(No Model.)

# E. W. VANDUZEN.

## Ball Striker.

No. 229,564. Patented July 6, 1880.

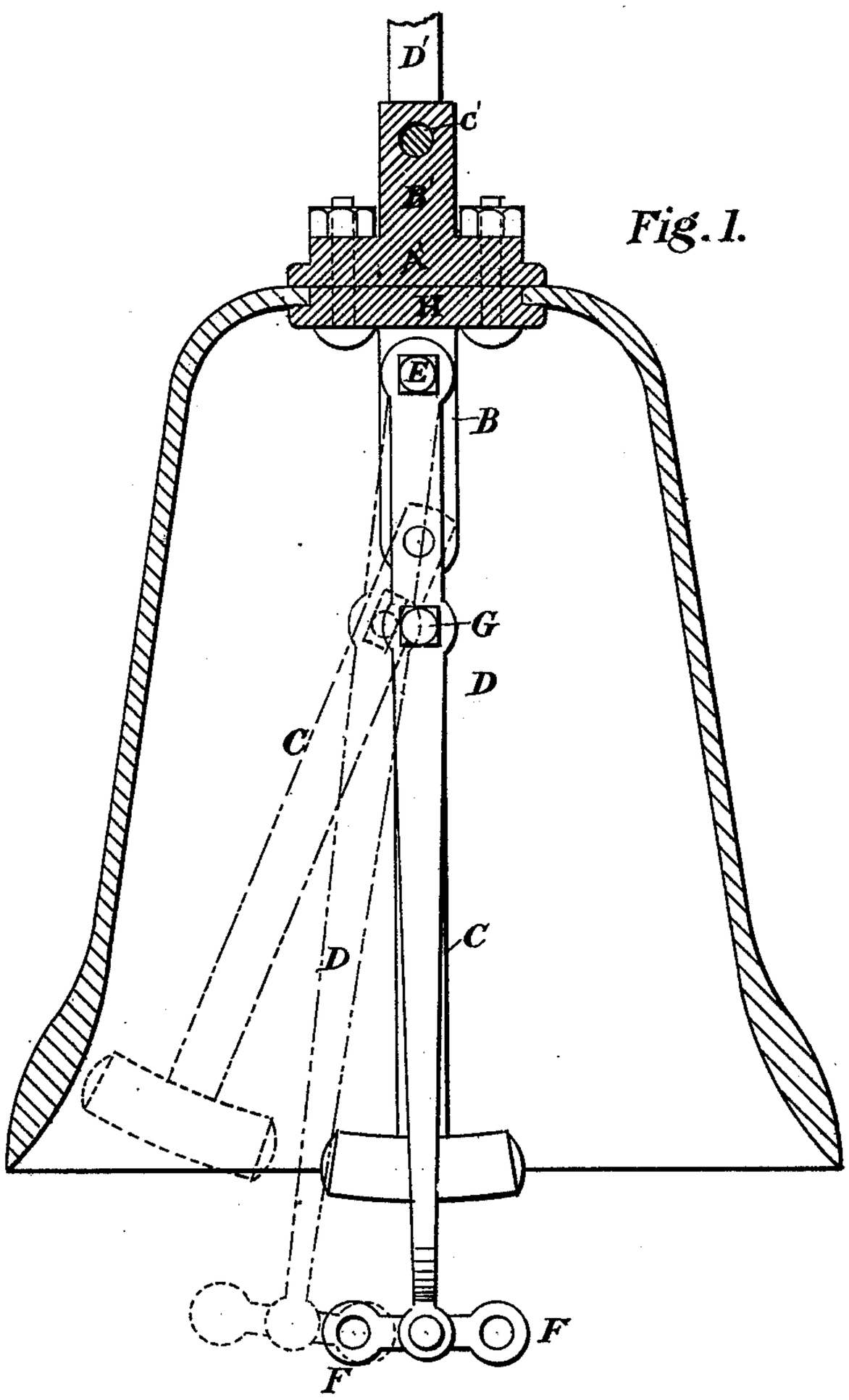


*Fig. 1.*

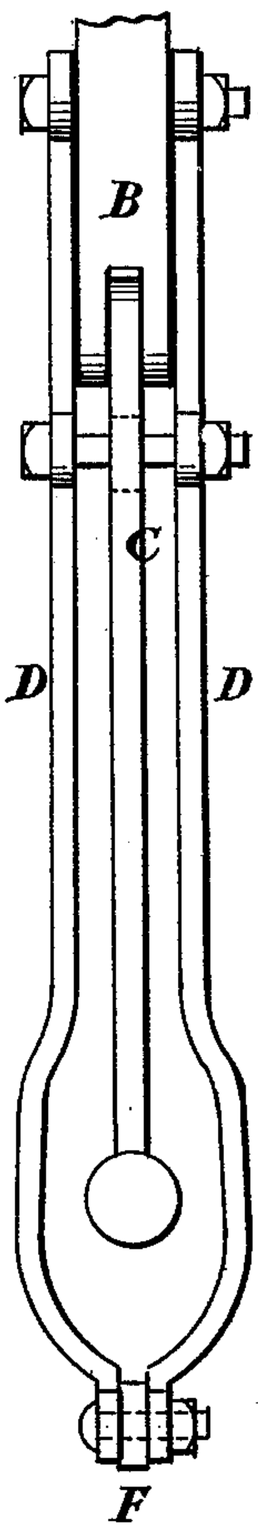


*Fig. 2.*

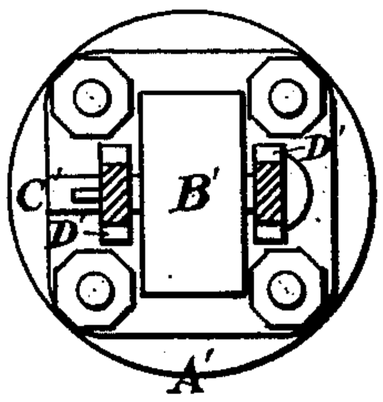


*Fig. 3.*

**Witnesses:**

J. A. Cady.
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**Inventor:**

Ezra W. Vanduzen,
By E. A. Ellsworth,
His Attorney.

# UNITED STATES PATENT OFFICE.

EZRA W. VANDUZEN, OF NEWPORT, KENTUCKY.

## BELL-STRIKER.

SPECIFICATION forming part of Letters Patent No. 229,564, dated July 6, 1880.

Application filed April 12, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, EZRA W. VANDUZEN, a citizen of the United States, residing at Newport, in the county of Campbell and State of Kentucky, have invented a certain new and useful Bell-Striker, (Case A;) and I do hereby declare the following to be a full, clear, concise, and exact description of the same, sufficient to enable others skilled in the art to which my invention appertains to make and use it, reference being had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a vertical section of a bell, showing a side view of the striker and suspending devices. Fig. 2 is an edge view of the striker detached from the bell; and Fig. 3 is a plan view of the suspending-plate.

Similar letters of reference in the drawings indicate the same parts.

My invention relates to an apparatus for striking fire-alarm and other bells by power applied to the clapper-shank, and it is designed to decrease the throw of the clapper-lever for the purpose of lessening the labor of striking the bell, and to add the momentum of the lever to that of the clapper for striking the bell with increased force.

To this end the invention consists in combining an operating-lever with the clapper in such a manner that the lever shall be suspended from the crown-plate within the bell and articulated to the clapper-shank, as I will now proceed to describe.

In the drawings, A is the crown-plate of the bell, cast with a projection, B, on its under side, to which the clapper-shank C is pivoted in any suitable manner, and the shank is slotted longitudinally just below the projection.

A′ is the suspending-plate, to which the crown-plate is bolted by two or more bolts, with the edge of the opening in the top of the bell between them. The suspending-plate is cast with a central ear, B′, upon its upper surface for the passage of a key-bolt, C′, by which the bell is hung from suspending-straps D′, bolted or articulated to a beam or timber above the bell. This mode of suspending the bell allows it to swing and vibrate freely without jarring the bell-tower.

D is the clapper-lever, composed of two side bars pivoted at their upper ends, by a single bolt, E, to opposite sides of the projection B, near the crown-plate, and extending down upon opposite sides of the clapper, which thus swings between them. The side bars may be of cast or wrought iron, and in one or more pieces; but, however made, their lower ends are joined together below the clapper and provided with a loop, F, on each side, to which cords or other devices are attached for operating the lever and clapper to strike the bell.

The side bars may be cast in one piece with the loops, or made separate therefrom and bolted to the loop-piece, a single bolt serving to unite all three. The side bars are further united beneath the projection B by a cross-bolt, G, passing through the slot in the clapper-shank, but in such a manner that the clapper can move freely on the bolt. The clapper-lever, by this arrangement, becomes a lever of the second order, the upper bolt, E, forming the fulcrum, and the weight to be lifted being the clapper. When the lever is pulled in either direction by the rope or other means the cross-bolt G lifts the clapper-shank and throws the clapper in the same direction, the leverage being such as to swing the clapper forcibly against the bell, the momentum of the lever adding to the strength of the blow. The slot in the clapper-shank allows the cross-bolt to move longitudinally of the shank as the clapper is swung; and, as the radius of the lever from the cross-bolt to the fulcrum-pin E is greater than the radius of the clapper from said bolt to the clapper-pivot, the movement of the clapper will be proportionately greater than that of the lever. These proportions should be such that the clapper will move about twice as far as the lever for the purpose of decreasing the labor of striking the bell—that is to say, so that a short movement of the lever shall be sufficient to give the clapper its full stroke.

Instead of slotting the clapper-shank for the play of the cross-bolt, the latter may pass through a simple bolt-hole in the shank, and the upper ends of the lever may be slotted to slide on the fulcrum-pin E. The effect is the same in both cases, however; but the slot in

the clapper-shank is the preferable method, as it is perhaps the simplest, cheapest, and strongest.

Having thus described my invention, what I claim is—

1. A bell-striker consisting of a pivoted clapper and an operating-lever pivoted to the clapper-shank and to its support, and having a movable leverage with respect to the clapper-shank, substantially as described, for the purpose specified.

2. The operating-lever suspended from the crown-plate within the bell and jointed to the clapper-shank, substantially as described, for the purpose specified.

3. The operating-lever suspended from the crown-plate within the bell and extending downward below the clapper upon opposite sides thereof to receive or carry a double loop, F, at its lower end, substantially as described, for the purpose specified.

4. The crown-plate cast with the projection B, adapted to receive and carry both the operating-lever and clapper, substantially as described, for the purpose specified.

5. The suspending-plate cast with a single ear, B′, in combination with the bolt C′ and suspending-straps D′, substantially as described, for the purpose specified.

In testimony of which invention I have hereunto set my hand this 30th day of March, A. D. 1880.

EZRA W. VANDUZEN.

Witnesses:

E. A. ELLSWORTH,

N. K. ELLSWORTH.