W. WINKEL.

DOOR-BELLS.

No. 194,023. Patented Aug. 7, 1877.

Fig. 2.

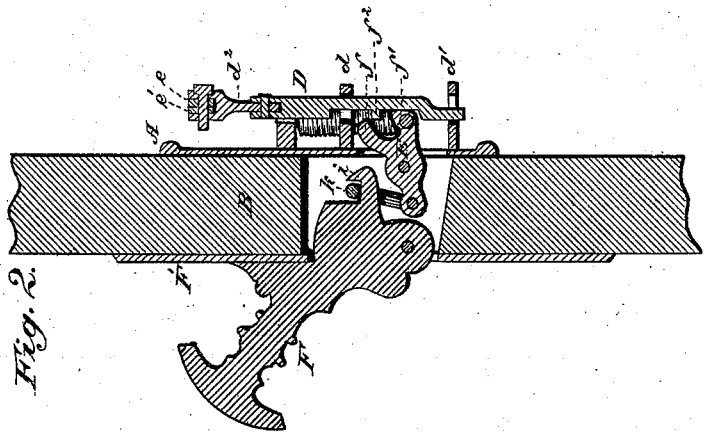


Fig. 3.

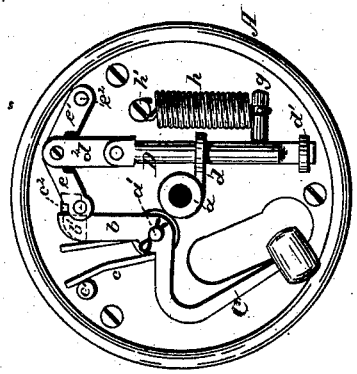
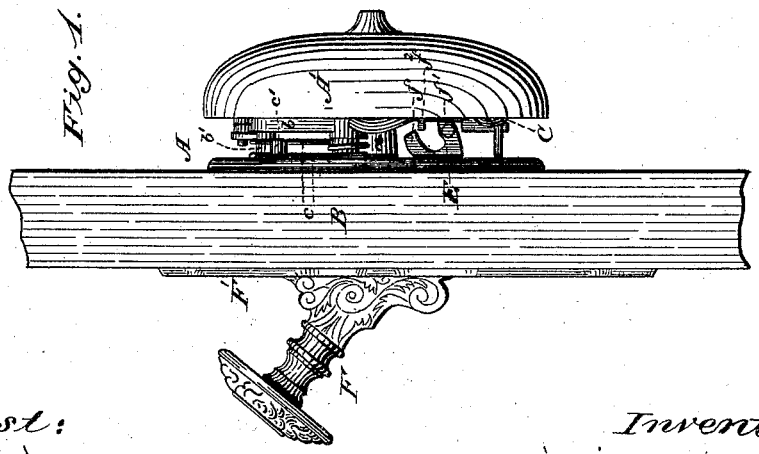


Fig. 4.



Attest:
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UNITED STATES PATENT OFFICE.

WILLIAM WINKEL, OF PLUCKEMIN, NEW JERSEY, ASSIGNOR TO HOPKINS & DICKINSON MANUFACTURING COMPANY, OF NEW YORK, N. Y.

IMPROVEMENT IN DOOR-BELLS.

Specification forming part of Letters Patent No. **194,023**, dated August 7, 1877; application filed July 25, 1877.

To all whom it may concern:

Be it known that I, WILLIAM WINKEL, of Pluckemin, in the county of Somerset and State of New Jersey, have invented a new and useful Improvement in Door-Bells; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The object I have in view is the production of a bell-striking mechanism to be used in connection with a lever bell-pull, which will be simple and cheap in construction, durable in use, and can be operated easily and with great certainty.

My invention therein consists, first, in a toggle-joint connected directly to the hammer and moved through a portion of the stroke by a reciprocating bar operated from the bell-pull, to withdraw such hammer, the said joint being thrown the rest of the distance and the hammer made to strike the gong by a spring operating independent of the bell-pull; second, in the peculiar means for connecting the bell-pull with this toggle-joint; and, further, in the various combinations of the operative parts, as fully hereinafter explained.

In the drawings, Figure 1 represents a side elevation of the bell and its operating mechanism, mounted in position for use; Fig. 2, a vertical section of the same on the line of the bell-pull, with the gong removed, and Fig. 3 a view from the rear with the gong removed.

Like letters denote corresponding parts.

A represents a circular cast-metal plate, adapted to be mounted and secured by wood-screws upon the inner side of a door frame or post, B, and having cast therewith a large central stud, *a*, for carrying the ordinary gong A′. On the plate A, on one side of this stud *a*, is cast a smaller stud, *a′*, upon which is pivoted the hammer C. This hammer is of the form shown in Fig. 3, having a short arm, *b*, projecting upwardly from the pivot, and a horizontal lug, *b′*, extending inwardly from the upper end of the said arm.

A spring, *c*, is wrapped around the stud *a′*, inside of the hammer-arm, and bears at its ends against the lug *b′*, and against a small stud, *c′*, cast on the plate A. This spring, by forcing the arm *b* inwardly, throws the hammer outwardly in contact with the gong, which outward motion is limited by another small stud, c^2.

D is a vertical shifting-bar, sliding in holes formed in the tops of two wings, d d^1, which are situated on the opposite side of the central stud from the hammer. This bar is connected at its upper end to a connecting-link, d^2, which is in turn pivoted to the inner ends of two horizontal links, e e^1. The link e is pivoted at its outer end to the arm *b*, while the link e^1 is set on a stud, e^2, thus forming a toggle-joint, which operates upon the short arm of the hammer.

E is a short lever, which projects through a slot in the plate A, just behind the shifting-bar D, and, when the bell is in position, enters a slot in the frame B. This lever is pivoted in lugs on the back of the plate A, and has two jaws, f f^1, on its outer end, which strike, when moved against a lug, f^2, on the inner face of the shifting-bar. These jaws are situated such a distance apart as to allow the shifting-bar a limited vertical movement independent of such jaws. To the lower jaw f^1 is secured a stud, *g*, projecting from the side of the same, and to the end of this stud is attached an upwardly-drawing spiral spring, *h*, which is held at its upper end by a screw, *h′*.

F is a lever bell-pull, which is pivoted in the lower end of a slot in the bell-pull plate F′. The end of this lever projecting inwardly from the plate F′ is provided with a hook, *i*, which engages, when in position, with a heavy link, *k*, the said link being pivoted at its opposite end to the lever E. This link connects the lever bell-pull with the gong-striking mechanism, and its length may be varied, as found necessary, to adapt the bell to frames or posts of different thicknesses, or two or more smaller links can be used in its place, if found desirable.

The gong and striking mechanism are all carried on the plate A, and this plate and the bell-pull and its plate are mounted directly opposite each other, on opposite sides of a door frame or post, the bell-pull and the striking mechanism being connected in the manner just described.

To ring the bell, the lever bell-pull F is pushed down by the hand, which pulls the link *k* upwardly, and forces down the outer end of the lever E, stretching the spring *h*. This movement brings the jaw *f* into contact with the lug f^2 on the shifting-bar, and the shifting-bar being forced down the toggle-joint $e\ e^1$ is straightened out, and the short arm of the hammer pushed outwardly against the pressure of the spring *c*, thus drawing the hammer itself away from the gong. As soon as the central pivot of the toggle-joint passes below the line of its outer pivots the spring *c* bends the joint downwardly and shoots the shifting-bar to its lowest position, throwing the hammer with a quick stroke against the gong. The spiral spring *h* will then draw the bell-pull and the jaws of the lever E upwardly, the lower jaw f^1 engaging the lug f^2 and straightening out the toggle-joint, the hammer being at the same time drawn away from the gong. The toggle-joint passing the straight line the spring *c* will throw it into its highest position, and the hammer will again strike the gong.

A constant resistance is exerted on the bell-pulling lever by means of the spring *h*, so that the bell-pull is not affected when the hammer is thrown, while the spring *c* is strong enough to overcome the toggle-joint and throw the hammer with considerable force against the gong, thus insuring absolute certainty in the operation of the mechanism, the gong being struck twice every time the bell-pull is moved.

The means employed are simple in construction, very durable in use, and can be operated conveniently and effectively.

Having thus fully described my invention, and explained some of its advantages, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The combination, in a door-bell, of a toggle-joint having one arm joined directly to the hammer-arm, and the other pivoted upon a stationary stud, a reciprocating bar moved by the bell-pull and connected to the central pivot of the said toggle-joint, and a spring for throwing said toggle-joint outwardly after it has passed a straight line, substantially as described.

2. The combination, with the toggle-joint $e\ e^1$, of the shifting-bar D, having lug f^2, and the lever E, moved by the bell-pull and provided with the jaws $f\ f^1$, substantially as described and shown.

3. The combination, with the shifting-bar D, having lug f^2 and the toggle-joint $e\ e^1$, of the lever E, provided with jaws $f\ f^1$, the link *k*, and the bell-pull F, substantially as described and shown.

4. The combination, with the toggle-joint $e\ e^1$, of the hammer C and spring *c*, substantially as described and shown.

5. The combination, with the lever E, moved by the bell-pull, of the shifting-bar D, spring *h*, toggle-joint $e\ e^1$, hammer C, and spring *c*, substantially as described and shown.

6. The bell-striking mechanism described, wherein are combined the lever bell-pull F, link *k*, lever E, spring *h*, shifting-bar D, toggle-joint $e\ e^1$, hammer C, and spring *c*, all constructed and arranged to operate substantially as described and shown.

This specification signed and witnessed this 18th day of July, 1877.

WILLIAM WINKEL.

Witnesses:
H. WADSWORTH,
SUTHERLAND D. JUDAH.