

(No Model.)

2 Sheets—Sheet 1.

F. SANDERSON.

DOOR BELL.

No. 386,164.

Patented July 17, 1888.

FIG. 1.

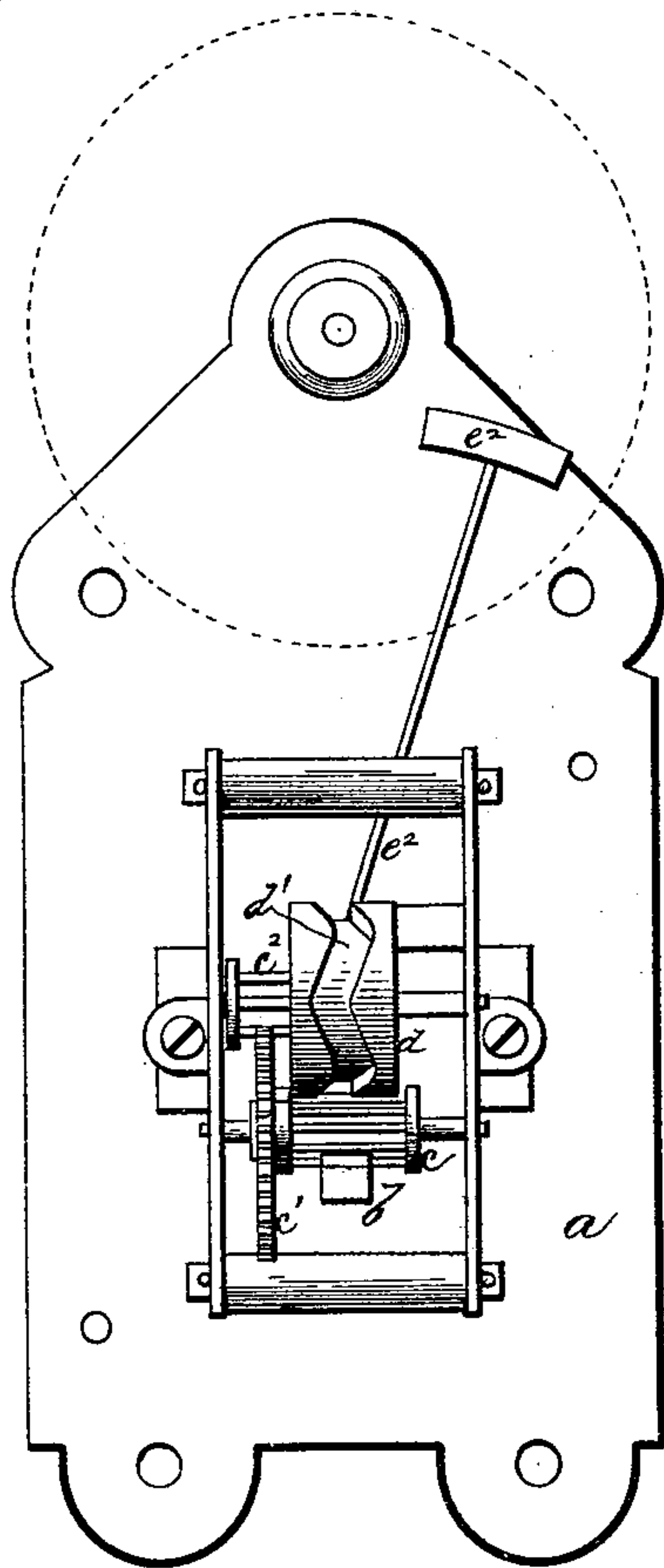
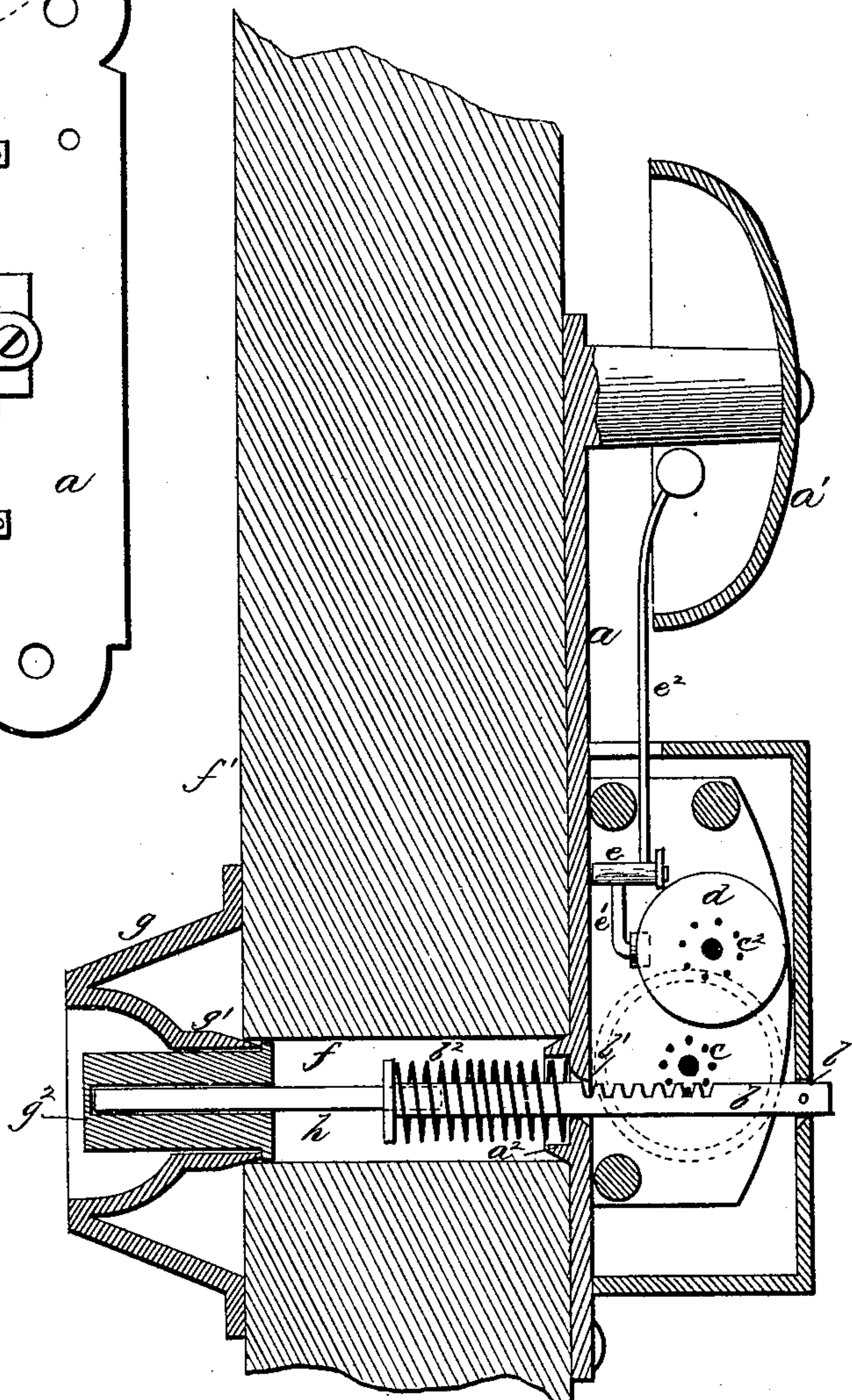


FIG. 2.



Witnesses:

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*W. S. McArthur.*

Inventor,  
*Fredrick Sanderson.*  
per *H. Harrison.*  
Attorney.

(No Model.)

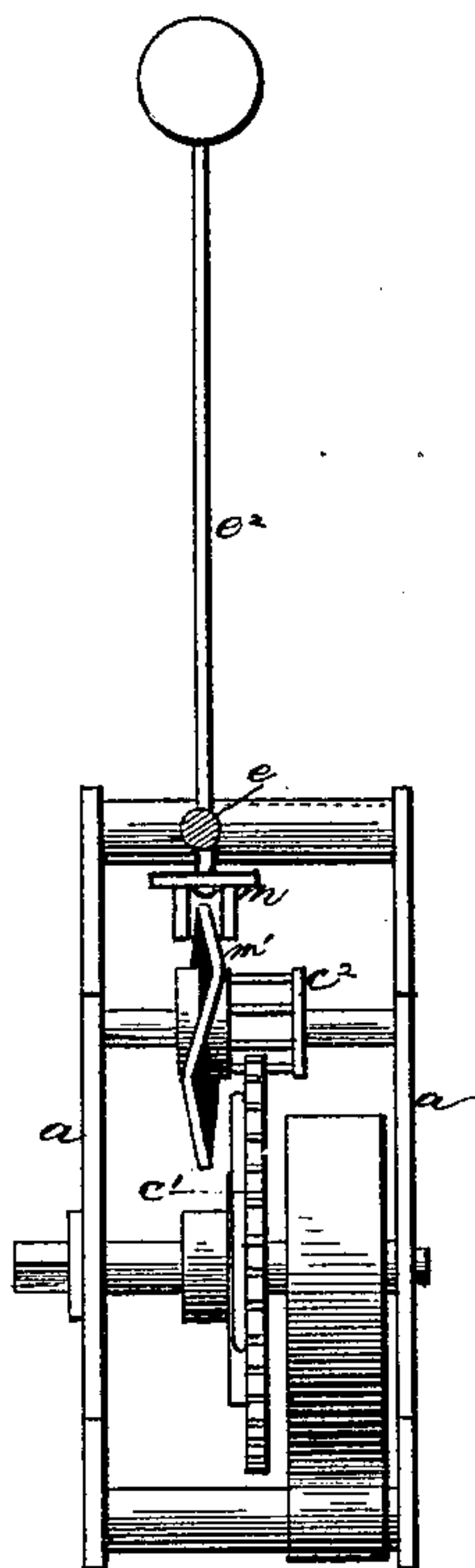
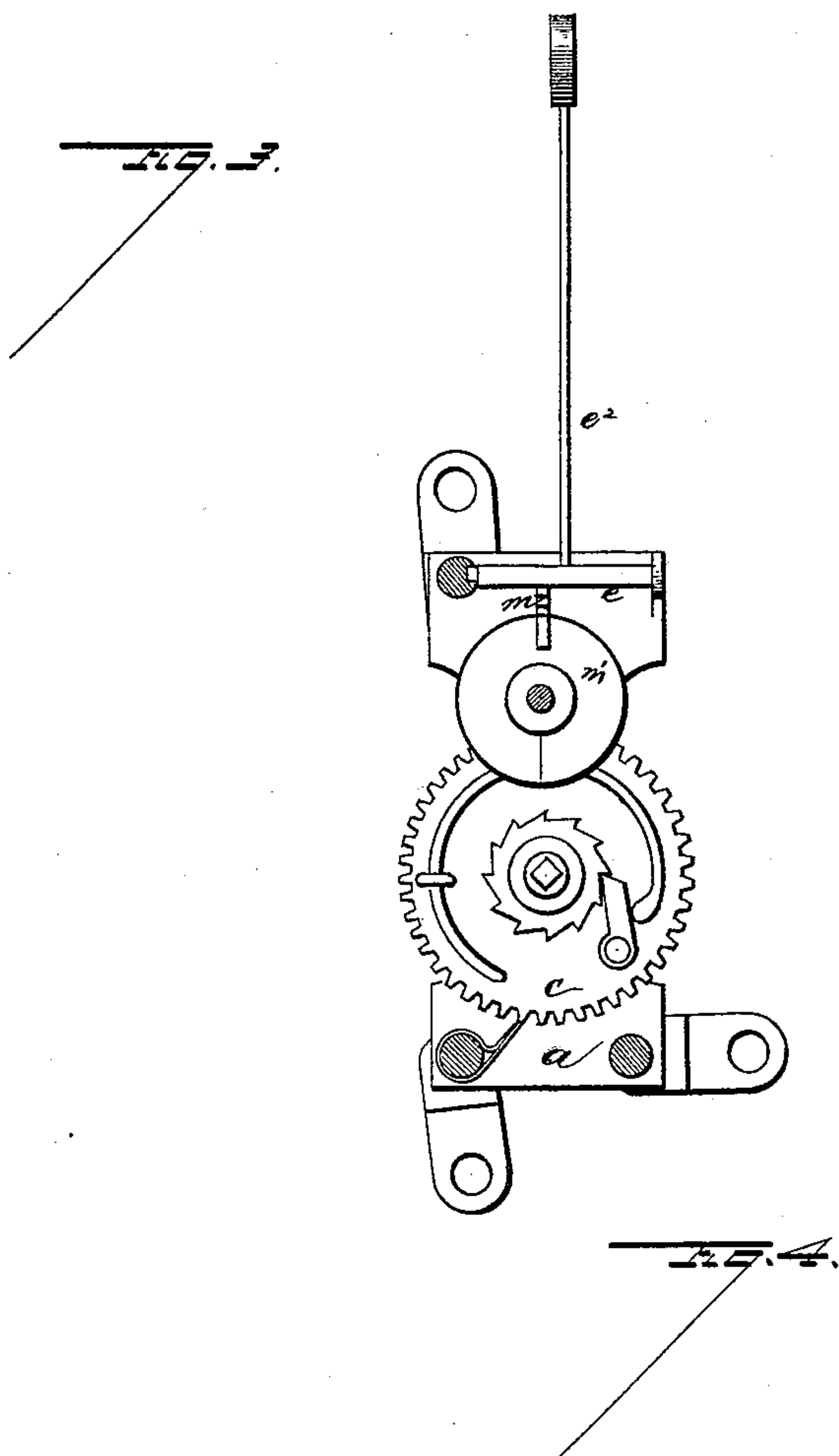
2 Sheets—Sheet 2.

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Witnesses:

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Inventor,

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# UNITED STATES PATENT OFFICE.

FREDERICK SANDERSON, OF PROSPECT PARK, ILLINOIS.

## DOOR-BELL.

SPECIFICATION forming part of Letters Patent No. 386,164, dated July 17, 1888.

Application filed April 6, 1887. Serial No. 233,902. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK SANDERSON, a citizen of the United States, residing at Prospect Park, in the State of Illinois, have invented certain new and useful Improvements in Alarm or Call Bells, of which the following is a specification, to wit:

This invention relates to an improvement in alarm-bells; and it consists in certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully described and claimed.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 represents a face view of an imitation electric door-bell, and Fig. 2 a vertical sectional view of the same. Fig. 3 is a section, and Fig. 4 a side elevation, of a clock-escapement of the ordinary kind in which my improvement is applied.

*a* represents the base-plate, upon which is secured a bell, *a'*, and the operative mechanism of a door bell or alarm of the variety designed to produce a close imitation of the electric bell. The mechanism herein shown consists of reciprocating rack-bar *b*, sliding through openings *b'* in the plate and casing, and provided with a spring, *b''*, to return it to place after being pushed by the ringer. This rack-bar engages a pinion or lantern wheel, *c*, secured upon the side of, or upon the same shaft with, a gear, *c'*, which in turn engages and drives a second pinion or lantern wheel, *c''*, and with it a wheel, *d*, which is in Fig. 1 shown as formed with a peripheral cam-groove, *d'*.

In suitable bearings I journal a rock-shaft, *e*, from one side of which projects a short arm, *e'*, which engages the cam-groove *d'*, and from the opposite side projects the hammer *e''*, as in Fig. 2.

A hole, *f*, is bored through the door or frame *f'*, to which the bell is to be attached, and the end of the rack-bar and its spring are allowed to project therein. It will be noted that the main base-plate *a* is cast or formed with a flange or nipple, *a''*, which is beveled on its outer side, and serves to center the rack-bar in the hole formed to receive it, as the plate

will readily adjust itself as it is placed against the door with its beveled nipple projecting into the hole *f*, as indicated in Fig. 2. Upon the outside of the door or frame *f'* is secured the casting *g* for the push-button, formed with a projecting beveled guide, *g'*, which centers itself in the outer end of the hole *f*, and in which is held the button *g''*, formed with a head or flange on its inner end to prevent its being forced out too far. A connecting wire or rod, *h*, is socketed into the button nearly to its outer end, as shown, in order that this rod may be held firmly and directly in line, and also that the force of the pressure may act at the outer face of the button and have no tendency to wobble when pressed in. The connecting wire is cut of a length to fit the hole *f*, and has its inner end socketed into the rack-bar, as shown in dotted lines in the drawings.

It will be noticed that the opening *b'* in the base-plate, through which the rack-bar passes, has its upper outer edge and lower inner edge beveled off to admit of the insertion of said rack-bar and the passage of its end beneath the pinion till its teeth can be engaged.

In use this bell is set up as herein shown, and a push upon the button forces in the rack-bar, and by means of the gearing and cam-wheel imparts to the hammer a series of rapid vibrations, which produce upon the bell a close imitation of an electric alarm. When the pressure is released, the spring returns the parts to their normal position; and if the spring is made of sufficient strength this reaction will be rapid enough to again produce the rapid strokes upon the bell. In this connection I would call attention to the peculiar excellence of the cam-wheel for actuating the hammer, as it is exactly the same in its action, no matter which direction it may be moved, and I am thus enabled to dispense with the ratchet and pawl usually used in connection with escapement or pallet wheels in similar mechanism. The cam-wheel need not necessarily be made as described, nor is it limited to door-bells. Thus in Figs. 3 and 4 I have shown it applied to an ordinary spring alarm, such as is common in alarm-clocks. In this case instead of forming the wheel with a cam-groove I have stamped it out of sheet metal, with a wavy or zigzag edge, produced by press-



ing the body of the sheet out of line to the required angle, and the hammer, instead of being as previously shown, is provided with a fork, as at *m*, to engage the cam *m'*, as clearly 5 seen in Fig. 4. It will thus be seen that the cam is readily applicable to any purpose in which a bell hammer is to be vibrated, and will act the same in either direction.

For easier and more accurate operation, the 10 yoke or fork which engages the stamped cam is pivoted upon the end of the bell-hammer and moves easily in rounding the corners of the zigzag edge of the cam.

The rack-bar is not of necessity formed square 15 in section, as shown, but is preferably made round, the teeth formed upon it serving to keep it from turning and in proper position for operation.

Having thus fully described my invention, 20 what I claim as new, and desire to secure by Letters Patent, is—

1. In an alarm or call bell, the combination, with the bell and its vibrating hammer having a forked end and a train of actuating-gearing, of a cam-wheel interposed between them 25 formed of a single piece of sheet metal stamped or pressed to proper form, substantially as and for the purpose set forth.

2. In an alarm or call bell, the combination, 30 with the bell striking mechanism and an actuating rod or button for connection with the same through a door or frame, of a base-plate upon which said bell mechanism is secured,

provided with openings for the passage of the actuating-rod, and formed with a circular beveled projection or flange to aid in centering 35 the opening in the plate with that in the door or frame through which the actuating-rod is passed, substantially as and for the purpose set forth. 40

3. In an alarm or call bell, the combination, with the bell mechanism adapted to be secured upon one side of a door or frame, and a connecting-rod for passing through said door or frame, of a push-button formed with a socket 45 to receive said rod nearly to the forward side of the button, whereby side draft and friction are avoided when the pressure is applied, substantially as and for the purpose set forth.

4. The combination, with a bell mechanism 50 secured upon one side of a door or frame, of a push-button for operating the bell, secured upon the opposite side of said door or frame, and connected through the same by a connecting-rod with the bell mechanism, said button 55 having its frame *g* formed with a projecting beveled guide, *g'*, to aid in centering it with the opening in said door or frame, and prevent binding of the operative parts, substantially as shown, and for the purpose set forth. 60

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK SANDERSON.

Witnesses:

W. C. MCARTHUR,  
W. S. MCARTHUR.