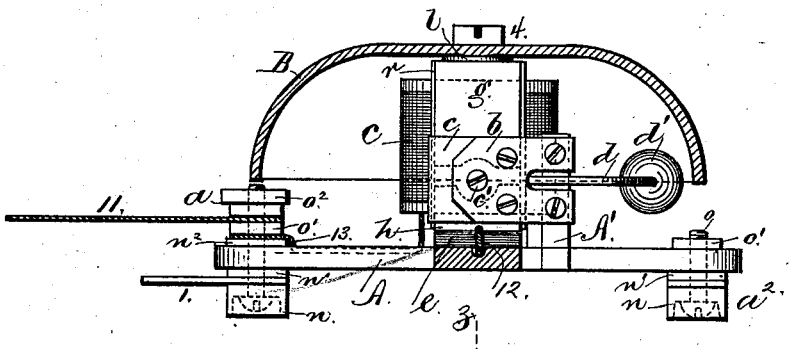
(No Model.)

C. F. DE REDON.

ELECTRIC BELL.

No. 381,765. Patented Apr. 24, 1888.

Fig. 1.



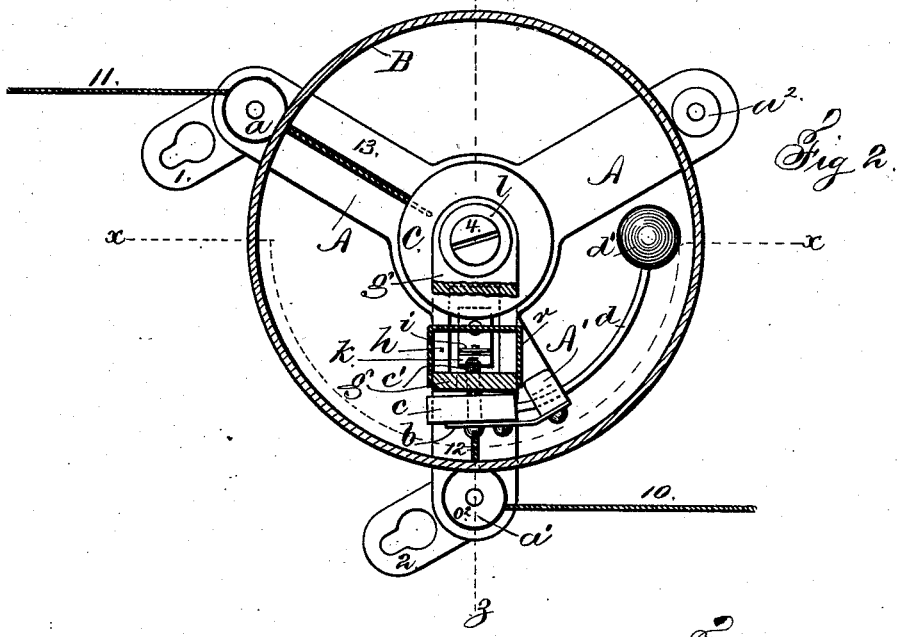
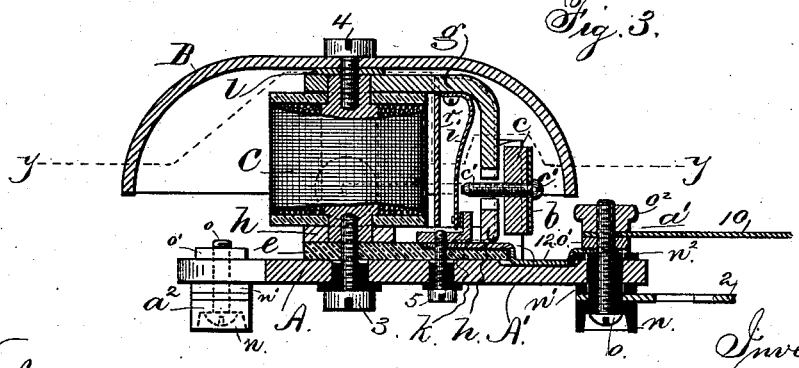


Fig. 2.

Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

CONSTANT F. DE REDON, OF NEW YORK, N. Y., ASSIGNOR TO PEARCE & JONES, OF SAME PLACE.

ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 381,765, dated April 24, 1888.

Application filed February 20, 1888. Serial No. 264,589. (No model.)

To all whom it may concern:

Be it known that I, CONSTANT FRANÇOIS DE REDON, of the city, county, and State of New York, have invented a new and useful Improvement in Electric Bells; and the following is declared to be a description of the same.

My invention relates to that class of electric bells in which the bell is provided with a vibrating hammer for striking the gong, which hammer is actuated by an armature operated by the alternate breaking and closing of an electric circuit. These bells as heretofore made are complicated, costly, and require constant care to keep them in order and free of dust.

My improved bell is simple, durable, non-expensive, and can be kept free from dust in the parts that make and break the electric circuit.

In my improved bell I employ a base of metal, an electro-magnet connected to said base, but insulated therefrom, and a gong connected to and supported by the electro-magnet, a standard rising from a portion of said base, and binding-posts of peculiar form upon the corners of said base; an armature and a metallic spring-plate connected, respectively, to the armature and standard, the hammer and its wire being carried by the armature; pole-pieces extending laterally from the opposite end of the magnet with their ends bent toward and in line with each other and in close proximity; a circuit-breaker connected to one pole upon its inner side, and an electrode or contact, and a case of non-magnetic material for excluding dust from the contact points.

In the drawings, Figure 1 is a sectional elevation at the line *x x*. Fig. 2 is a sectional plan at the line *y y*, and Fig. 3 a vertical section at the line *z z* of Fig. 2.

The metal base A, I prefer to make with three equidistant arms, upon the outer ends of two of which are the binding-posts *a a'*. The post a^2 and the suspending-eyes 1 2 are connected and form part of the posts *a a'*, and are employed to support the bell in a hanging position. The binding-posts *a a'* are composed of the cups and stems *n*, of insulating material, which pass through the base A, and surrounding which are the rings n' n^2, also of insulating material. The screws *o* pass through the cups and stems, and there are nuts o' o^2 upon the screws *o*. The nuts o' act to clamp the parts firmly together, and the nuts o^2 serve to clamp the wires conducting the electric current to or from the bell. The suspending-eyes 1 2 are held between the cups *n* and rings n'. The standard A' is connected to and rises from the base A.

c is the armature, and *b* a metallic spring-plate connected by screws to the armature and standard, respectively, and the hammer-wire *d* is carried by the armature, and upon its outer end is the hammer d'. A contact screw, c', passes through the armature *c*.

The electro-magnet C is of usual character, and its core is securely connected at one end by an insulated screw, 3, passing through the base A and through a plate, *e*, of insulating material and into one end of the core, and the screw 4 passes through the gong B and through a washer, *l*, and into the opposite end of the core of the electro-magnet, and the gong B is thus secured in place. The pole-pieces *g h* of the electro-magnet surround the ends of the core of the magnet, and are held to place by the screws 3 4, and said pole-pieces extend out laterally, and their ends are bent toward and in line with each other and into close proximity.

The circuit-breaker *i* is a spring of sheet metal secured to the pole *g* upon its inner surface, and is bent in the shape shown in Fig. 3. The pole *h* is slotted, and within the slotted portion and upon the plate *e*, of insulating material, the electrode or contact *k* is held by the insulated screw 5.

The conductor-wires 10 11 are connected to the binding-posts *a a'*, and the wire 12 connects the post *a'* and electrode *k* together, and the wire 13 connects the post *a* and base of the electro magnet C.

The operation is as follows: The electric current comes by the wire 10 to post *a'*, and by wire 12 to the electrode *k*, through this electrode and the circuit-breaker *i*, the end of which touches the electrode and passes to the pole-piece *g*, and through the electro-magnet and slotted pole-piece *h*, and away by the wire 13, binding-post *a*, and wire 11. The

current in the electro-magnet causes the pole-pieces to attract the armature *c* and bend the metallic spring-plate *b*, and swings the hammer toward and against the gong and rings the bell. At the same time the contact screw *c'* of the armature *c* comes against the circuit-breaker *i*, and moves or pushes the same away from the contact *k*, breaking the circuit. As soon as the circuit is broken the attraction of the pole-pieces ceases, and the armature is freed and moved back to its normal position by its metallic spring-plate *b*, and the circuit-breaker *i* at the same time comes again against the electrode *k*, making or completing the circuit and again attracting the armature. The circuit is thus repeatedly and rapidly broken and completed, and a rapid vibratory movement is given to the armature and hammer to ring the bell, and this is continued so long as the current passes to the bell.

I provide a three-sided case, *r*, of non-magnetic material, which extends vertically between the pole-pieces *g h* and grasps the sides of the pole-pieces inclosing the circuit-breaker *i* and electrode *k*, and preventing the admission of dust to these parts to interfere with their successful operation.

I claim as my invention—

1. The combination, in an electric bell, with the base and gong, of an electro-magnet connected at its respective ends to the base and gong, the pole-pieces extending out laterally, the circuit-breaker *i*, the electrode or contact *k*, the armature, and its spring and contact-screw and hammer, substantially as specified.

2. The combination, in an electric bell, with the base and gong, of an electro-magnet connected at its respective ends to the base and gong, the pole-pieces extending out laterally, the circuit-breaker *i*, the electrode or contact *k*, the armature and its spring-hammer and contact-screw, and a case, *r*, inclosing the circuit-breaker, to exclude the dust, substantially as specified.

3. In an electric bell, the combination, with the electro-magnet, of the pole-pieces extending laterally and the ends bent toward and in line with each other and into close proximity, a circuit-breaker connected to one pole upon its inner side, the electrode or contact *k*, the armature *c*, adjacent to the exterior flat surface of the poles, and its contact-screw *c'*, substantially as specified.

4. In an electric bell, the combination, with the electro-magnet, of the pole-pieces extending laterally and the ends bent toward and in line with each other and into close proximity, a circuit-breaker connected to one pole upon its inner side, the electrode or contact *k*, the armature *c*, adjacent to the exterior flat surface of the poles, and its contact-screw *c'*, and a three-sided case, *r*, of non-magnetic material, grasping the sides of the poles and inclosing the contacts or electrodes to exclude dust, substantially as specified.

5. In an electric bell, the combination, with the electro-magnet, of the pole *g*, extending laterally from the top of the magnet and its end bent over the circuit-breaker connected therewith upon its inner side, the plate *e*, of insulating material, the slotted pole *h*, connected to the electro-magnet and plate *e*, and having its outer end bent over toward and in line with the end of the pole *g*, the electrode or contact *k*, and armature *c*, substantially as specified.

Signed by me this 15th day of February, A. D. 1888.

CONSTANT F. DE REDON.

Witnesses:

HAROLD SERRELL,

WILLIAM G. MOTT.