

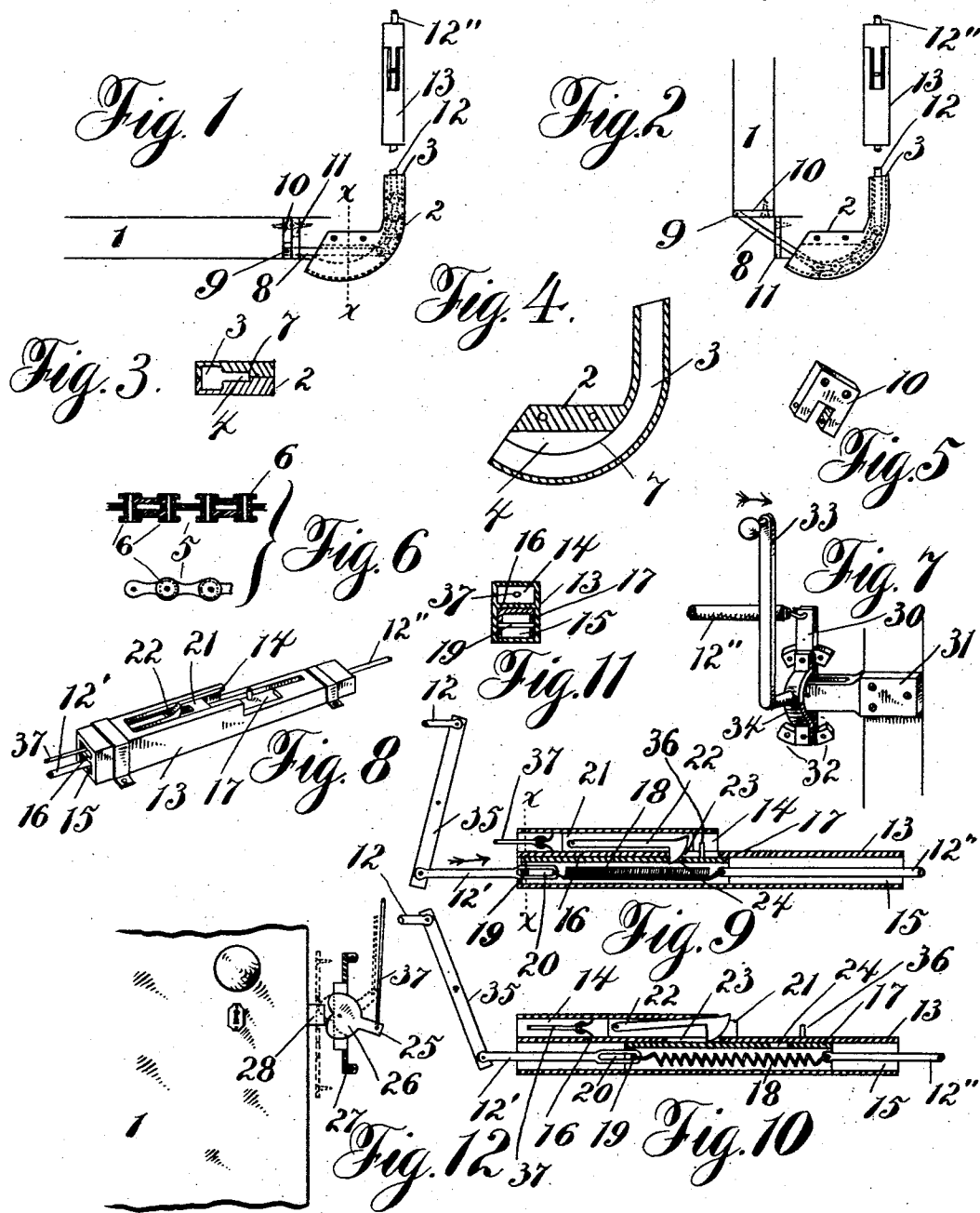
(No Model.)

2 Sheets—Sheet 1.

D. B. AKARD.
DOOR OPENER OR CLOSER.

No. 586,375.

Patented July 13, 1897.



Witnesses.
S. M. Briggs.
W. A. Stevens

Inventor.
Dolvan B. Akard.
by Kincaid & Co. Attys

(No Model.)

2 Sheets—Sheet 2.

D. B. AKARD.
DOOR OPENER OR CLOSER.

No. 586,375.

Patented July 13, 1897.

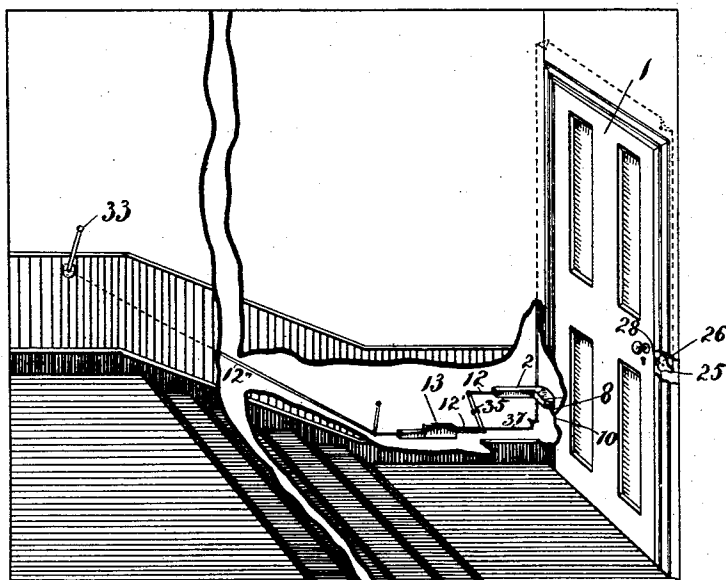


Fig. 13

WITNESSES :

Ediz. Kincaid
Ed. English

INVENTOR
Dolvan B. Akard

BY
Kincaid & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

DOLVAN B. AKARD, OF SAN FRANCISCO, CALIFORNIA.

DOOR OPENER OR CLOSER.

SPECIFICATION forming part of Letters Patent No. 586,375, dated July 13, 1897.

Application filed April 30, 1895. Serial No. 547,654. (No model.)

To all whom it may concern:

Be it known that I, DOLVAN B. AKARD, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Door Openers or Closers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in devices for operating doors from a point situated a considerable distance therefrom; and it has for its object to provide a device of this class which shall be simple in construction, positive and even in its action, free from irregular or jerking motion, and by the use of which the door, besides being readily opened and closed, may be unlatched or latched without the necessity of an independent operation.

In accomplishing the above results I have aimed at economy in construction and provided for the ready assemblage of parts and against any liability of their derangement.

Other objects and advantages of the invention will appear in the following specification, and the novel features thereof will be specifically defined by the appended claims.

In the accompanying drawings, which form a part of this specification, I have clearly illustrated the invention, and in the several views have employed like numerals of reference to indicate like parts.

Figure 1 is a plan view of my invention attached to a door, the latter being represented in a closed position. Fig. 2 is a similar view representing the door open. Fig. 3 is a section through the line *x x*, Fig. 1. Fig. 4 is a section taken at right angles to Fig. 3. Fig. 5 is a perspective of a detail. Fig. 6 is a longitudinal section and plan view of the linked operating-rod. Fig. 7 is a perspective view of the lever and attachments for operating the connecting-rod. Fig. 8 is a perspective of the device for operating the latch. Figs. 9 and 10 are longitudinal sections of the device shown in Fig. 8, showing different positions of the interior parts. Fig. 11 is a section through *x x*, Fig. 9. Fig. 12 is a view of

the unlatching device, showing its position relative to the door. Fig. 13 is a perspective view showing the invention as a whole.

I will now explain the construction and operation of my invention, reference being had to the above drawings by number.

Numeral 1 indicates an ordinary "flat" door hinged in the customary manner and adapted to swing inward. Held securely by screws to a point near the hinged face of the door 1 is the metal casting 2, which is formed in halves screwed together and contains the semicircular roadway 3 and cut-away portion 4. Adapted to travel in this roadway 3 is the linked rod 5, on the pivots of which are formed the projecting friction-wheels 6, the latter being provided to bear on the shoulder 7 of the roadway 3. At one extremity of this linked rod 5 is pivoted the link 8, which is connected with the door 1 by the pivot 9, passing through the slotted plate 10, which is screwed to the door, as shown in Figs. 1 and 2. As a guide for this link 8 I have provided the secondary slotted plate 11, which is screwed to the jamb of the casing. At the opposite extremity of the linked rod 5 is pivoted the operating-rod 12. It is manifest that as the rod 12 is forced into the roadway 3 the wheels 6 travel on the shoulders 7 and the link 8 is forced outward, forcing the door into the position shown in Fig. 2. Reversing the motion of the rod 12 consequently closes the door. Now in order to release the latch of the door I have provided special mechanism, which I will proceed to explain.

Rigidly secured at a point near the casting 2 and in a line below the roadway 3 is the metal box 13, divided into two longitudinal compartments 14 and 15 by the partition 16. Situated within the compartment 15 is the sliding member 17, to one extremity of which is secured the coiled spring 18, while the other bears the transverse pin 19, which slides in the longitudinal groove 20 in the rod 12, the remaining extremity of the spring 18 being secured to the inner extremity of the rod 12.

Sliding in the upper compartment 14 is the member 21, bearing the pivoted catch 22, which projects through the slot 23 in the partition 16 and engages with a recess 24 in the upper face of the member 17. The inner end

of the member 21 is connected to the arm 25 of the unlatching device, (shown in Fig. 12,) which consists of a cam 26, pivoted in the plate 27, and is adapted to engage the latch-bolt 28 of the door 1. This cam 26 is constructed with the terminal portion of its periphery formed on the arc of a circle, whose center is the pivot of the cam. In the drawings I have shown a double or heart-shaped cam formed with two curved edges, which permit it to be used on either a right or left acting door. The rod 12" is secured at one end to the member 17 and at the other to the lever 30, (situated between the studding at the head of the stairs,) which is pivoted to the bracket 31, the latter being secured to the studding by means of the screws shown, the ears 32 being formed integral with the lever 30 for the purpose of changing the tension of the rod 12" without shifting the position of the outer operating-handle 33, which is secured to the lever 30 by the yoke 34.

It is manifest by reference to Fig. 7 that as the handle 33 is moved in the direction of the arrow the rod 12", which is continued in Fig. 9, draws the member 17 along, and with it the spring 18, until the pin 19 comes in contact with the inner extremity of the slot 20, as shown in Fig. 10; but during this short motion the latch 22 is pulled along, drawing with it the member 21 and rod 37, the latter turning the cam 26 into the position shown in dotted lines in Fig. 12, when the latch 28 will be forced into the door, which will be released. The pin 19 now being in contact with the extremity of the slot 20, the rod 12" is drawn along with the member 17 in the direction of the arrow in Fig. 9 and turns the pivoted lever 35, which in turn pushes the rod 12 into the roadway 3, and, through the linked rod 5 and link 8, the door is forced open into the position shown in Fig. 2; but after the member 17 has moved a certain distance sufficient to carry the catch 22 far enough to unlatch the door the catch 22 comes in contact with the end of the opening 23 and slides over it, disengaging the catch 22 from the member 17, allowing the latter to move independently.

In closing the door the lever-handle 33 is turned in the opposite direction until the pin 19 engages with the opposite extremity of the slot 20, when the door begins to close; but before this operation is complete the pin 36, which projects upward from the member 17 and through the partition 16, engages with the member 21, forcing it along, and, through the rigid rod 37, operates the cam 26, allowing the latch-bolt 28 to spring into its normal latched position, when the door closes. In connecting the cam 26 with the member 21 I have employed ordinary angle-levers, such as are employed in wiring bells.

The object in forming the cam 26 with a portion of its periphery on the arc of a circle

is to permit any slight play or action of the cam without affecting the latch or changing its position relative thereto. This slight play or movement of the cam 26 may be the result of a slight derangement of the parts of the device, due to constant use or other unavoidable causes.

From the above description it will be readily seen that I have provided a simple and inexpensive device by the use of which the door may be unlatched and opened or closed and latched with but one connecting-rod, and, further, that the mechanism described presents no hindrance to the opening or closing of the door by the ordinary direct hand method.

I am aware that there are various forms which particular parts of this device may take on and still be within the spirit of my invention, and I therefore do not desire to confine myself to the exact construction and location of parts herein shown and described.

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

1. In a device of the class described, the combination of a stationary semicircular roadway 3, with a movable linked rod 5, formed with friction-wheel 6 adapted to bear on shoulders 7 in said roadway, connecting-link 8 pivoted to said linked rod and the hinged edge of the door, and a cut-away portion 4 in said roadway for the reception of said connecting-link, substantially as set forth.

2. In a device of the class described the combination of a stationary roadway 3 with a movable linked rod operating in said roadway and connected with the door, a metal box 13 bearing a sliding member 17, a coiled spring 18 connecting said linked rod with said sliding member, and an unlatching device engaging with said member and means for operating said sliding member substantially as set forth.

3. An unlatching device for doors consisting of a pivoted member ending in a cam, the terminal portion of the periphery of said cam being formed on the arc of a circle with the pivot of said member as a center substantially as set forth.

4. In a device of the class described the combination with a hinged door, a linked rod pivoted to said door at a point without its center of revolution, an operating device connected to said linked rod and by means of which said linked rod is moved in both directions, a guide for said linked rod, and an unlatching device connected to said operating device and by means of which said door is unlatched, for the purpose set forth.

In witness whereof I hereto set my hand in presence of two witnesses.

DOLVAN B. AKARD.

Witnesses:

GREGORY L. WALSH,
HARRY J. LASK.