Aug. 26, 1941. H. CORDREY ET AL 2,253,495

SLIDING DOOR LOCK

Filed March 19, 1940

Fig. 1.

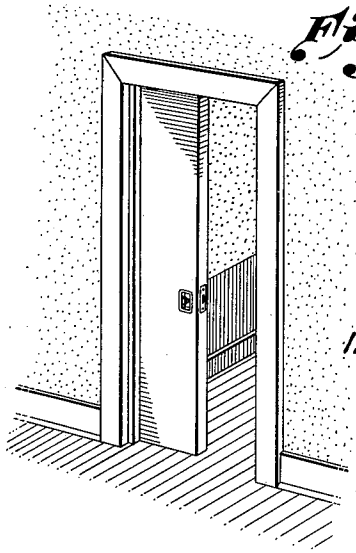


Fig. 2.

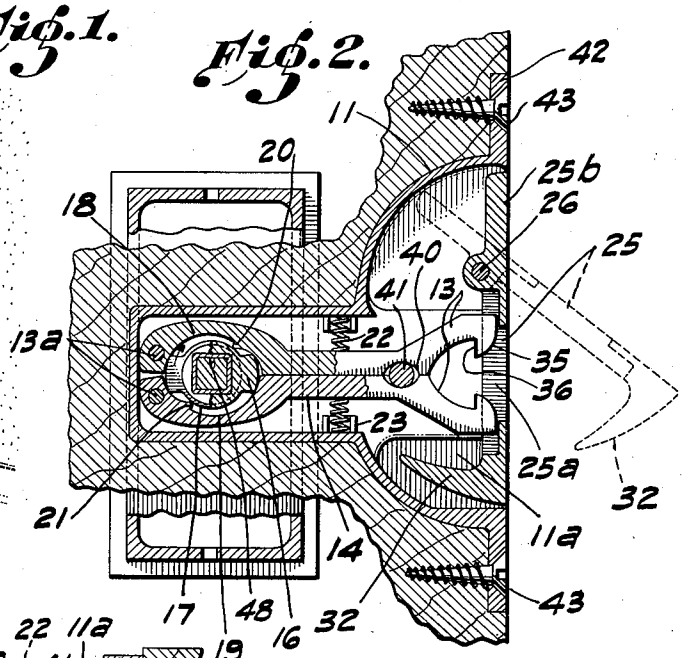


Fig. 4.

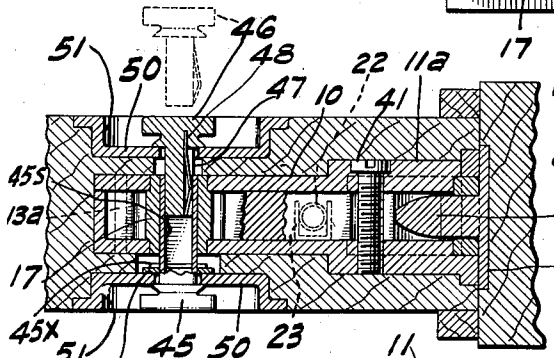


Fig. 5.

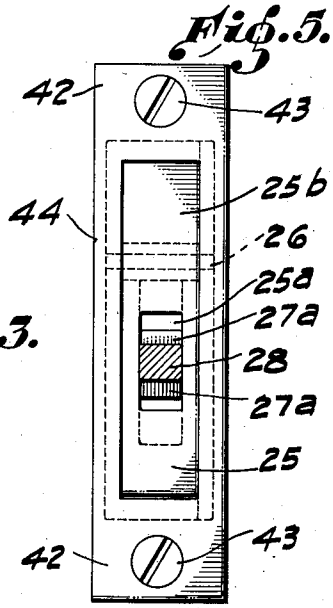
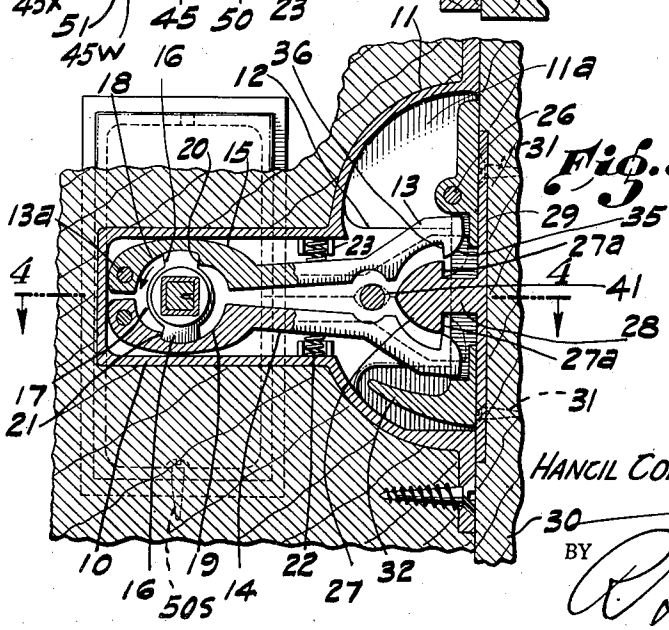


Fig. 3.



HANCIL CORDREY AND WALTER J. DUVALL,
INVENTORS.

BY

ATTORNEY.

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SLIDING DOOR LOCK

Hancil Cordrey and Walter J. Duvall, Chula Vista, Calif., assignors to Peabody-Acker, Inc., Los Angeles, Calif.

Application March 19, 1940, Serial No. 324,782

7 Claims. (Cl. 70—447)

This invention relates to a sliding door lock construction and more specifically to a face plate pull having a way through or across it, in combination with a catch which is stationed on the door frame adjacent to the door opening and which projects at times through said way or opening of the face plate into an operative relation with a key controlled locking mechanism.

Among the objects of this invention are, to provide an improved sliding door lock including a pull element which may be conveniently and dependably used to open a sliding door, and which will not add to the number of parts used to lock and operate the door; to provide improved means to manually start closing the door; to provide a door locking and a door operating means wherein, when the locking elements are not in their operative position, the operation of the door will not cause any wear upon said locking elements; to provide a locking mechanism a portion of which will serve to guide and center the door accurately in its closing movement thereby preventing wear occurring between the edges of the advancing door and its casing; and to otherwise improve and simplify door operating and locking means of the kind to which the invention pertains.

With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

Referring to the accompanying drawing, which illustrates what is at present deemed to be a preferred embodiment of the invention—

Fig. 1 is a perspective view of a partly open door showing the same equipped with our invention.

Fig. 2 is a vertical mid-section of a fragment of the front edge portion of a sliding door showing our lock mounted therein. In this view the escutcheon casing is shown in elevation as to its flange and the remainder thereof in vertical mid-section. The swingable face plate is shown in full lines in its retracted position and in dotted lines in its outswung position.

Fig. 3 is a view similar to Fig. 2 except that a fragment of the door jamb is shown carrying the stationary catch, and the paired locking dogs are shown in their inoperative position in full lines, and in their operative position in dotted lines.

Fig. 4 is a section taken on line 4—4 of Fig. 3.

Fig. 5 is a face view of the front end of the lock casing, the shank of the stationary catch being shown in section.

Referring in detail to the drawing, the lock casing shown has an inner portion 11 which is expanded above and below in an arcuate manner and is also of a greater width than the inner portion 10. Each side of the expanded casing portion 11 has an internal, plate-like boss or rise 12, said parts 12 being positioned to guide the movements of a pair of vertically swingable dogs 13 when the two-part casing shown is in its assembled condition. Said dogs are furnished at their inner ends with pivot pins 13*a*, which may also assist in holding together the two halves of the lock casing.

Said dogs 13 are each furnished with a straight shank portion 14 which at its inner end is outcurved at 15 away from its fellow, thereby providing opposed, internal cam faces to cooperate with the wings 16 of the key operable barrel 17.

The above described two locking dog structures are identically shaped except that the upper one as shown in Figs. 2 and 3 is actuated when the key operable barrel acts upon its rearwardly located cam face 18, whereas the corresponding cam face 19, of the other dog is located somewhat forwardly of said cam face 18, this arrangement being necessary in order to cause the barrel wings 16 to swing the dogs apart from the closed position shown in Fig. 2 to that shown in the full lines in Fig. 3, when the barrel is turned in a clockwise direction. The movement of one of the wings 16 of the barrel across the cam face 18 is arrested by a shoulder 20, and the movement of the other wing is arrested by a shoulder 21. Two compression springs 22 are shown which act upon the outer sides of the dog shanks to press them toward each other except when opposed by the barrel having been turned as aforesaid. Each of said springs is shown held in place by an annular boss 23 which projects internally from the rectangular portion of the casing.

The lock is shown provided with a pendant swingable face plate 25, the pivot 26 of which supports said swingable plate in a downwardly spaced relation to its upper end, said pivot extending athwart the front portion of the two-part casing, and providing an inswingable arm portion 25*b* above it. Said face plate has an elongated opening 25*a* extending lengthwise of its lower portion, said opening being sufficiently large to serve as a way to admit the beveled head 27 which is carried by the neck 28 of the catch ele-

ment 29, the base portion of said catch element consisting of a plate which is counter-sunk into and is attached to the jamb 30 by screws 31.

Said swingable face plate 25 is furnished at its lower end with a hook or arcuate finger 32 which normally occupies the lower part of the space between the lock casing wall portions 11a resulting from the arcuate expansion above and below of the front portion of the lock casing. Said hook is utilizable to apply manual traction to the closed door to withdraw it from the recess it normally occupies in the wall.

Each dog 13 is shown having an outer cam face 35 at the inner end of which the dog has a tooth 36, the dogs being thus shaped to cause them to slide over and then catch behind the upper and lower portions of the catch head 27 forming the shoulders 27a, when the springs 22 are permitted to exert unopposed action upon the dog shanks. Each of the locking dogs is shown provided at the outer end of its shank portion with an arcuate internal recess 40 thus making room for the screw 41 which forms the main means for securing the two halves of the lock casing together. Said lock casing is shown furnished with the conventional upper and lower front flanges 42 to receive the screws 43 and connected by the lateral or rim flanges 44.

Various key means may be used for the purpose of turning the barrel 17. As shown, said barrel has a square passage through it into one end portion of which is fittable a square key 45 and into the opposite end portion of which key is fittable a key 46 which telescopes into said key 45 a considerable distance. The key 46 is assumed to be the outside key and is of a removable character, being square and furnished along one side with a groove 47 within which is a bowed leaf spring 48 that acts frictionally to removably maintain the key in its inserted position within the other key. Said keys 45 and 46 pass through vertically elongated escutcheon plates 50, having shoulders 51 which provide convenient finger holds for use to complete the opening of the door after it has been somewhat withdrawn from the door recess by traction upon the hooked face plate 25. The key 45 will ordinarily be non-removable and will project from the inner (for example, bathroom) side of the door. Said key 45 is shown furnished with a square shank 45s which fits within the internally square barrel 17. Before putting said key 45 into place it is passed through the escutcheon plate 50 which has through it a sufficiently large opening to permit, without frictional contact, the free rotation of the square shank of the inserted key. The washer 45w and securing pin 45x are also put in place before the escutcheon plate 50 has been secured to the door by screws 50s or otherwise.

Viewed in plan the base portion of the catch head 27 is as wide as the neck 28 (see Fig. 4), but as seen in vertical section or in side elevation said head is much wider than said neck, thus providing the aforementioned catch shoulders 27a to be engaged by the teeth 36 of the dogs. The outer part of said head 27 is tapered both as seen in plan and in side elevation, and cooperates with the lock casing and its dogs in such a manner as to center the slidable door during the final portion of its closing movement, thereby preventing injurious wear or contact of the front edge portion of the door with its casing.

In describing the operation of the device it will be assumed that the same is installed as a door lock for a bathroom, or other room, with regard to which the removable key 46 (Fig. 4) is on the outer side of the door in relation to said room, the permanently inserted key 45 being inside the room when the door is closed.

Before a person enters the bathroom he will remove the key 46 so that, after he has entered the room, closed the door, and locked it by means of the key 45, there will be no outside means whereby the door may be opened while the bathroom is in use. When the person who is using the room has entered, he will turn the barrel 17 by means of the key 45, from the position in Fig. 3 in an anti-clockwise direction, thereby permitting the compression springs 22 to swing the dogs 13 toward each other into a locking relation to the catch head 27.

Preparatory to closing the door the person entering the room will press his finger against the part 25b of the arm 25 which is above its pivot 26, thereby inswinging the contacted part and swinging the hooked lower portion of said arm outwardly as indicated by dotted lines in Fig. 2, whereupon he will use the finger 32 of said arm as a means for applying traction upon the door to draw it from its recess to a sufficient extent to enable him to use the shouldered portion 51 of the escutcheon 50 to complete the closing movement of the door. Having closed the door he will lock it by rotating the barrel 17, by means of the key 45, in an anti-clockwise direction from the position thereof shown in Fig. 3, thus permitting the springs 22 to contract the toothed portions of the dogs to locking position.

Performing the above recited series of operations in the reverse order will enable him to open the door and leave the room, whereupon he will replace the key 46. While the key 46 is removed an indication will be given to persons outside of the room that the room is occupied, but when said key is in place it will be evident that the room is unoccupied, even if at such time the door is closed. An auxiliary emergency key providing access to the room when such room is occupied may be provided in a secretive place close by.

It will be obvious that by providing the way 25a through the swingable pull 25 and disposing the parts in such a manner that the stationary catch may project through said way when the door is closed, much less vertical space is required in which to mount said swingable pull than would be necessary if all parts of said swingable pull were located either above or below the portion of the locking mechanism with which said stationary catch registers. By using one dog only of the paired dogs shown, space may be still further economized and the rear portion of the lock casing reduced in the manner shown.

What has been referred to as a "stationary" catch may be carried by the door casing or by another sliding door extensible from the opposite side of the door opening.

We claim:

1. In a door lock, a casing having an open front end portion furnished with a face plate to close such opening, said face plate having through it an opening to admit a stationary locking element, said face plate being pivotally supported subjacent its upper end to swing in a substantially vertical plane and being manually operable for movement to an outswung position by depressing the portion thereof above its pivot wherein its opposite end constitutes a handle means for applying traction to a door.

2. In a sliding door lock; the combination of a pivoted face plate pull furnished with a way, said pull being pivotally supported in the front end portion of said lock at a point in a downwardly spaced relation both to the upper edge of said lock and the upper end of said pull to swing in a substantially vertical plane and being operable for movement to an outswung position by manually depressing the portion thereof above its pivotal support, and a dog pivoted to said lock and having a tooth partially underlying said way engageable with a catch adapted to enter said way.

3. A lock casing of a generally flat character having an arcuately opening front or outer portion which extends in a vertical direction when said casing is in place in a recess in the outer edge portion of a sliding door, and a pendant arm pivotally supported in the front portion of said casing at a point in a downwardly spaced relation both to the upper edge of said casing and to the upper end of said arm to close such open portion, the end portion of said arm above its pivot being manually accessible for inward swinging in the area defined by said arcuately expanded portion thereby to cause its lower end portion to swing outwardly for being grasped as a handle means usable to pull the door toward its closed position, said arm having through its lower portion an opening, and locking means within said casing engageable with a stationary locking member positioned to enter said opening as said door approaches its closed position.

4. In a door lock, a casing having a front end portion furnished with a face plate, said face plate being pivotally supported in the front end portion of said casing at a point in a downwardly spaced relation both to the upper edge of said casing and the upper end of said face plate to swing in a substantially vertical plane and being manually operable for movement to an outswung position by depressing the portion thereof above its pivotal support wherein it constitutes a handle means for applying traction to a door, said face plate having through it an opening to admit a stationary locking member positioned to enter said opening during the closing movement of the door.

5. In a sliding door lock; the combination of a face plate pull furnished with a way, said face plate being pivotally supported in the front end portion of said lock at a point in a downwardly spaced relation both to the upper edge of said lock and the upper end of said face plate to swing in a substantially vertical plane and being manually operable for movement to an outswung position by depressing the portion thereof above its pivotal support wherein it constitutes a handle means for applying traction to the door and a spring-pressed dog pivoted to said lock and having a tooth partially underlying said way so constructed and arranged that it engages an externally mounted stationary locking member positioned to enter said way when the door is slidably advanced to the closed position.

6. A lock casing of a generally flat character having an expanded front or outer portion which extends in a vertical direction when said casing is in place in a recess in the outer edge portion of a sliding door, and a pendant arm pivotally supported in the front portion of said casing at a point in a downwardly spaced relation both to the upper edge of said casing and to the upper end of said arm, the end portion of said arm above its pivot being manually accessible for inward swinging thereby to cause its lower end portion to swing outwardly for being grasped as a handle means usable to pull the door toward its closed position, said arm consisting of a flat metal strip having through its lower portion an opening.

7. In a lock casing having an open front end portion mounted upon a sliding door, a pair of elongated locking dogs extending alongside of each other and pivotally mounted in said casing to swing toward and from each other, said dogs each having adjacent to one side of said casing a locking tooth which is directed toward that of its fellow, a pendant face plate to close said opening, said face plate having through it an opening to admit a stationary catch mounted upon a part toward and from which said door is slidable to be engaged between the toothed portions of said dogs when the door is closed, said face plate being pivotally supported in the front end portions of said casing at a point in a downwardly spaced relation both to the upper edge of said casing and the upper end of said face plate to swing in a substantially vertical plane and being manually operable for movement to an outswung position by depressing the portion thereof above its pivotal support wherein it constitutes a handle means for applying traction to said door; spring means tending to swing said dogs toward each other, and a turnable barrel mounted in said casing between said dogs, said barrel having wings engageable with adjacent side portions of said dogs to swing them apart and maintain them separated to a sufficient extent to allow an unobstructed movement of the toothed portions thereof across said stationary catch.

HANCIL CORDREY.
WALTER J. DUVALL.