projecting end 46

of this lever will clear the latch bolt 22 and permit the same to be retracted, but when the dog-controlling plunger is moved to its retracted position by contacting with the strike plate upon the door jamb, when the door is closed, the stem 28 and the cross-head 29 upon the inner end of this stem will be moved inwardly and thereby permit the dogging lever 41 to be swung about its pivot 42 so that the end 46 will lie behind the latch bolt and prevent the same from being retracted.

The lock casing has a notch cut in its lower edge, through which projects the emergency slide or lifter 47. The lower end of this slide has a substantially U-shaped configuration, as shown more clearly in Fig. 8, and in the clearance space formed between the opposite legs of the U-shaped construction, is mounted an anti-friction roller 49 upon an axle 50. This emergency slide or lifter 47 is constructed so that it will slide in a vertical direction and is retained in its proper path by the opposite faces of this slide, which contact with the walls 49ª and 50ª of the slot formed in the lock casing, and the upper portion 48 of the slide is retained in its proper path by a plurality of lugs such as 51 and 52. Pivotally mounted upon a stud 53 carried by the lock casing is a swinging lever 54, which is provided with the projections or contact portions 55, 56 and 57. The contact portion 55 of this lever rests against an inner face of the emergency slide 47, the arrangement being such that the lever 54 is swung about its pivotal mounting 53 when the slide 47 is raised. The projection 56 upon this lever is constructed to cooperate with a projecting portion 58 formed upon the dogging lever 41, and the projecting arm 57 is so constructed that a portion of this arm contacts with one face of the cross-head 25 mounted upon the inner end of the latch bolt stem 24, and another portion of this arm 57 is positioned to contact with a lug 59 formed upon the outer end of the finger 37.

The emergency lever bar 15, which is pivotally mounted between the lugs 14 by means of a pivot pin 60, is provided with an inwardly directed finger 61 which is positioned to contact with the anti-friction roller 49 and to force the emergency slide 47 into its lock casing when the emergency lever 15 is depressed by exerting pressure on the panic bar 16.

The operation of my device is as follows: The latch bolt 22 and the dog-controlled plunger 23 are normally held in their protracted position by the springs 27 and 30, but, if desired, both the latch bolt and the plunger may be simultaneously retracted by inserting a key in the key-hole 62 and retracting the sliding bar 31, whereupon the finger 39, in which the stem 28 is slidably mounted, contacts with the cross-head 29 and retracts the dog-controlling plunger. At the same time, the long projecting finger 37 which is formed integral upon the sliding bar, contacts with the finger-like portion 57 of the lever 54 and swings this lever about its pivot in a rearward direction, but, due to the fact that a portion of this finger 57 contacts with the cross-head 25, when the sliding bar 31 is retracted, the latch bolt 22 will be retracted through the latch bolt stem and the cross-head. It should be noted that whenever the lever 54 is swung about its pivot 53 in a rearward direction, either by means of the finger 37 which contacts with the extension 57 or by means of the emergency slide 47, the inner face of which contacts with the lug 55 formed upon the lever 54, the extension 56 will contact with the projection 58 upon the dogging lever 41 so that this dogging lever will be swung to its inoperative position, as shown in Fig. 6, in order that the latch bolt 22 may be retracted.

From the above description, it is thought it will be apparent that my emergency lock is so constructed that it may at all times be released by its panic bar from the inside of the door, in order to open the same. When the sliding bar 31 is protracted by a key, not shown, inserted from either side of the door both the latch bolt and the dog-controlling plunger will be released and moved to their protracted position by their operating springs, as shown in Fig. 6. When in this position it will be apparent that the door may be readily opened from the inside of the same by means of the panic bar 16, due to the finger 61 formed upon this bar which contacts with the anti-friction roller 49 to raise the slide 47, whereupon the lever 54 is operated to simultaneously swing the dogging lever 41 to its inoperative position and to retract the latch bolt 22. The dog-controlling plunger 23 does not need to be operated in order to permit the door to be opened, since this plunger does not enter an opening in the strike plate upon the door jamb, but is forced into its lock by the strike plate, in order that the dogging lever 41 will be permitted to swing to its dogging position as soon as the door reaches its closed position. When the slide bar 31 is operated by its key to retract the latch bolt and the dog-controlling plunger, the door is unlocked and may be opened from either the inside or outside of the same.

It will be obvious that my novel means for mounting the escutcheon plates upon the door in proper alignment with a mortise lock is not limited to the particular means herein disclosed for securing the escutcheon 12 to the lock 11, since numerous changes may be made in the device herein disclosed

without departing from the scope of my invention; nor is my invention limited to the particular type of panic bar herein disclosed, since any desired type of panic bar or emergency lever may be used without departing from the scope of my invention as defined in the annexed claims. Furthermore, although I have disclosed an anti-friction roller mounted upon the emergency slide 47, it will be apparent that this roller, in order to reduce the friction between the slide 47 and the finger 61, may be mounted upon either the emergency slide or the finger, and it will be apparent that any form of anti-friction device may be substituted for the roller herein disclosed without departing from the scope of my invention as defined in the claims.

1. In combination with an emergency exit lock, an escutcheon having lugs upon the outer face thereof having an emergency actuating lever pivotally mounted between said lugs, and means for securing said escutcheon to said lock, whereby said emergency lever is properly positioned relative to said lock.

2. In combination with an emergency exit lock, an escutcheon provided with inwardly projecting lugs having an emergency actuating lever pivotally mounted thereupon, and means passing through said lugs and lock for retaining said escutcheon in proper position relative to said lock, whereby said emergency lever is properly positioned relative to said lock.

3. In combination with an emergency exit lock, an escutcheon having an emergency actuating lever pivotally mounted thereupon, lugs formed upon said lock, and securing means engaging said escutcheon and said lugs for positioning said escutcheon relative to said lock.

4. In combination with an emergency exit lock, an escutcheon having an emergency actuating lever mounted thereupon, lugs formed upon said lock, bosses formed upon said escutcheon and positioned to contact with said lugs to retain the escutcheon in spaced relation to said lock, and securing means passing through said lugs and bosses for positioning said escutcheon relative to said lock and for preventing movement therebetween, whereby said emergency actuating lever is properly positioned relative to said lock.

5. In combination with an emergency exit lock, an escutcheon spaced from said lock, said escutcheon having an emergency actuating lever pivotally mounted thereupon with the inner end of said lever positioned below the lock case to be swung into and out of operative engagement with a portion of said lock, and securing means for rigidly fastening said escutcheon to said lock to prevent the operation of said lever from producing a relative displacement between said lock and escutcheon.

6. In combination with an emergency exit lock, an escutcheon having an emergency actuating lever pivotally mounted on the outer face thereof, screws passing through said escutcheon and said lock for properly aligning the escutcheon with its lock and for preventing relative displacement therebetween, whereby said emergency lever is retained in its proper operating relation to said lock.

7. In combination with an emergency exit lock having perforated lugs upon the case thereof, escutcheons for said lock, one of said escutcheons having an emergency actuating lever mounted thereupon, and securing means engaging said escutcheons and lock for properly aligning the escutcheons with said lock and preventing relative displacement therebetween, whereby the emergency actuating lever is retained in its proper position relative to said lock.

8. In combination with an emergency exit lock, escutcheons having inwardly directed bosses formed thereupon positioned to contact with said lock and retain the escutcheons in spaced relation relative to said lock, and means passing through one of said escutcheons and said lock for securing the escutcheons to the lock and preventing them from being displaced relative to the lock, whereby said emergency lever is properly positioned relative to said lock.

9. In combination with an emergency exit lock, an escutcheon having an emergency actuating lever mounted thereupon, means within said lock operated by said actuating lever, an anti-friction roller between said means and the actuating lever, and means for securing said escutcheon to said lock, whereby said emergency lever is positioned and retained in its proper operating position relative to said first mentioned means.

10. In combination with an emergency exit lock, an escutcheon having an emergency actuating lever mounted thereupon, an emergency slide within said lock operated by said lever, anti-friction means positioned between said slide and lever to reduce the friction therebetween, and securing means connecting said escutcheon and lock to prevent relative displacement therebetween, whereby said emergency lever is retained in its proper operating relation to said emergency slide.

11. In a lock, a lever operated slide, a key-operated bar, a latch bolt, a lever for dogging said bolt in its protracted position, a lever for simultaneously retracting said latch bolt and moving said dogging lever to its inoperative position, said last mentioned lever having operative engagement with said slide and said key-operated bar.

12. In a lock, a latch bolt having a latch bolt stem, a lever for dogging said bolt in its

protracted position, a pivoted lever having direct operative engagement with said stem and with said dogging lever, and means for operating said pivoted lever for simultaneously retracting said latch and moving said dogging lever to its inoperative position.

13. In an emergency exit lock, a latch bolt having a latch bolt stem, a dogging lever for dogging said latch bolt in its protracted position, a swinging lever directly engaging said stem and constructed to simultaneously actuate said latch bolt stem and said dogging lever, a dog-controlling plunger having a bolt-operating stem, and a key-operated slide for retracting said latch bolt and said dog-controlling plunger, said slide being provided with a finger having a seat therein forming a bearing in which the stem of the dog-controlling plunger is slidably mounted, said slide being also provided with a projecting finger operatively engaging said swinging lever.

14. In combination with a mortise lock, an escutcheon having a latch-operating lever mounted thereupon, one end of said lever extending below the lock, and means engaging said lock and escutcheon for retaining the escutcheon in proper position relative to said lock, whereby said operating lever is properly positioned with respect to said lock.

15. In combination with a mortise lock, an escutcheon having a latch-operating lever pivotally mounted thereupon, one end of said lever extending below the lock and means extending from said escutcheon to said lock for retaining the escutcheon in proper position relative to said lock, whereby said operating lever is properly positioned with respect to said lock.

16. In combination with a mortise lock, escutcheons for said lock, one of said escutcheons having a latch-operating lever mounted thereupon, a latch within said lock operated by said lever, lugs upon one edge of said lock, bosses upon said escutcheons adjacent a marginal edge thereof and positioned to align with said lugs, means for securing said bosses to said lugs, and means positioned adjacent the opposite marginal edges of said escutcheons for securing the same in spaced relation, said last-mentioned means being spaced from said lock.

17. In combination with a door, a latch case mounted thereupon, a latch within said case, an escutcheon upon one face of said door having a latch operating lever pivotally mounted upon the outer face thereof to swing in a vertical plane, and securing mean engaging said case and escutcheon to firmly secure the same in place upon said door with the escutcheon properly positioned relative to said case, whereby said operating lever is properly positioned relative to said case to operate the latch therein.

18. In combination with a door, a lock for said door provided with a latch bolt, an escutcheon upon one face of said door provided with outwardly projecting lugs having a latch operating lever pivotally mounted between said lugs, and securing means firmly securing said escutcheon and lock together and to said door with the escutcheon properly positioned relative to said lock, whereby said operating lever is properly positioned to operate said latch bolt.

19. In combination with a lock, a latch therein, an escutcheon having a latch operating lever pivotally mounted upon the outer face of said escutcheon to swing in a vertical plane, and securing means engaging said escutcheon and lock to properly position said escutcheon relative to said lock, whereby said operating lever is properly positioned to operate said latch.

20. In combination, a lock, a latch therein, an escutcheon provided with outwardly projecting lugs having a latch operating lever mounted thereupon, and means for rigidly securing said escutcheon to said lock.

21. In combination, a lock having lugs formed on the case thereof, an escutcheon having a latch operating lever pivotally mounted thereupon to swing in a vertical plane, and means for rigidly securing said escutcheon to said lugs in spaced relation thereto.

22. In combination, a lock and an escutcheon plate associated therewith, said lock having an operating part exposed at the lower portion thereof, said escutcheon plate having an operating member pivotally mounted thereon, and provided with an arm to engage said exposed part, and means to connect the upper portions of said lock and plate to maintain said arms in operative position relative to said exposed part.

23. In combination, a lock and an escutcheon plate associated therewith, said lock having an operating part exposed at the lower portion thereof, said escutcheon plate having an operating member pivotally mounted thereon, and provided with an arm extending below said lock but disconnected from the same, to engage said exposed part, and means to connect the upper portions of said lock and plate to maintain said arm in operative position relative to said exposed part.

In witness whereof, I have hereunto set my hand on the 27th day of June, 1918.

HENRY G. VOIGHT.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,500,167, granted July 8, 1924, upon the application of Henry G. Voight, of New Britain, Connecticut, for an improvement in "Locks," errors appear in the printed specification requiring correction as follows: Page 4, line 84, claim 7, for the word "lock" read *perforated lugs;* page 5, line 58, claim 17, for the word "mean" read *means;* same page, lines 68 and 87, claims 18 and 20, after the word "lugs" insert the word *and*, and line 88, for the word "thereupon" read *between said lugs;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of August, A. D. 1924.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.