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L. CHALAS, E. RÉQUILLART & C. CONTAL.

ELECTRIC HORN.

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Fig. 1.

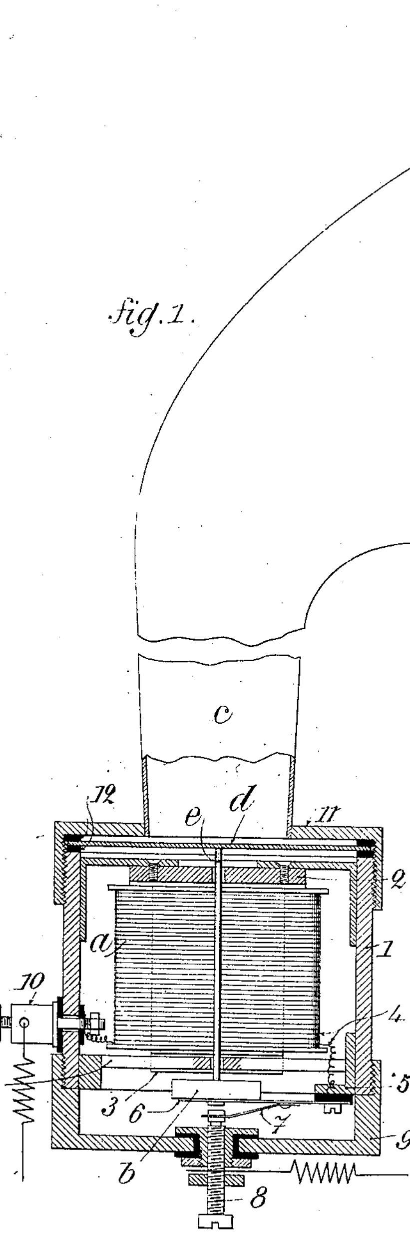
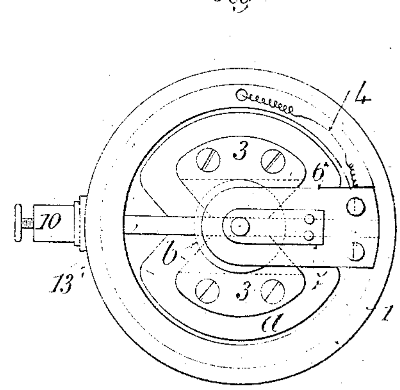


Fig. 2.



Witnesses
[signature]
[signature]

Inventors
Leon Chalas,
Edouard Réquillart, and
Camille Contal
By H. B. Willson & Co
Attorneys

UNITED STATES PATENT OFFICE.

LÈON CHALAS, EDOUARD RÉQUILLART, AND CAMILLE CONTAL, OF LEVALLOIS-PERRET, FRANCE.

ELECTRIC HORN.

No. 874,792. Specification of Letters Patent. Patented Dec. 24, 1907.

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To all whom it may concern:

Be it known that we, LÈON CHALAS, EDOUARD RÉQUILLART, and CAMILLE CONTAL, citizens of the Republic of France, residing at Levallois-Perret, Seine Department, 5 Rue Voltaire, in the Republic of France, engineers, have invented certain new and useful Improvements in an Electric Horn, of which the following is a specification.

Our invention relates to an electric horn in which the sound is produced by the action of an electro-magnet which, when subjected to an intermittent current, acts on a vibrating plate located in the mouth of an acoustic tube.

An important feature of our invention consists in the use of a movable rod or pin arranged between the movable armature of the electro-magnet and the vibrating plate and which transmits the vibrating movements of the former to the latter.

In the accompanying drawing which shows, by way of example, one embodiment of our invention: Figure 1 is a vertical section of an electrical horn; and Fig. 2 is a bottom plan view of the electro-magnet of the said horn.

In a cylindrical casing 1 is secured an electro-magnet *a*, of which 2 designates the breech, 3 the pole pieces, and 4 the wire of the solenoids. The casing 1 also carries, on a bracket 5, a spring plate 6, to which is secured a soft iron armature *b*, near the pole pieces. On the said plate 6 is riveted a spring contact 7, capable of being applied against a screw contact 8, so mounted in the bottom lid 9 of the casing 1 as to be insulated therefrom. The plate 6 is also insulated from the casing and is connected to one end of the wire 4; the other end of the said wire is connected to a binding post 10, on the casing 1. An electric trembling device is thus constituted, for if the screw contact 8 and the binding post 10 are connected with any battery, the current passing through the spring contact 7 and the electro magnet is stopped each time the latter attracts the armature *b*, and passes again so soon as the armature is released, provided that the position of the screw contact 8 has been well adjusted or regulated.

On the other end of the casing is secured a top lid 11, in the center of which is arranged an acoustic tube *c*, which terminates in a bell. Within the lid 11 is located a vibrating plate *d*, which consists, for instance, of a thin steel disk; the said vibrating plate is clamped between celluloid or other suitable washers 12, in the interval between the edge of the casing 1 and the bottom of the top lid 11.

The movement of the armature *b* is transmitted to the plate *d* by a steel or other suitable rod *e*, which is loosely mounted between the said parts; the said rod is guided through the breech 2 and a cross-piece 13, located between the pole pieces 3, in such a manner as to enable the said rod to move freely longitudinally; the length of the rod is such that when at rest it forces the armature *b* to move slightly away from the pole pieces 3 against the action of the spring plate 6. Each time the armature *b* is attracted by the electro-magnet *a*, the rod *e* pushes the plate *d*, which, by its resiliency, transmits a blow to the column of air within the tube *c;* so soon as the armature ceases to be attracted, the plate *d* assumes its primary shape and at the same time the rod *e* and the armature *b* move back into their initial positions; then the armature is attracted again, and so on, so that the plate *d* vibrates and blows the horn.

The electric horn thus constituted is of very small size when compared with the intensity of the sound given out.

The cylindrical shape of the casing 1 is the result of the shape of the vibrating plate, which is more advantageous when made circular. To make the best use of the capacity of the said cylindrical casing, it is preferable to make the electro-magnet *a* of corresponding shape in cross section, or in horse-shoe shape with flat coils as shown in the drawing, or upright either with or without a cuirass, or of any other suitable shape. To avoid rupture sparks, a condenser may be connected to the electro-magnet, and the said condenser will be preferably fitted in annular shape around the casing 1.

It is to be understood that the present invention is not limited to the embodiment hereinbefore described; the essential point is to transmit the vibratory movements between a vibrating plate and the movable armature of an electro-magnet by means of a rod loosely mounted between the said plate and the said armature.

Claims

1. In an electric horn, the combination of a vibrating plate, an electro-magnet, an armature, a spring plate adapted to press the armature towards the electro-magnet, a rod loosely mounted between the armature and the vibrating plate, the said rod being adapted to maintain the armature slightly away from the electro-magnet against the action of the said spring plate, and means for producing intermittent currents in the electro-magnet.

2. An electric horn comprising a tube in the shape of a trumpet, a casing on the smaller end of the tube, a vibrating plate within the casing, an electro-magnet in said casing, an armature, a spring for pressing said armature toward said electro-magnet, a rod to hold said armature away from said electro-magnet, means for transmitting the vibrations of the armature to said vibrating plate, and means for producing intermittent currents in said electro-magnet.

3. In an alarm device, a horn, a diaphragm arranged in operative relation thereto, an electro magnet, an armature influenced by said electro magnet, a circuit interrupter operated by said armature and a connection between said armature and said diaphragm whereby vibrations of the armature are mechanically transmitted to the diaphragm.

In testimony, that we claim the foregoing as our invention, we have signed our names in presence of two subscribing witnesses.

LÉON CHALAS.
EDOUARD REQUILLART.
CAMILLE CONTAL.

Witnesses:
HANSON C. COXE,
MAURICE ROUX.