H. G. VOIGHT.

PANIC BOLT.

APPLICATION FILED DEC. 26, 1914.

1,163,795.

Patented Dec. 14, 1915.

3 SHEETS—SHEET 1.

Fig. 1.

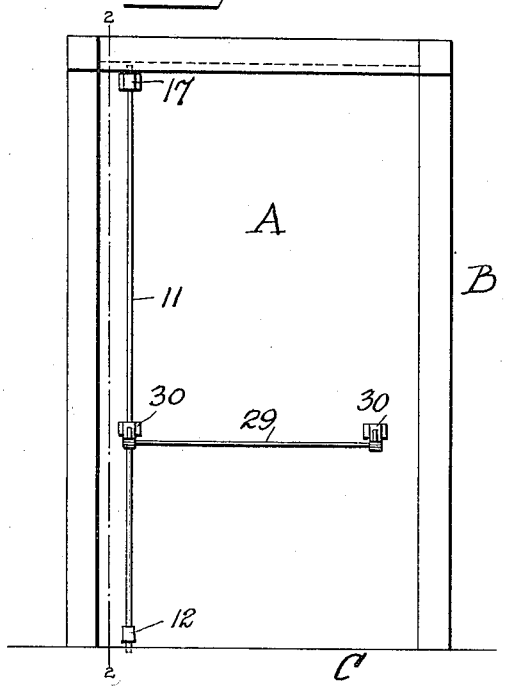
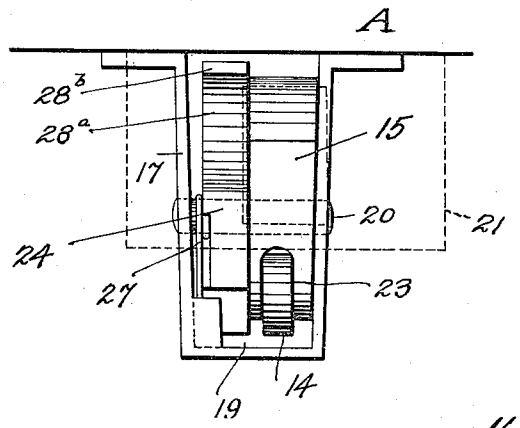


Fig. 7.



WITNESSES:

F. A. Carlson

M. O'Millinus

INVENTOR.

H. G. Voight

BY

ATTORNEY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

H. G. VOIGHT.

PANIC BOLT.

APPLICATION FILED DEC. 26, 1914.

1,163,795.

Patented Dec. 14, 1915.

3 SHEETS—SHEET 2.

Fig. 2.

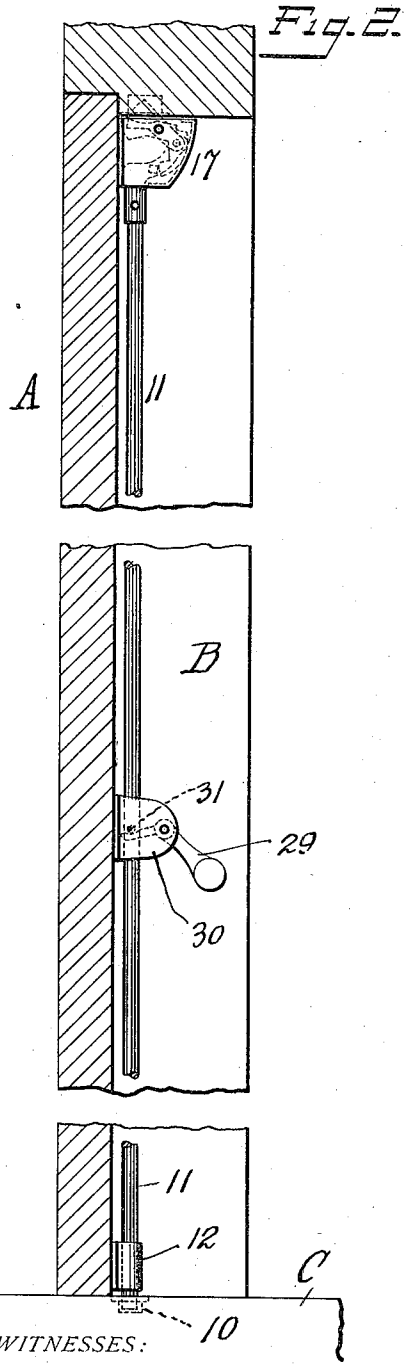
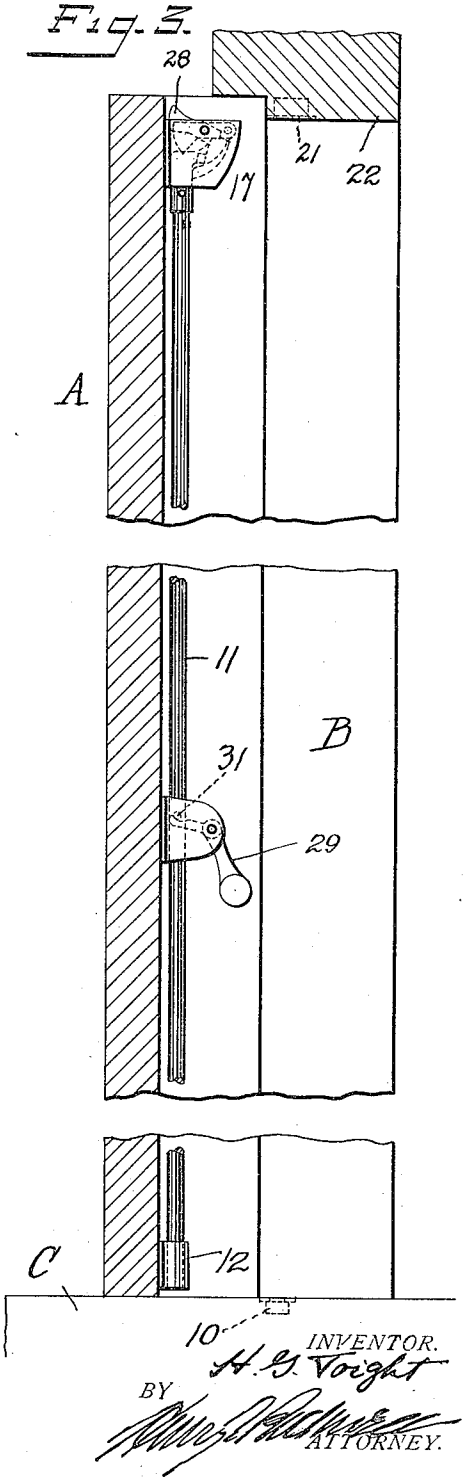


Fig. 3.



WITNESSES:

F. A. Carlson

M. O. Williams

INVENTOR.

H. G. Voight

BY

ATTORNEY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

H. G. VOIGHT.

PANIC BOLT.

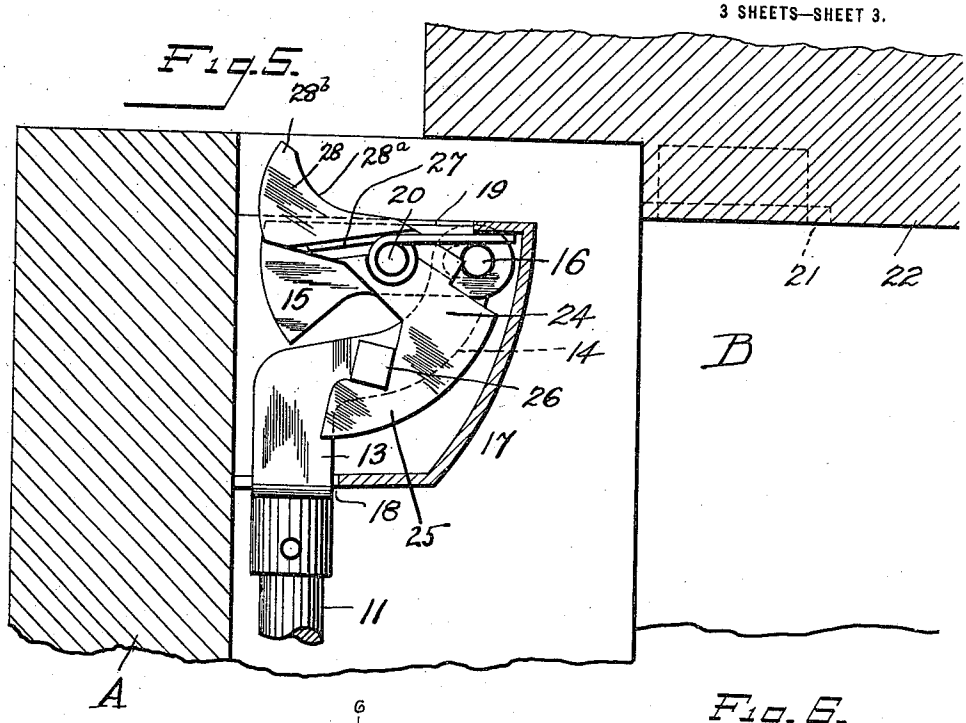
APPLICATION FILED DEC. 26, 1914.

1,163,795.

Patented Dec. 14, 1915.

3 SHEETS—SHEET 3.

Fig. 5.



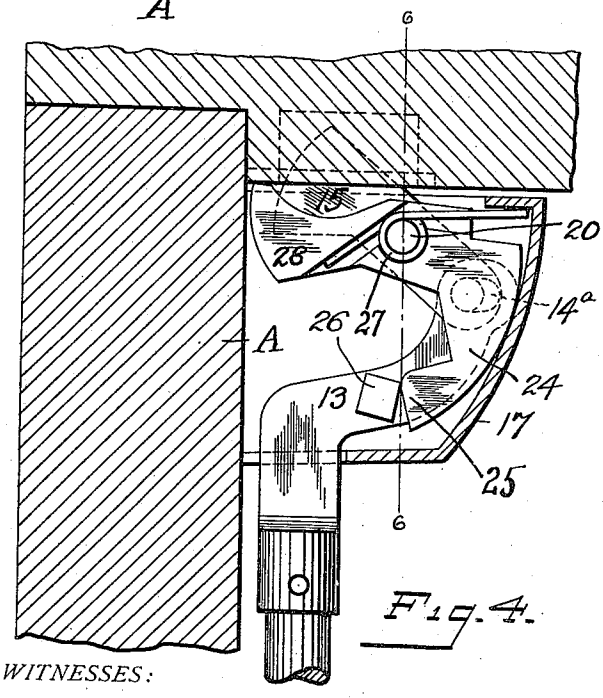
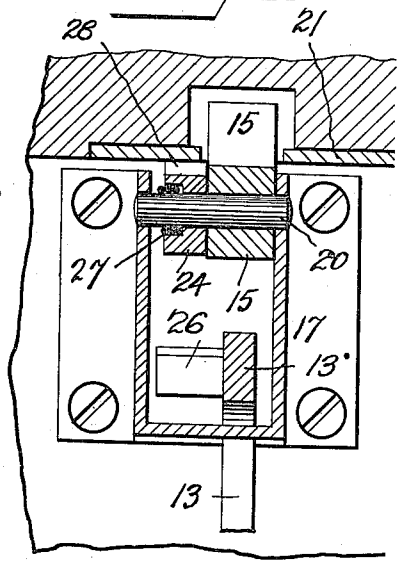


Fig. 4.

Fig. 6.



WITNESSES:

F. A. Carlson

M. O. Williams

INVENTOR.

H. G. Voight

BY

ATTORNEY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY G. VOIGHT, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO SARGENT & COMPANY, OF NEW HAVEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

PANIC-BOLT.

1,163,795. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed December 26, 1914. Serial No. 879,161.

To all whom it may concern:

Be it known that I, HENRY G. VOIGHT, a citizen of the United States, residing in New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Panic-Bolts, of which the following is a full, clear, and exact description.

This invention relates to emergency exit locks, or so-called panic bolts, of the type which are applied to the doors of theaters, schoolhouses, department stores, and other buildings, for facilitating exit in case of fire.

The invention refers 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 means of a swinging cross-bar on the inner face of the door. Certain features, however, are applicable to locks of other types.

One of the primary objects of the invention is to furnish a simple, effective panic bolt mechanism which is applicable either to a door swinging over a threshold, or to a door swinging directly over the floor where there is no threshold. When the door is released, the bolt at the lower edge thereof is automatically held in an elevated position, so that the mechanism can be satisfactorily employed, even in the case where there is no threshold, and where the floor is carpeted, without the necessity of making the strike plate or keeper in the floor of special form.

Other objects of the invention are to provide panic bolt mechanism in which oppositely acting bolts are connected together, and to the actuating mechanism, in an especially simple manner; to furnish improved detent mechanism for automatically holding the bolts retracted when they are disengaged from their keepers, and the door is opened, and for releasing the bolts automatically when the door is closed again and they come into registry with their keepers; and to improve the general construction and operation of devices of the class to which the invention relates.

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 an inside elevation of a door equipped with one form of my panic bolt, showing the door in its closed position; Fig. 2 is a section on line 2—2 of Fig. 1: Fig. 3 is a view similar to Fig. 2, showing the position of the parts after the door has been opened: Fig. 4 is an enlarged detail of the upper part of Fig. 2, with the casing for the upper bolt shown in section: Fig. 5 is a similar enlarged view of the upper part of Fig. 3: Fig. 6 is a section on line 6—6 of Fig. 4: and Fig. 7 is a top plan view of the upper bolt and its associated parts, the strike plate being indicated by dotted lines.

Referring to the drawings, I have shown my improvements applied to a panic bolt mechanism embodying a bolt at the upper edge of the door for coöperating with a strike plate or keeper on the lintel, an oppositely acting bolt at the lower edge of the door for coöperating with a strike or keeper in the floor, and a swinging cross-bar extending across the door, and adapted to release the bolts when said cross-bar is moved downward. Both bolts are positively acting, and the upper bolt has associated therewith certain mechanism for automatically holding the bolts retracted when they are released to open the door, and for releasing the bolts automatically when the door is closed again, so that they thereupon take into their respective keepers. All of these features, however, are not essential parts of the invention in its broadest aspects.

The door A is mounted in a frame or casing B, and is adapted to open outward as usual. The door swings directly over the floor C, there being no threshold. A strike plate or keeper 10 of customary form is mortised in the floor, as indicated by the dotted lines in Figs. 2 and 3, and is adapted to be engaged by a long bolt 11 in the form of a rod, guided vertically on the inner face of the door. The lower end portion of the rod moves in a suitable guide 12 applied to the door, near the lower edge of the latter. The rod 11 extends almost to the upper edge of the door, and in the form shown, it consists of a single length of metal, but obviously it might be made in sections if desired. At the upper end of the rod, the same carries a bracket 13 having an arm 14 offset from the face of the door, and pivoted at its

upper extremity to a bolt 15 by means of a pivot pin 16. The bolt 15 is mounted in a casing 17, having a bottom opening 18 for the bracket 13, and a top opening 19. The bolt 15 is pivoted in the casing 17 on a pivot pin 20, said pivot pin being located intermediate of the ends of said bolt, and the latter is adapted to coöperate in the usual way with a strike or keeper 21 in the lintel 22 of the door frame. The bolt 15 is provided with a curved end adapted to take into the strike 21, in the manner shown by the dotted lines in Fig. 4, while at the opposite end of the bolt the same is preferably provided with a fork 23 in which the upper end of the arm 14 is pinned by the pin 16. The upper extremity of the arm is provided with a slot 14^a engaging the pin 16, thus allowing the bolt 15 to swing pivotally when the bracket is reciprocated vertically.

Mounted within the casing 17 for the upper bolt is the automatic detent mechanism hereinbefore mentioned. This mechanism preferably coöperates with the strike plate 21, and may be constructed and arranged in the following manner: Pivoted on the pin 20 at the side of the bolt 15 is a detent member 24 having a weighted hook portion 25 at its lower end, tending to engage a lug 26 projecting laterally from the bracket 13. The detent member 24 is pivoted intermediate of its ends, and a spring 27 wound around the pin 20 reacts at one end against the casing 17, and at the opposite end against the upper portion of the member 24, so as to assist the action of gravity in holding the detent member engaged with the projection on the bracket. In the normal position of the detent, shown in Fig. 5, the hook 25 engages the lug 26, and the upper extremity 28 of the detent member extends upward out of the opening at the top of the casing 17. The upper part 28 of the detent is provided with a curved face 28^a adapted to contact with the edge of the strike 21 when the door moves to its closed position, and with a tip or extremity 28^b which is adapted to engage the flat part of the strike alongside the bolt opening therein when the door is fully closed, as shown in Figs. 4, 6 and 7.

The bolts 11, 15 are adapted to be released from their respective strike plates by means of a swinging cross-bar 29, mounted in brackets 30 on the inner face of the door. One of these brackets serves as a guide for the bolt 11. One end of the cross-bar 29 is adapted to engage beneath one or more pins 31 on the bolt 11, so that when the cross-bar is depressed from the position shown in Fig. 2 to that shown in Fig. 3, the bolt 11 will be raised, and thereby released from the keeper 10. As the bolt 11 is raised out of engagement with its keeper, the head of the bolt 15 will be moved in the opposite direction, *i. e.*, lowered, by virtue of the connections previously described. Thus, the door is released by a slight push on the cross-bar. By referring to Figs. 4 and 5, it will be noted that as soon as the door is opened to the very slight extent necessary to carry the tip 28^b of the detent member out beyond the strike, the curved upper face 28^a of the detent member permits the detent member to assume a more upright position as the door opens, with the result that the hook portion 25 catches beneath the projection 26, and holds both bolts 11, 15 in a retracted position. Thus, the lower bolt 11 is prevented from dragging on the floor at any time when the door is open. When the door is closed again, the curved face 28^a of the detent member comes into contact with the edge of the strike 21, and as the bolts 11, 15 come opposite the openings of the respective strikes, the detent member is forced downward at its upper end sufficiently to disengage the lug 26 from the hook 25. This releases the bolts, and the bolt 11 is immediately moved down by gravity into its strike 10, at the same time forcing the bolt 15 into the strike 21.

Various changes in the details of the construction may be adopted without departing from the scope of the invention as defined in the claims. For example, it will be obvious that the panic bolt can be applied with satisfaction to a door having a threshold, as well as one without a threshold, and when I refer to a strike or keeper located on or in the floor, I do not intend to limit myself in this respect.

What I claim is:

1. In a panic bolt, the combination with a door and door frame, of a sliding bolt mounted on the door, and adapted to engage a keeper on the floor, a pivoted bolt at the upper edge of the door adapted to engage a keeper on the lintel, means for releasing said bolts from said keepers, and means for automatically holding said bolts retracted when the door is opened, and for releasing them when the door is closed; substantially as described.

2. The combination with a door and door frame, of a bolt guided vertically on the inner face of the door, and adapted to engage a keeper on the floor, a pivoted bolt mounted on the upper edge portion of the door, and adapted to engage a keeper on the lintel, means of connection between said bolts whereby they move oppositely, and means for automatically holding said bolts retracted when the door is opened, and for automatically releasing said bolts from their retracted position when the door is closed; substantially as described.

3. The combination with a door and door frame, of a vertically movable bolt guided on the inner face of the door, and having a

plain lower end adapted to engage a keeper on the floor, a cross-bar for raising said bolt out of engagement with said keeper, said bolt adapted to return to its locking position by gravity, a bolt pivoted on the door adjacent the upper edge thereof, and adapted to engage a keeper on the lintel, means of connection between said bolts whereby the upper bolt is released from its keeper simultaneously with the release of the lower bolt, by means of said cross-bar, and means for automatically holding said bolts retracted when the door is released and opened, and for automatically releasing said bolts when the door is closed, so that said bolts can take into their keepers by gravity acting on the first-named bolt; substantially as described.

4. The combination with a door and door frame, of a bolt guided vertically on the inner face of the door, and having a lower end adapted to engage a keeper on the floor, a bolt pivoted on the door adjacent the upper edge of the latter, and adapted to engage a keeper on the lintel, means of connection between said bolts, whereby they may be released from their keepers at the same time, means for so releasing said bolts from their keepers, and automatic detent mechanism cooperating with one of said keepers; substantially as described.

5. The combination with a door and door frame, of a bolt guided vertically on the inner face of the door, and provided with a lower end adapted to engage a keeper on the floor, a bolt pivoted on the door adjacent the upper edge of the latter and adapted to engage a keeper on the lintel, means of connection between said bolts whereby they are released from their keepers at the same time, means for so releasing said bolts, and automatic detent mechanism coöperating with the keeper of the upper bolt; substantially as described.

6. In a panic bolt, the combination of casing adapted to be applied to the door near the upper edge thereof, a pivot member extending transversely across said casing, a bolt pivoted in said casing by said member to swing in a plane perpendicular to the door, a pivoted detent member for the bolt mounted in said casing adjacent the bolt, an operating rod connected with the bolt, a cross bar operatively associated with said operating rod, and means for operating said detent member; substantially as described.

7. In a panic bolt, the combination of a casing adapted to be applied to one face of a door, a bolt pivoted in said casing to swing in a plane perpendicular to the plane of the door, a strike plate on the door frame having an opening to receive said bolt, means including a cross bar for withdrawing said bolt from the strike plate, and a pivoted detent member for said bolt mounted in said casing adjacent said bolt to swing in a plane perpendicular to the door and coöperating with said strike plate; substantially as described.

8. In a panic bolt mechanism, the combination of a pivoted bolt, a detent member for said bolt pivoted coincidently therewith, means on the door for operating the pivoted bolt manually, and means on the door frame for operating said detent member; substantially as described.

9. In a panic bolt mechanism, the combination of a casing, a bolt in said casing, a pivot for said bolt located intermediate of the ends of the latter, a detent member for said bolt mounted to swing on said pivot, means for operating said bolt, and means for operating said detent member; substantially as described.

10. In a panic bolt mechanism, the combination of a casing adapted to be applied to one face of a door, a pivot member in said casing, a bolt pivoted on said pivot member, a strike adapted to coöperate with said bolt, a detent member for the bolt arranged to cooperate with said strike and pivoted in said casing by said pivot member, means for operating the bolt, and means for operating the detent member; substantially as described.

11. In a panic bolt, the combination of a casing adapted to be applied to one face of a door, a bolt pivoted in said casing, a second bolt operatively connected with the first, means for actuating said bolts simultaneously, a strike for said first bolt, and a detent member pivoted in said casing coincidently with said first bolt, and located alongside said bolt so as to coöperate with said strike; substantially as described.

12. In a panic bolt, the combination of a sliding member guided vertically on the inner face of a door, a casing applied to the door near the upper edge of the latter, a pivot extending across said casing, a bolt pivoted intermediate of its ends on said pivot, and having its head portion disposed toward the face of the door, and a bracket connecting the upper end of said sliding member with the other end of said bolt, and passing through an opening in said casing; substantially as described.

13. In a panic bolt, the combination of a sliding member guided vertically on the inner face of a door, a casing adapted to be applied to said door adjacent one edge thereof, a pivot extending across said casing, a bolt pivoted intermediate of its ends on said pivot, and having its active end disposed toward the face of the door, and a bracket rigid with the upper end of said sliding member, and passing through an opening in said casing, said bracket having an arm offset from said sliding member, and loosely pivoted to the other end of said bolt; substantially as described.

14. In a panic bolt mechanism, the combination with a door and door frame, of a bolt guided vertically on the inner face of the door and having its lower end formed and arranged to lock the door to the frame, a bolt pivoted on the door adjacent the upper edge of the latter, a strike plate mortised in the lintel and having an opening to receive said pivoted bolt, means of connection between said bolts whereby they are retracted at the same time, means for so retracting said bolts, and detent mechanism for holding both bolts retracted, comprising a part adapted to release said bolts by contacting with the strike plate of said pivoted bolt; substantially as described.

15. In a panic bolt mechanism, the combination with a door and door frame, of a bolt adjacent the upper edge of the door, a strike plate or keeper for said bolt carried by the lintel of the door frame, a second bolt mounted adjacent the lower edge of the door, a strike plate or keeper on the floor for receiving said second bolt, means of connection between said bolts whereby they are retracted simultaneously, a cross-bar on the door for retracting said bolts, a gravity actuated detent member pivoted adjacent the upper bolt and normally pendant in a position wherein it holds said bolts retracted from their keepers, and a part on said gravity detent member adapted to engage the keeper of the upper bolt alongside the bolt opening when the door is closed to thereby swing said detent member clear of the bolt mechanism and release the latter; substantially as described.

In witness whereof, I have hereunto set my hand on the 23rd day of December, 1914.

HENRY G. VOIGHT.

Witnesses:
H. E. ROCKWELL,
DAVID L. DAGGETT.

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