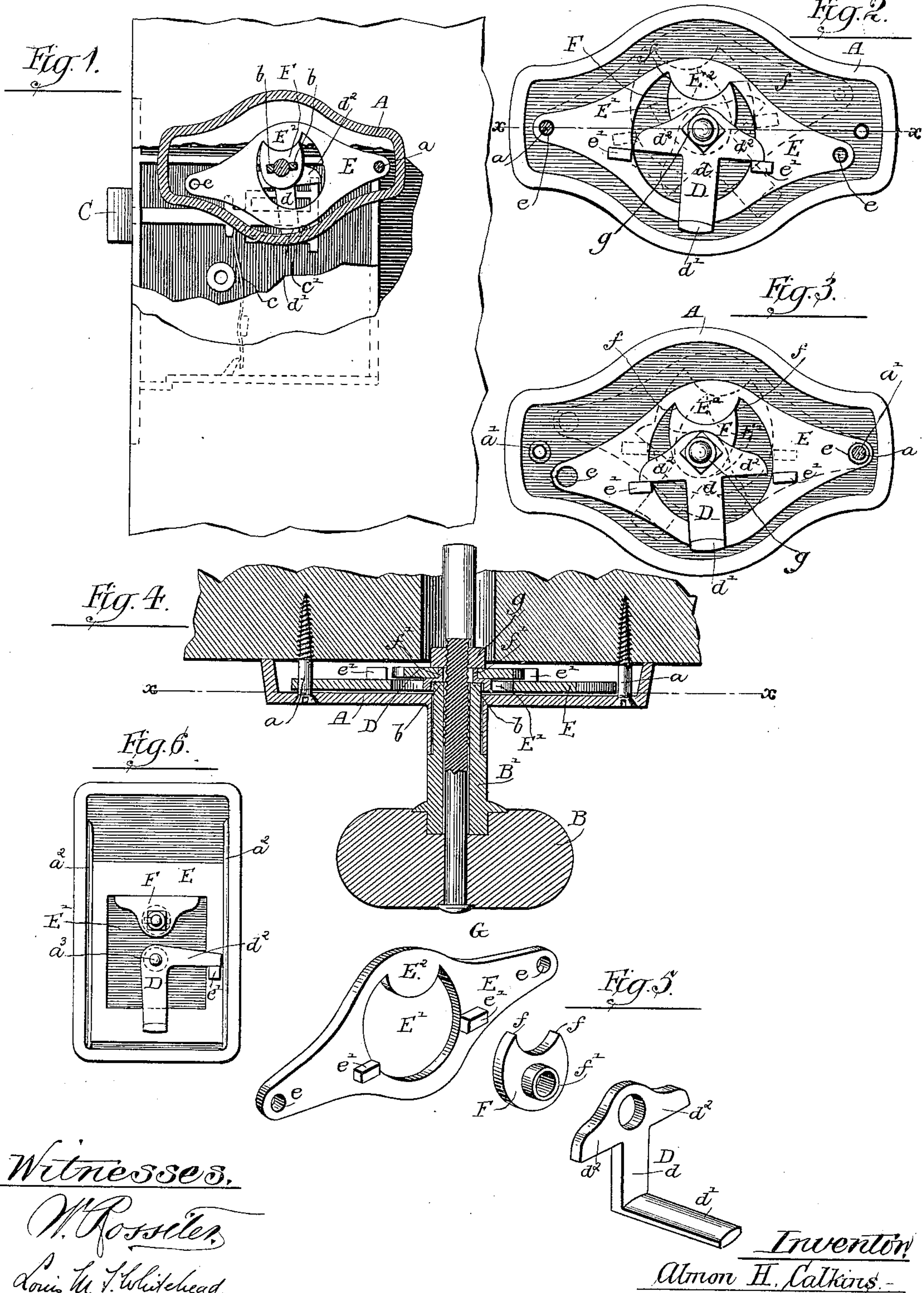


(Model.)

A. H. CALKINS.  
LATCH OPERATING DEVICE.

No. 365,236.

Patented June 21, 1887.





# UNITED STATES PATENT OFFICE.

ALMON H. CALKINS, OF EVANSTON, ILLINOIS.

## LATCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 365,236, dated June 21, 1887.

Application filed September 13, 1886. Serial No. 213,440. (Model.)

*To all whom it may concern:*

Be it known that I, ALMON H. CALKINS, of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Latch-Operating Devices; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to operating devices for spring-latches of that class in which the operating device is located in a rose-plate, by which the knob is supported.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

A device embodying the invention consists in its essential features of a pivoted actuating-lever having a horizontal arm engaging the latch-bolt and provided with a horizontal laterally-extending arm adapted to swing in the vertical plane, a vertically-movable lever or plate provided with a lug or projection engaging the arm or wing of the lever, and a cam-plate rigidly connected with the knob-shank and provided with two projections engaging the said vertically-movable plate, so as to move the latter vertically in whichever direction the knob is turned, such vertical motion of the plate operating to swing horizontally the working end of the lever engaged with the latch-bolt in a direction to draw the latter inwardly.

In one form of device embodying my invention herein illustrated, in which the vertically-movable plate above referred to is pivotally supported at one side of the knob-axis, said plate and the latch-actuating lever are made with two sets of engaging parts, and the plate is adapted for pivotal support at either side of the pivot-axis, so that the same parts may be used for either right or left hand doors, as will hereinafter fully appear.

As illustrated in the said drawings, Figure 1 is a sectional elevation of the principal working parts of a latch-operating mechanism taken upon line *xx* of Fig. 4, looking toward the door, a part of the door and latch-casing

being broken away to show the latch and its actuating-spring. Fig. 2 is an elevation of the rose-plate and the operative parts therein removed from the door. Fig. 3 is a similar view illustrating the devices shown in Fig. 2 as shifted in position, to give a movement to the actuating-lever in a reverse direction. Fig. 4 is a sectional view of the rose-plate, the knob, and adjacent part of the door, taken upon line *xx* of Fig. 2. Fig. 5 is a perspective view illustrating the three parts of the actuating device removed from the rose-plate and separated from each other. Fig. 6 illustrates another form of latch-actuating mechanism embracing the general features of construction present in the devices shown in the other figures.

In the said drawings, A indicates the rose-plate; B, the knob; C, the latch-bolt, and *c* the actuating-spring. Said rose-plate is formed by a casting provided with a shallow recess on its under side, and is made of considerably greater dimension horizontally than vertically.

D is the lever for actuating the latch-bolt, which is pivotally supported at its upper end and is arranged vertically in such manner that its lower end may swing horizontally when the lever is oscillated. Said actuating-lever D consists of an arm, *d*, depending from the pivotal axis of the lever, a horizontal arm, *d'*, attached to the lower end of the arm *d* at right angles to the latter, and extends inwardly through notches or openings in the door and latch-casing and is engaged with an aperture, *c'*, of the latch-bolt. Said lever D is also provided with two lateral wings or arms, *d''*, extending horizontally one upon each side of the arm *d*, at right angles to the latter, at a point adjacent to the pivotal axis of the lever.

E is a horizontally-arranged oscillating plate, which is arranged to swing in a vertical plane back of the lever D, and is provided with two pivot-holes, *e e*—one at each end—whereby it may be pivotally supported at either side of the pivot-axis of the knob. Said plate E is provided with projections or lugs *e' e'*, adapted to bear upon the arms *d''* of lever D for moving said lever.

F is a cam-plate or dog which is attached to



and moves with the shank of the knob, and which is located in the same plane as the plate E and within a central aperture,  $E'$ , formed in the said plate, said cam-plate or dog being provided with two projections or bearing-points,  $f f$ , at its upper part, adapted to engage the opposing edge of the plate E at the upper margin of the recess therein in such manner that the said plate will be raised when the dog or cam-plate is turned in either direction.

In the particular construction illustrated the top margin of the cam-plate F is made hollow or concave in form between the points  $f f$ , and the plate E is provided with an outwardly-curved projection,  $E^2$ , entering the concavity of the cam-plate F, the projections or points  $f$  of the said cam-plate being adapted to engage said projection  $E^2$  when the knob is turned in the manner clearly indicated in dotted lines in Figs. 2 and 3. The engaging-surfaces of the said plate E and cam-plate F may, however, be constructed in any well-known or preferred manner, so as to move the said plate E in the same direction when the knob is turned either way.

The lugs or projections  $e' e'$  of the plate E are arranged at such distance apart that only one of them will be engaged with an arm,  $d^2$ , of the lever D at one time, so that when the free end of said plate is lifted by rotating the knob and cam-plate F said lug engaged with the arm  $d^2$  will press upwardly upon the latter, and thereby swing the lower end of the lever D and the horizontal arm  $d'$  thereof horizontally in a direction to draw back the latch-bolt. The parts will obviously operate in the same manner whether the plate E is pivotally supported at one or the other of its ends.

Suitable pivotal support for the plate E may be provided in any convenient manner, as shown in Figs. 1, 2, and 4. The pivot-holes of the said plate are adapted to receive one of the screws  $a a$  by which the rose-plate is attached to the door. Instead of pivoting the plate E upon the screws by which the rose-plate is held upon the door, the said plate may be pivoted upon suitable studs attached to or formed on the rose-plate, and either made concentric with the screw-apertures in the plate or otherwise. In Fig. 3 the said plate E is shown as pivoted upon a stud or boss,  $a'$ , through which the screw  $a$  passes.

In the particular construction of the parts herein illustrated the cam-plate F is connected with and held from turning upon the knob-shank  $B'$  by means of longitudinal extensions or wings  $b b$  upon the shank, Figs. 1 and 4, engaging suitable recesses in the said cam-plate, and the necessary pivotal support for the lever D is afforded by means of a tubular extension,  $f'$ , upon the said cam-plate F, Fig. 5, the several parts described being held together by a central bolt, G, which extends through the knob and shank and through the said plate F, and is provided upon its inner end with a

nut,  $g$ , which is clamped against the sleeve  $f'$ , so as to hold the shank and the said sleeve rigidly together. The sleeve or collar  $f'$  is of course made of sufficient depth or thickness to allow the lever D to be turned freely thereon when the nut  $g$  is tightened to clamp the parts.

The main features of construction and operation present in the device, made as above described, may be embodied in other constructions differing therefrom in their details—as, for instance, the actuating-lever D may be pivoted otherwise than upon the knob-shank or a part connected therewith, and the plate E, instead of being pivoted, may slide vertically in suitable bearings in the rose-plate. An example of these modifications is shown in Fig. 6 of the drawings. In this case the plate E is of rectangular form, and is held and adapted to slide vertically in guides  $a^2 a^2$  at either side of the rose-plate. The cam-plate F and the surface of the plate E engaged thereby are straight, and the plate E is provided with but one projection,  $e'$ , which engages a single arm,  $d^2$ , upon the lever D. Said lever D is in this instance pivoted upon a stud,  $a^3$ , attached to or formed upon the rose-plate below the knob-shank, the plate E being provided with a central opening,  $E'$ , in which the cam-plate F and the said stud  $a^3$  are located.

The construction last above described has the advantage of occupying little space; but the one shown in Figs. 1 to 5 is preferred by reason of its applicability to both right and left hand doors.

I claim as my invention—

1. The combination, with a rose-plate and a knob pivotally connected therewith, of a pivoted latch-actuating lever constructed to engage the latch-bolt, and provided with a horizontal arm located adjacent to its pivotal point, a vertically-movable plate provided with a lug or projection engaging the horizontal arm of the lever, and a cam-plate rigidly connected with the knob and engaging the said oscillating plate, so as to move the latter vertically when the knob is turned in either direction, substantially as described.

2. The combination, with a rose-plate and a knob pivotally connected therewith, of a latch-actuating device which is reversible for right and left hand doors, said actuating device comprising a pivoted latch-actuating lever provided with arms extending at opposite sides of its pivotal point, and an oscillating plate adapted for pivotal connection with the rose-plate at either side of the knob-axis, said oscillating plate being provided with two lugs, either of which may be placed in engagement with one of the arms of the actuating-lever, substantially as described.

3. The combination, with a rose-plate, of a knob and a knob-shank pivotally supported in the rose-plate, a latch-actuating lever, D, provided with an arm or arms,  $d^2$ , a vertically-



movable plate, E, provided with a lug or lugs  
engaging said arm or arms, and a cam-plate,  
F, rigidly connected with the knob and en-  
gaging said plate E, said lever D being piv-  
5 otally supported upon the cam-plate F con-  
centrically with the axis of the knob, substan-  
tially as described.

In testimony that I claim the foregoing as my  
invention I affix my signature in presence of  
two witnesses.

ALMON H. CALKINS.

Witnesses:

C. CLARENCE POOLE,  
WM. ROOVAART.