A. A. PAGE.

DETENT FOR PANIC BOLTS AND THE'LIKE.

APPLICATION FILED OCT. 28, 1916.

1,306,560.

Patented June 10, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

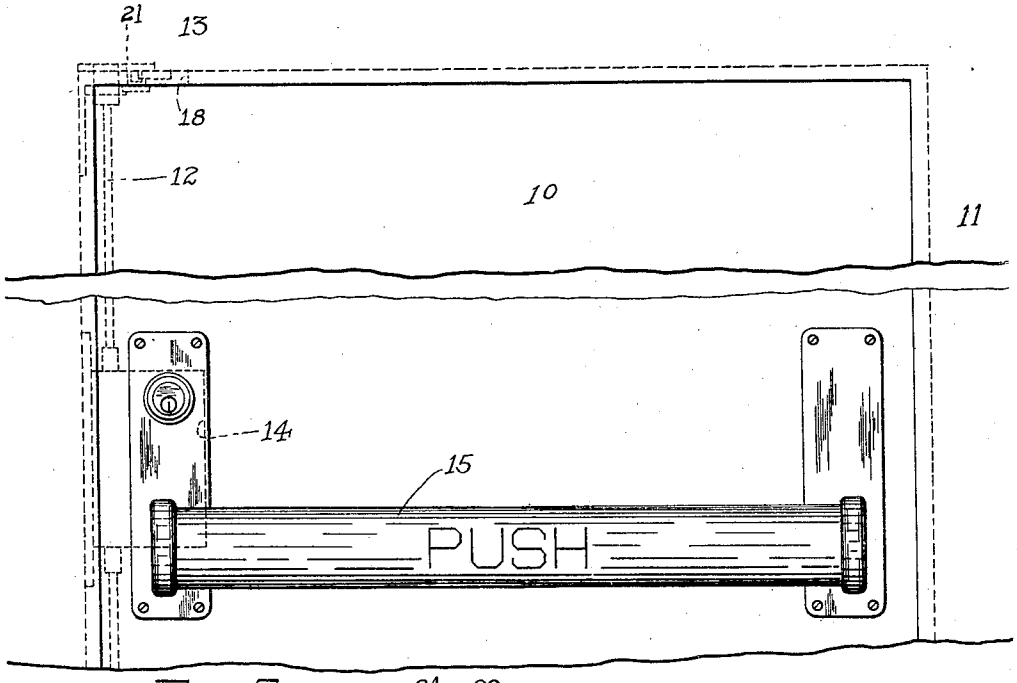


Fig. 2.

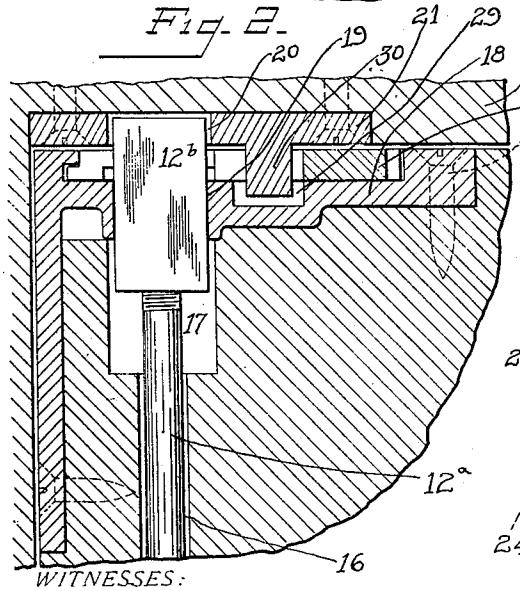
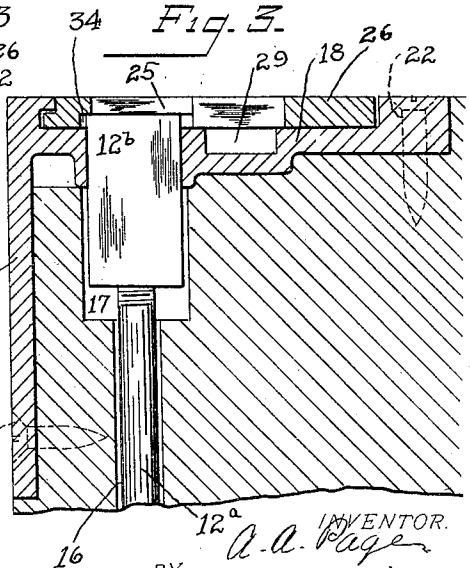


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

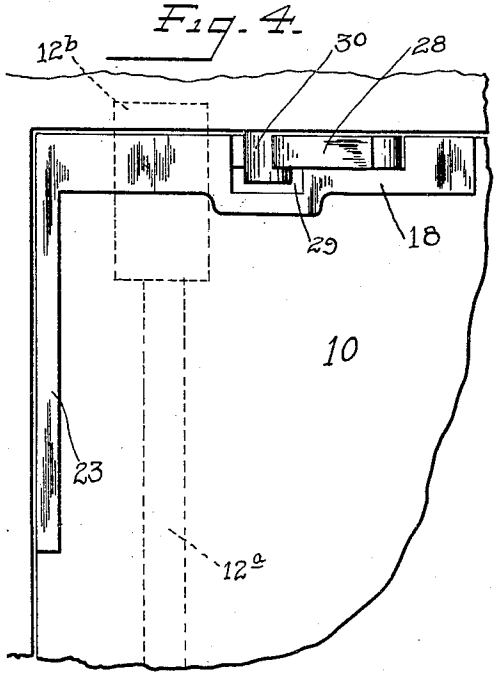


Fig. 5.

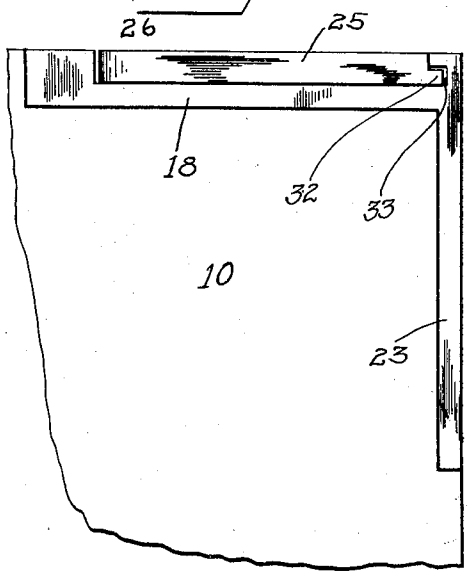


Fig. 6.

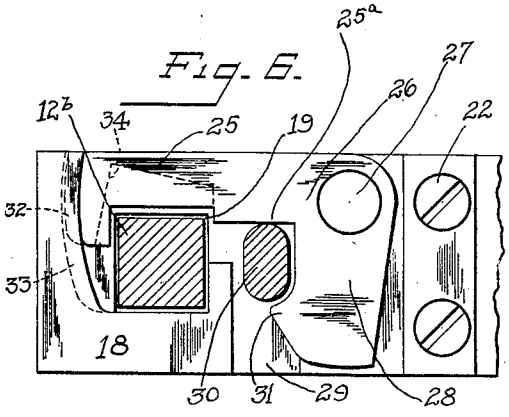


Fig. 7.

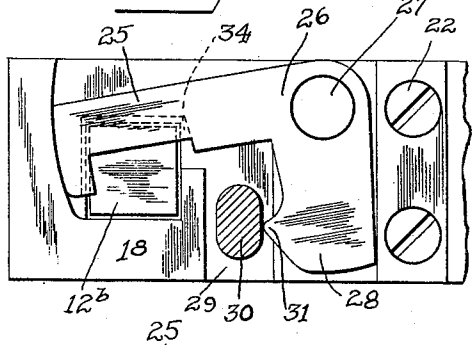


Fig. 8.

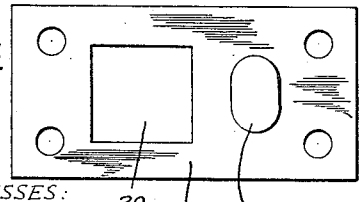
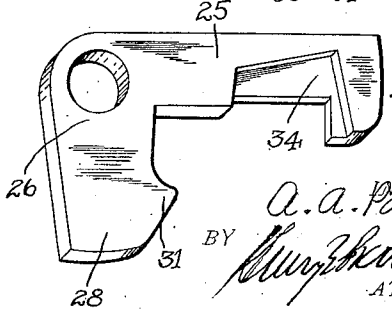


Fig. 9.



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UNITED STATES PATENT OFFICE.

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DETENT FOR PANIC-BOLTS AND THE LIKE.

1,306,560. Specification of Letters Patent. Patented June 10, 1919.

Application filed October 28, 1916. Serial No. 128,239.

To all whom it may concern:

Be it known that I, ALBERT A. PAGE, of East Haven, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Detents for Panic-Bolts and the like, of which the following is a full, clear, and exact description.

This invention relates to detent mechanism for bolts and more particularly to a detent mechanism for automatically holding in retracted position a panic bolt or the like when the door is opened and for releasing the bolt when the door is closed. The invention also relates especially to a detent for a bolt adapted to engage a keeper on the lintel of the door and operated by a horizontal push bar or the like, but it will be obvious from the following description that certain features of my invention will be found useful in locks and latches of various types.

It is hardly necessary to explain the general advantages of a detent device for a panic bolt or similar mechanism. As the bolt is retracted, such device automatically dogs it in retracted position, and this permits the subsequent closing of the door by taking hold of the push bar, bolt operating lever or other member on the inside of the door without causing the bolt to be projected until it is in a position to engage properly with its keeper. Moreover a detent device is desirable because it prevents or reduces to a minimum the possibility of the bolt being tampered with or damaged while the door is in the open position.

One of the primary objects of the present invention is to provide a very simple and efficient detent device, particularly adapted for use at the upper edge of the door, which takes up very little space and which can be very readily mounted.

Another object of the invention is to provide a detent in which a part on the strike or keeper mounted on the lintel is adapted to shift into and out of operative position in an automatic manner a horizontally movable detent, which can be confined within the lines of the door at the upper edge thereof. When the door is opened the detent member is automatically moved over the head of the bolt when the latter is retired; and on closing the door the detent member is automatically withdrawn from its bolt retaining position by engagement with the strike.

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,

Figure 1 is a fragmentary inside view of a door equipped with a panic bolt embodying my improvements, the door being in the locked position;

Fig. 2 is an enlarged vertical longitudinal section of the door and detent device, with the bolt in the door-locking position;

Fig. 3 is a similar view showing the door open;

Fig. 4 is an elevation of the detent mechanism looking from the inside of the room, the door being closed;

Fig. 5 is a view of a portion of the upper edge of the door looking from the outside, said door being in the open position;

Fig. 6 is a top plan view of a portion of the door showing the bolt in the door-locking position;

Fig. 7 is a similar view showing the bolt dogged in the door releasing position;

Fig. 8 is a detail face view of the keeper or strike; and

Fig. 9 is a detail perspective view of the detent lever showing the under side thereof.

In Fig. 1 of the drawings, I have shown my improved detent mechanism in connection with a swinging door 10 hinged at the right-hand side of the frame or casing 11 to swing in an outward direction, and having an upwardly extending bolt 12 working therein at the free edge of the door, to cooperate with a keeper in the lintel 13. In the particular form shown, the bolt 12 is actuated by mechanism in a case 14 mortised in the free edge of the door, which mechanism in turn is actuated by a swinging push bar 15 extending across the door at the inside, the arrangement being such that when the bar 15 is pushed toward the face of the door, the bolt 12 is withdrawn from its keeper so as to release the door and permit it to be opened as the pressure on the push bar is continued. The bolt 12 comprises a stem portion 12^a and a head 12^b. The stem is shown as operating in a bore 16 and the head operates in a recess 17 cut in the door near the upper corner thereof.

The bolt head is guided in a guide plate 18 mortised in the door at the upper edge thereof, and as the bolt is protracted it moves through an opening 19 in the plate 18 into engagement with an opening 20 in the strike or keeper 21, which strike or keeper is mortised in the under part of the lintel 13, as shown in Fig. 2.

Referring now to the particular construction of the guide plate 18, this plate is of substantially the same width as the thickness of the door, and is accommodated in a notch or recess cut in the corner of the door. At the inner end of the plate, the same is provided with holes, for attaching screws 22, by means of which it is secured to the door. The plate is also provided with a depending portion 23 mortised in the door at the free side edge thereof, and secured in place by screws 24. The bolt head 12^b may be of square cross-section, as shown, the opening 19 being of corresponding shape. At that side of the plate 18 which is disposed toward the outer face of the door, the plate is cut away adjacent the bolt opening 19 to provide working space for one end 25 of a detent lever 26, pivoted to the plate at 27. In the form shown, this detent lever is in the shape of an elbow or bell crank, and the pivot pin 27 is located at the bend of the elbow. The end portion or arm 25 of the lever is disposed at the outer side of the door, whereas the arm 28 of the lever extends in an inward direction, having its free extremity adjacent the inner face of the door. The arm 28, like the arm 25, operates in a cut-away portion of the plate, and preferably the upper surface of the entire lever 26 is flush with the upper surface of the main part of the plate, which in turn is flush with the upper surface of the door.

Extending transversely with respect to the plate 18, adjacent the bolt opening 19 but at a point more remote from the side edge of the door, is a groove 29, in which operates a depending projection 30 on the strike or keeper 21. A lateral shoulder 31 on the arm 28 is adapted to extend over the edge of the groove 29 into engagement with the projection 30 so that the lever may be actuated to retain and release the bolt. The arm 25 when in one position is adapted to clear the bolt head, as shown in Fig. 6, so as to enable the bolt to lock the door in the customary manner; but in another position, the arm 25 is adapted to overlie the bolt head when the bolt is retracted, so as to hold it or dog it in the retracted position, as shown in Fig. 7. In order to prevent any appreciable upward movement of the dogging end of the arm 25, the free extremity of said arm is provided with a tongue or rib 32 engaging an under cut or groove 33 in the plate 18, in which under cut or groove the tongue or rib 33 is adapted to slide as the detent lever is swung about its pivot. When the detent lever is in the bolt-locking position shown in Fig. 7, upward pressure on the bolt head cannot lift the end of the lever owing to the fact that a part of the mounting plate overhangs the tongue or rib 32.

The keeper or strike 21 is of customary form, except for the fact that it is provided with the pin or projection 30 depending therefrom adjacent the bolt opening. 20. The projection 30 does not interfere with the closing of the door owing to the provision of the clearance groove 29 adjacent the detent lever.

The operation of the device will be more or less obvious from the foregoing description. When the door is closed and locked (as shown in Figs. 2 and 6), the bolt head 12^b is extended upward past the detent lever into engagement with the strike opening 20. The projection 30 on the strike rests within the elbow of the detent lever on the outer side of the angular shoulder or cam 31 on the arm 28 of the lever. The outer edge of the arm 25 is substantially flush with the outer face of the door, while the inner edge of said arm is in close proximity to the bolt opening 19. When the door is opened, the actuation of the push bar 15 moves the bolt head in a downward direction, and just as soon as it clears the strike 21, pressure on the bar 15 forces the door outwardly into the open position. In order that the door may be freely opened, the shoulder 31 on the detent lever must be moved from behind the projection 30 on the strike. This is permitted by the pivotal mounting of the detent lever, and the shoulder 31 engages the projection 30 in such a manner that as the door opens, the arm 25 is swung inwardly over the bolt opening. At this time, the bolt head is fully retracted by its operating mechanism, and it is in such a position as to permit the arm 25 of the detent lever to swing over the same into the bolt retaining position, shown in Fig. 7, due to the engagement of the shoulder 31 with the stationary projection 30. This stationary projection thus pushes the detent lever into its operative position automatically on the opening of the door, and as the lever reaches its operative position it disengages the projection 30. The opening movement of the door is therefore not interfered with except for the very slight pressure necessary to swing the detent lever on its pivot. The bolt is dogged automatically in the retracted position on the opening of the door, and it remains in this position while the door is open. The detent lever is so located as to be invisible from the floor and hence tampering with the bolt mechanism by unauthorized persons during the time that the bolt head is open is reduced to a minimum. The pres-

sure of the bolt-head, which is usually acted on by a suitable spring, is sufficient to hold the detent lever firmly in the dogging position, and it is therefore possible to close the door by pulling on the push bar without causing the bolt to be projected before it comes into register with the strike opening. When the door is closed, the groove 29 clears the projection on the strike until the latter contacts with the inner edge of the arm 25 at about the point 25ª (Fig. 6), whereupon during the final closing movement of the door the projection 30 thrusts the arm 25 from over the bolt and bolt opening, whereby the bolt is permitted to shoot into the opening of the strike automatically as it comes into register with said opening. The parts then occupy the position shown in Fig. 6, until the door is opened again, whereupon the operations just described are repeated.

In order that the bolt may be given the maximum amount of throw up into the keeper, the upper surface of the bolt head in the retracted position lies quite close to the upper surface of the guide plate. In order to permit this, the arm 25 of the detent lever is under cut where it overlies the bolt head, as shown at 34. In other words, the bolt-retaining portion of the lever is of less thickness than the main portion thereof, in order to permit the bolt to have a maximum throw without detracting from the strengh and solidity of the construction.

Various changes in the details of the construction may be made without departing from the scope of the invention as set forth in the claims.

What I claim is:

1. In a panic bolt construction, the combination of a door and door frame, a vertical sliding bolt adapted to project upward beyond the upper edge of the door, a keeper on the lintel to receive said bolt, a horizontally swinging elbow lever mortised in the upper edge portion of the door adjacent the corner thereof and having one arm adapted to overlie the bolt head to hold the bolt in retracted position, said lever having another arm disposed substantially transversely of the upper edge portion of the door, a pivot for said lever, and a depending projection on said keeper positioned to engage one arm to swing the elbow lever into bolt-engaging position and to engage the other arm to swing the elbow lever out of bolt-engaging position; substantially as described.

2. In a panic bolt construction, the combination of a door and door frame, a vertical sliding bolt adapted to project upward beyond the upper edge of the door, a keeper on the lintel to receive said bolt, a horizontal swinging elbow lever mortised in the upper edge portion of the door adjacent the corner thereof and having one arm adapted to overlie the bolt head to hold the bolt in retracted position, said lever having an operating arm disposed substantially transversely of the upper edge portion of the door, a pivot for said lever, a depending projection on said keeper for engaging the operating arm of said elbow lever, and a plate on the upper edge of the door upon which said elbow lever is pivotally mounted, said plate having a transverse groove in which said projection operates; substantially as described.

3. In a device such as described, a bolt-guiding plate adapted to be mortised in the upper edge of the door at the corner portion thereof and having a bolt opening adjacent the corner of the door, a detent device in the form of an elbow lever, a pivot for said elbow lever on that side of the bolt opening which is located away from the free side edge of the door, and a keeper having a lug positioned to contact with one arm of said detent device to move the device into bolt-engaging position and to contact with the other arm to release said bolt, substantially as described.

4. In a device such as described, a plate adapted to be mortised in the upper edge of the door at the corner portion thereof and having a bolt opening adjacent the corner of the door, a bolt slidably mounted in said opening, a detent device in the form of an elbow lever for dogging said bolt in its retracted position, a pivot for said elbow lever on that side of the bolt opening which is located away from the free side edge of the door, and a keeper having a projection to actuate said detent device automatically, said elbow being mortised in said plate substantially flush with the edge of the door, and said plate having a groove adjacent said elbow lever to receive the projection on the keeper and to permit either arm of said lever to be brought into operative engagement with said projection; substantially as described.

5. In combination with a door and door frame, a vertically sliding bolt carried by said door, a horizontally swinging detent in the form of an elbow lever pivotally secured at its elbow upon a horizontal edge of said door and adapted to overlie the bolt head when the same is retracted to thereby dog the bolt in its retracted position, and a projection upon said door frame coöperating with said elbow lever to move the same positively into and out of bolt-dogging position, said projection positioned to engage one arm of said elbow lever to move the lever to dogging position and to engage another arm to move the lever out of dogging position; substantially as described.

6. In combination with a door and door frame, a vertically sliding bolt carried by said door, a horizontally swinging detent in the form of an elbow lever pivotally mounted at its elbow upon a horizontal edge of said door and adapted to overlie the bolt

head when the same is retracted to thereby dog the bolt in its retracted position, one arm of said elbow lever provided with a laterally projecting shoulder, and a projection upon said door frame positioned to engage said shoulder when said door is opened to swing said detent to its dogging position; substantially as described.

7. In combination with a door and door frame, a vertically sliding bolt carried by said door, a horizontally swinging detent in the form of an elbow lever pivotally mounted at its elbow upon a horizontal edge of said door and adapted to overlie the bolt head when the same is retracted to thereby dog the bolt in its retracted position, a keeper upon said door frame positioned to be engaged by said bolt, a shoulder upon one arm of said detent, and a projection upon said keeper positioned to operatively engage either said shoulder or the arm which is not provided with a shoulder to thereby positively and automatically move said detent into and out of dogging position; substantially as described.

8. In combination with a door and door frame, a vertically sliding bolt carried by said door, a keeper upon said door frame positioned to be engaged by said bolt, a horizontally swinging detent pivotally mounted upon a horizontal edge of said door and adapted to overlie the bolt head when the same is retracted to thereby dog the bolt in its retracted position, a shoulder upon said detent, and a projection upon said keeper positioned to engage said shoulder when said door is moved in one direction and to engage a face of said detent when said door is moved in an opposite direction to thereby positively and automatically move said detent into and out of dogging position; substantially as described.

In witness whereof, I have hereunto set my hand on the 26th day of October, 1916.

ALBERT A. PAGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."