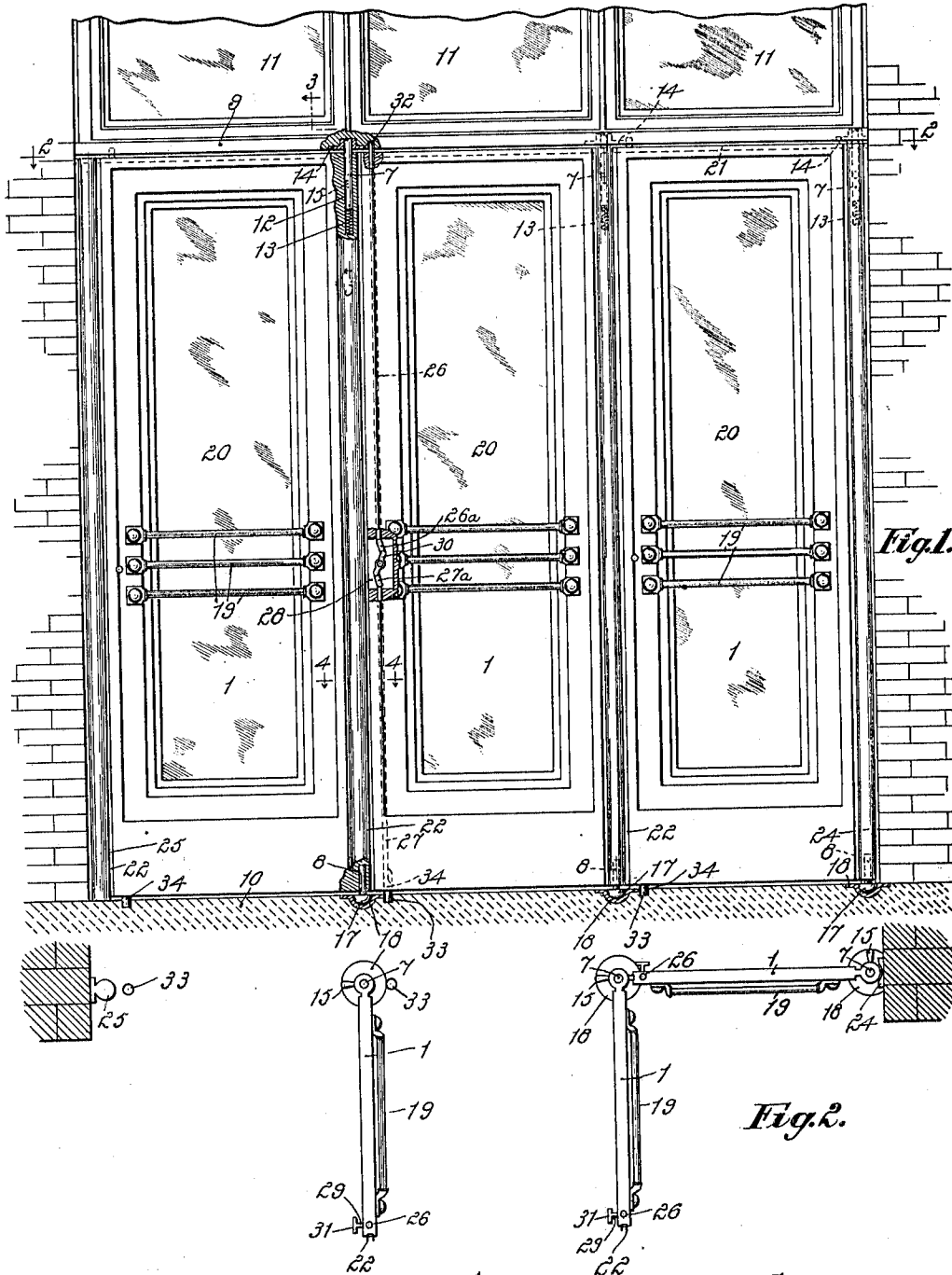


Patented June 9, 1914.

1,099,415.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

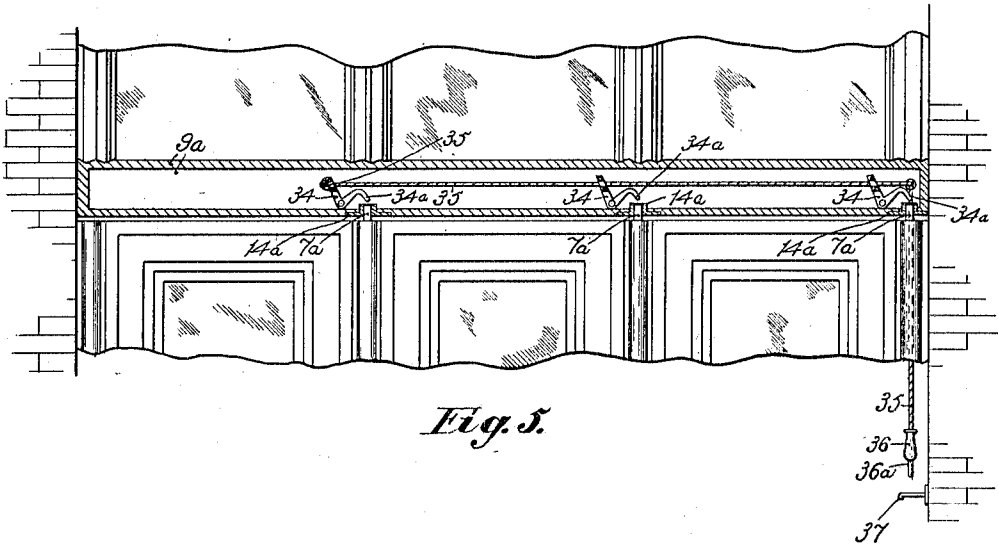


*Fig. 5.*

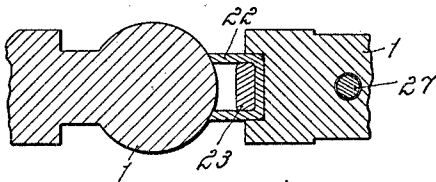


*Fig. 4.*

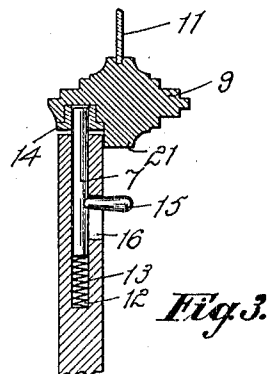


*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

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## DOOR CONSTRUCTION.

1,099,415.

Specification of Letters Patent.

Patented June 9, 1914.

Application filed September 18, 1912. Serial No. 720,923.

*To all whom it may concern:*

Be it known that I, FRANCIS A. WINSLOW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Door Construction, (Case 13,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in door construction and its object is to provide an improved arrangement particularly adapted for vestibule doors and entrance doors for use in large office buildings.

Owing to the excessive height and congested flood area in large office and other buildings, the main entrances are usually overcrowded; therefore it is desirable that every inch of space at the entrances be used to the best advantage. To this end I have provided doors which are hung by means of trunnions or pivot rods, with the front edge of one door engaging the back of the adjacent door, thereby doing away with the necessity for mullions, which of course would obstruct the entrance. The narrowest practicable construction of mullion in metal is about two inches. Oftentimes the mullions are made five or six inches wide. It will readily be seen, therefore, that where there are a number of doors hung in an entrance the doing away with the mullions effects quite a saving of floor space.

The trunnions or pivot rods referred to are so constructed and disposed that the doors can be readily removed, if for instance, in warm weather it should become desirable that the entrance be unobstructed.

In one form of my invention I provide means whereby, in case of fire or panic, the upper trunnions, by means of which the doors are pivoted, may, by a single operation be thrust from their bearings, thereby allowing the doors to fall to the floor.

Further details of construction will appear as this description progresses.

My invention is illustrated in the accompanying drawings, in which:

Figure 1 is an outside elevational view of an arrangement of entrance doors embodying my invention, certain parts being broken away to more clearly reveal the construction; Fig. 2 is a view taken on the line 2—2 of Fig. 1 looking in the direction indicated

by the arrows. In this view two of the doors are shown in their open position. Fig. 3 is a fragmentary sectional view taken on the line 3—3 of Fig. 1, and looking in the direction indicated by the arrows, showing the arrangement of the upper pivot rod and the cylinder pivot therefor. Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 1, showing how the pivoted edge of one of the doors is engaged by the unpivoted edge of the adjacent door; and Fig. 5 shows a modified form of door construction wherein the upper pivot rods may be simultaneously thrust from their bearings in case of fire or panic.

Similar reference characters refer to similar parts throughout the several views.

Referring to Figs. 1 and 2, I have shown a plurality of doors 1, each pivoted on the right-hand side thereof at top and bottom by means of trunnions 7 and 8 respectively to the lintel 9 and the floor 10. Above the lintel I have shown transoms 11. As is clearly illustrated in Figs. 2 and 4, the adjacent edges of the doors engage each other, there being no mullions interposed between the edges of the doors as in the usual door construction. The pivot rods 7, are disposed in openings 12, in the upper right-hand corners of the doors. Compression springs 13, serve to normally hold the rods 7 in cylindrical pivot bearings 14, carried by the lintel 9. Each of the pivot rods 7, is provided with a handle 15, extending through a slot 16, on the inside of the door with which it is associated. When a door is to be removed from position, the handle 15 of its pivot rod 7, is grasped and the pivot rod 7 lowered against compression spring 13. The lower trunnions or pivot rods 8, are provided with semi-spherical heads 17, which, when the doors are in operative position, are disposed in sockets 18, forming therewith the equivalent of a ball and socket joint.

When the pivot rods 7 are removed from their bearings, and the doors are unlocked at their left hand edges the doors may be tilted from a vertical position without danger of damage to the lower pivot rods, due to the ball and socket arrangement referred to. The tops of the sockets 18, are flush with the surface of the floor, as illustrated, in order that when the doors are removed, there will be no obstructions appearing above the surface of the floor. Each of the

doors is provided with a plurality of bars 19, which may be grasped to open or close the door, and which protect the glass 20, with which each of the doors is provided.

5 Any suitable spring means, not shown, may be provided for normally holding the doors in closed position. While I have in the drawings shown the lintel 9 provided with a shoulder 21, to prevent the doors  
10 from opening inwardly, it may be sometimes desirable to have the doors open both inwardly and outwardly, which may be accomplished by dispensing with the shoulder 21.

15 By referring to the drawings it will be seen that the pivoted edges of the doors are rounded. The purpose of this will hereinafter appear. The unpivoted edge of each of the doors is provided with a flexible  
20 weather strip 22, of any suitable material, disposed in a slot in the edge of the door. This weather strip 22, which is conformed to have a U-shaped cross-section, is retained in position by means of a strip 23. The  
25 right-hand side of the entrance opening is provided with a weather strip 24, adapted to engage the pivoted edge of the adjacent door. The left-hand side of the entrance opening is provided with a strip  
30 or bar 25, adapted to be engaged by the weather strip carried by its adjacent door. The purpose in having the pivoted edges of the doors rounded as shown, will now appear. As one of the doors is rotated to  
35 a position at right angles to its normal closed position, the weather strip 22, carried by the door adjacent to its pivoted edge, will at all times be in engagement with the said rounded pivoted edge. If the pivoted  
40 edges of the doors were not rounded, as shown, this would not be the case.

As I have found that it is not practicable to lock the doors to each other, each door is provided with independent means for  
45 locking the same, which may be constructed as follows: Rods 26 and 27 are disposed in openings in the doors near the weather strip carrying edges thereof. Each of the doors is mortised at 28 to accommodate a spindle  
50 29, carrying a plate 30 within the mortise and a knob or suitable handle 31 on the inside of the door. The rods 26 and 27 are connected to the plate 30, by means of suitable links 26<sup>a</sup> and 27<sup>a</sup> respectively. The  
55 rods 26 and 27, when in their locking position engage in openings 32 and 33 in the lintel and floor respectively. In Fig. 1 the locking rods are shown in their locking position. The rods 27 are enlarged as indicated at 34 in Fig. 1, in order to provide a  
60 very strong locking connection between the doors and the floor or sill.

It will readily be seen that in case of fire or panic the doors can be very easily re-  
65 moved by dropping the upper pivot rods

or thrust bolts and lifting the lower rod from its pivot in the floor, leaving a flush floor without obstruction.

I will now proceed to describe the means which is provided whereby in case of fire 70 or panic all of the upper pivot rods or thrust bolts may be simultaneously and by a single operation thrust from their cylinder pivots in the lintel, allowing the doors to be thrown to the floor. As illustrated in Fig. 75 5, the lintel 9<sup>a</sup> is provided with a hollow interior in which are pivoted suitable bell cranks 34 adjusted upon a rope or cable 35, as shown. The rope or cable 35 is led to any convenient place where it is safe 80 from tampering, and is there provided with a suitable handle 36. As shown, the arms 34<sup>a</sup> of the bell cranks are normally disposed directly over the cylindrical pivots 14<sup>a</sup>. When a pull is exerted upon the rope or 85 cable 35, the bell crank arms 34<sup>a</sup> descend into the cylinder pivots 14<sup>a</sup>, and thrust the pivot rods 7<sup>a</sup> therefrom. The bell cranks may be held in actuated position by securing an eye 36<sup>a</sup> to the handle 36. This eye 90 may be fastened over a suitable projection 37, when the bell cranks have been operated. The pivot rods 7<sup>a</sup> having been thrust from their bearings, the doors will fall over, or at least can very easily be pushed over. 95 The lower pivots corresponding to those illustrated in Fig. 1, no difficulty is experienced in pushing over the doors.

While I have illustrated my invention in the particular embodiments herein shown 100 and described, I do not wish to be limited to these exact constructions, but desire to claim broadly any equivalent constructions which may suggest themselves to those skilled in the art. 105

What I claim and desire to secure by Letters Patent of the United States is:

1. A uni-planar door construction without mullions, comprising three or more independently swinging doors disposed in the 110 same vertical plane when in closed position, and trunnions for pivoting the corresponding lateral edges of the doors at top and bottom, said doors when in closed position disposed with the unpivoted lateral edge of one 115 adjacent to the pivoted lateral edge of another door.

2. In combination, three or more doors normally disposed in the same vertical plane, and devices for pivoting each of said doors 120 at top and bottom at one of the lateral edges thereof, said doors when in closed position being disposed with the unpivoted lateral edge of one adjacent to the pivoted lateral edge of an adjacent door. 125

3. A door construction comprising three doors disposed in the same vertical plane when in closed position, trunnions for pivoting each of said doors at top and bottom at one of the lateral edges thereof, each edge 130

of the middle one of said doors being engaged by an adjacent edge of one of the other doors when all of the doors are in closed position.

5 4. In combination, three or more doors disposed in the same vertical plane when in closed position, and trunnions for pivoting the corresponding lateral edges of the doors at top and bottom, each of said doors having one of its lateral edges engaged by one of the lateral edges of an adjacent door when the several doors are in closed position.

15 5. In combination, a plurality of doors, each pivoted at top and bottom near one of the lateral edges thereof, the unpivoted lateral edge of one of said doors located immediately adjacent a pivoted lateral edge of the next, the pivoted lateral edge of each one of said doors being rounded to present a surface substantially concentric with a line through its pivots and a flexible strip carried by the one unpivoted edge of an adjacent door arranged to tightly engage said rounded surface at all times.

25 6. In combination, a plurality of doors disposed with their adjacent edges engaging each other, each pivoted at top and bot-

tom by means of trunnions, and means whereby the upper trunnions may be simultaneously thrust from their bearings.

7. In combination, a plurality of doors disposed with their adjacent edges engaging each other, each pivoted at top and bottom by means of trunnions, and means whereby the upper trunnions may be simultaneously thrust from their pivots, the said lower trunnions having ball and socket engagement with their bearings.

8. In combination, three or more doors disposed with their adjacent edges engaging each other, each pivoted at top and bottom, the pivots of one door being adjacent to the free edge of the adjacent door, and means whereby the upper pivots may be simultaneously thrust from their bearings, the said lower pivots having ball and socket engagement with their bearings.

In witness whereof, I hereunto subscribe my name this 14th day of September, A. D. 1912.

FRANCIS A. WINSLOW.

Witnesses:

R. E. PAUL,

L. MATTHIAS.