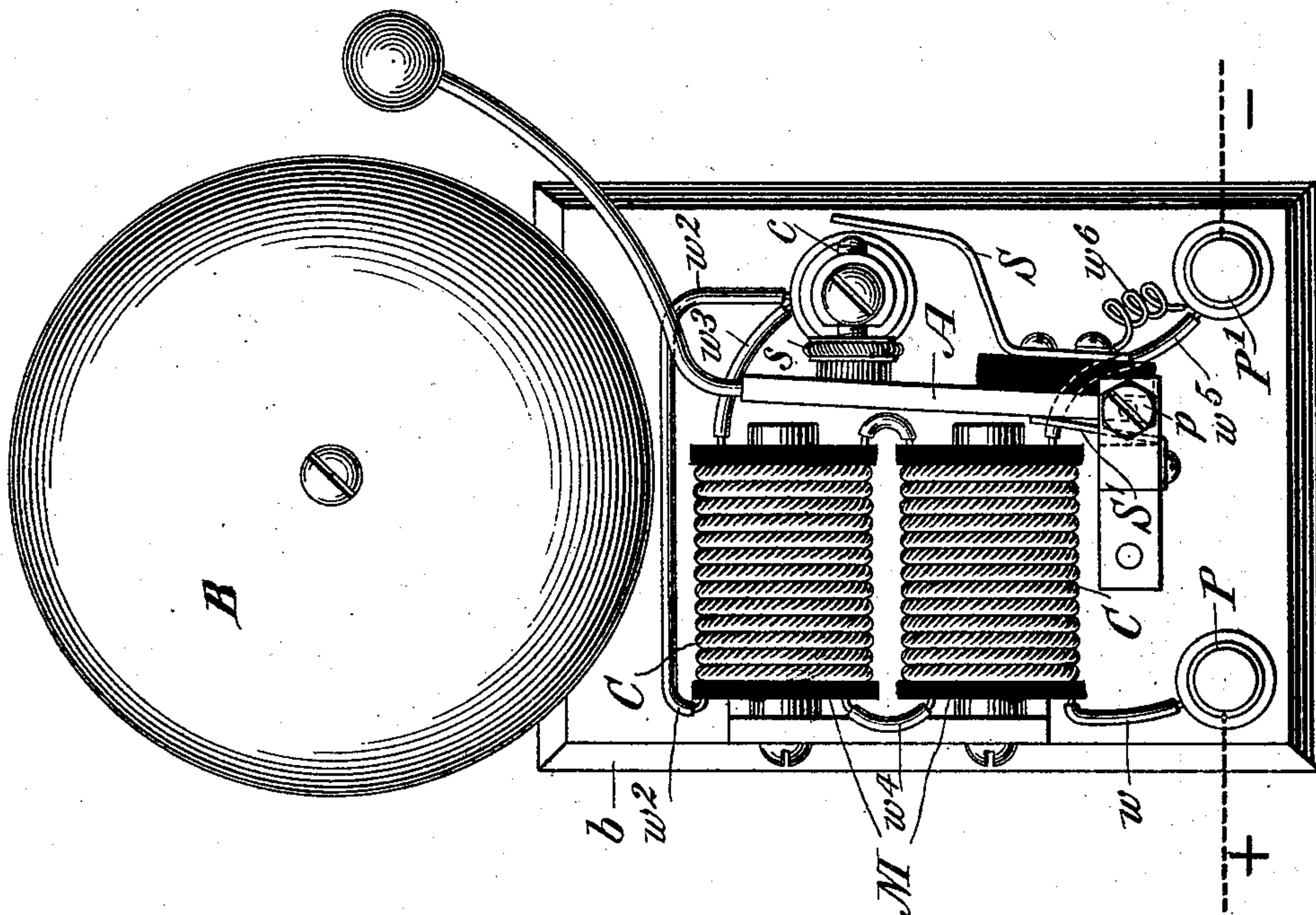


(No Model.)

G. F. ATWOOD & J. W. AYLSWORTH.
ELECTRICAL ALARM OR BELL.

No. 534,595.

Patented Feb. 19, 1895.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE F. ATWOOD, OF ORANGE, AND JONAS WALTER AYLSWORTH, OF
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ELECTRICAL ALARM OR BELL.

SPECIFICATION forming part of Letters Patent No. 534,595, dated February 19, 1895.

Application filed May 28, 1894. Serial No. 512,605. (No model.)

To all whom it may concern:

Be it known that we, GEORGE F. ATWOOD, of Orange, and JONAS WALTER AYLSWORTH, of Newark, county of Essex, and State of New Jersey, citizens of the United States, have made a new and useful invention in Electrical Alarms or Bells, of which the following is a specification.

Our invention is directed particularly to improvements in what is known in the art as trembler or tap bells, and its object is, to adapt bells of this generic nature for use in connection with electrical circuits of high potential or in general for use in connection with electric lighting, electric power, and analogous systems of electrical distribution where currents of variable potential and quantity are used.

To this end it consists in combining with an electrical trembler or tap bell of well known form a novel type of resistance coil or resistance medium, whereby the construction of bells of this nature is greatly cheapened and the entire apparatus more readily adapted for use in the places named.

Our invention will be fully understood by referring to the accompanying drawing, which illustrates in side elevation a well known form of trembler or tap bell having our improvement applied thereto.

Prior to our invention electrical trembler or tap bells have not been practically available for use in connection with electric lighting, power transmission, and analogous systems of high potential and great quantity currents for the reasons, first, that the high potentials of the currents utilized necessitated the construction of electro-magnets wound with very fine wire which necessarily materially increased the cost of this type of apparatus over that incurred in building similar bells for use in connection with primary batteries and analogous low potential circuits; second, because of such high potential circuits and of the great amount of self-induction resulting from the high winding the sparking at the circuit interrupter caused an arcing to such an extent that the contacts were soon destroyed. It was with a view of overcoming these serious objections that our invention was devised, for a full and clear

understanding of which reference is now had to the drawing in detail, in which—

b represents the base or support of the apparatus; *P P'*, the binding posts therefor; *M*, the operating electro-magnet; *B*, the bell or gong; *A*, the vibratory armature therefor carrying the usual form of bell striking hammer and pivoted at *p* to a standard which is in turn secured to the base *b*; *S'*, the retractile spring for the armature lever *A*, and *S* the circuit interrupting spring carried by an insulating block secured in turn to the armature; *c*, a metallic standard secured to the base *b* and carrying near its upper end an adjustable contact screw *s*.

w, *w*², *w*³, *w*⁴, *w*⁵ and *w*⁶ represent the conductors from the binding posts *P* and *P'* to and through the coils of the electro-magnet, the contact spring *S* and the conducting standard *c*. In the arrangement and adaptation of these conducting coils for trembler or tap bells of the type named lies the essence of our invention. We first wind the cores of the electro-magnet *M* with an insulated metallic conductor and attach one end of this conductor directly to the metallic standard *c*, through the conductor *w*³, the other end of said conductor being attached by conductor *w*⁵ to the binding post *P'*. The standard *c* is connected in turn by a second insulated conductor *w*² to one end of an insulated flexible carbon conductor *C* of high resistance and of few convolutions wound around both coils and connected ultimately through an insulated conductor *w* with the binding post *P*.

The operation is as follows: When the circuit is closed through the conductors joining the binding posts *P* and *P'* current flows by way of conductor *w*, the high resistance insulated carbon conductor *C* around both cores of the electro-magnet, by conductor *w*² to standard *c*, conductor *w*³ to the inner coils of the electro-magnet which are joined by conductor *w*⁴, thence by conductor *w*⁵ thereby causing the armature *A* to be drawn forward. On its forward movement, however, the spring *S* is brought into contact with the adjustable contact *c* and the circuit is then as follows: from the binding post *P* through the high resistance carbon conducting coils *C* which are at such a distance from the cores that their

magnetizing influence is not appreciably felt, thence through the conductor w^3 , standard c , contact spring S , conductor w^6 , thereby short circuiting the inner or magnetizing coils.

5 Consequently the armature drops off and at the instant of rupture of the circuit, both sets of coils are again included in circuit. We find that with a trembler bell as thus constructed there is almost absolutely no sparking at the point of rupture of the circuit between the contact screw s and the circuit interrupting spring S .

10 We make no claim in the present application to a flexible insulated carbon conductor or resistance as that constitutes the subject matter of a separate application for a patent filed by us of even date herewith bearing Serial No. 512,606.

20 We believe we are the first to devise an electrical trembler or tap bell in which the shunting resistance is located upon the cores of the energizing electro-magnet, and our claims are generic as to this particular:

25 Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. An electrical alarm or bell having an operating electro-magnet and a resistance therefor of carbon wound about the coils of the electro-magnet, and means for connecting the carbon resistance in a circuit around the magnet coil.

2. An electrical alarm or bell having an op-

erating electro-magnet and a resistance coil therefor wound about the energizing coil or coils of the magnet. 35

3. An electrical alarm or bell having an operating electro-magnet wound with two coils connected in series, in combination with circuit connections whereby the energizing current is conveyed through one of said coils. 40

4. An electrical alarm or bell having an operating electro-magnet and a resistance coil or coils of carbon wound on the same core or cores as are the energizing coils of the magnet and connected in series therewith, in combination with circuit connections whereby the operating current is conveyed through the resistance coil and the electro-magnet demagnetized. 45

5. An electric trembler or tap bell having a carbon resistance connected in series relation with the energizing coil or coils of the actuating magnet and wound about the core or cores thereof, in combination with means for closing the circuit through the carbon resistance and around the energizing coil or coils. 50

In testimony whereof we have hereunto subscribed our names this 24th day of May, 1894. 55

GEORGE F. ATWOOD.

J. WALTER AYLSWORTH.

Witnesses:

CHARLES J. KINTNER,

M. M. ROBINSON.