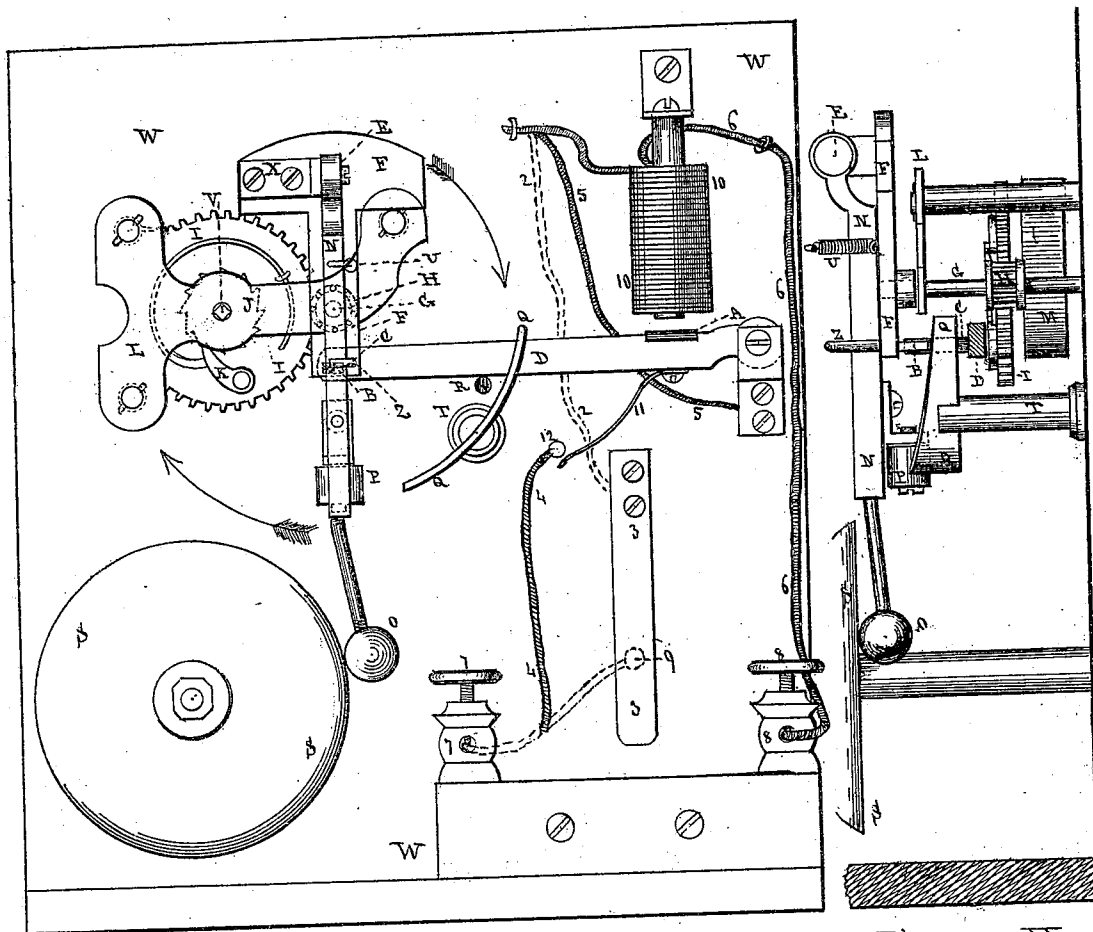


C. WILLIAMS, Jr. & J. REDDING.
ELECTROMAGNET ALARM GONG.

No. 108,743.

Patented Oct. 25, 1870.



Figure, I.

Figure, II.

Inventors.
Charles Williams
Jerome Redding

In presence of
John M. Batchelder
Henry S. Rowe

United States Patent Office.

CHARLES WILLIAMS, JR., OF SOMERVILLE, AND JEROME REDDING, OF
CHARLESTOWN, MASSACHUSETTS.

Letters Patent No. 108,743, dated October 25, 1870.

IMPROVEMENT IN ELECTRO-MAGNETIC ALARM-GONGS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern :

Be it known that we, CHARLES WILLIAMS, JR., of Somerville, and JEROME REDDING, of Charlestown, both of the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Electric Alarm-Gongs; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters and figures marked thereon.

Figure I is a front elevation of the apparatus.

Figure II is a side elevation.

Our improvement consists of a mechanical apparatus designed for striking a gong or bell, and an electro-magnet, having connecting wires leading to a galvanic-battery.

The electro-magnetic part of the instrument controls the mechanism and brings it into action when required, the main feature of novelty being the mode of giving, by a hammer of peculiar construction, a succession of blows upon the gong or bell, these blows being very powerful as compared with the amount of the weight or the strength of the spring that drives the mechanism. The volume of sound produced is very much greater than it is in instruments having vibrating or reacting hammers.

The screw-cup 7, Fig. I, is attached to one pole of a battery, and the cup 8 to the other pole.

When the key 3 is depressed and placed in contact with the metallic knob 9, the current passes from cup 7, through wire 1 and key 3, to wire 2 and through the magnet 10, and thence back to the other pole of the battery by the wire 6.

During this time the magnet is charged, the armature A and the armature-lever D are raised, and the spring 11 (one end of which is attached to the lower side of the armature-lever D) comes in contact with the pin 12.

The current passes by the wires 4 and 5 through the magnet, and keeps the circuit closed after the key 3 is released from the knob 9.

As long as the armature A and lever D are held up, the detent B cannot come in contact with the stop C.

The mechanism of the striking part of the instrument is constructed as below, (see Figs. I and II.)

The frame L is attached to the back-board W.

The toothed wheel I is geared with the pinion II and driven by the spring M, which is wound up by a key applied at the end of the shaft V, the wheel I being retained in place when wound by the ratchet J K.

The pinion II is fast to the shaft G, which carries, at its outer end, the part F.

This part F revolves with the shaft G and carries with it the revolving arm or hammer N.

A bracket-stud, X, is screwed to the face of the part F near the top, and affords a loose or swing joint at E for the hammer N, allowing it to move freely back and forth, the extent of this motion being limited by the spiral spring U, that is fastened at one end to the part F and at the other to the arm N of the hammer.

Near the middle of this arm there is a friction-roller, P, and at a short distance from it there is a stud, T, affixed to the back-board, that holds, at its outer end, a curved cam or wiper, Q, narrow at the upper end and wider at the bottom, as seen in Fig. II.

The ball O, at the bottom of the arm N, is in such a position that it will strike the edge or lip of the bell or gong S.

The detent B, before referred to, is fixed to the back side of the part F, and remains in contact with the stop C, upon the armature-lever D, when the instrument is not in action.

The stop R limits the fall of the lever D, and may be movable for the purpose of adjusting the distance between the magnet 10 and the armature A.

The key 3 may be depressed by the hand or by levers, wires, rods, or other apparatus connected with doors, windows, safes, or other objects.

When electric connection is made with the knob 9, the armature and lever are lifted by the magnet, the stop is disengaged from the detent, the part F, with its attached hammer, revolves in the direction of the arrows, the friction-roller passes over the outer edge of the cam, which throws the hammer outward, and the gong is struck by the ball O. The spring U brings the hammer back to place.

A hook, Z, in addition to the spring U, may be used for limiting the forward motion of the arm N, the main purpose of the spring being to bring the hammer back to place after it has been thrown out toward the bell by the cam Q.

When thus drawn back by the spring, the hammer passes freely between the bell and the frame, the blows of the revolving arm being continued as long as the armature and lever are held up by the magnet.

If the instrument is required to give but a single blow the branch circuit may be omitted. This allows the armature and lever to drop from the magnet and stop the rotation of the hammer as soon as the key 3 rises and breaks the circuit.

A weight or any other power may be used, instead of a spring, for driving the mechanism.

The instrument, constructed as herein described, has but one wheel and pinion, and is much more

simple than the machines heretofore used for giving a heavy blow.

What we claim, and desire to secure by Letters Patent, is—

1. A striking apparatus, having a rotary hammer turning always in the same direction, and making one or more entire revolutions, the hammer being so hung or suspended that it can be thrown in contact with a bell or gong by a cam or its equivalent, and drawn back by a spring or its equivalent after each stroke, substantially as described.

2. In combination with the striking apparatus herein described, the electrical connections of the battery with the magnet, its armature and the armature-lever, by means of the spring 11 or its equivalent, the wires and the key, substantially as herein specified.

CHARLES WILLIAMS, JR. [L. S.]
JEROME REDDING. [L. S.]

Witnesses:

JOHN M. BATCHELDER.
HENRY S. ROWE.