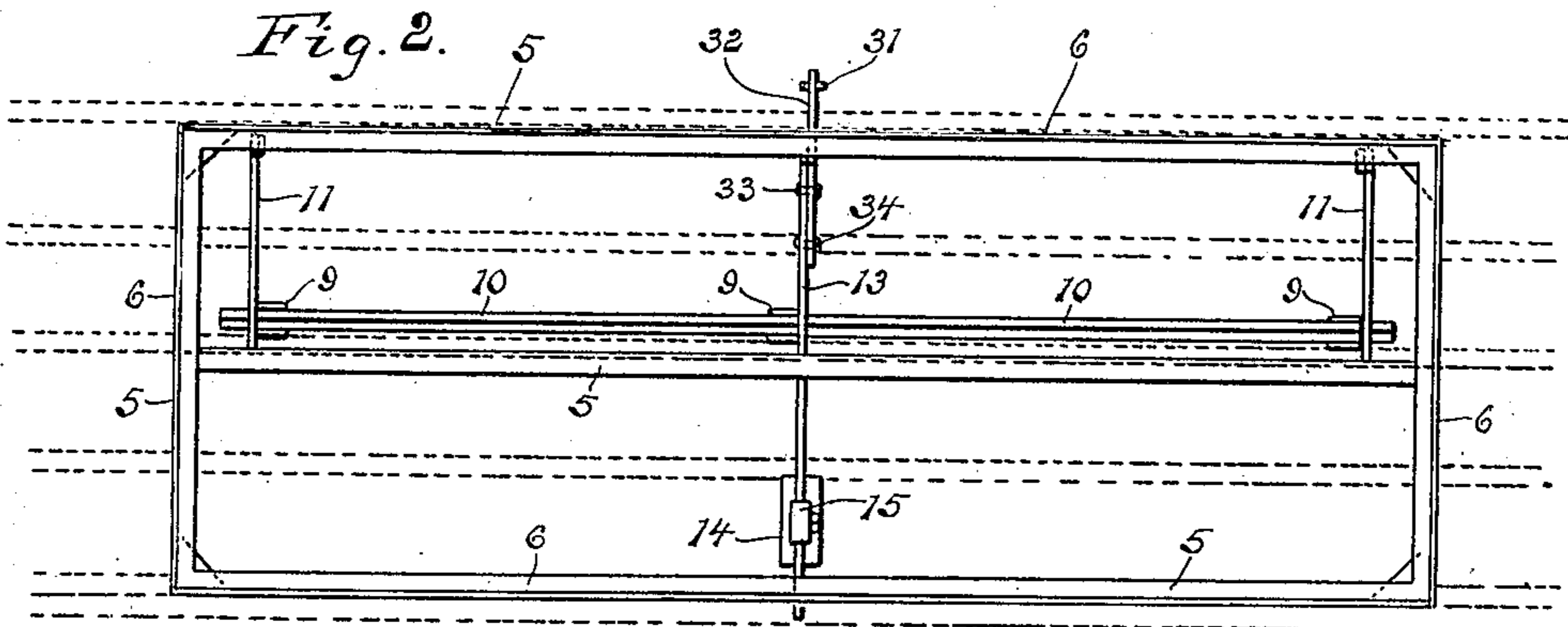
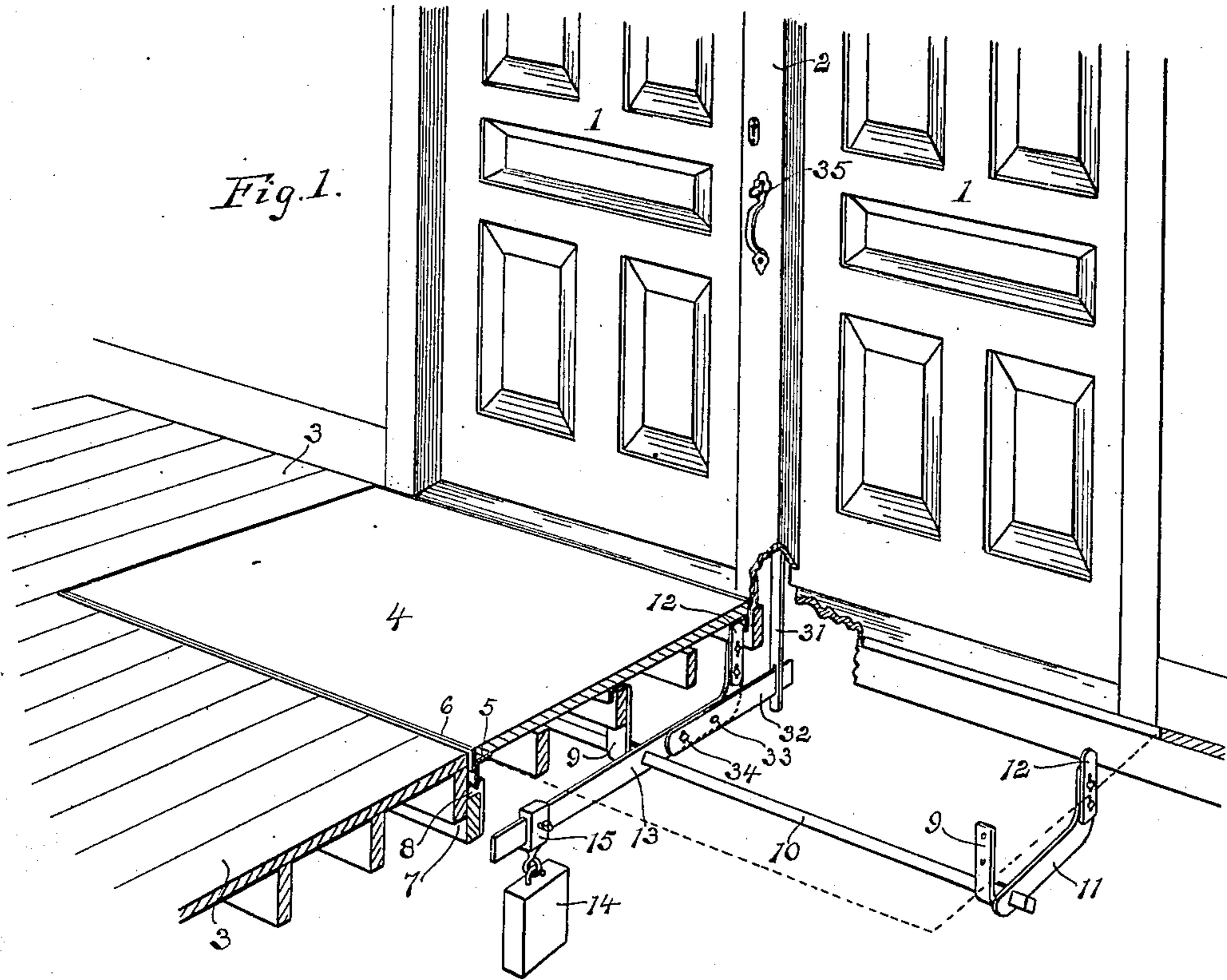


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APPLICATION FILED AUG. 10, 1908.

920,375.

Patented May 4, 1909.
2 SHEETS—SHEET 1.



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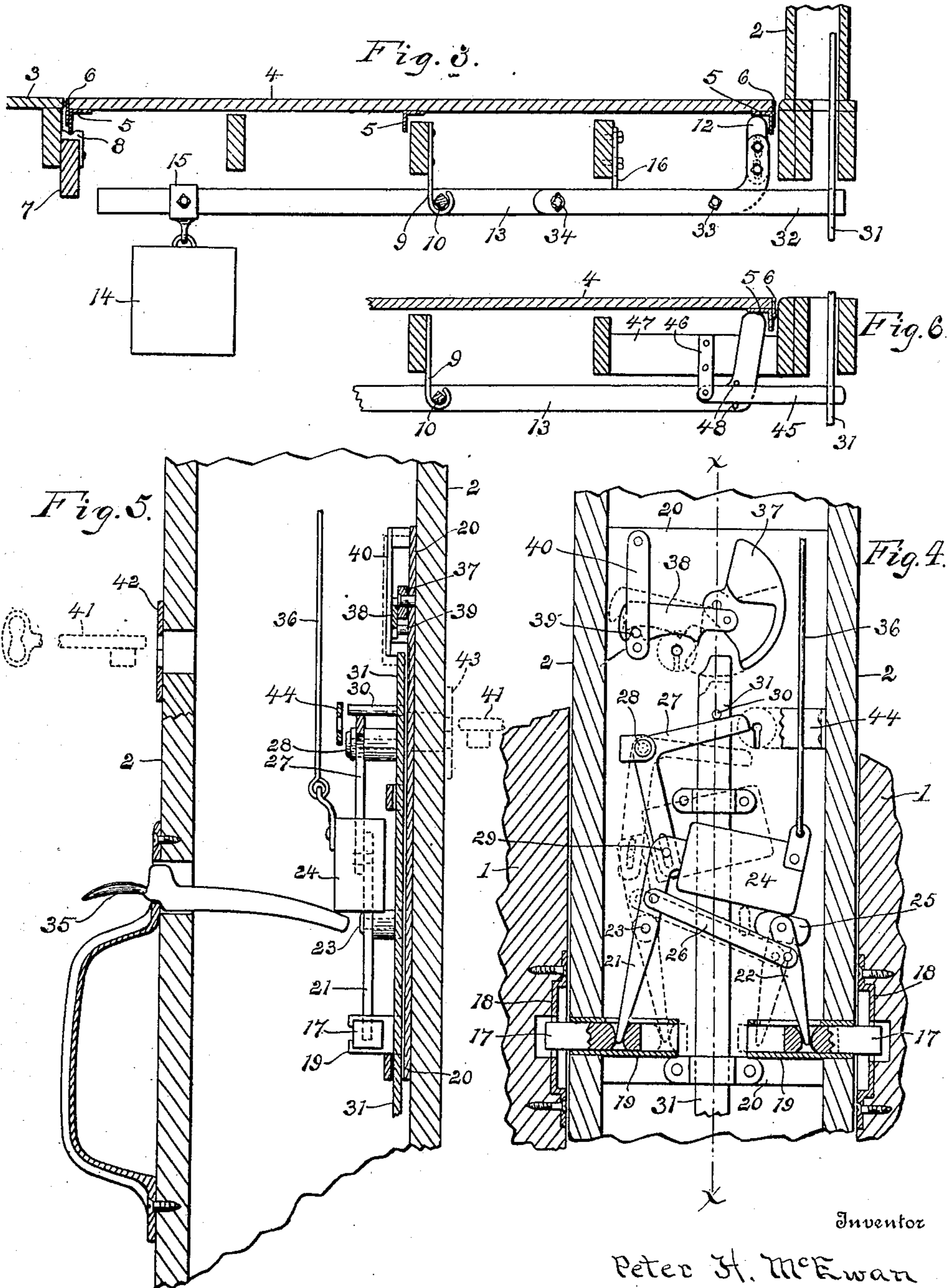
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UNITED STATES PATENT OFFICE.

PETER H. McEWAN, OF WINDSOR, ONTARIO, CANADA.

LOCKING MECHANISM FOR EMERGENCY EXIT-DOORS.

No. 920,375.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed August 10, 1908. Serial No. 447,823.

To all whom it may concern:

Be it known that I, PETER H. McEWAN, a citizen of Canada, residing at Windsor, in the county of Essex and Province of Ontario, Canada, have invented certain new and useful Improvements in Locking Mechanism for Emergency Exit-Doors, of which the following is a specification.

This invention relates to an improved locking mechanism for emergency exit doors especially adapted for doors of schools, theaters and other public buildings and its object is to provide a compact, cheap and efficient device which is automatic in its operation, operating to unlock the door when approached from the inside and which is so constructed that it may be quickly and cheaply installed in buildings already erected.

To this end the invention consists in the construction, arrangement and combination of parts substantially as shown and described and particularly pointed out in the claims, reference being had to the accompanying drawings in which—

Figure 1 is a perspective view of the inner side of double doors and showing a portion of the floor and platform adjacent to the doors broken away to show the platform lever mechanism; Fig. 2 is a plan view of the platform frame and lever mechanism; Fig. 3 is an enlarged transverse vertical section of the same; Fig. 4 is a further enlarged view showing the locking mechanism in elevation with parts broken away to show the construction; Fig. 5 is a vertical section of the same substantially on the line $x-x$ thereof; and Fig. 6 is a detail showing a modification of the platform lever mechanism.

As shown in the drawings, 1—1 are double doors hung in the usual manner with their free adjacent edges engaging a central stile or post 2, and 3 is the floor at the inner side of the doors, which floor is cut away to receive a platform 4. This platform consists of floor boards secured to a rectangular frame 5 formed of angle-iron and to the outer edges of this frame is secured a flange 6 which extends upward a short distance to engage the ends and edges of the boards forming the top of the platform. This frame thus serves as a form within which the boards of the platform are laid and greatly facilitates the accurate building of the platform. A suitable supporting strip 7 is secured to one of the floor

stringers beneath the edge of the platform farthest from the doors and upon this strip are secured a number of bearings 8 having V-notches in their upper sides to receive the edge of the downwardly extending flange of the angle-iron forming that side of the platform frame.

Secured to one of the floor stringers which extends along substantially the longitudinal center line of the platform are a number of hangers 9 consisting of strips of metal bent into a loop at their lower ends to form a bearing to receive and hold the longitudinally extending rod 10 which is preferably rectangular in cross-section so that its corners will engage the loops and turn freely therein.

Secured to each end of the rod 10 is an arm 11 having a bearing-plate 12 adjustably attached thereto and extending upward into engagement with the under side of the angle-iron forming the edge of the platform adjacent to the doors. A similar arm 13 is secured to the rod intermediate its ends and also has an adjusting plate to engage and support the edge of the platform. This arm extends rearwardly away from the doors and upon the extended end is adjustably secured a weight 14 by means of a block 15 sliding thereon and held in place by a set-screw. The weight 14 is sufficient to overcome the weight of one edge of the platform and normally support the platform with its rear edge resting in the bearings 8 and its forward edge raised a short distance above the floor stringers.

If desired, a stop-plate 16 may be adjustably secured to one of the stringers to engage the arm 13 and limit the upward movement of the platform, the downward movement of said platform being limited by the floor stringers which are left in place when the floor is cut away to install the platform.

Within the hollow stile 2, at the desired height, is located the mechanism for operating the sliding bolts 17 which are projected outward in opposite directions to engage strike-plates 18 secured to the edges of the doors. These strike-plates are preferably off-set inward to prevent the bolt from being thrown by the insertion of a thin tool in the crack between the door and stile. The bolts are guided in suitable guide-ways 19 secured upon a back-plate 20 which is fastened by

screws or otherwise to the inner side of the board forming the outer side of the stile. Upon this back-plate is also mounted a lever mechanism for throwing the bolts which consists of levers 21 and 22, each being provided with a pointed end which projects through a slot in the guide-ways 19 into an opening in the bolt. The lever 21 is pivoted at 23 intermediate its ends and to its laterally bent upper end is secured a weight 24. The lever 22 is pivoted upon a stud 25 on the back-plate at its upper end and a link 26 is pivotally attached thereto at one end a short distance below the pivoted upper end of the lever and at its opposite end said link is pivotally attached to the lever 21 at a short distance above the pivot 23 of said lever so that said levers are connected to work in unison and the throwing of one lever in one direction will throw the opposite lever in the opposite direction and thus the bolts 17 are simultaneously projected or retracted. The stud 25 is located so that it forms a stop for the weight 24 and thus limits the outward throwing of the bolts by said weight.

The bolts are retracted to unlock the doors by providing a bell-crank 27 which is pivoted at 28 to the back-plate and is connected to the upper end of the lever 21 by means of a pin 29 on said lever engaging a slot in the lower end of the lower arm of said bell-crank. The upper or horizontal arm of the bell-crank extends beneath a pin 30 projecting from the side of the vertical bar 31 which extends downward in the stile to a point opposite the arm 13 of the platform lever mechanism. An extension-bar 32 is adjustably secured to the arm 13 and projects through an opening in the end of the bar 31. The bar 32 is adjustably attached to the arm 13 by means of a pivot-bolt 33 and an adjusting bolt 34 extending through the arm and through a vertical slot in the bar, said bar may thus be adjusted up or down out of line with the arm 13 and thus adjust the throw of the bar 31.

The person approaching the doors from the inside and stepping upon the platform will overcome the weight 14 and depress the platform thus rocking the rod 10 and arm 13 with its extension 32 and pull down upon the bar 31, which movement of said bar by reason of the engagement of the pin 31 with the upper arm of the bell-crank will cause the levers 21 and 22 to be thrown to the positions shown in dotted lines in Fig. 4 and the bolts 17 will be retracted, automatically unlocking the doors. Should the platform and connected mechanism for any reason fail to throw the bolts, an ordinary latch 35 is provided on the inner side of the stile with its tongue extending through and into engagement with the under side of the weight 24 so that by operating the latch, the weight will be lifted and the levers 21 and 22 thrown to retract the bolts.

In some places it may be desirable to provide means for unlocking the doors from an upper story of the building as, for instance, in a school building where, in case of fire, the teacher on a floor above wishes to be entirely sure that the doors are unlocked. For so unlocking the door, a rod or cord 36 is attached to the weight 24 and extends upward in the stile and through the wall to the room or rooms above.

When the doors are being constantly used and it is desired that they should be left unlocked, both against ingress and egress, a weighted sector 37 which is pivoted to the back-plate directly above the upper end of the bar 31, is turned downward to engage the end of said bar and hold it down. The locking bolts are thus held retracted and the rod 10 and platform levers are turned so that the platform rests upon the floor stringers and is as solid as any other portion of the floor. The locking mechanism is also held from operation and all wear of the parts prevented while thus held.

The sector 37 is thrown and held out of the path of the bar 31 by a tumbler 38 pivotally attached at one end to the sector at a distance from its pivot and provided with a notch near its opposite end to engage a pin 39 on a guide-loop 40. The tumbler is operated by means of a key 41 shown in dotted lines which is inserted through an escutcheon 42 secured over an opening in the inner side of the stile, said tumbler being so formed that when the key is inserted and turned, the tumbler will be lifted, disengaging it from the pin 39 and allowing the weighted sector to turn downward over the upper end of the bar 31, said bar at the time being held in depressed position by the operator standing upon the platform 4 while inserting and turning the key. The sector is turned out of the path of the bar 31 by inserting and turning the key which engages the tumbler and acts to force the same longitudinally and reengage it with the pin 39. The mechanism may thus be locked or unlocked only by a key which can be inserted only from the inside of the door.

When the doors are locked, they may be unlocked from the outside by a key which may be the key 41 by inserting the same through an escutcheon 43 secured over an opening in the outside of the stile, a rest 44 being provided for the inner end of the key adjacent to the end of the upper arm of the bell-crank 27. When said key is so inserted and turned, it will engage said end of the bell-crank arm and turn the bell-crank, thus operating the levers 21 and 22 and retracting the bolts 17. By this arrangement, the doors can never in any way be locked against egress because a slight pressure on the platform will throw the bolts and unlock the door and if, by any chance, the mechanism should be out of order, the doors may be

quickly unlocked by means of the latch 35. The sector 37 operates to hold the mechanism in inoperative position with the locking bolts retracted so that while it is in operative position, the doors are unlocked.

The locking mechanism is but slightly larger and no more complicated than an ordinary lock and is all mounted upon the back-plate 20 so that it may be quickly and easily put in place. The arrangement is such that but a slight movement of the platform is required to operate the locking mechanism and the construction of the platform frame and its lever mechanism is such that the platform will operate freely and easily, is not liable to get out of order and may be quickly installed by any ordinary mechanic.

It may be desirable, in order that the platform may have a very limited movement, to provide the construction shown in Fig. 6, in which the operating bar 31 is actuated by a lever 45 pivotally attached at one end to any suitable fixed support such as a bar 46 secured to a cross-piece 47 placed between the floor stringers and secured thereto. Intermediate its ends, this bar 45 is engaged by pins 48 on the arm 13 so that a slight movement of said arm will give an extended movement to the end of the bar to which the operating bar 31 is attached. The supporting bar 46 may be secured to the cross-piece at any desired point so that the desired movement of platform will give the necessary movement to the operating bar.

Certain features herein shown, described and claimed are shown but not claimed in my copending application No. 428,130.

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

1. The combination of doors, a hollow stile between the doors, a movable platform adjacent to the inner side of the doors, and locking mechanism for the doors within the stile constructed to engage the door and operated by the movement of the platform to unlock the doors.

2. The combination of doors, a stile between the doors, locking bolts adapted to project laterally from the stile to engage and lock the doors, a movable platform adjacent to the door, and means operated by the movement of the platform for actuating the bolts.

3. The combination with a door and its stile, of a movable platform adjacent to the door, locking mechanism within the stile at one side of the door embodying a bolt adapted to engage and lock the door, and means extending upward within the stile and connecting the platform and locking mechanism to actuate the latter by the movement of the former.

4. The combination with a door and its stile, of a movable platform adjacent to the

door, a locking bolt within the stile, means for projecting the bolt laterally from the stile into engagement with the door to lock the same, lever mechanism for retracting the bolt, and means connecting said lever mechanism and the platform to actuate the former by the movement of the latter.

5. The combination with a door having a hollow stile and means inclosed within said stile for engaging and locking the door, of a floor having an opening adjacent to the door, a platform within said opening pivotally supported at one edge, platform lever mechanism to support the other edge of the platform and embodying a weight to counter-balance the weight of said platform edge, and means connecting said platform lever mechanism and said locking means to actuate the latter by the movement of the former.

6. The combination with a door having a hollow stile and door-engaging locking means inclosed within said stile for the door, of a floor supported upon stringers and cut away to form an opening therein adjacent to the door, a platform within the opening in the floor pivotally supported at one edge and free to rise and fall at its opposite edge, platform lever mechanism to engage and normally support the free edge of the platform at a distance above the floor stringers, said platform being adapted to rest upon said stringers when in depressed position, and means connecting the platform levers and the locking means to actuate the latter by the movement of the former.

7. The combination with a door having a hollow stile and door engaging locking means inclosed within said stile for the door, of a platform adjacent to the door pivotally supported at one edge, a rod pivotally supported and extending longitudinally beneath the platform, arms on said rod extending laterally therefrom and engaging the platform near its free edge, an arm extending in the opposite direction, a weight on the last named arm to counter-balance the weight of the edge of the platform resting upon said arms, and means connecting one of said arms and the locking means to actuate the latter by the movement of the platform.

8. The combination with a door having a hollow stile and means inclosed within said stile for engaging and locking the door, of a floor having an opening adjacent to the door, a platform supported within said opening and consisting of an angle iron frame and floor boards secured thereon, bearing members to pivotally support one edge of the platform adapted to be engaged by the downwardly extending flange of the angle iron forming one side of the frame, lever mechanism engaging the angle iron at the other side of the platform and embodying a weight to counterbalance the weight of said edge of the platform, and means connecting said plat-

form lever mechanism and said locking means to actuate the latter by the movement of the former.

9. The combination with a door and means for locking the same, of a platform pivotally supported at one edge adjacent to said door, a rod extending longitudinally beneath the platform and supported in bearings, arms on said rod, plates on the ends of said arms adjustably secured thereto and engaging the platform near its free edge to support the same, an arm extending oppositely to said arms, a weight adjustably secured to said arm, and means connecting one of said arms and the locking means.

10. The combination with a door and its hollow stile, of a platform adjacent to the door, a back-plate within the stile provided with a guide-way, a bolt in said way adapted to be projected into engagement with the door to lock the same, lever mechanism mounted upon said plate to actuate said bolt, a bar to actuate said lever mechanism extending downward within the stile, and means connecting the platform and said bar.

11. The combination with a door having a hollow stile and a movable platform adjacent to the door, of locking means inclosed within said hollow stile embodying a bolt adapted to engage and lock the door, means moved by the movement of the platform for actuating said locking means, and means for preventing the actuation of the locking means and holding the same with the bolt retracted and the door unlocked.

12. The combination with a door having a hollow stile, of a movable platform and means for supporting said platform in a raised position, means for rigidly supporting said platform when depressed, locking mechanism inclosed within said hollow stile and embodying a bolt adapted to engage and lock the door, means moved by the movement of the platform for actuating said locking means, and means for holding said means for supporting said platform to permit the platform to rest upon its fixed supports and to hold the locking mechanism with its bolt retracted.

13. The combination with a door and its hollow stile, of a movable platform adjacent to the inner side of the door, locking mechanism within the stile embodying a bolt to engage and lock the door, means for actuating the locking mechanism and adapted to be moved by the movement of the platform, and separate means on the inner side of the stile for actuating the locking bolt independent of the platform.

14. The combination with a door and its stile, of a movable platform adjacent to the inner side of the door, locking mechanism within the stile to lock the door, means extending downward within the stile for actu-

ating the locking mechanism and adapted to be moved by the movement of the platform, and a latch on the stile at the inner side thereof with its tongue projecting inward to engage and actuate said locking mechanism independently of the platform.

15. The combination with a door having a hollow stile, of locking mechanism inclosed within said hollow stile and embodying a bolt to engage and lock the door, a weight to actuate said mechanism and normally hold the bolt engaged with the door, a platform at the inner side of the door to actuate said mechanism and unlock the door, and a key adapted to be inserted from outside the door into engagement with the locking mechanism to unlock the door and a rest for said key.

16. The combination with a door having a hollow stile, of a movable platform adjacent to said door, locking mechanism inclosed within said hollow stile and embodying a bolt to engage the door, a weight to actuate said mechanism and normally hold the bolt projected, means actuated by the movement of the platform for actuating the locking mechanism to unlock the door, and means for raising the weight to actuate the locking mechanism and unlock the door independently of the platform.

17. The combination with a door having a hollow stile, of a movable platform adjacent to the door, locking mechanism inclosed within said hollow stile and embodying means to normally hold said mechanism in position to lock the door and adapted to be actuated by said platform to unlock the door, and key-actuated means for holding said mechanism in unlocked position.

18. The combination with doors and a stile between said doors, of a movable platform adjacent to said doors, locking mechanism within the stile consisting of bolts adapted to be projected laterally into engagement with the doors, connected levers engaging and simultaneously operating said bolts, a weight to actuate said levers in one direction, and means actuated by the movement of the platform for actuating said levers in the other direction.

19. The combination with doors and a stile between said doors, of a movable platform extending across said doors at their inner side, platform levers to support said platform, a weight carried by the platform levers to counterbalance the weight of the platform supported by said levers and normally hold the platform raised, locking mechanism within the stile embodying bolts and levers for projecting said bolts laterally into engagement with the doors, a weight within the stile carried by said levers to actuate said mechanism and normally hold the bolts projected, and a bar extending vertically within the stile to engage and operate said levers of

the locking mechanism and connected at its lower end to the platform levers to move therewith.

20. The combination with a door having a
5 hollow stile and locking means for the door
inclosed within said hollow stile, of a movable platform adjacent to the door, lever mechanism to normally support the platform, an operating bar extending upward to
10 the locking means to operate the same, and a bar pivoted at one end to a fixed support and engaging said operating bar at its opposite

end to move the same, said bar being engaged intermediate its ends by the platform lever mechanism and moved thereby when
15 said mechanism is moved by the depressing of the platform.

In testimony whereof I have signed my name to this specification in presence of two witnesses.

PETER H. McEWAN.

Witnesses:

ESTHER M. WIGLE,
A. SCULLY.