

July 17, 1928.

1,677,271

W. J. CARROLL

PANIC BOLT

Filed Aug. 29, 1923

2 Sheets-Sheet 1

Fig. 1.

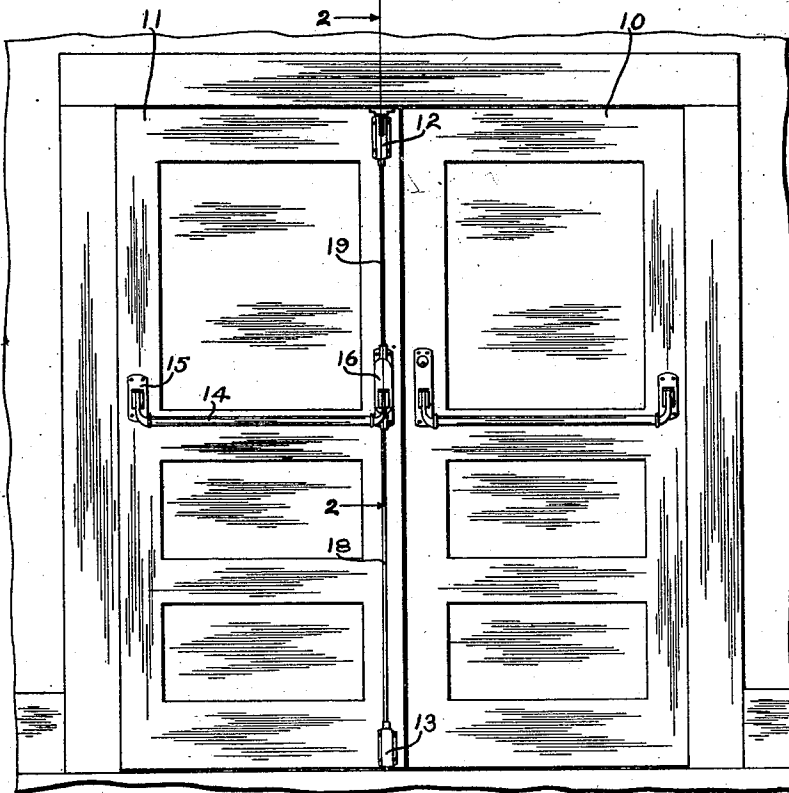


Fig. 6.

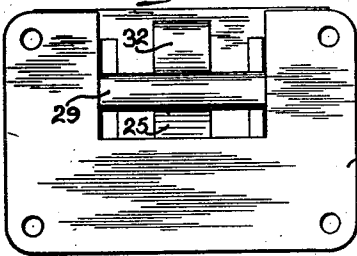


Fig. 5.

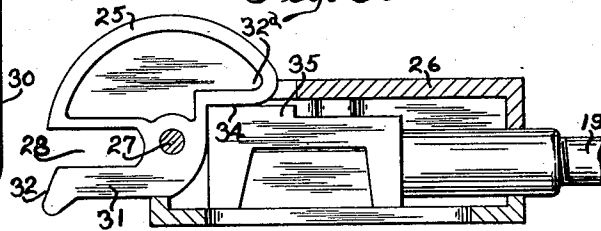
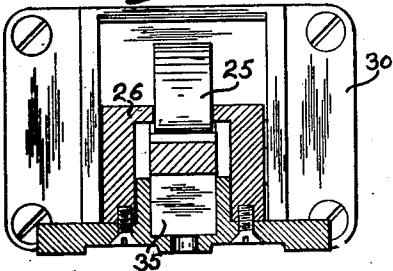


Fig. 7.



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Fig. 2.

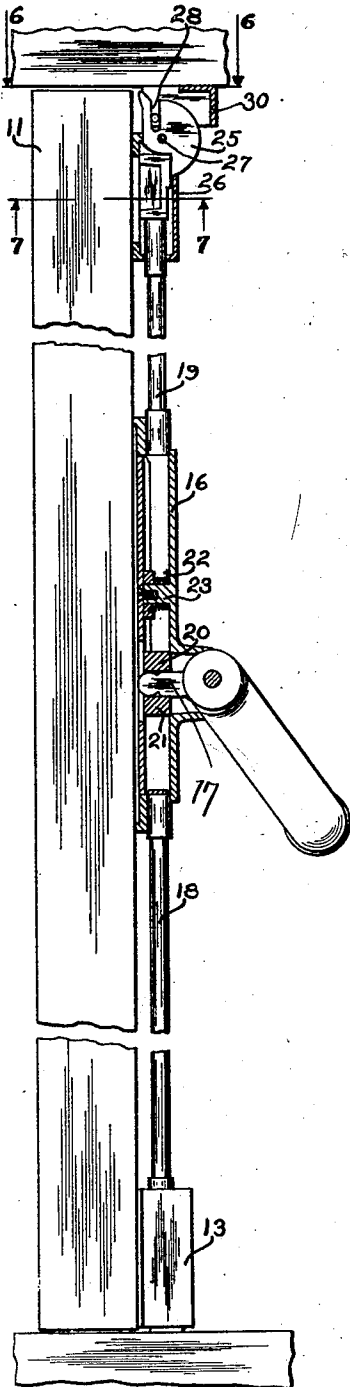


Fig. 3.

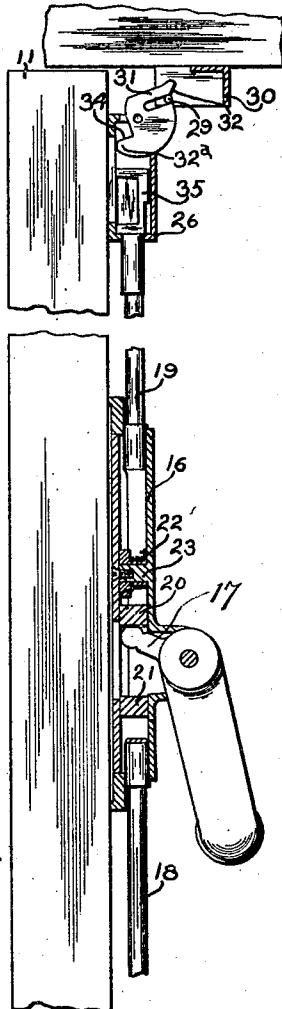
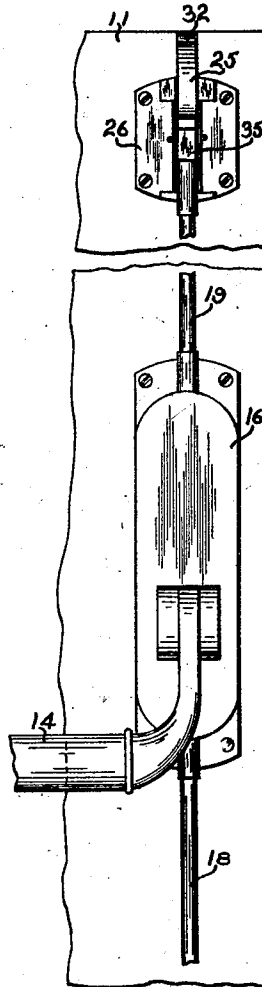


Fig. 4.



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UNITED STATES PATENT OFFICE.

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PANIC BOLT.

Application filed August 29, 1923. Serial No. 659,969.

This invention relates to emergency exit latches or so-called panic bolt latches of the type which are applied to doors of school houses, theaters, department stores, or other buildings for facilitating exit where a fire or the like causes panic, and are usually applied to one of a pair of swinging doors where one of the doors normally remains closed.

The invention relates more particularly to panic bolt mechanism in which the door is provided with bolts adapted to engage keepers or strike plates on the lintel and floor, respectively, and arranged to be released from said strike plates or keepers by the operation of a panic bar on the inner face of the door. In some of its aspects, however, the principles of my invention are not limited to this type of device, although shown in connection therewith in the accompanying drawings.

It is necessary in such structures to provide mechanism whereby the bolts, when retracted to permit the door to open, will be retained in this retracted position so that the door will freely close; although usually, a spring is provided to urge the bolts normally to protracted position. In some instances, a detent is provided in the bolt case to hold the bolt in retracted position and a lug or stop is provided on the door frame to coact with the detent, when the door is closed, to release the bolt and permit its actuation by the spring to protracted position. Such a mechanism, however, is more or less complex and expensive and not always positive in operation.

One object of my invention is to overcome the defects mentioned above and to provide a bolt which will remain in retracted or inoperative position when the door is open, but which will be moved to and automatically dogged in operative position when the door is closed.

Another object of my invention is to provide a pivoted bolt which is moved to and from operative position by a rotary or swinging movement about its pivot, upon the opening and closing of the door.

A still further object of my invention is the provision of a latch of this character with a bolt adapted to engage a strike on the door jamb, such that it will be dogged in operative position by the usual bolt operating rod or plunger, and which will be

moved to inoperative position by a force applied to the door in an opening direction when the dog has been released.

An additional object of my invention is in the provision of a latch of the above type which will prevent a door from rattling when in its closed position, and which will not be rendered inoperative if the door sags to any considerable extent.

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 an inside elevational view of a door having applied thereto a latch embodying my improvements;

Fig. 2 is a sectional view on line 2—2 of Fig. 1, showing the door closed;

Fig. 3 is a view similar to Fig. 2, but showing the position of the parts as the door is being swung to open position;

Fig. 4 is a front elevational view of the panic bolt mechanism showing the upper latch mechanism with the case removed;

Fig. 5 is a sectional view of the upper bolt mechanism;

Fig. 6 is a top plan view of the upper bolt mechanism on line 6—6 of Fig. 2; and

Fig. 7 is a sectional view on line 7—7 of Fig. 2.

I have shown at 10 and 11 a pair of doors such as are commonly used in connection with public buildings, the door 11 being designed to remain usually in closed position. The panic bolt structure includes a bolt mechanism designated generally by the numeral 12 adapted to cooperate with a strike plate or keeper on the lintel, and a second bolt mechanism 13 designed to cooperate with a keeper in the floor or on the threshold of the door. These bolts are adapted to be operated by means of a lever or panic bar 14 pivoted to an escutcheon plate 15 and to the case 16 which encloses the operating mechanism, one end of the panic bar being provided with an operating finger 17 adapted to actuate the bolt controlling rods or plungers 18 and 19.

The lower bolt mechanism 13 may be of any desired type, for instance, that described in the patent to H. G. Voight, No. 1,345,041, and, likewise, the bolt operating mechanism within the case 16 may also be similar to that described in said patent.

The rods 18 and 19 extend within the case

16 and are provided with laterally disposed lugs 20 and 21, respectively, adapted to be engaged by the finger 17 to retract the operating rods into inoperative position, or the position assumed when the door is permitted to open. A spring 22 coiled about a post 23 on the case 16 is adapted to urge the bolts to protracted position so that they may engage the strike plates to hold the door closed.

10 The upper bolt mechanism 12 consists of a rotary or swinging bolt 25 pivoted to the case 26 at 27. This bolt is provided with a slot 28 adapted to engage a strike or keeper in the form of a rod or post 29 secured to a keeper plate 30 mounted on the door lintel.

The main body portion of the bolt 25 is, as shown, substantially semi-circular in shape and is provided with a finger 31 spaced from the main portion of the bolt so that the slot 28 is presented between the two parts, the finger 31 being provided with a beveled face or edge 32 which is adapted to contact with the member 29 and properly guide it into the slot when the door closes. The bolt is over-weighted, so as to normally hang substantially in the position shown in Fig. 3, with the tail 32^a in contact with the rear wall of the case 26.

The lower end or tail portion of the bolt is shaped to provide a flat face or shoulder 34 adapted to be engaged by a dogging member 35 secured to the upper end of the rod 19 to dog the bolt in operative position, as shown in Fig. 2. When the dog has been withdrawn and the door opened so that the bolt swings downwardly into the position shown in Fig. 3, it will be apparent that the tail piece 32^a of the bolt lies in the path of the dogging member 35, so that it will be impossible for this dogging member to return to its operative or dogging position, but, on the contrary, it will be restrained in its retracted position, shown in Fig. 3. Under these conditions, it will be in position to immediately spring upwardly behind the shoulder 34 under the influence of the spring 22 when the door is closed and the bolt is rotated about its pivot due to the action of the post 29 on the finger 31.

50 The operation of my device is as follows: Assuming that the door is open, the parts will be in the position shown in Fig. 3, except that the dogging member 35 will have been urged upwardly against the tail piece of the bolt 25 by the spring 22. Assuming that the door is now closed, the post 29 of the door strike will either enter freely into the slot 28, or will be guided thereinto by the beveled edge 32 of the finger 31. Continued movement of the door to a closed position will cause the bolt to be turned in an anti-clockwise direction about its pivot 27, as shown in Fig. 3, due to the contact of the post with the edge of the finger 31, until it has assumed the position shown in Fig. 2,

wherein the post 29 has moved substantially to the lower end of the slot and the tail piece 32^a has been moved out of the path of the dogging member 35, at which time the dogging member is moved upwardly, by the spring, behind the shoulder 34 to dog the bolt in position where it embraces the post 29 to hold the door closed. It will be apparent that in this position of the parts, as shown in Fig. 2, the door is securely held in closed position and may not be opened until the rod or plunger 19 is retracted by means of the panic bar 14 to permit the bolt 25 to be urged in a clockwise direction from the position shown in this figure to the position shown in Fig. 3, which movement will take place upon the opening of the door, due to the contact of the post 29 against the edge of the slot 28. It will be, of course, understood that when the door is opened and the panic bar 14 is released, it will be free to move from the position shown in Fig. 3 to its neutral position shown in Fig. 2, independently of the return of the rods 18 and 19, to their protracted positions, as the finger 17 is not secured to the lugs 20 and 21, but, on the contrary, merely impinges there-against.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. In a panic bar latch mechanism, a keeper plate adapted to be secured to a door frame and provided with a cylindrical rod disposed in a horizontal position, a casing adapted to be secured to a door and having a pivot member extending transversely thereof, a bolt mounted on the pivot member to swing about a horizontal axis, said bolt being provided with a relatively deep slot to receive the rod on the keeper plate, the width of said slot being such as to receive the rod therein substantially without play in a direction transversely of the slot, means for guiding said rod into said slot, and a rod extending longitudinally into the casing and engaging the bolt below the pivot to dog it in door latching position.

2. In a panic bar latch mechanism, a keeper plate adapted to be secured to a door frame and provided with a cylindrical rod disposed in a horizontal position, a casing adapted to be secured to a door and having a pivot member extending transversely thereof, a bolt mounted on the pivot member to swing about a horizontal axis, said bolt being provided with a relatively deep slot to receive the rod on the keeper plate, the width of said slot being such as to receive the rod therein substantially without play,

said bolt being provided with a finger extending outwardly therefrom at an angle to the sides of said slot, said finger being provided with an abutment engaging face of
5 substantial length extending at an angle to the adjacent face of said slot and adapted to guide said rod into said slot, and a rod ex-

tending longitudinally into the casing and engaging the bolt below the pivot to dog it into door latching position.

In witness whereof, I have hereunto set
10 my hand this 22nd day of August, 1923.

WILLIAM J. CARROLL.