(No Model.)

J. H. WHITAKER.

DEVICE FOR OPENING OR CLOSING DOORS.

No. 505,376. Patented Sept. 19, 1893.

Fig. 1.

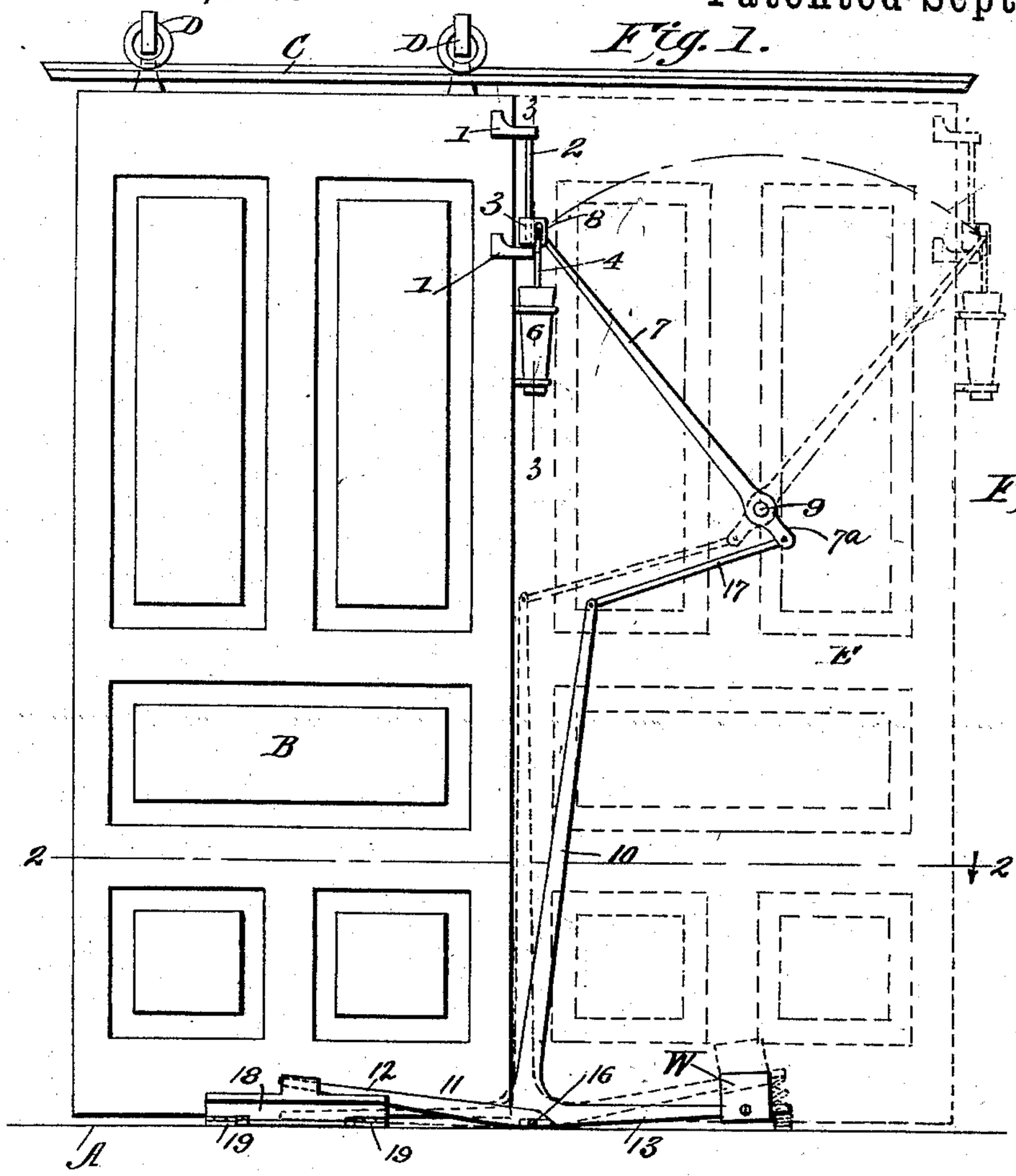


Fig. 3.

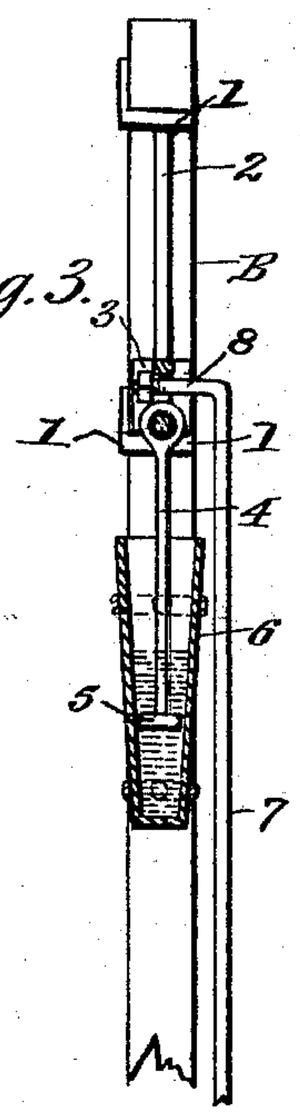


Fig. 2.

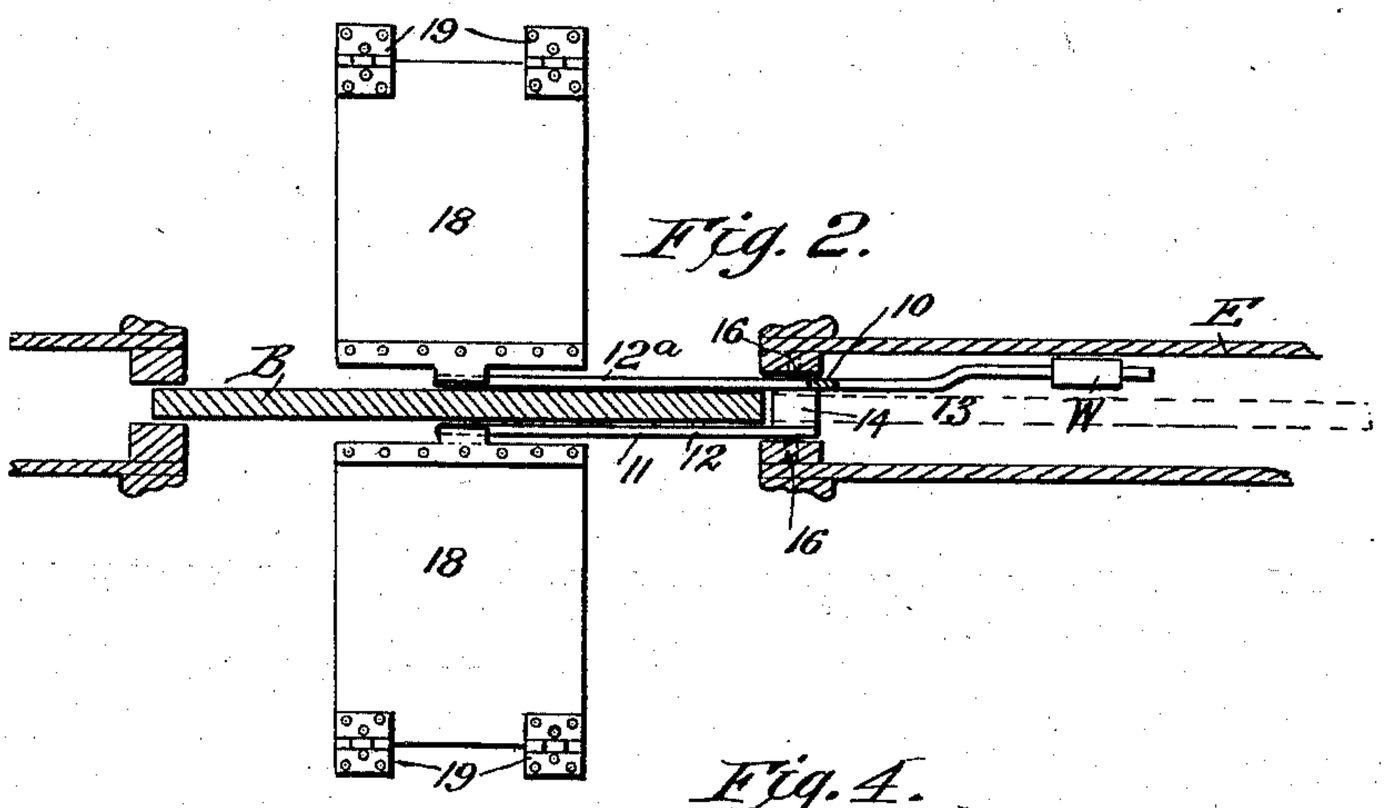
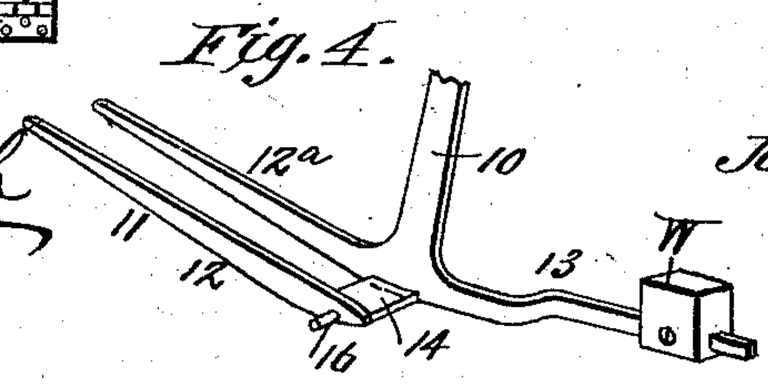


Fig. 4.



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DEVICE FOR OPENING OR CLOSING DOORS.

SPECIFICATION forming part of Letters Patent No. 505,376, dated September 19, 1893.

Application filed May 14, 1892. Serial No. 433,068. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. WHITAKER, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Automatic Door-Operating Devices, of which the following is a specification.

My invention relates to that class of door operating mechanisms, in which the opening and closing of the door are accomplished by means of levers which are operated to open the door by the weight of the person about to pass through the door opening, while the closing of the same is effected by a counter weight operating such levers for a reverse movement.

The object of my invention is to provide a simple and cheap mechanism of this character, easily manipulated, and effective for its desired purpose.

This invention, which relates more particularly to improvements upon my pending application for Letters Patent No. 423,800, filed March 4, 1892, consists in the peculiar combination and novel arrangement of parts, hereinafter described and particularly pointed out in the claims, reference being had to the accompanying drawings in which—

Figure 1 represents a front elevation of a door with my improvements applied, the wall or slide way into which the door passes being removed to disclose the operative parts. Fig. 2 is a horizontal section taken on the line 2—2, Fig. 1. Fig. 3 is an enlarged sectional view on the line 3—3, Fig. 1, and Fig. 4 is a detail perspective view hereinafter particularly referred to.

In the accompanying drawings A indicates the floor line, and B the door, which is hung to slide on the horizontal rail C, it being supported on the roller hangers D D, in the usual manner. Projected from the inner edge of the door and secured thereto near its top, are two brackets I—I, which support a vertical rod 2 upon which is held a collar 3 held to slide between the brackets I—I and such collar is hinged to a plunger rod 4 as most clearly shown in Fig. 1. This rod 4 has a head 5 at its lower end which enters the vessel 6, which is secured in a suitable manner to the edge of the door below the lower bracket 1.

7 indicates a lever which has a hook 8 at its upper end, by means of which it is hinged to the sliding collar 3, it being also pivoted near its lower end on a pin 9, projected from the partition wall E. In practice the hook 8, of the lever 7 is of such a length as to permit the door to slide, without it or its brackets coming in contact with the lever 7.

10 indicates the main operating lever, which is fulcrumed on a pin 16 secured to the partition or studding, which lever is provided at its lower end with a foot portion, extending at approximately right angles to the lever 10 proper, and such bar extends to the front and rear of the lever as at 11 and 13, the front end 11 being forked to form arms 12 and 12ª which embrace the lower edge of the door as shown, while the rear arm 13 forms the weight beam, as upon it is mounted an adjustable counter weight W, such arm 13 being normally held down against the floor by the weight when the door is closed, and the end 11 elevated above the floor a sufficient distance for operative purposes as shown in Fig. 1. The bottom edge of the door when in its normal position is between the arms 12 and 12ª with its inner edge adjacent the grooved connecting piece 14 (see Fig. 4). It will be noticed by reference to Fig. 1 that the upper end of the lever 10 is joined by the pivoted arm 17, with the short arm 7ª of the lever 7 and it is manifest that when the parts are arranged as shown in such figure, that when the front end 11 of the lever 10 is depressed, such lever will be swung in the direction indicated by the arrow, and serve thereby to swing the lever 7 in the arc indicated by the dotted circle, which lever 7 will carry with it the door to the position shown in dotted lines. As a convenient means for operating the lever 10 I place at each side of the door a tread plate 18, the outer edge of each being secured to the floor by the hinges 19—19, or in any other suitable manner, and the inner edge of each tread plate rests on the forked members 12, 12ª of the lever 10 as most clearly shown in Fig. 2. It should be stated, that the levers 7 and 10 with their connecting link 17, the weight beam 13 and the weight W are located outside of the line of the door so as not to obstruct its free passage in sliding on its rollers. After the door has been opened in the man-

ner heretofore described and the weight released from the arm 12 or 12ª, the counter balance weight will cause a reverse movement of parts, and the door moves again to its normal position as also the several parts constituting my device. To overcome the jar and increased speed as the door reaches its normal or closed position, and when it reaches the end of its open movement, (which speed and jar are especially found when the levers are operated quickly and with force) I use oil or other suitable fluid in the vessel 6 forming, as it were, a dash pot, in which the follower 5 operates and which acts as a cushion and prevents the jar and increased speed action of the devices.

While I have not shown it in the drawings it is obvious that my improvements are readily applicable to double doors, it being only necessary to arrange the tread plates at the meeting ends of such door and extend their inner bearing ends laterally to lap the forked ends of the operating levers 10 at opposite sides of the door way. Furthermore a spring may be employed instead of a counter weight, (see dotted lines Fig. 1) to serve the same purpose.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with the sliding door, the pull rod 2 on its rear edge, the cushion chamber 6, held on such edge and the collar 3 held to slide on the rod 2 and formed at its lower end with a follower 5, operating in the chamber 6, of the lever 7, pivoted near its lower end to the wall, its upper end having a pivotal connection with the sliding collar 3, and means for operating the lever substantially as described.

2. In a door operating device, the combination with the sliding door, having a rod bearing 2 at its upper rear edge, the lever 7 pivoted near its lower end to the wall, its upper end pivotally connected to a collar 3, held to slide on the rod 2, the lever 10 pivoted at its lower end to the wall, its upper end having a pivotal arm connection with the lower end of the lever 7, said lever 10 having a forwardly forked extension adapted to embrace the lower end of the door and a counter weight connected therewith to normally hold the levers and door to a closed position and the front forked end up from the floor substantially as and for the purpose described.

3. The combination with the framing, the door held to slide thereon, and provided with a pull rod 2 on its upper rear edge, a cushion chamber 6 secured to such edge under the rod 2, the collar 3 held to slide on the rod 2, and formed with a depending portion having a follower 5 operating in the chamber 6 and the lever 7 pivoted at 9 to the wall, its upper end having a pivotal connection with the collar 3, of the lever 10 pivoted at its lower end to the wall and formed with forked extensions 12, 12ª and a rearwardly extending beam 13 carrying a weight W and the hinged tread members 18 engaging the members 12 and 12ª of the lever 10, all arranged substantially in the manner and for the purpose described.

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Witnesses:
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