

(No Model.)

J. H. BICKFORD.

ELECTRIC BELL OR MECHANICAL STRIKER.

No. 381,823.

Patented Apr. 24, 1888.

Fig: 1.

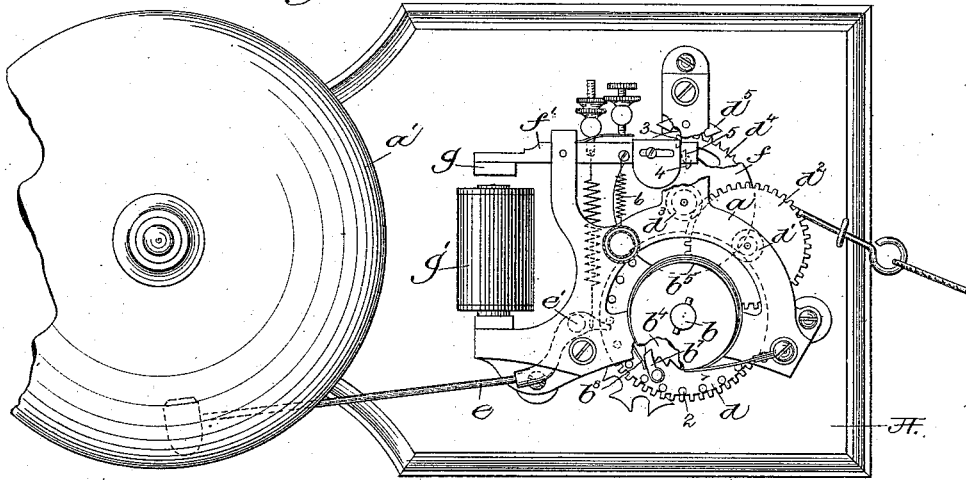


Fig: 2.

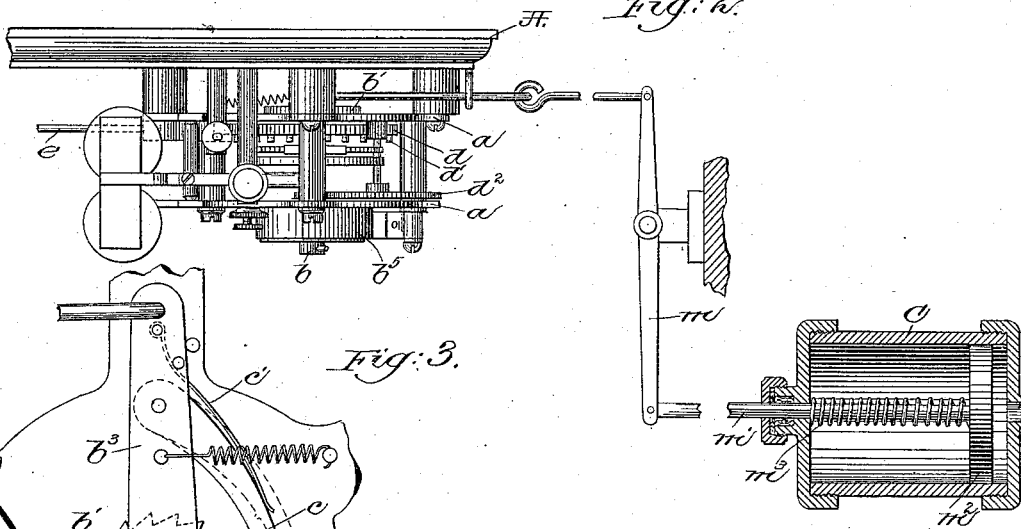
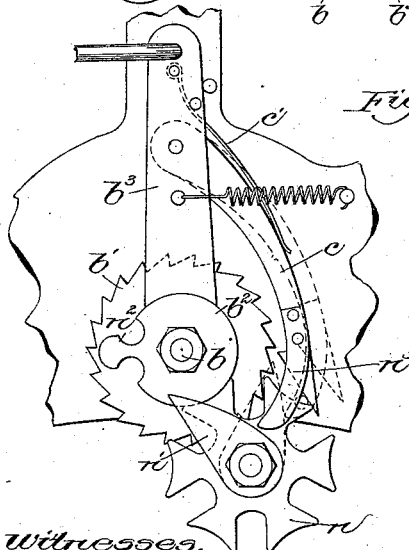


Fig: 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN H. BICKFORD, OF SALEM, MASSACHUSETTS.

ELECTRICAL BELL OR MECHANICAL STRIKER.

SPECIFICATION forming part of Letters Patent No. 381,823, dated April 24, 1888.

Application filed May 31, 1887. Serial No. 239,756. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. BICKFORD, of Salem, county of Essex, and State of Massachusetts, have invented an Improvement in Electric Bells or Mechanical Strikers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct an electro-mechanical striker or bell which may be employed to strike one heavy blow each time the device is operated.

The invention consists in the combination, with a motor mechanism, a winding device therefor, and a releasing device for the motor mechanism, whereby it may operate the striking-lever, of means for disengaging the winding device from the motor mechanism after the motor has been fully wound; also, in other details of construction, to be hereinafter pointed out.

Figure 1 shows in front elevation a bell embodying this invention; Fig. 2, a side view of the bell shown in Fig. 1, and means being shown for operating the winding device or lever; Fig. 3, a detail of the means employed for disengaging the winding device.

The base-plate A is provided with suitable uprights or supports for a frame-work, *a*, composed of two side plates. The base-plate A also supports a suitable gong, *a'*. The winding-shaft *b* has its bearings in the frame-work, said winding-shaft having secured thereon a ratchet-toothed wheel, *b'*, (see Fig. 3,) a pinion, *b''*, having a single tooth, a ratchet-toothed wheel, *b'''*, and a mainspring, *b''''*. The winding-lever *b''''* is loosely mounted upon the winding-shaft *b*, said winding-lever carrying a pull-pawl, *c*, the tooth of which is held in engagement with the teeth of the ratchet-wheel *b'* by a spring, *c'*, so that as the winding-lever is moved the pawl *c* will engage and move the ratchet-wheel *b'* one tooth at a time and rotate the winding-shaft to wind the spring. A pawl, *b''''*, is pivoted to the upper side of the toothed wheel *d*, and by a spring, *b''''*, is held in engagement with the teeth of the ratchet-wheel *b'*, said pawl serving as a back-stop for the spring.

The toothed wheel *d* meshes with a pinion, *d'*, fixed to an arbor carrying a toothed wheel, *d''*, which meshes with a pinion, *d'''*, fixed to

shaft carrying a scape-wheel, *d''''*, which co-operates with a suitable pallet, *d''''''*.

The toothed wheel *d* is provided with a series of studs, 2, which, as the wheel revolves, strike one end of a striking-lever, *e*, pivoted at *e'* to the main frame-work, each one of the said studs operating to move the striking-lever to strike the gong. The striking-lever is restored to its normal position by a spring.

The releasing device for the motor consists of a disk, *f*, fixed to the shaft carrying the scape-wheel, said disk having two projections, 3 4, (see dotted lines, Fig. 1,) and also of a pivoted lever, *f'*, which is provided at one end with a projection, 5, which, when the lever is in one position, co-operates with one of the projections 3 or 4, and when in the opposite position co-operates with the other projection. The lever *f'* carries the armature-bar *g* of an electro-magnet, *g'*, supported by the frame-work, said magnet normally being demagnetized and the lever being held away from the magnet by a spring, 6.

When the magnet is energized, the lever *f'* is moved, its projection 5 disengaging the projection 4, and if said lever is held toward the magnet the said projection 5 will engage the projection 3 when the disk has completed one revolution; but if said lever should recede from the magnet the projection 5 will strike the projection 4 at the completion of one revolution, so that in either event but one revolution can be made.

The winding device is provided with a throwing-out or disengaging device, which, when the motor has been fully wound, will be disengaged, so that any further operation of the winding device will have no effect.

The throwing-out device is herein shown as a star-wheel, *n*, which is engaged by the single tooth *n''* of the pinion *b''*, so that at each revolution of the pinion *b''* the star-wheel will be moved one tooth. A projection, *n'*, is fixed to the star-wheel *n*, or to the shaft carrying the star-wheel, which engages a projection, *n''*, of the pawl *c*, acting to throw the said pawl out of engagement with the ratchet-wheel *b'* after the motor has been sufficiently wound, and after once throwing out the winding device it may be operated at will without effect.

I have herein shown the winding device or

lever connected with a pivoted lever, *m*, which is in turn connected with a piston-rod, *m'*, having a piston, *m²*, moving in a cylinder, *C*. A spiral spring, *m³*, surrounds the piston-rod, one end of which bears against the cylinder and the other against the piston. Compressed air is employed to move the piston against the tension of the spring, and when the air is cut off the spring returns the piston to its normal position.

The bell, when applied, as herein especially designed, to a locomotive, is wound automatically by the compressed air employed to operate the brakes, the winding device being moved at every time the brakes are applied, and the disengaging device operates to throw the winding device out when the motor is fully wound, so that if the brakes are applied after the motor has been wound and the winding device consequently moved no effect will be produced on the motor.

I claim—

1. In an electric bell or striker, the normally-wound motor and the striking-lever *e*, connected positively with and to be directly operated by the said motor, and the releasing device for the said motor, and the electro-magnet *g'*, for moving the releasing device, permitting the motor to operate, and the winding device for the motor, combined with the independent disengaging device, substantially as described, for the winding device, as and for the purposes set forth.

2. In an electric bell or striker, the motor and striking-lever operated by it, the winding device for the motor, said winding device consisting of the pawl *c* and ratchet *d'*, and means for moving the winding device, combined with the releasing device composed of a pivoted lever, *f'*, having a projection, 5, and a part car-

ried by the motor having the projections 3 4, all substantially as described, and an electro-magnet for effecting the movement of the pivoted lever.

3. In an electric bell or striker, a motor 45 mechanism consisting of a train of gears and a winding device, a series of pins or studs carried by one of the large gears, as *d*, and a pivoted lever, one end of which is directly engaged and operated by the said pins or studs, 50 combined with a releasing device carried by one of the small gear-shafts, whereby a large number of movements may be given to the striking-lever at each time the motor is wound.

4. In an electric bell or striker, a motor, a 55 releasing device therefor, a striking-lever adapted to operate once at each time the motor is released, combined with a winding device for the motor, the star-wheel *n*, pinion *b²*, projection *n'*, and projection *n³*, substantially 60 as described.

5. In a bell or striker, the normally-wound motor and the releasing device therefor, consisting of the arm *f'*, projection 5 thereon, the disk *f*, and the projections 3 and 4, and an 65 electro-magnet, *g'*, for moving the said motor, the winding device, as the pawl *c* and ratchet *b'*, for the motor, and the independent disengaging device for the winding device, operating substantially as described, combined with 70 means, as the lever *b³*, substantially as described, for moving the winding device, substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN H. BICKFORD.

Witnesses:

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