

No. 738,134.

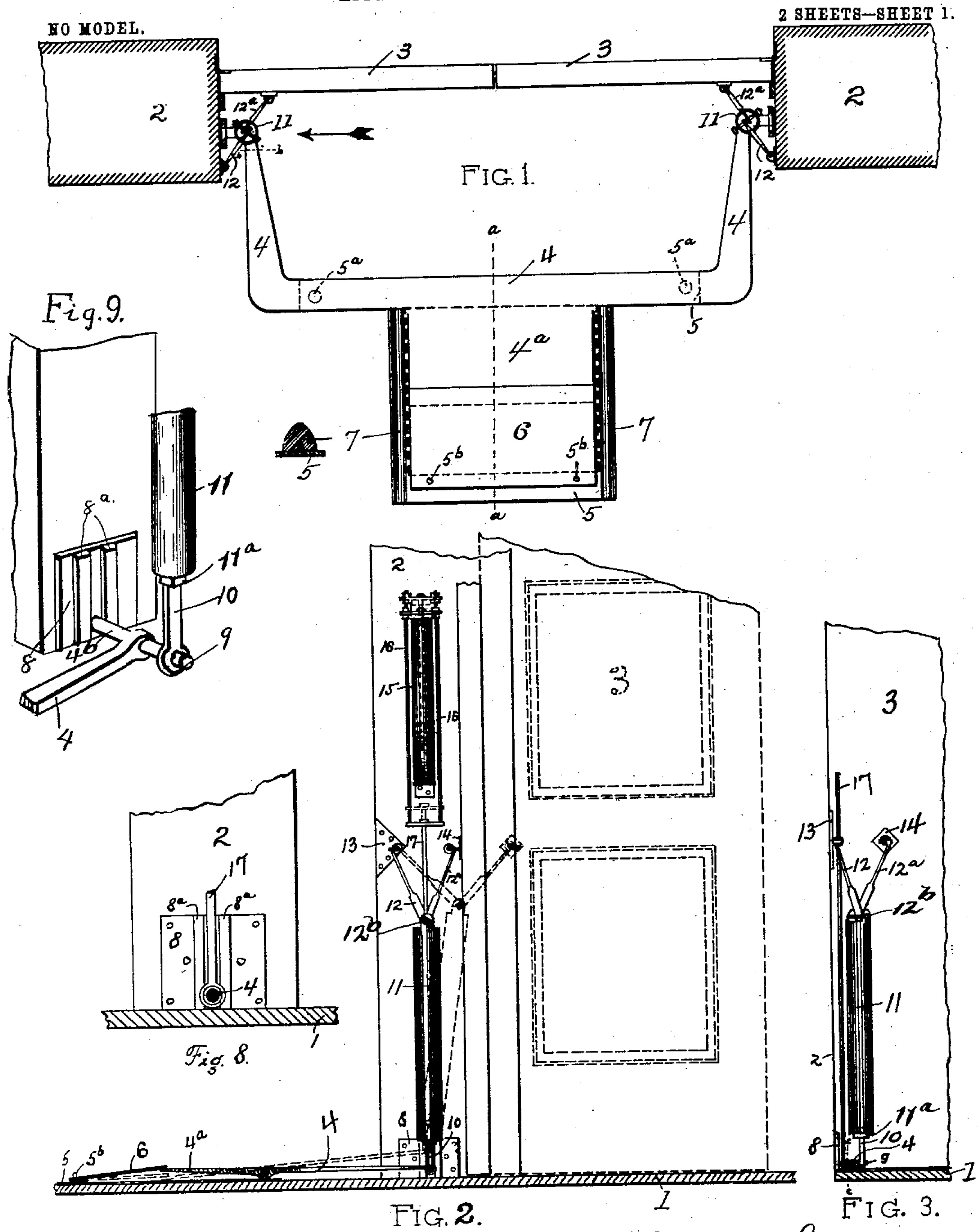
PATENTED SEPT. 1, 1903.

J. H. WHITAKER.  
AUTOMATICALLY OPERATING DOOR.

APPLICATION FILED JUNE 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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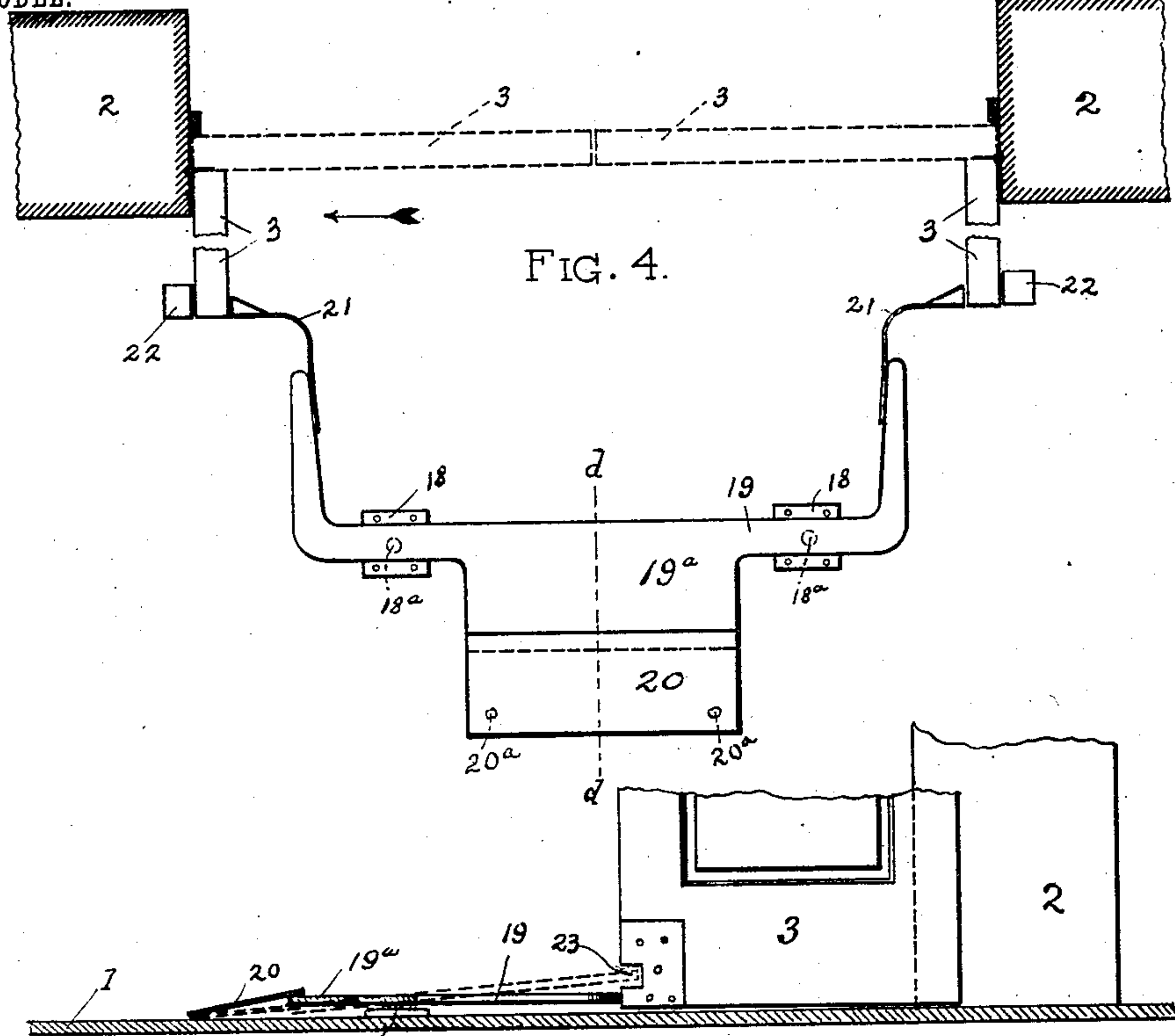


FIG. 5.

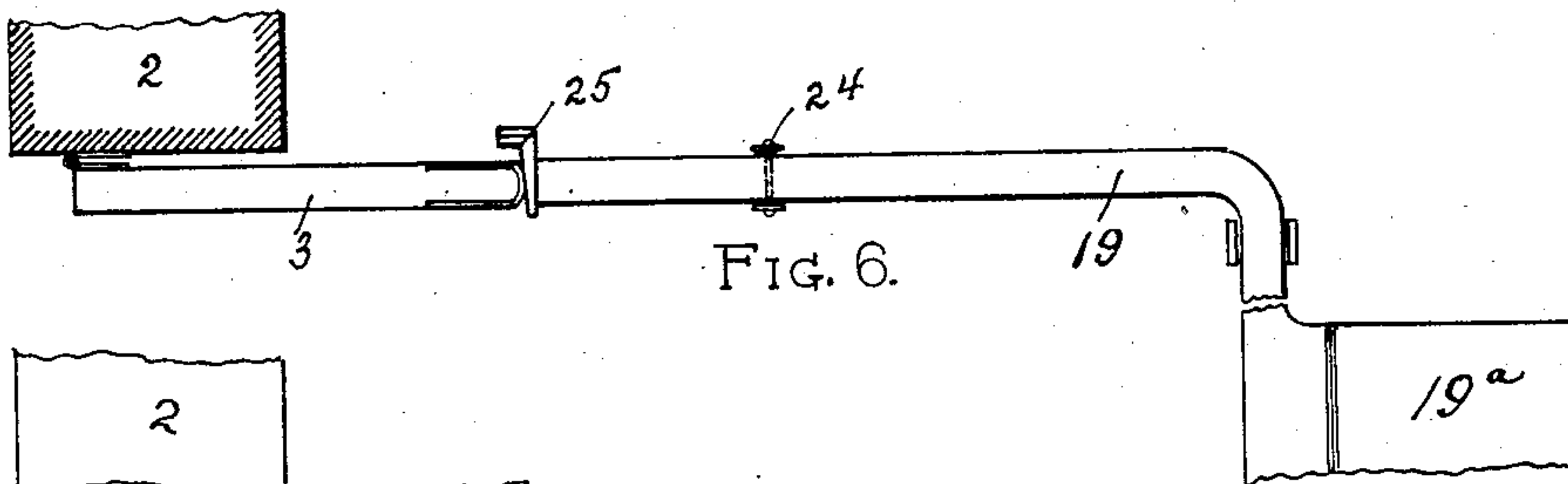


FIG. 6.

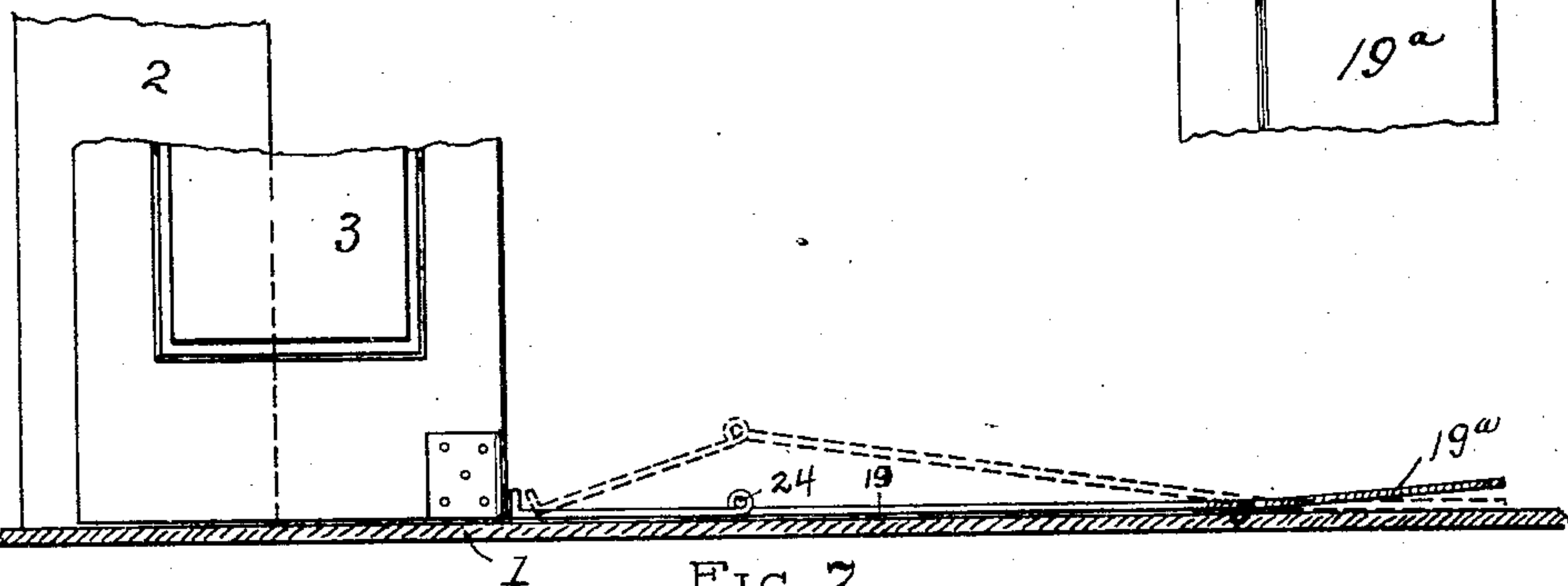


FIG. 7.

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# UNITED STATES PATENT OFFICE.

JOHN H. WHITAKER, OF DAVENPORT, IOWA.

## AUTOMATICALLY-OPERATING DOOR.

SPECIFICATION forming part of Letters Patent No. 738,134, dated September 1, 1903.

Application filed June 23, 1902. Serial No. 112,893. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. WHITAKER, a citizen of the United States of America, and a resident of Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Automatically-Operating Doors, of which the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description.

This invention relates to that class of automatically-operating doors which are opened and closed by means of mechanism connected with the door, which mechanism is actuated through the depression of a tread-plate slightly elevated above the floor and located a short distance from the door. Various forms of mechanism for so operating doors are disclosed in my Patents No. 496,027, dated April 25, 1893; No. 505,376, dated September 19, 1893; No. 632,299, dated September 5, 1899, and No. 658,413, dated September 25, 1900. All of these patents disclose mechanism adapted to open and close what are commonly termed "sliding doors."

My present invention is adapted for opening and closing swinging doors; and its chief object consists in providing mechanism by which swinging doors may be opened through the depression of a plate or platform located a short distance from the doors and after being opened remain open until the person has passed through the doorway, also to provide mechanism by which the opened doors may be closed by the depression of a plate or foot-lever located in the path of the person after passing through the opened doorway.

A further object is to produce mechanism for accomplishing the objects named which shall be simple in construction, occupy a minimum amount of space, and which is not likely to get out of order through use.

Other minor objects will be apparent from the following description and reference to the drawings, in which—

Figure 1 is a plan view of two swinging doors hung upon hinges secured to the door-jamb at each side of the doorway, the door-jamb, and mechanism by which the doors are opened. Fig. 2 is an elevation of one of the door-jamb and the operating mechanism, taken on the line *a a* of Fig. 1 and viewed in

the direction of the arrow in said Fig. 1, showing the edge of one of the swinging doors, the same door when opened being shown in dotted lines, with the relative location of the operating mechanism also shown in dotted lines. Fig. 3 shows the connection between the operating-lever resting upon the floor and the parts which direct and control the movement of the door, taken on the line *b b* of Fig. 1. Fig. 4 is a plan view of the mechanism for catching and holding open the doors when they have been opened by the person passing therethrough and of the releasing-lever. Fig. 5 is an elevation of the door-jamb and opened door, with the releasing-lever in section on the line *d d* of Fig. 4 and viewed in the direction of the arrow shown in said Fig. 4. Fig. 6 is a plan view of a modification of the mechanism for holding the door open and of the releasing device. Fig. 7 is a side elevation thereof, the foot-lever or tread-plate being shown in cross-section. Fig. 8 is an enlarged view of the guide-brackets and parts operating therewith, sectioned on the line *c c* of Fig. 3. Fig. 9 is a perspective view of the guide and adjacent parts, the rod 17 being omitted.

As the mechanism for opening the two doors, the means for holding them open, and for releasing them are in all respects identical, the operating-lever connecting the mechanism at both doors, and both being operated simultaneously by the weight of the person upon the tread-plate connected with the operating-lever or the releasing-lever, I will, in describing my invention, simply refer to one of such sets of operating mechanism, it being now understood that such reference includes both doors and the mechanism connected therewith.

In the drawings, 1 represents the floor; 2, the door-jamb; 3, the door, which is secured to the door-jamb by hinges in the well-known and usual way.

4 is the operating-lever.

4<sup>a</sup> is a plate made integral with the lever 4 and slightly elevated above the floor.

5 is the floor-plate, composed of metal strips resting upon the floor and of such form that the operating-lever and tread-plate may rest upon it.

5<sup>a</sup> 5<sup>a</sup> are upwardly-projecting pins secured to or made integral with the inner and longer



strip of the floor-plate 5 and are adapted to enter corresponding holes in the under side of the operating-lever 4, which holes are somewhat larger in diameter than the pins. 5<sup>b</sup> 5<sup>b</sup> are similar upwardly-projecting pins secured to or made integral with the outer and shorter strip of the floor-plate 5.

6 is the tread-plate, provided with perforations near one edge which correspond with the pins 5<sup>b</sup> 5<sup>b</sup> and into and through which said pins pass. The opposite edge of said tread-plate laps over the edge of and rests upon the elevated plate 4<sup>a</sup>.

7 7 are guards composed of rubber or other material, which may be secured to the floor or to the metal strips of the floor-plate adjacent to plate 4<sup>a</sup> and tread-plate 6 for the purpose of obviating the danger of catching one's foot under the elevated tread-plate. The inner extremities of the operating-lever are bent at right angles and greatly reduced in size and form pins or lugs 4<sup>b</sup>.

8 is a bracket secured to the lower edge of the door-jamb and having two vertical parallel guide-ribs 8<sup>a</sup> 8<sup>a</sup>. The pin-like extremity of the operating-lever 4 rests in the space between such parallel ribs and is guided vertically thereby.

9 is a short pin secured to or made integral with the operating-lever near its inner extremity and projecting horizontally therefrom in a direction opposite to that of the pin-like extremity of said operating-lever. Loosely connected with this pin or lug is the rod 10, which is secured to and vertically adjustable in the lower end of the weighted tube 11, the part 11<sup>a</sup> being threaded in the end of the tube. The tube 11 is adapted to be weighted, as may be found necessary in the operation of my invention, and for that reason I find it convenient to construct said tube of gas-pipe, into which lead of the required weight may be inserted. To the upper extremity of said tube 11 are loosely secured the spreading-arms 12 12<sup>a</sup>, their lower ends being mounted on a bolt or pin 12<sup>b</sup>, which may be secured to the upper end of the tube in any suitable manner.

13 is a bracket provided with a hook or ring and fastened to the door-jamb by screws or any other suitable means. To the hook or ring on this bracket is fastened by a loose connection the upper extremity of the arm 12. To the side of the door, near its rear edge, is secured a bracket 14, similar to the bracket 13, and to the hook or ring thereof is fastened the upper end of the arm 12<sup>a</sup>.

Secured vertically to the door-jamb in any suitable manner is an oil-chamber 15, located above the weighted tube 11 and on a line therewith. A piston-rod and plunger of ordinary construction are placed within said oil-chamber to operate therein. Said piston-rod at its upper end is connected with a rectangular movable frame 16, which surrounds said oil-chamber. Depending from the lower end of said frame 16 and secured thereto is a rod 17, which rod extends downward and is

loosely connected with the pin-like extremity of the operating-lever 4 adjacent to the ribs on the bracket.

From the foregoing explanation and description it will now be seen that by stepping upon the tread-plate 6 the lever-plate 4<sup>a</sup> will be depressed, and in consequence the operating-lever 4 will be rocked on the fulcrum formed by the pins 5<sup>a</sup> 5<sup>a</sup> and the lever 4 resting thereon. The inner extremities of said lever 4 will be elevated, being guided in their vertical movement by the guide-ribs of the bracket 8. The rod 10 being operatively connected with the operating-lever 4, through its loose connection with the pin 9, said rod and weighted tube 11 will be elevated simultaneously with the inner extremity of the lever 4. The upper ends of the spreading-arms 12 and 12<sup>a</sup> being fastened to the stationary brackets 13 and 14 on the door-jamb and door, respectively, said upper ends cannot rise. In consequence of the loose connection between the upper end of the tube 11 and lower ends of arms 12 and 12<sup>a</sup> the arm 12<sup>a</sup>, through the rising action of the tube 11, will cause the door 3 to be swung open on its hinges and the door and operating mechanism will assume the relative locations shown by the dotted lines in Fig. 2. There being two doors and two sets of mechanism, as explained, operated simultaneously through the action of the operating-lever, both doors will be opened at the same time.

I will now describe the mechanism by which the doors are held open until the person has passed through the doorway and by which they are released and closed.

In Figs. 4 and 5, 18 18 are brackets, fastened to the floor by screws or otherwise, each having an upwardly-projecting pin or post 18<sup>a</sup> 18<sup>a</sup>. 19 is the releasing-lever, having a central plate 19<sup>a</sup> slightly elevated above the floor. 20 is the tread-plate, provided with two short pins or posts 20<sup>a</sup> 20<sup>a</sup> on its under side. Corresponding holes may be provided in the floor to receive said posts 20<sup>a</sup> 20<sup>a</sup>. The opposite edge of said tread-plate laps over and rests upon the central plate 19<sup>a</sup>. The extremities of said lever 19 have secured thereto curved spring-metal catches 21, beveled at their ends. 22 is a stop-block to limit the backward swing of the door. 23 represents a slot cut from the door near the bottom of the front edge thereof, and I prefer to cover that portion of the door immediately adjacent to the slot with sheet metal or brass. When the person has stepped upon the tread-plate 6, the door will be opened. When it approaches a position substantially at right angles to its closed position, it will strike the curved portion of the metal catch, the latter yielding to the pressure of the swinging door. As soon as the door has passed the metal catch the latter will spring back to its normal position, thus holding the door open and causing it to remain stationary between the catch and the stop-block 22. The person after passing through the doorway



will step upon the tread-plate 20, which will cause the releasing-lever 19 to rock on its pivots or fulcrum and raise the extremities and the spring-metal catches attached thereto until the beveled ends of said catches come into the path of the slot 23. The weighted tube 11 being held in an elevated position by reason of the door being held open and the latter being free to slip past the catch 21, owing to the slot 23, said weighted tube and attached mechanism will seek their normal positions and in descending will of course swing the door to.

A modification of the releasing mechanism is shown in Figs. 6 and 7, in which the arms of the releasing-lever 19 are provided with a break or joint, as shown at 24, and their extremities with a friction-block 25. In this modification the slot 23 will be dispensed with; but I prefer to cover the lower front corner of the door where it engages the friction-block with sheet metal. When the door in opening approaches a position substantially at right angles to its closed position, the metal-covered corner will strike the friction-block, which is slightly beveled and may be faced with rubber. As indicated at Fig. 6, it will be held open through its contact with the friction-block. In the modification I have not shown the tread-plate 20, but simply the elevated plate 19<sup>a</sup>. After the person has passed through the doorway by stepping upon the elevated plate 19<sup>a</sup> the releasing-lever will rock on its fulcrum or pivot, which will raise the break or joint 24, and in consequence draw the friction-block 25 away from the door, as indicated by dotted lines in Fig. 7, releasing the latter and allowing it to swing to through the action of the weighted tube 11, as hereinbefore explained.

In order to prevent the too sudden closing of the door, I have provided the oil-chamber mechanism already described. It will be seen that when the door is opened the piston-rod carrying the plunger, by reason of its connection with the rectangular frame and rod 17, will be elevated, and when the door swings to the plunger will descend in the oil-chamber and will be retarded in its descent by the oil therein, thus acting as a cushion for the closing door and causing it to close gently and smoothly.

Various changes and modifications of the mechanism I have here shown will readily suggest themselves to those skilled in the art, and I do not, therefore, wish to be understood as limiting the scope of my invention to the precise constructions here disclosed; but

What I do claim, and desire to secure by Letters Patent, is—

1. In an automatically-operated swinging door, a foot-operated lever, two spreading-arms, one of which has its upper end secured to the door-jamb, the other similarly secured to the door, and a weighted tube or rod to whose upper end the lower ends of said arms

are loosely secured, said rod or tube being connected with and actuated by the foot-operated lever for the purposes herein stated. 70

2. In an automatically-operated swinging door, the combination of a foot-operated lever, two spreader-arms, one of which has an arm secured to the door-jamb, the other arm being similarly secured to the door, a weighted member in the form of a rod or tube to which the other ends of said arms are secured, said weighted member being connected with and actuated by the foot-operated lever, means for holding said door in an open position, and a foot-operated releasing-lever. 75 80

3. In an automatically-swinging door, the combination of a foot-operated lever, two spreader-arms, one of which has its upper end secured to a jamb, the other arm being similarly secured to the door, a weighted member to whose upper end the lower ends of the arms are loosely secured, said weighted member being connected with and actuated by the foot-operated lever, a lever provided with a catch, whereby the door is held in an open position, foot-operated means for raising the inner extremity of said last-named lever for releasing the door from its open position; an oil-chamber, a piston-rod operating therein and means for operatively connecting the piston-rod with the inner extremity of the foot-operated lever first named. 85 90 95

4. In a device of the character described, a foot-operated lever, a weighted member loosely connected to the lever, arms loosely connected to the weighted member, a door to which one of the arms is connected, and a support fixed with relation to the door to which the other arm is connected. 100 105

5. In an automatically-operated swinging door, a bracket secured to the door-jamb and provided with two parallel vertical guide-ribs adjacent to each other, and a foot-operated lever whose inner extremity moves vertically between said guide-ribs, in combination with a weighted tube or rod whose lower end is loosely secured to said lever near its inner extremity, and a pair of spreading-arms, whose upper ends are secured, one to the door-jamb, the other to the door, the lower ends of both being loosely secured to the upper end of the weighted tube or rod for the purposes stated and substantially as described. 110 115

6. In an automatically-operated swinging door, a foot-operated lever, having a central plate elevated above the floor, a supporting-plate adapted to rest upon the floor and to sustain the lever, a tread-plate mounted upon the supporting-plate and overlapping the central plate of the lever, a bracket secured to the door-jamb adjacent to the floor and having vertical guide-ribs for the inner extremity of the lever; a weighted tube or rod whose lower end is loosely connected with the extremity of the lever, two spreading-arms whose lower ends are loosely connected with the upper end of the weighted tube, the upper end of one of such arms secured to the 120 125 130



door-jamb and the upper end of the other arm  
to the swinging door; an oil-chamber secured  
to the door-jamb, a plunger and piston-rod  
adapted to move vertically in the oil-cham-  
5 ber, means connected to the piston-rod and  
to the inner extremity of the foot-operated  
lever to cause the plunger to rise and descend  
simultaneously with such lever extremity;  
means for catching and holding the door in  
10 an opened position, a releasing foot-operated  
lever, with a central plate elevated above the  
floor, brackets secured to the floor upon which  
the releasing-lever is mounted, a tread-plate,

one edge of which rests upon the floor, its op-  
posite edge overlapping and resting upon the 15  
elevated central plate of the releasing-lever;  
all for the purposes stated and substantially  
as described.

In witness whereof I have hereunto affixed  
my name, in the presence of two witnesses, 20  
this 16th day of June, 1902.

JOHN H. WHITAKER.

In presence of—

I. C. ANDERSON,  
T. O. DAVIS.