

(No Model.)

C. TURNBULL, Jr.
ELECTRIC BELL.

No. 513,219.

Patented Jan. 23, 1894.

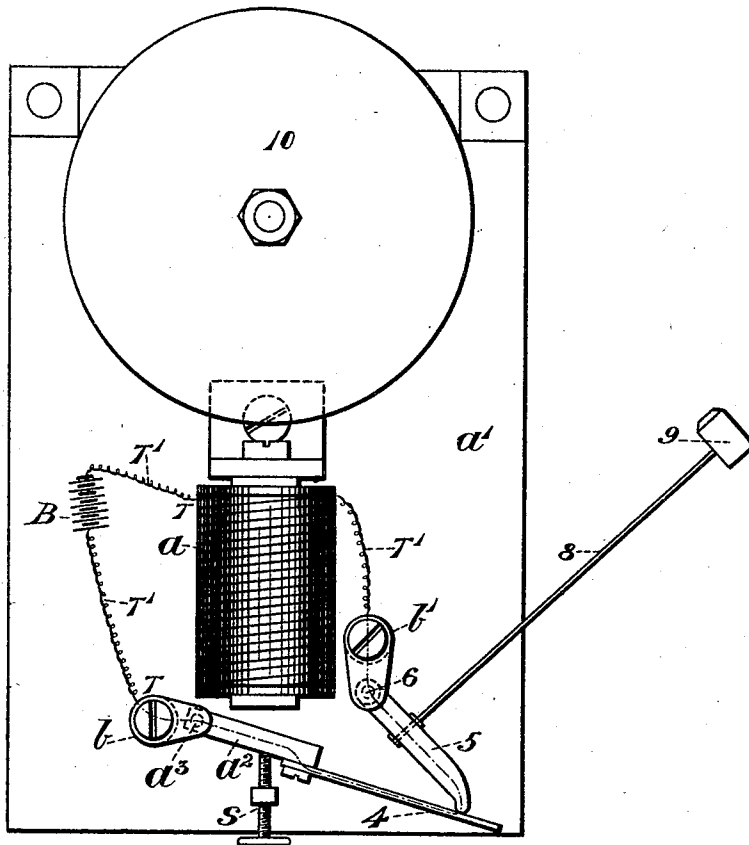


Fig. 1

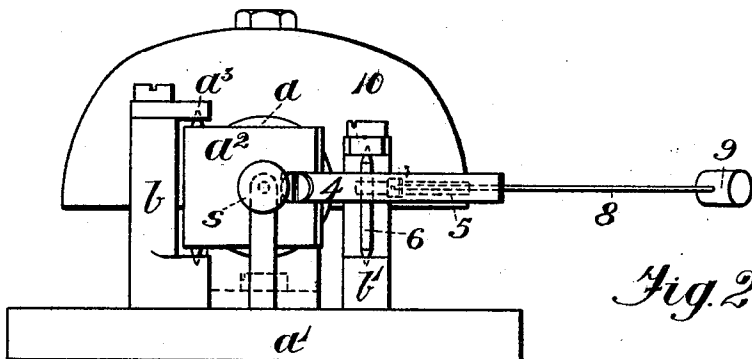


Fig. 2

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES TURNBULL, JR., OF NORTH SHIELDS, ENGLAND.

ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 513,219, dated January 23, 1894.

Application filed July 24, 1893. Serial No. 481,375. (No model.)

To all whom it may concern:

Be it known that I, CHARLES TURNBULL, Jr., a subject of the Queen of Great Britain and Ireland, and a resident of North Shields, county of Northumberland, England, have invented certain Improvements in the Construction of Electric Bells, of which the following is a specification.

This invention refers to improvements in the construction of electric bells and consists in a special combination of parts having for its object an improved regulation or adjustment of the period of electrical contact whereby improved results may be obtained from the bell.

The accompanying drawings in which Figure 1 shows a front elevation and Fig. 2 an under side plan view of the same illustrate one method of effecting my invention, and in the following description like marks of reference designate like parts.

Referring to the drawings *a* represents an electrical magnet mounted on a wooden frame *a'*, and *a*² is the armature hinged at *a*³ in bracket *b*. The arm or extension 4 of the armature is designed to make and break contact with the arm 5 centered at 6 in bracket *b'*; the arm 5 also carries the hammer bar 8 and hammer 9.

10 is a gong-bell.

B represents the battery, T the terminals and T' the wires leading from the battery round the magnet and thence when the circuit is completed, through bracket *b*, armature *a*², extension 4, arm 5, and bracket *b'*.

The operation and precise novel effect produced from the improved construction described are as follows: When the current is switched on from the battery, the magnet attracts the armature. The armature raises arm 5 and when the armature strikes the magnet the contact is instantly broken because the momentum imparted to the hammer causes arm 5 to continue traveling in the same direction until it strikes the bell. The armature rebounds from the magnet and falls back onto the adjusting screw S and the hammer rebounding from the bell, the arm 5 renews the contact with arm 4 of armature when the operation is repeated. Thus instead of the

armature governing the motions of the hammer-bar as hitherto has been the case, the latter governs the armature motions so that not only is the armature made to keep time with the hammer but the periods of electrical contact between 4 and 5 are more prolonged whereby a more powerful and efficient impact is obtained.

It will be observed that in the apparatus described the electrical circuit is not broken until the armature actually has struck the magnet and that the contact must break at this particular point the result of which is that the hammer is thrown against the bell with great force whereas if the contact was broken before the armature struck the magnet, the force of the hammer against the bell must be materially reduced. Immediately contact is broken, the armature falls back its full distance onto the regulating screws where it waits until the hammer falls back to renew the contact and repeat the operation. Further electric bells constructed as herein described have a great range of power for if a powerful battery is connected to the bell, the adjusting screw may be set back to increase the armature stroke in which case the hammer will hit the bell with very powerful blows, whereas as hitherto constructed increase of battery power has the chief effect of increasing the frequency instead of the actual power of the blows.

The strokes of the bell are by my invention so distinct that the vibration of the gong is not unduly interfered with as in bells hitherto constructed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In electric bell apparatus the combination with an electro-magnet and vibrating armature having a fixed extension 4 thereon of a vibrating arm 5 pivoted at 6 carrying the hammer-bar 8 and hammer 9 the make-and-break point of the electrical circuit being between the extension 4 aforesaid of the vibrating armature and the vibrating arm 5 substantially as and for the purpose set forth.

2. In electric bell apparatus the combination with an electro-magnet and vibrating armature having a fixed extension 4 thereon, 100

the travel of the said armature being regulated by screw 8 of a vibrating arm 5 pivoted at 6 carrying the hammer-bar 8 and hammer 9 the make-and-break point of the electrical
5 circuit being between the extension 4 aforesaid of the vibrating armature and the vibrating arm 5 substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of 10 two subscribing witnesses.

C. TURNBULL, JR.

Witnesses:

A. CRAWHALL CHAPMAN,
J. A. HARVEY.