No. 887,530. PATENTED MAY 12, 1908.

DE FOE SCOTT & C. G. BLICKLE.

DOOR OPENER AND CLOSER.

APPLICATION FILED SEPT. 30, 1907.

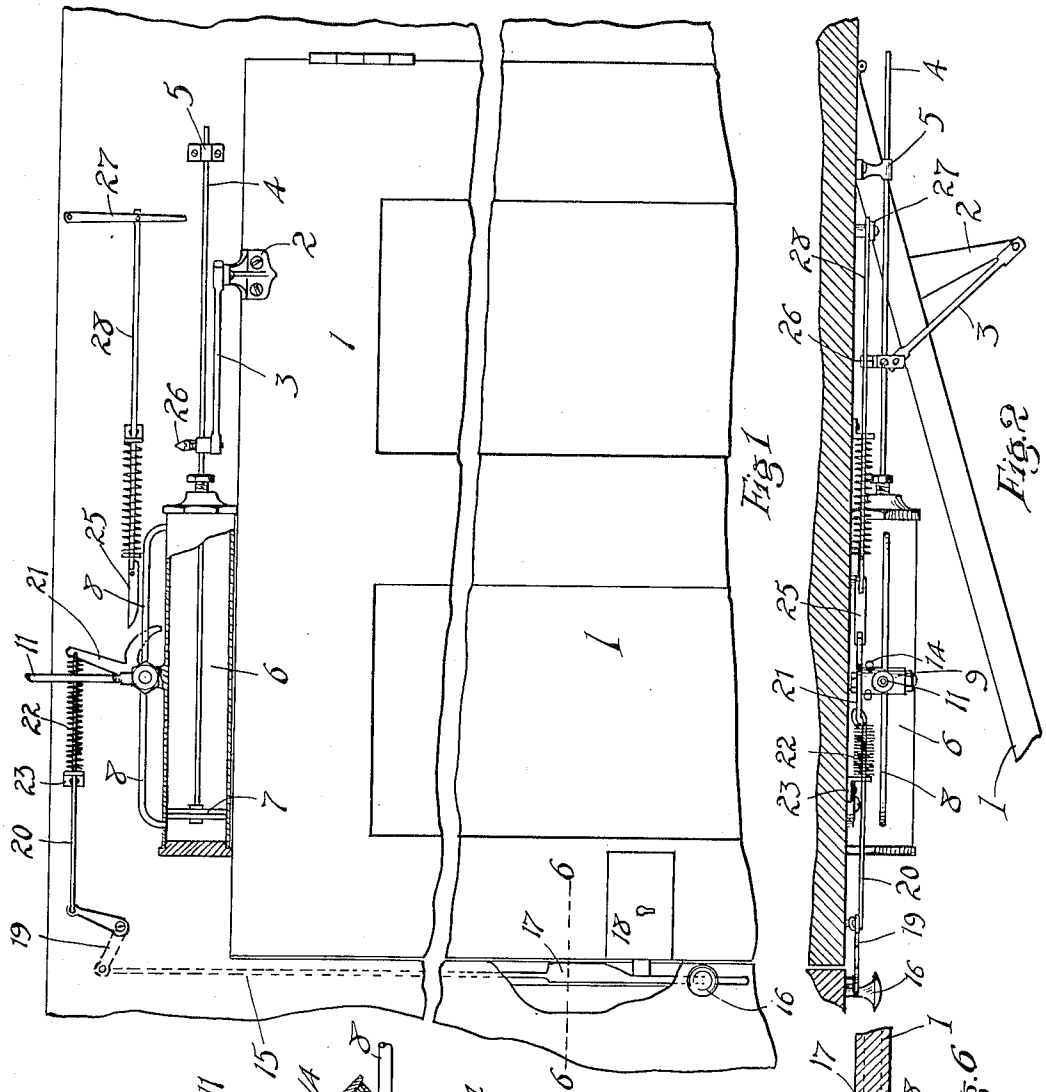


Fig. 1

Fig. 2

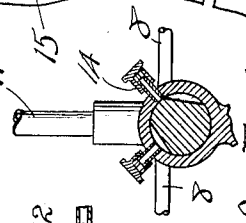


Fig. 4

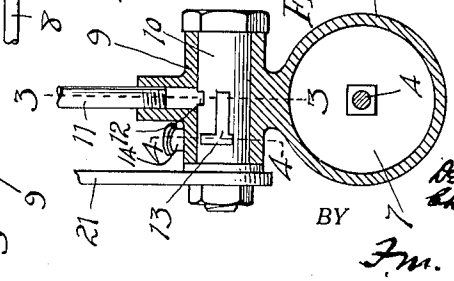


Fig. 5

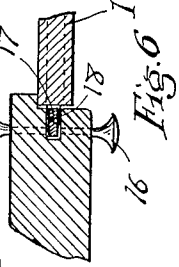


Fig. 6

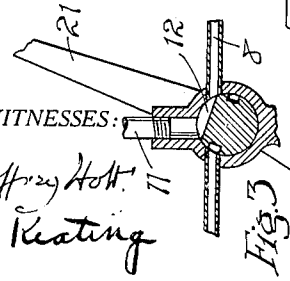


Fig. 3

WITNESSES:

Geoffrey Holt

N. Keating

INVENTORS

De Foe Scott.

Chas. G. Blickle.

BY

Fm. Wright

ATTORNEY.

UNITED STATES PATENT OFFICE.

DE FOE SCOTT AND CHARLES G. BLICKLE, OF SAN FRANCISCO, CALIFORNIA.

DOOR OPENER AND CLOSER.

No. 887,530. Specification of Letters Patent. Patented May 12, 1908.

Application filed September 30, 1907. Serial No. 395,079.

To all whom it may concern:

Be it known that we, DE FOE SCOTT and CHARLES G. BLICKLE, citizens of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Door Openers and Closers, of which the following is a specification.

The object of the present invention is to provide means for opening and closing a door, readily controlled by a person desiring to pass therethrough, and in which the door will be automatically closed after so being opened.

In the accompanying drawing, Figure 1 is a broken front view of a portion of the door equipped with our improvement; Fig. 2 is a top plan view, partly in section, of the same; Fig. 3 is a cross section on the line 3—3 of Fig. 5; Fig. 4 is a broken cross section on line 4—4 of Fig. 5; Fig. 5 is a longitudinal section, partly in side elevation, through the controlling valve; Fig. 6 is a section on the line 6—6 of Fig. 1.

Referring to the drawing, to the upper part of a door 1 of the usual construction is secured a bracket 2, to which there is pivoted a link 3, adjustably connected to a piston rod 4, sliding in a bearing 5 and also in the end of the cylinder 6 and connected to a piston 7 in said cylinder. To opposite ends of said cylinder pipes 8 lead from a valve chamber 9 in which rocks a valve 10. Compressed air or other pressure fluid is supplied to said chamber by means of a pipe 11. Said valve is formed with a channel 12 adapted to selectively conduct the compressed air from the entrance by the pipe 11 to either of the pipes 8 leading to opposite ends of the cylinder. At the same time air is allowed to escape from the other end of the cylinder by the other pipe 8 through a channel 13 leading to one of two adjustable outlets 14. It results from this construction that, when the valve is moved into one of two limiting positions, compressed air or other fluid enters at one end of the cylinder and escapes at the other, and the piston and its rod are thereby moved, and the door is either opened or closed.

In order to control the application of the compressed air there is provided, at the side of the door, a rod 15 having at the lower end handles 16 extending through the casing of the door in opposite directions, so that the door can be opened from either side. Said rod is formed with an inclined portion or cam 17 adapted to engage the latch 18 of the door, so that, upon depressing either knob or handle, said latch is moved back so as to be able to clear the striking plate or casing of the door so that the door can be opened. At its upper end said rod 15 is connected with a bell crank lever 19, which in turn is connected by a rod 20 with the upper end of a lever 21 controlling the valve 10. A coiled spring 22 around said rod is interposed between the end of said lever 21 and a fixed guide 23. Therefore upon depressing the rod 15 by means of the knob 16, the latch is first moved back to clear the striking plate, and, while said latch is held in the latter position, the valve is opened to admit compressed fluid to the end of the cylinder to open the door. Upon releasing the knob, the spring 22 raises the rod again and shifts the valve to admit the compressed fluid to the other end of the cylinder to close the door. But we herein show mechanical means for automatically controlling the closing of the door. For this purpose there is provided a latch 25, which, when the valve has been moved to open the door, engages the valve lever 21, and holds it in the position in which the compressed air opens the door. But when the piston rod has advanced to a pre-determined position and the door has been sufficiently opened, a projection 26 on said rod engages a lever 27 connected by a rod 28 with said latch, so that, when the lever 27 is moved, the latch is withdrawn, and the valve lever 21 is allowed to swing back under the action of the spring, shifting the valve 10, admitting compressed fluid to the other end of the cylinder and automatically closing the door.

We claim:—

1. In an apparatus of the character described, the combination of a door, having a latch, a cylinder, a piston therein, an operative connection between said piston and door, whereby the movement of said piston opens or closes the door, means for admitting pressure fluid to either end of said cylinder, a valve for controlling said means, and means for operating said valve comprising a handle outside the casing of the door adjacent to its edge, said means having a part arranged to engage the latch of the door to cause it to clear the door casing when said means are operated to open the door, substantially as described.

2. In an apparatus of the character de-

scribed, the combination of a door having a latch, a cylinder, a piston therein, an operative connection between said piston and door whereby the movement of said piston opens or closes the door, means for admitting pressure fluid to either end of said cylinder, a valve for controlling said means, means for operating said valve comprising a device arranged to move vertically, and having a handle outside the casing of the door adjacent to its edge, said device having an inclined part arranged to engage the latch of the door to cause it to clear the door casing, when said device is operated to open the door, substantially as described.

3. In an apparatus of the character described, the combination of a door, a cylinder, a piston therein, an operative connection between said piston and door whereby the door is opened or closed by the movement of the piston, means for admitting pressure fluid to either end of the cylinder, a valve for controlling said means, means for operating said valve, a spring for returning said valve when released from said means, a latch adapted to hold said valve in the position into which it is moved when the door is opened, and means automatically actuated at a predetermined point in the movement of the door to withdraw said latch, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

DE FOE SCOTT.
CHARLES G. BLICKLE.

Witnesses:
F. M. WRIGHT,
D. B. RICHARDS.