

C. B. WOODARD.

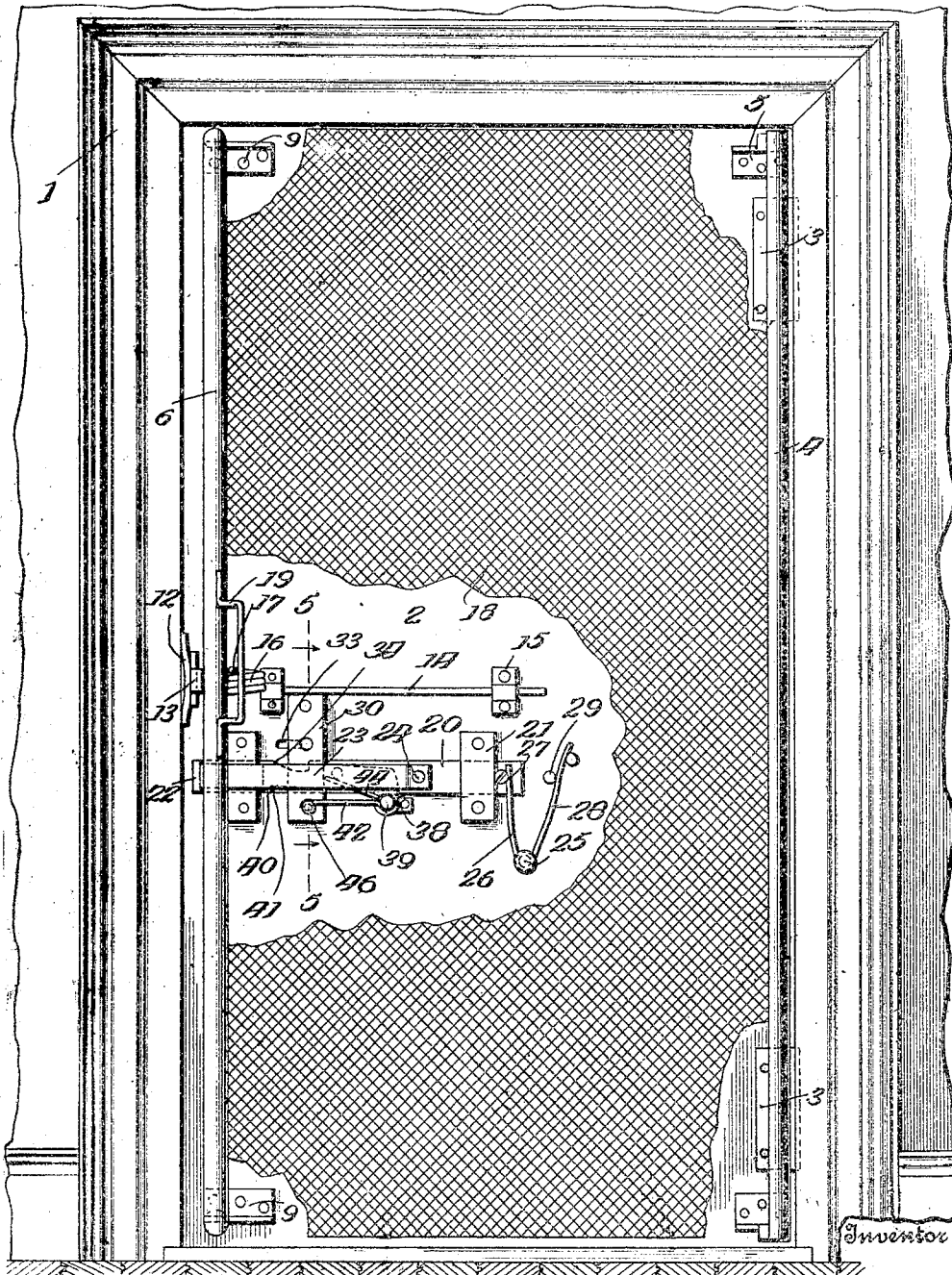
SAFETY EXIT.

APPLICATION FILED APR. 12, 1912.

Patented Mar. 18, 1913.

2 SHEETS—SHEET 1.

1,056,140



Witnesses

John E. C. E. E.

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Fig. 1.

By

W. W. W.

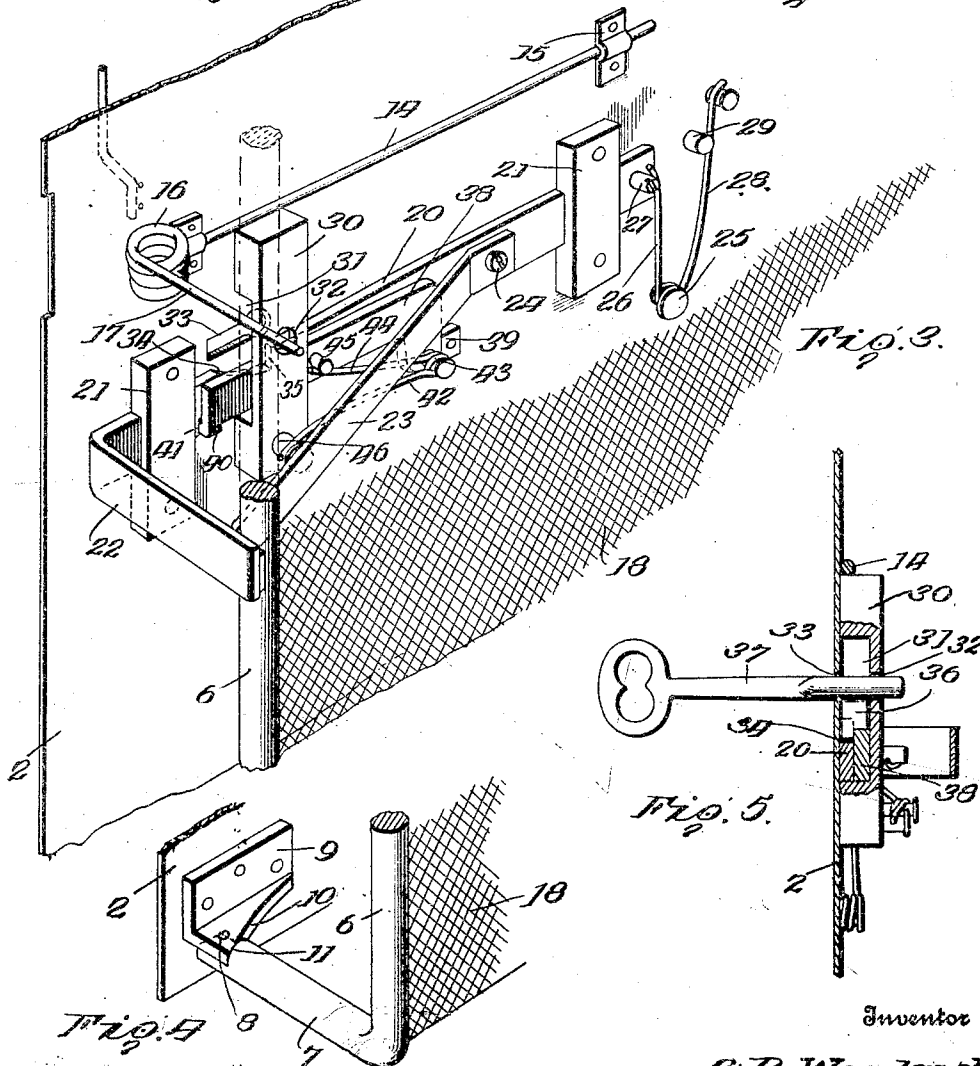
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SAFETY EXIT.
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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SAFETY-EXIT.

1,056,140.

Specification of Letters Patent.

Patented Mar. 18, 1913.

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To all whom it may concern:

Be it known that I, CHARLES B. WOODARD, citizen of the United States, residing at Springfield, in the county of Robertson and State of Tennessee, have invented certain new and useful Improvements in Safety-Exits, of which the following is a specification.

This invention relates to doors and locking means therefor, and has as its object to provide a door especially adapted for use in theaters, halls, factories, department stores, schools, and in fact any buildings in which a number of people are to congregate and in which there would be liable to be a rush for exits, in the event of fire.

It has been proposed to provide the doors of buildings, such as mentioned above, with locks which are adapted to be released by the pressure of a person's hands against a bar or plate mounted upon the door and having connection with the lock through the medium of levers and links. Such a device, however, presents the disadvantage that the mechanism being complicated is liable to get out of order and be disarranged at the time when it is necessary that it should operate, and furthermore pressure must be exerted at one certain point.

It is one aim of the present invention, to provide a locking device for such a door which will be released upon the pressure being applied at practically any point in the surface area of the door, so that in the event of a panic and a rush for the exits in a building equipped with the invention, the first person reaching the door, whether voluntarily, or by being thrown or pushed against the door, will actuate the device to release the door for outward swinging movement.

A further aim of the invention is to so construct the locking mechanism for the door that it may be released by the use of a key from the outside, so that while the door may be opened by any authorized person, from without, it may be readily and quickly swung open by any one within the building in which it is located.

In the accompanying drawings:—Figure 1 is a view in elevation of a door embodying the present invention; Fig. 2 is a horizontal sectional view through the door showing the locking mechanism therefor in top plan; Fig. 3 is a perspective view of the locking

mechanism and a portion of the door; Fig. 4 is a fragmentary perspective view of one lower corner of the door; Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 1.

In the drawings, the door frame is indicated by the numeral 1, and the door proper by the numeral 2, the latter being mounted in the frame for swinging movement by means of hinges 3.

The means provided for holding the door locked and for releasing the same for outward swinging movement is in the nature of a flexible panel which is supported between upright bars, and one of these bars, indicated by the numeral 4, is secured at its upper and lower ends to fixed brackets 5 located at the upper and lower corners of the door at the hinged side thereof. The other bar is indicated by the numeral 6 and has its upper and lower ends bent at right angles, as at 7, and pivoted, as at 8, to brackets 9 secured upon the inner face of the door 2 at the upper and lower corners thereof, these brackets being located at the free side of the door. By referring to Figs. 2 and 4 of the drawings, it will be observed that the bar 6 is so supported that it may be swung to the right, as in Fig. 2, about the pivots 8.

That portion of each bracket 9 to which the corresponding right angularly bent end 7 of the bar 6 is pivoted, has its edge extending at an angle to the face of the door, as indicated at 10, and each end 7 of the bar 6 is formed with a shoulder 11 extending diagonally thereacross and abutting against the angular edge 10 of the respective bracket whereby to limit the swinging movement of the bar to the left, or, in other words, toward the free side of the door. A keeper 12 is secured upon one side of the door frame 1, and a latch head 13 is formed or secured upon the bar 6, preferably at a point substantially midway between its upper and lower ends and is arranged to engage behind the keeper 12 whereby to hold the door in closed position. The bar 6 is normally and yieldably held with the head 13 in engagement with the keeper by means of a spring 14 which is secured upon the inner face of the door by means of clips 15 and is coiled, as at 16, and provided with a forwardly projecting arm 17 beyond its coiled portion, which arm bears against the said bar 6 for the purpose stated.

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The flexible panel, mentioned above, is preferably in the nature of a sheet of wire mesh material indicated at 18, although it may be of cloth, or any other like flexible material. This sheet is secured at its vertical edges to the bars 4 and 6 and is normally held taut by the arm 17 of the spring acting upon the said bar 6. At this point it will be apparent, that when pressure is exerted against the sheet 18 and the same is flexed, about as shown in dotted lines in Fig. 2 of the drawings, the bar 6 will be swung toward the bar 4, also shown in dotted lines in the said figure, and the latch head 13 will be moved out of engagement with the keeper 12. Therefore, should anyone press against the flexible panel 18, or be thrown against the same, the door will be immediately released for outward swinging movement. Inasmuch as the bars 4 and 6 are rigid and the panel 18 is stretched taut between the same, it will be understood that pressure exerted against any portion of the area of the flexible panel will result in disengagement of the latch head 13 from its keeper. It will also be observed at this point that by reason of the engagement of the shoulders 11 with the edges 10 of the brackets 9, the bar 6 will be restrained against swinging movement in the direction of the free side of the door when the door is swung to open position, and that consequently when the door is swung closed the latch head 13 will be in position for engagement with its keeper 12. In order that the door may be manually opened from within without the necessity of pressing against the panel 18, a handle 19 is secured upon the bar 6 at any convenient point.

As before stated, means is provided whereby the door may be unlocked, from without, by the use of a proper key, and this means comprises essentially a member which is mounted for sliding movement upon the inner face of the door, and which is in engagement with the bar 6, sliding movement of the member in one direction being effected by the use of a key, for the purpose of swinging the said bar 6 to disengage its latch head 13 from its keeper 12. The member mentioned above consists in part of a bar 20 which is slidably mounted in bearings 21 upon the inner face of the door and has its end which is located next adjacent the free side of the door bent to extend forwardly at right angles, as at 22. This end of the bar is preferably strengthened by a diagonal brace 23 secured to it at its free end and extending inwardly at an angle and secured to the bar 20, as at 24.

By referring to Fig. 3 of the drawings, it will be observed that the forwardly projecting end 22 of the said bar engages at its extremity with the bar 6, and as before stated and as will be understood by refer-

ring to the said figure, when the bar 20 is slid in the direction of the hinged side of the door, the extremity of its arm 22, bearing against the rod 6, will swing the latter in a corresponding direction to disengage the latch head 13. A pin 25 is secured upon the inner face of the door 2 immediately beyond the inner one of the bearings 21, and a spring is coiled around this pin and has one arm 26 bearing against a stud 27 upon the bar 20 at its inner end. The other arm of the spring, indicated by the numeral 28, projects upwardly and has its end engaged between spaced studs 29 also located upon the inner face of the door. This spring serves to normally and yieldably hold the bar 20 slid in the direction of the free side of the door.

A bracket 30 is secured upon the door and is formed with a recess 31 facing the said door and slidably receiving the bar 20, and this bracket is formed with an opening 32 located directly opposite a key-hole 33 formed in the door. The bar 20 is formed in its upper side with a notch 34 having an abrupt wall 35 against which the bit 36 of a key 37, shown in Fig. 5 of the drawings, is arranged to act in order that the bar may be slid against the tension of the spring 26 when the key is turned in one direction. In order that the bar 20 may be held against such sliding movement and to prevent the bar from being retracted except by the use of a key constructed as shown in Fig. 5, there is provided a detent which consists of a finger 38 pivoted at one end, as at 39, to the inner face of the door 2 and extending beside the inner face of the said bar 20. This finger also extends through the recess 31 in the bracket 30 and at its free end and lower edge is formed with a lug 40 having a portion projecting toward the door and normally engaging in a notch 41 formed in the lower edge of the bar 20. A spring 42 is coiled about a pin 43 upon the door and has one arm 44 engaging beneath a stud 45 upon the finger 38. The other arm of this spring bears against a pin or other suitable stop 46 upon the bracket 30. The finger 38 is normally held swung upwardly by the spring 42 and with its lug 40 engaging in the notch 41, so as to prevent sliding movement of the bar 20, and by referring to Fig. 5 of the drawings it will be observed that a portion of the bit of the key 37 is designed to ride over the upper edge of this finger 38 as the key is turned, whereby to depress the said finger against the tension of the spring 42 and to disengage its lug 40 from the notch 41. This depression of the finger 38, of course, takes place prior to the engagement of the bit of the key against the wall 35 of the notch 34, so that the initial movement of the key serves to release the bar 20 for sliding movement, and further

rotation of the key serves to slide the bar to swing the locking bar 6 to the dotted line position shown in Fig. 2.

From the foregoing description it will be seen that there is provided a safety door which will be automatically unlocked and swung open when pressure is applied at any point in the area of the flexible panel 18, although the door cannot be opened, from without, except by the use of the proper form of key. It will also be observed that after the door has been released and swung open, or pressure has been exerted against its flexible panel, it is not necessary to re-arrange any of the elements of the locking device before the door can be again closed, nor does the actuation of the locking device by the key 37 in any way affect the subsequent actuation of the device through the medium of the flexible panel 18.

Having thus described my invention, what I claim is:—

1. The combination with a door, of a lock for the door, including a member yieldably held against movement to release the door, and a flexible panel extending across the door and connected directly to the said member and supported at one side thereby.

2. The combination with a door, of a lock for the door, comprising a latch bar mounted for swinging movement, means yieldably holding the bar against movement, and a flexible panel extending across the door and connected directly to the said latch bar.

3. The combination with a door, of a lock for the door, including a latch bar mounted for swinging movement and extending vertically at the free side of the door, means yieldably holding the latch bar against movement to release the door, and a flexible panel extending across the door and connected to the latch bar and supported at one side thereby.

4. The combination with a door, of a lock for the door, comprising a bar having angularly extending ends pivoted to the door, a latch head carried by the bar and arranged to engage a keeper upon the frame of the door, means cooperating with the bar to yieldably hold the same with its latch head in engagement with the keeper, and a flexible panel extending across the door and connected to the said bar and supported at one side thereby.

5. The combination with a door, of a lock for the door, including a member yieldably held against movement to release the door, said member comprising a bar extending vertically at the free side of the door and arranged for movement transversely of the door, a bar fixed at the hinged side of the door and parallel to the first-mentioned bar, and a flexible panel secured at one side to the first-mentioned bar and supported thereby and at its other side to the fixed bar.

6. The combination with a door, of a lock for the door, including a bar mounted for swinging movement at the free side of the door and carrying a latch head, means yieldably holding the bar against movement to disengage the latch head from its keeper, means for limiting the swinging movement of the bar in the opposite direction, and a flexible panel extending across the door and secured to the said bar and supported at one side thereby.

7. The combination with a door, of a lock for the door, including a member yieldably held against movement to release the door, a flexible element extending across the door and connected directly to the said member, and key-operated means arranged for actuation of the said member to release the door.

8. The combination with a door, of a lock for the door, comprising a bar having its ends bent at an angle and pivoted to the door at the free side thereof, the said bar extending vertically at the said side of the door, a latch head carried by the bar, a spring upon the door bearing against the bar and normally holding the bar with its latch head in engaging position, a bar fixed to the door at the hinged side thereof and extending in parallel relation to the first-mentioned bar, and a flexible panel secured at the one side to the fixed bar and at its opposite side to the first-mentioned bar and extending across the door.

9. The combination with a door, of a lock for the door, including a member yieldably held against movement to release the door, a flexible element extending across the door and having operative connection with the said member, and key-operated means for moving the member to release the door, said means including a member slidable upon the door and having an arm engaging the said member.

10. The combination with a door, of a lock for the door, including a latch bar arranged at the free side of the door, a flexible element extending across the door and operatively connected with the latch bar, and a key-actuated bar slidably mounted upon the door and having an arm engaging against the latch bar and arranged, when the last-mentioned bar is slid in one direction, to move the latch bar to position to release the door.

11. The combination with a door, of a lock for the door, comprising a latch bar mounted at the free side of the door, means yieldably holding the latch bar in position to lock the door, a flexible element extending across the door and connected to the latch bar, a member slidably mounted upon the door and having a portion operatively connected with the latch bar, the said member being key-actuated to move the latch bar out of position to lock the door, and a de-

tent for the said member comprising a pivoted finger having a lug engaging with a stop upon the said member, the said detent being arranged to be key-actuated to release the member for movement.

12. The combination with a door, of a lock for the door, comprising a member yieldably held in locking position, normally taut means extending across the door and

arranged when sagged to move the member 10 to release the door, and key-actuated means for so moving the member.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES B. WOODARD. [L. S.]

Witnesses:

GEO. H. LAWRENCE,
B. M. HAWKINS.