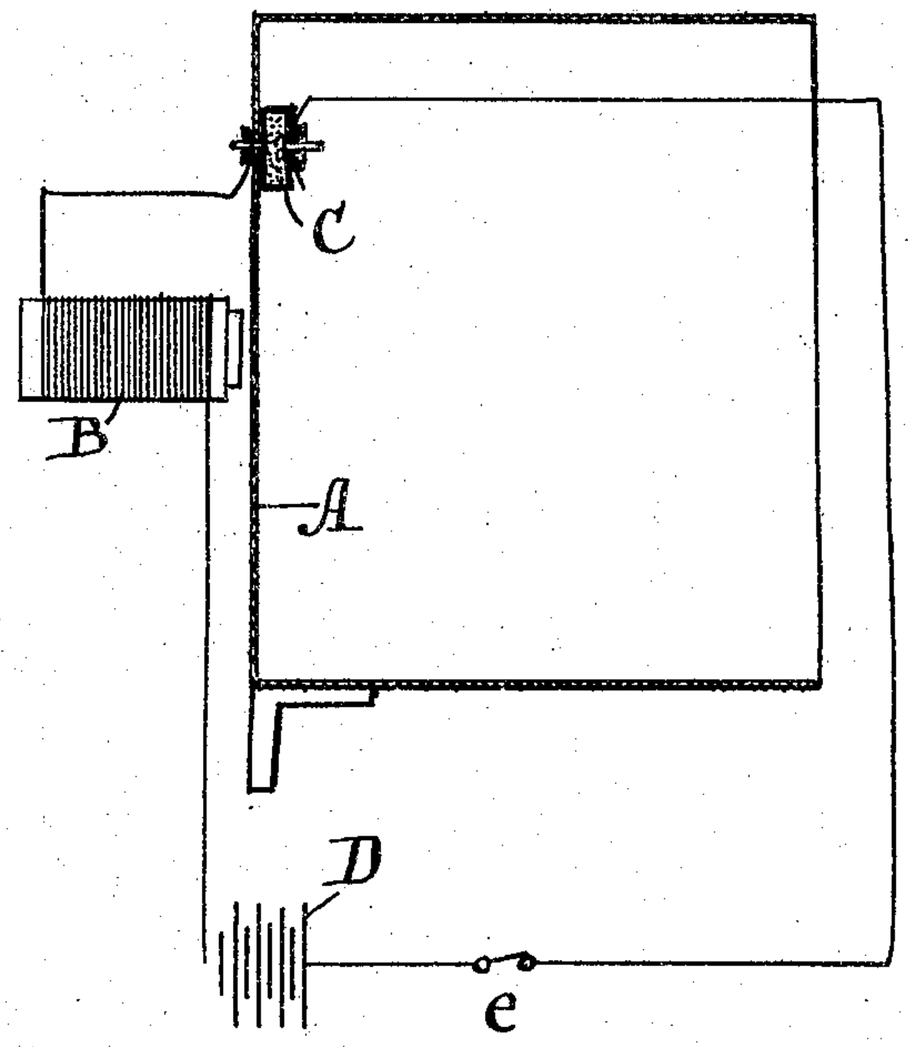
No. 794,245. PATENTED JULY 11, 1905.

C. H. O'BRIEN.

ELECTRIC APPARATUS FOR PRODUCING SOUND SIGNALS.

APPLICATION FILED JULY 18, 1904.



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No. 794,245. Patented July 11, 1905.

UNITED STATES PATENT OFFICE.

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ELECTRIC APPARATUS FOR PRODUCING SOUND-SIGNALS.

SPECIFICATION forming part of Letters Patent No. 794,245, dated July 11, 1905.

Application filed July 18, 1904. Serial No. 217,020.

To all whom it may concern:

Be it known that I, CHARLES H. O'BRIEN, a citizen of the United States of America, and a resident of Augusta, county of Kennebec, State of Maine, have invented certain new and useful Improvements in Electric Apparatus for Producing Sound-Signals, of which the following is a specification.

My present invention relates to improvements in electric apparatus for producing sound-signals; and the main object of the invention is the production of a novel arrangement of electrical apparatus with relation to a vibrating body—such as diaphragms, bells, and piano-strings—so that the current of electricity passing through such apparatus will cause a continuous vibration to be imparted to such vibrating body, so that a continuous sound will be produced. It is a well-known fact that make-and-break electrical contacts have been employed to cause the vibrating of such bodies, especially diaphragms; but the sounds thus produced are not what are known as "continuous," as the breaks between the vibrations are very decided and disagreeable, and thus have rendered such devices impractical. It has therefore been my object to so improve upon the make-and-break contacts to provide no perceptible intermission between the vibrations, thus making what I term a "continuous" vibration, and consequently a sustained sound for a period according to the length the electrical current is allowed to flow.

In order to carry the invention into effect, I employ a vibrating body which has directly attached thereto a button or casing carrying carbon particles in circuit with an electromagnet which influences the said body batteries, and a switch or push-button for completing the circuit. By the means of the carbon particles and the electromagnet so arranged the vibrating body is acted upon by the electromagnet, so that the vibration thereof disturbs the carbon particles in the casing, thus causing a variation of resistance which automatically varies the pull of the magnet, causing the vibrations of the body to be continuous, as no intermission between the vibrations is perceptible.

In order to illustrate my invention, I have shown in the accompanying drawings the invention as applied to a cylinder, the bottom of which acts as a diaphragm.

Referring to the drawings, A designates the vibrating body, B an electromagnet, C a casing containing carbon particles, D the batteries, and E a switch or push-button for completing a circuit through the electromagnet, casing, and batteries, all of which are connected in series by the usual wires.

The casing C, containing the carbon particles, is connected directly to and entirely supported by the vibrating body A, thus causing the vibrating body to act directly upon the carbon particles to disturb them. Thus it is evident that when the electrical circuit is completed by means of the push-button or switch the current of electricity causes the electromagnet B to attract the diaphragm or vibrating body A, thus setting the casing C in motion to disturb or decohere the carbon particles, thus producing a variation of current which affects the action of the electromagnet and produces a vibration of the diaphragm or vibrating body, thus producing a continuous sound due to the normal vibration of the sounding-body.

This apparatus can be applied for all classes of sound signaling means upon street-cars, automobiles, launches, and the like.

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

1. In an apparatus of this character the combination of an electromagnet, a sound-producing vibrating body capable of being vibrated directly by said electromagnet, a variable resistance connected directly to and carried by and adapted to be vibrated with said body, a source of electrical energy and means for causing electricity to flow from the source through the electromagnet and variable resistance.

2. In an apparatus of this character, the

combination of an electromagnet, a sound-producing vibrating body capable of being vibrated directly by said electromagnet, a casing containing granulated conductive particles connected directly to and carried entirely by and adapted to be vibrated with said body, a source of electrical energy, and means for causing electricity to flow from the source through the electromagnet and casing.

3. In an apparatus of this character, the combination of an electromagnet, a sound-producing diaphragm capable of being vibrated directly by said electromagnet, a casing containing granulated conductive particles connected directly to and carried entirely by and adapted to be vibrated with said body, a source of electrical energy and means for causing electricity to flow from the source through the electromagnet and casing.

4. In an apparatus of this character, the combination of an electromagnet, a sound-producing vibrating body capable of being vibrated directly by said electromagnet, a casing containing granulated conductive particles connected directly to and carried entirely by and adapted to be vibrated with said body, batteries, and means for causing electricity to flow from said batteries through the electromagnet and casing.

5. In an apparatus of this character, the combination of an electromagnet, a sound-producing diaphragm capable of being vibrated directly by said electromagnet, a casing containing granulated conductive particles connected directly to and carried entirely by and adapted to be vibrated with said body, batteries, and means for causing electricity to flow from the batteries through the electromagnet and casing.

6. In an apparatus of this character, the combination of an electromagnet, a sound-producing vibrating body capable of being vibrated directly by said electromagnet, a casing containing carbon particles connected directly to and carried entirely by and adapted to be vibrated with said body, a source of electrical energy, and means for causing electricity to flow from the source through the electromagnet and casing.

7. In an apparatus of this character, the combination of an electromagnet, a sound-producing diaphragm capable of being vibrated directly by said electromagnet, a casing containing carbon particles connected directly to and carried entirely by and adapted to be vibrated with said body, a source of electrical energy and means for causing electricity to flow from the source through the electromagnet and casing.

8. In an apparatus of this character, the combination of an electromagnet, a sound-producing vibrating body capable of being vibrated directly by said electromagnet, a casing containing carbon particles connected directly to and carried entirely by and adapted to be vibrated with said body, batteries and means for causing electricity to flow from said batteries through the electromagnet and casing.

9. In an apparatus of this character, the combination of an electromagnet, a sound-producing diaphragm capable of being vibrated directly by said electromagnet, a casing containing carbon particles connected directly to and carried entirely by and adapted to be vibrated with said body, batteries and means for causing electricity to flow from the batteries through the electromagnet and casing.

10. In an apparatus of this character, the combination of a source of electrical energy, a sound-producing vibrating body, electrically-operated means for directly vibrating said vibrating body, a variable resistance connected directly to and carried by and adapted to be vibrated with said body, and means for causing electricity to flow from the source through the electrically-operated means and the variable resistance.

Signed at Augusta, Maine, this 2d day of July 1904.

CHAS. H. O'BRIEN.

Witnesses:
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BEN SHAW.