J. L. McKEE & R. R. GATES.

DOOR OPENER.

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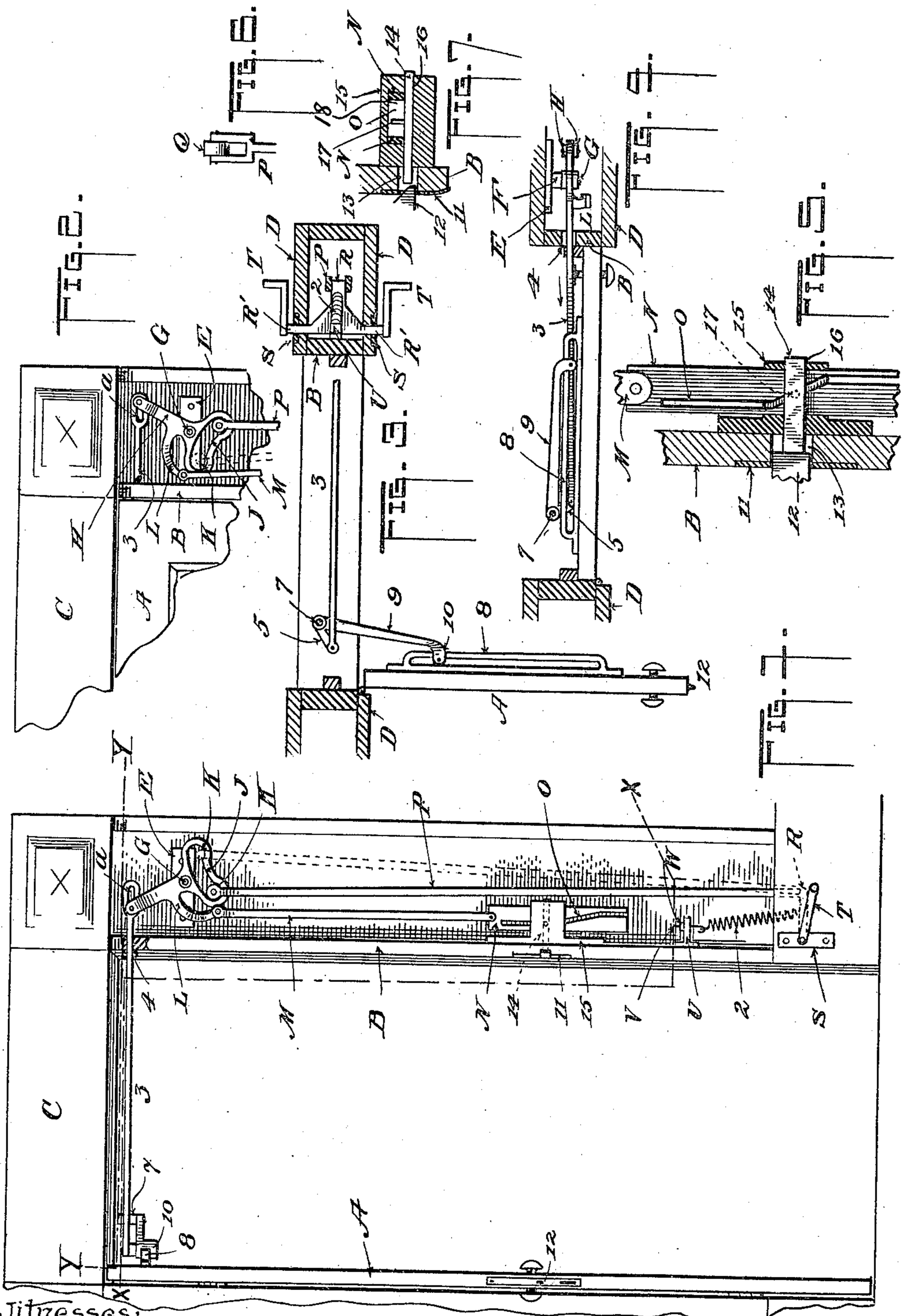
948,737.

Patented Feb. 8, 1910.



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UNITED STATES PATENT OFFICE.

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DOOR-OPENER.

948,737. Specification of Letters Patent. Patented Feb. 8, 1910.

Application filed April 13, 1908. Serial No. 426,675.

To all whom it may concern:

Be it known that we, JACOB L. McKEE and ROBERT R. GATES, citizens of the United States, residing at Dunlap, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Door-Openers; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a device for operating doors the same being partially automatic in that upon manually operating a certain lever mechanism the door will be opened or closed.

To the end that the invention may be understood the accompanying drawing has been provided in which,

Figure 1 is an elevation of a door framing with part of the casing removed to show the operating mechanism, the door being shown standing open. Fig. 2 shows a portion of the same but with the door closed and the mechanism thrown to a position opposite from that shown in Fig. 1. Fig. 3 is a horizontal section of some of the parts as viewed in Fig. 1 taken on line *x x* of the latter figure. Fig. 4 is also a horizontal section on line *y y* Fig. 1 showing the door in its closed position. Fig. 5 is a vertical section of the door jamb and mechanism for engaging and shifting the bolt-latch of the door. Fig. 6 is an elevation of the bifurcated end of a rod provided with a roller and used in connection with the door operating parts. Fig. 7 is a horizontal section of a latch operating mechanism shown in Figs. 1 and 2.

The mechanism about to be described is provided in order that a person may readily open the door by means of his foot when his hands cannot be used for the purpose as, for instance, when carrying a load, said mechanism being so arranged that after having passed out the door may be closed in the same way.

The letter A indicates the door and B the door frame.

C indicates the casing or finishing above the door, that at the right hand side of the door shown in Figs. 3 and 4 by the letter D having been removed in Figs. 1 and 2 so as to show the operating mechanism.

Secured in any convenient manner to some part of the framing so as to be concealed from view, is a plate E provided with a stud F, Fig. 4, on which is pivotally carried, as at G, a lever H adapted to rock in a vertical plane. This lever has a slot below its pivot as at J which extends in a general direction substantially at right angles to the portion of said lever above the pivot, each end of said slot being preferably enlarged as indicated by K. Said lever above its pivot is also provided with an arm L at one side from which a rod M is suspended, the latter carrying a bar N having a slot O therein the purpose of which will be described presently.

Within the slot J of the lever H is one end of a rod P provided with a friction roller Q, Fig. 6, the lower end of said rod being suitably attached to a lever R near the floor, Figs. 1 and 3. This said lever is provided with trunnions R′ which extend through suitable bearings S let into the casing D at each side of the wall, each trunnion carrying a foot-lever T. Above the lever R and secured to the framing B is a bracket U through which extends a vertically adjustable member V; adjustment thereof being had by means of a suitable nut W. To this member is attached one end of a spring 2 whose lower end is suitably connected to the said lever R and normally holds the latter in a raised position. The upper extremity of the lever H is bifurcated as shown in Fig. 4 and between its extremities lies the end of a horizontally disposed rod 3, slotted at *a*, which extends through an opening 4 in the door jamb, its opposite end being pivotally attached to the short arm 5 of a lever, Fig. 3, which is on a stud 7 suitably secured to the underside of the door framing.

Secured to one side of the door near its top is a slotted bar 8 with which a long arm of the lever 9 engages, said arm being forked as shown at 10 in Fig. 1 and provided with a roller (not shown) similar to Q carried by the rod P in Fig. 6. On the door frame or jamb B is the usual keeper 11 for receiving and holding the latch-bolt 12 of the door, a portion of this being shown in Fig. 5 entered through said keeper, there being a hole entirely through the casing at 13 in the figure last named, into which extends a sliding bolt 14 guided in a casting 15 in a horizontally disposed slot 16, said bolt being provided with a pin 17, Fig. 7, which extends into the slot O of the member N hereinbefore described. Said member N is

adapted to shift vertically within the casting 15 in the slot 18, Fig. 7. The said slot O as may be seen is so disposed with reference to the sliding bolt 14 that as the member N is raised or lowered the said bolt is shifted in the direction of its length but this action will be better understood in the description of the operation.

In Fig. 2 the door is shown closed with the lever H in the position it occupies at that time. The lifting tendency of the spring 2 will, however, raise the rod 2 so as to carry it to the highest end of the slot as shown by broken lines in that figure, ready for the next movement. If pressure be exerted upon one of the levers T the lever H will be thrown to the position shown in Fig. 1 with the result that the door will be thrown to the open position. It will be noted in Fig. 4 that a push on the rod 3 in the direction of the arrow will move the arm 5 and swing the lever 9 on its pivot with the result that the long arm of this member will push the door open to the position shown in Fig. 3. The lever H having reached the position shown in Fig. 1, the upper end of the rod P by reason of the pull of the spring will move into the upper part of the slot ready for the closing movement. If pressure be again exerted on one of the levers T the short arm 5 of the lever 9 (Fig. 3) will be pulled causing the long arm to move to the position shown in Fig. 4 and in doing so will pull the door shut, the end of said long arm sliding along the slotted bar 8 in either movement of said door.

Provision must be made for disengaging the latch-bolt 12 of the door from the keeper 11 when the door is to be opened, and this is accomplished through the sliding bolt 14. In Fig. 5, the member N is in its raised position or the position it occupies when the door is closed with said bolt 14 withdrawn from contact with the said latch-bolt. As the lever H moves from the position shown in Fig. 2 toward the position shown in Fig. 1 the first action is to depress this member N. The slanting portion of the slot O shifts the bolt 14 toward and against the latch-bolt by means of the pin 17 forming said latch-bolt out of its keeper 11. However, as the door moves to the closed position the member N rises to retract the bolt 14 so that when the latch-bolt 12 reaches its keeper the said bolt 14 is out of the way to permit the door to properly latch. It is designed that the member N cause the latch-bolt 12 to be forced out of the keeper before any opening movement is attempted and in order that this may occur the end of the rod 3 is slotted at *a*, as described, which permits the lever H to have sufficient movement to lower said member N before said rod 3 imparts movement to the arm 5 of the lever 9.

By the arrangement illustrated it will be seen that the door can be operated from either approach and can be readily closed after passing through the opening.

By means of the nut W and the hook V the spring 2 may be adjusted to produce the necessary tension and this may be done by removing the casing which conceals it or by providing means that can be operated from the outside to accomplish the same purpose without the necessity of the removal of the casing.

We have not gone into the detail as to the manner of securing the various parts in place since any means can be used for so doing. Such alterations or changes in our device can be made as may be found of advantage without departing from the spirit and intent of the invention.

Having described said invention we claim:

1. In a door opener the combination with a door, of a horizontally disposed member secured to and extending partially across the door, a lever pivoted between its ends in the door-way upon the casing and having one end in engagement with the member, a rod-member pivoted to the free end of the lever, a lever pivoted at one side of the door-way, one end being slidably engaged by the opposite end of the rod-member, a member in slidable engagement at one end with the other end of the said lever and adapted to move the latter on its pivot, and means to normally hold the said member in position for operation.

2. In a door opener the combination with a door, of a horizontally disposed member secured to and extending partially across said door, a lever pivoted between its ends in the door-way upon the casing and having one end in engagement with the member, a rod-member connected at one end to the free end of the lever and provided at its other end with a slot, a lever pivoted between its ends at the side of the door-way, one of its ends engaging the slot of the rod-member, there being a slot at the other end of said lever, a member to engage the slot and adapted for moving the lever on its pivot and means to normally hold said member in a position within the slot ready for operating said lever.

3. In a door opener the combination with a door, of a horizontally disposed member secured to and extending partially across the door, a lever pivoted between its ends in the door-way upon the casing and having one end in slidable engagement with the member, a rod-member pivoted to the free end of the lever, a lever pivoted at the side of the door-way one end being slidably engaged by the opposite end of the rod-member, a member in slidable engagement at one end with the other end of the said lever and adapted to swing the latter on its pivot, means by which to depress the member, and

means to hold said member normally in a raised position ready for operation.

4. In a door opener the combination with a door, of a horizontally disposed member secured to and extending partially across the door, a lever pivoted between its ends in the door-way upon the casing and having one end in engagement with the member, a rod-member pivoted to the free end of the lever, a lever pivoted at the side of the door-way, one end being slidably engaged by the rod-member, a member in slidable engagement at one end with the other end of the said lever and adapted to move the latter on its pivot, a device to operate the door latch and operated by the lever, means to move the member, and other means to hold the latter normally in position for operation.

5. In a door opener the combination with a door of a horizontally disposed member secured thereto, a lever fulcrumed in the door-opening and having a long and a short arm, its long arm having sliding engagement with the said member, a lever having a horizontal axis and carried on the door casing, a member connecting the short arm of the first lever with one end of the last described lever, a member in slidable engagement with the opposite end of the said last named lever to operate the same, there being provision by which it may positively shift relative thereto to operate said lever from each opposite side of the axis of the lever, and means to positively cause such shifting movement.

6. In a door opener the combination with a door, of a horizontally disposed member secured thereto, a lever pivoted between its ends and having a long and a short end, the long end adapted to permanently and slidably engage the member, a rod-member attached at one end to the short end of the lever, a second lever mounted between its ends on a horizontal pivot and having the opposite end of the rod-member in slidable engagement with one of its ends, a member in engagement with the opposite end of said lever, there being provision by which it may positively shift from one side of the lever to the other in a plane perpendicular to the axis of the latter, means to positively move the member to shift the lever, and means to return the member to its position after each movement.

7. In a door opener the combination with a door, of a horizontally disposed member secured thereto, a lever pivoted between its ends and having a long and a short end, the long end adapted to permanently engage the member, a rod-member attached at one end to the short end of the lever, a second lever mounted between its ends on a horizontal pivot and having the opposite end of the rod-member in slidable engagement with one of its ends, a member in slidable engagement with the opposite end of said lever, there being provision by which it may positively shift from one side of the lever to the other in a plane perpendicular to the pivot thereof, a device to operate the door latch, means to connect the device and the last named lever, means to positively move the member to move the lever on its pivot, and means to hold the member normally in position ready for operation.

8. In a device of the class described, a lever mounted to swing on a vertical axis in the vicinity of the door, a member on the door with which said lever engages, a second lever within the door frame and concealed from view, a rod connecting the two levers, one end of the same having a slot with which one of the levers engages, there being a slot in said second lever, a foot lever, a rod connecting said foot lever with said second lever through its said slot, all being arranged substantially as shown and described for the purposes set forth.

9. In a device of the class described, a lever mounted to swing on a vertical axis in the door opening, a member attached to the door and having a horizontally disposed slot therein extending across said door, a second lever within the door frame, a rod connecting the two levers, one end of the same having a slot with which one of the levers engages, there being a slot in said second lever, a foot lever, and a rod connecting the foot lever with said second lever by means of its slot, all being arranged substantially as shown and described and for the purposes set forth.

10. In a device of the class described, a door and door frame, a lever pivoted on a vertical axis in the upper part of the door frame above the opening, a slotted member secured on the door with which said lever engages, a second lever, a rod connecting both said levers, there being a slot in one end of said rod within which one of the levers is adapted to play, means carried by said second lever for disengaging a latch bolt of a door from its keeper, a foot lever arranged to be operated from either side of the door, a connection between said foot lever and said second lever, and a spring for retracting the foot lever and sustaining it in position for operation and for setting the mechanism for action substantially as described.

In testimony whereof we affix our signatures, in presence of two witnesses.

JACOB L. McKEE.
ROBERT R. GATES.

Witnesses:
L. M. THURLOW,
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