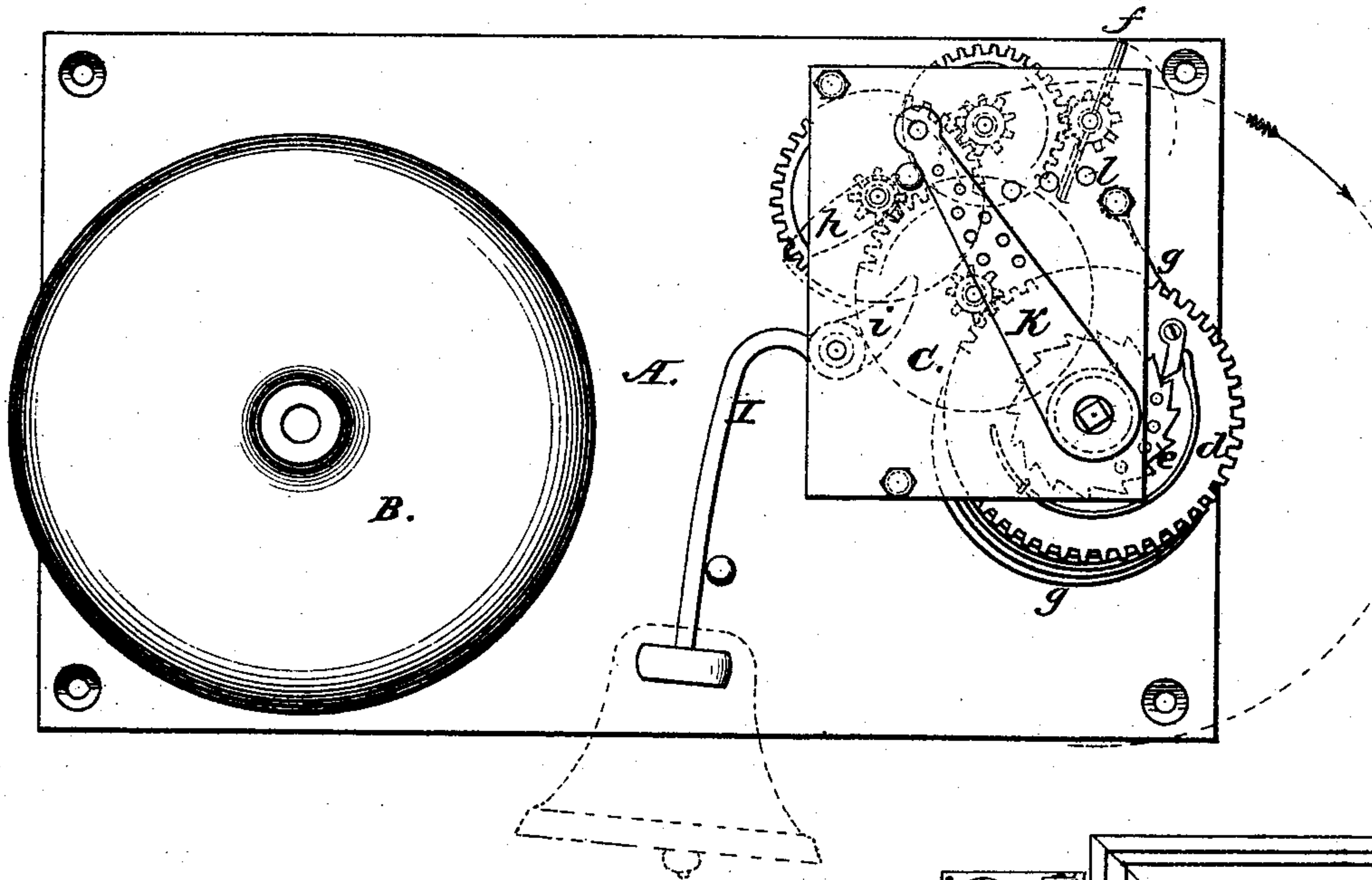


F. C. D. McKAY.  
Door-Bells.

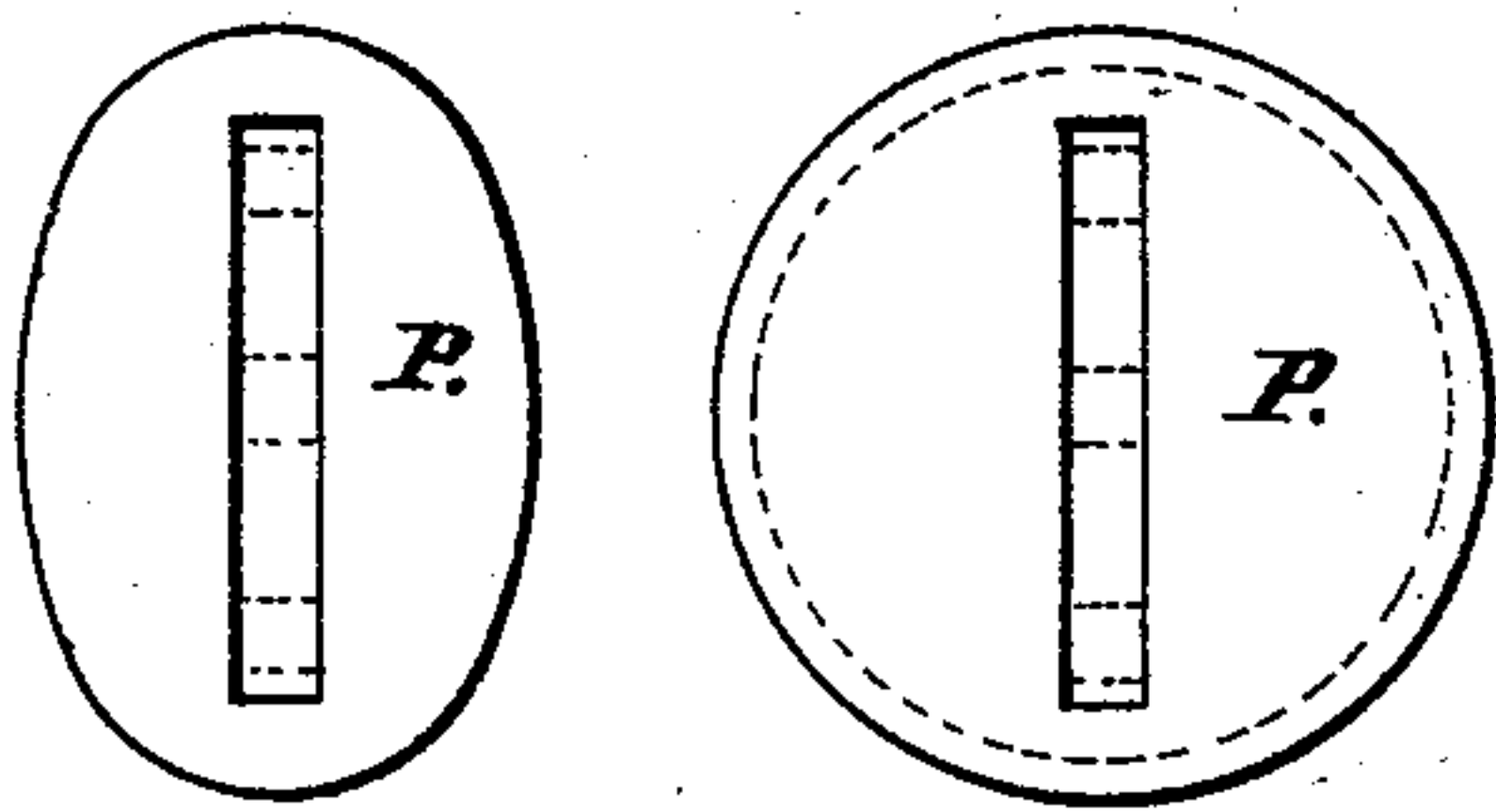
No. 151,996.

Patented June 16, 1874.

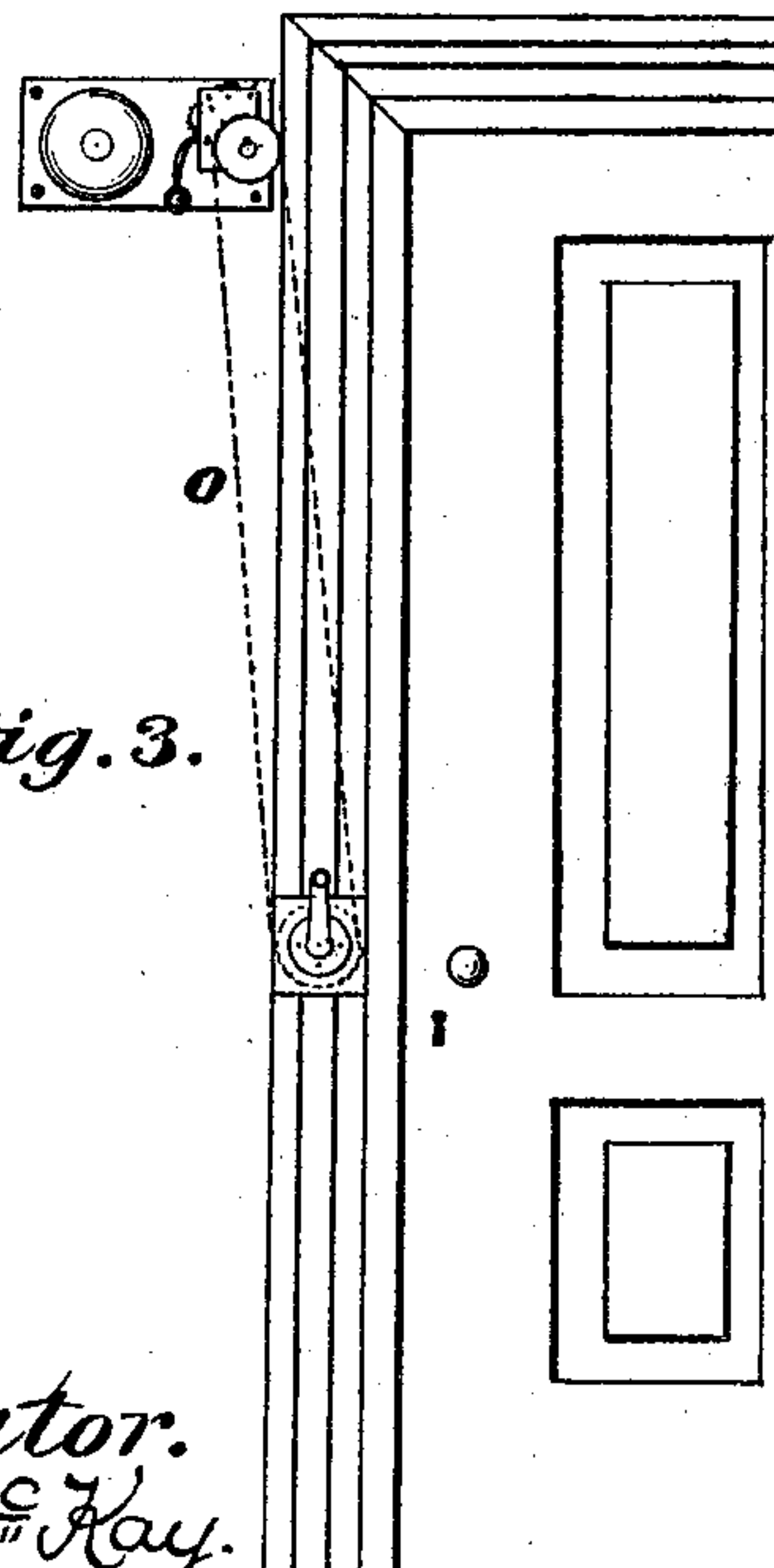
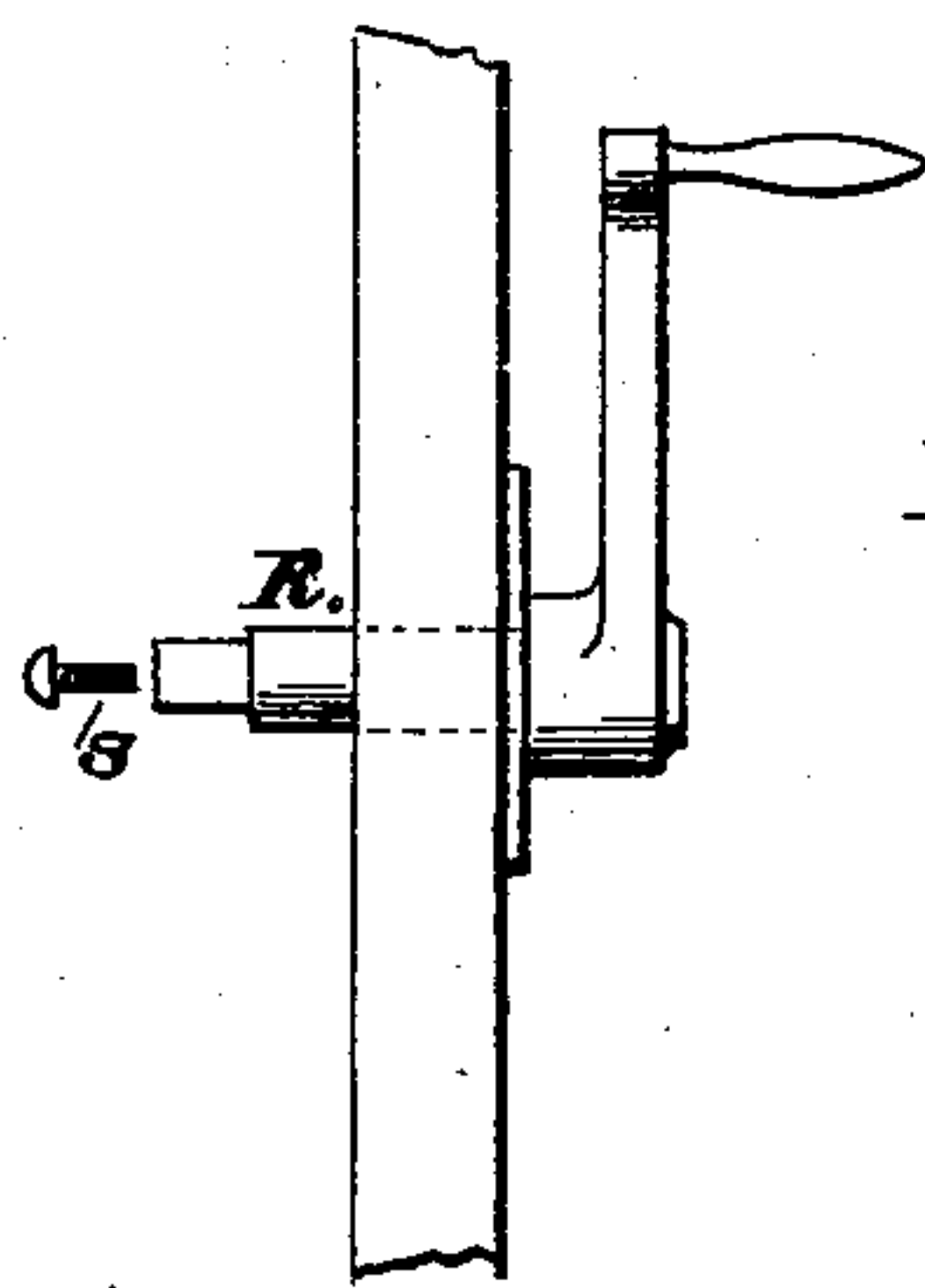
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses.  
W. L. Perrine  
A. H. Norris

Inventor.  
F. C. D. McKay.  
Per. James L. Norris.  
Atty.



# UNITED STATES PATENT OFFICE.

FERDINAND C. D. McKAY, OF ELMIRA, NEW YORK.

## IMPROVEMENT IN DOOR-BELLS.

Specification forming part of Letters Patent No. **151,996**, dated June 16, 1874; application filed September 23, 1873.

*To all whom it may concern:*

Be it known that I, FERDINAND C. D. McKAY, of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Door-Bells, of which the following is a specification:

My invention relates to certain improvements in the mode of operating door, call, signal, and alarm bells; and it consists in a clock-work mechanism interposed between a bell and a bell-pull, so that by moving the bell-pull the gearing is wound, whereby, on releasing the bell-pull, the gearing imparts motion to mechanism for sounding the bell, as will be described more fully hereinafter. The invention consists, further, in means for causing the mechanism to operate when power is applied in the direction of either winding or unwinding the spring or weight.

In the accompanying drawing, Figure 1 represents a general view of my invention, the clock-work and gong being shown in full lines, and a vibrating bell being shown in dotted lines as attached to the hammer or striking-lever. Fig. 2 is a view of the pulleys. Fig. 3 represents my invention as applied to a door.

A represents the board or plate to which the parts are attached. B is a gong, screwed to a standard in the ordinary manner. C is the clock-work, which, in this case, is composed of five shafts and their wheels and pinions, the fourth and fifth being used to regulate the motion or stroke of the hammer, and the fifth shaft carrying a fan-wheel or flier, *f*. The first shaft carries the diving-gear *d* and ratchet *e*, attached and operated by the spring *g* in the usual manner. The third shaft carries a cam, *h*, which, at each revolution, strikes the short arm *i* of the hammer or striking-lever *I*, and causes it to vibrate, said short arm *i* being cam-shaped, so as to be operated by the cam *h* when revolving in either direction. Attached to the first or main shaft is a crank-lever, *K*, by means of which the mechanism is set in motion. When the lever *K* is moved toward the right hand, it winds up the spring or weight, and when released the action of the spring operates the gearing. The number of strokes of the hammer upon the bell is regulated by the amount of play allowed to the lever *K*, which may be limited by means of a

pin inserted in any one of a series of holes, *l*, in the outer plate of the mechanism. If the crank-lever *K* be allowed to make a complete revolution in winding up the spring and then released, the number of strokes of the hammer will be about thirty, more or less. If the pin is inserted in such a position as to allow the lever to describe only a half-circle, the number of strokes will be fifteen, and thus the hammer may be caused to make any desired number of strokes, by limiting the play of the lever.

The mechanism may be caused to operate when the lever is turned either to the right or to the left by connecting the ratchet *e* and gear-wheel *d* together by a pin or screw inserted in one of a series of perforations in the same, so as to cause them to move together in either direction. By this means, when the lever *K* is moved toward the right hand to wind the spring, it sets the gearing and the cam *h* in motion in one direction, and when released and allowed to recede by the unwinding of the spring, the mechanism is set in motion in the opposite direction.

If desired, the spring and ratchet may be dispensed with when the lever is desired to operate in both directions; but I prefer to retain them, as it may then be readily arranged to operate either in both directions, or in one direction only.

When the apparatus is used as a call-bell, or when used as a door-bell, and placed in position upon the same level with the bell-pull, the lever *K* serves as such bell-pull. But when used as a signal or alarm bell, and placed at some distance from the bell-pull, or when used as a door-bell and placed near the top of the door, as shown in Fig. 3, I use a pulley, *P*, upon the main shaft instead of the lever *K*, and another on the inner end of the bell-pull shaft, securing them in place by means of screws *s*, or in any other suitable manner.

These pulleys may be either circular or elliptical in form, and may be arranged upon their axes either centrically or eccentrically. In the arrangement shown in Fig. 3, the pulleys are circular in form, and arranged centrically, with a band, *O*, passing over them.

When the bell-pull is turned to the right or left, the pulley, on its shaft *R*, through the



band O, communicates motion to the upper pulley on the main shaft of the mechanism, and thus operates the gearing and sounds the bell.

When the bell-pull is arranged to operate in one direction only, a wire or chain may be substituted for the band, and have its two ends secured to the respective pulleys. The pulley P is formed with a slot, *p*, corresponding in width with the thickness of the angular portion of the shaft, to which it is attached, whereby it may be readily arranged either centrically or with any desired degree of eccentricity. When a circular pulley is arranged eccentrically, or an elliptical pulley arranged either eccentrically or centrically, increased motion is obtained, and all slack wire is taken up. When the bell and mechanism are placed at a distance from the bell-pull, and in such a position as to require one or more changes in the direction of the wire, the pulleys are used instead of bell-cranks, and are found stronger and more durable, and more uniform in their operation.

When the gong is of sufficient dimensions, it may be placed over the mechanism so as to surround and conceal it, the bell striking upon the inner or concave surface.

If desired, the gong may be dispensed with,

and an ordinary vibrating bell attached to the lever I, as shown in dotted lines.

I claim as new and desire to secure by Letters Patent—

1. The combination, with a clock-train, a bell, a vibrating or reciprocating bell-pull, and a pulley or lever, the pull winding the spring of the train on being moved in one direction and releasing the same to impart motion on its movement in a reverse direction, of lever K, and a regulating-pin, substantially as herein shown and described.

2. The lever K, arranged with relation to the clock-work by means of a pin inserted in the perforations *l*, so as to limit its play and the consequent operation of the mechanism, substantially as shown and described.

3. The combination of the gear-wheel *d*, ratchet *e*, and lever K, for operating the mechanism either in both directions or in one direction only, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of September, 1873.

F. C. D. MCKAY.

Witnesses:

JAMES L. NORRIS,  
A. H. NORRIS.