(No Model.)

A. LÜNGEN.

ELECTRIC BELL.

No. 393,710. Patented Nov. 27, 1888.

Fig. 1.

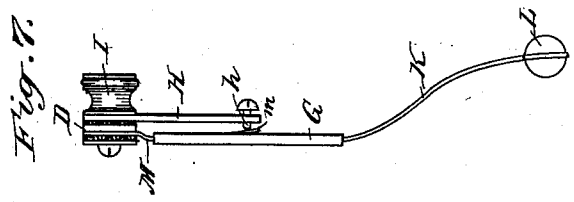

Fig. 2.

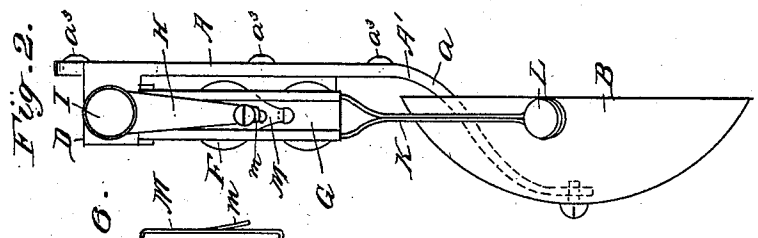

Fig. 6.

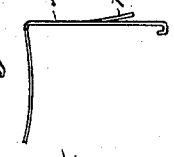

Fig. 3.

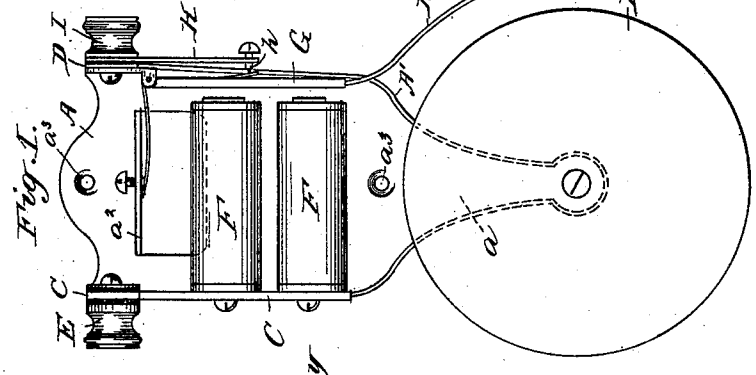

Fig. 5.

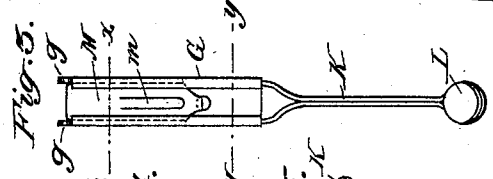

Fig. 4.

Fig. 7.

Attest:

J. A. Hurdle.

Frank Luck Bernstein.

Inventor:

Adam Lüngen.

UNITED STATES PATENT OFFICE.

ADAM LÜNGEN, OF NEW YORK, N. Y.

ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 393,710, dated November 27, 1888.

Application filed November 21, 1887. Serial No. 255,703. (No model.)

To all whom it may concern:

Be it known that I, ADAM LÜNGEN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Bells, of which the following is a specification.

My invention relates to an improvement in electric bells, and more particularly to the construction of the vibrating armature in such bells; and it consists in so forming the soft-iron armature with turned-over or crimped edges, so that it will clamp and attach itself to the supporting-spring and to the striking-hammer of the bell without the aid of screws or rivets; and it furthermore consists in the particular construction of the frame or base upon which the several parts of the bell are mounted, all of which will be hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a top view of a bell embodying my invention. Fig. 2 is a side view of the same. Fig. 3 is a detached view of the armature. Fig. 4 is a section through the armature on line *x x* of Fig. 1. Fig. 5 is a similar view on line *y y* of Fig. 3. Fig. 6 is a detached view of the spring used to return the armature to its normal position, and Fig. 7 illustrates a modification in the method of mounting the armature.

A is the base or frame, and is preferably made of stamped metal in the form shown—that is, with a longitudinally-projecting arm, *a*, adapted to support the bell B, and upwardly-projecting lugs or arms C and D, to support the several parts hereinafter described. This base A has formed around its edge a lip or bead, A′, to give it the required stiffness, so that it may be stamped out of comparatively thin metal. The upwardly-projecting lug C is made to support a binding-post, E, and two electro-magnets, F F, the electric connection being from the binding-post E to and through the coils of the electro-magnets and to the base A, and the lug D is made to support the vibrating armature G and contact bearing arm H, the former being so mounted as to be in electrical contact with the base A and the latter being insulated therefrom but secured thereto by the binding-post I.

The vibrating armature is formed as shown in Figs. 3, 4, and 5, there being a piece of soft iron turned over or crimped, as shown in Figs. 4 and 5, to clamp and secure the two ends of a wire rod or stem, K, which is made to surround a head or hammer, L, which head is preferably made in the form of a ball, as shown, and grooved to receive the rod K. This rod K is bent around the head L and its ends inserted in the crimp or bend of the armature-plate and the latter forced down thereon, so that the two parts are firmly joined together. The rear or pivotal end of the armature may be formed with ears *g g*, perforated and adapted to receive a pivotal pin passing through ears formed upon the upwardly-projecting lug D upon the base A, to hold the armature in position in front of the electro-magnets F, and the hammer L in position *h* strikes the bell or gong B.

The armature G is held in position away from the electro-magnets by a spring, M, one portion of which is inserted under and clamped by the crimped edges of the armature, and the free end of this spring is bent around and bears against an upwardly-projecting arm or lug, a^2, of the base A. That part of the spring M which is clamped in the armature-plate has a tongue, *m*, stamped out of its central portion and bent outwardly to form a yielding contact. The contact bearing-arm H is secured to the upwardly-projecting lug D of the base by the binding-post I, but is insulated from said lug D, as is the binding-post I, and carries at its outer end a contact-point, *h*, mounted upon a screw passing through the arm H and in the track of the contact *m* on the armature G, as it vibrates in front of the electro-magnets F. This arm H and the binding-post I are insulated from the supporting-arm D and from the armature-supports by means of insulating-washers.

In lieu of the pivotal connections G G and the retracting-spring, as shown in Figs. 1 and 6, I may cause the spring to form the support for the armature, as shown in Fig. 7—that is, by extending the spring backwardly and securing it by means of the binding-post to the lug D, and so forming it that it will act both as a support and a retracting-spring for the armatures. The base or frame A is adapted to be secured in position against a wall by perforations a^3, around which a downwardly-projecting flange or rim is formed, so that the base A, when secured to a wall, will be raised therefrom. The electrical circuit through the bell

is through the binding-post E, to the electro-magnet coils, to the base A, thence to the vibrating armature through its connection with said base to the contact-point *h*, which, with the vibrating armature, forms the interrupter or circuit maker and breaker, and through the arm H and the binding-post I to the line.

What I claim as my invention is—

1. In an electric bell, a vibrating armature, substantially as herein described, consisting of an armature-plate crimped at its edges to clamp and secure a bifurcated arm, K, to carry a hammer, L, and a retracting-spring, M.

2. In an electro-magnetic bell, an armature composed of a soft-iron plate, G, crimped at its edges to clamp a bifurcated hammer-bearing arm K, and a retracting-spring, M, as described.

Signed at New York, in the county of New York and State of New York, this 14th day of November, A. D. 1887.

ADAM LÜNGEN.

Witnesses:
W. D. EDWARDS,
B. FRANKLIN BERNSTEIN.