No. 863,322. PATENTED AUG. 13, 1907.

W. F. SEIDEL & E. SASSENHOFF.

ELECTROMAGNETIC SOUNDING APPARATUS.

APPLICATION FILED SEPT. 1, 1906.

2 SHEETS—SHEET 1.

Fig. 1,

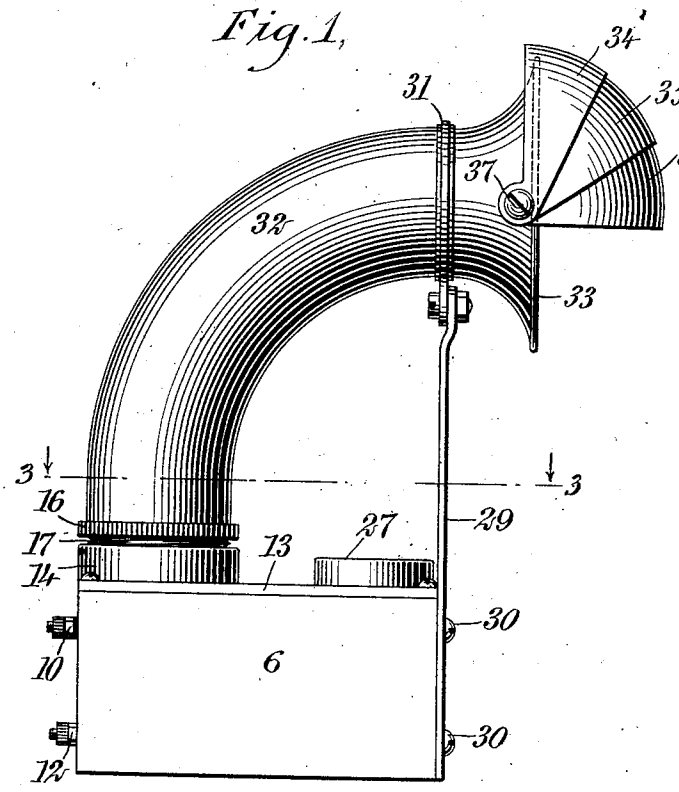


Fig. 2,

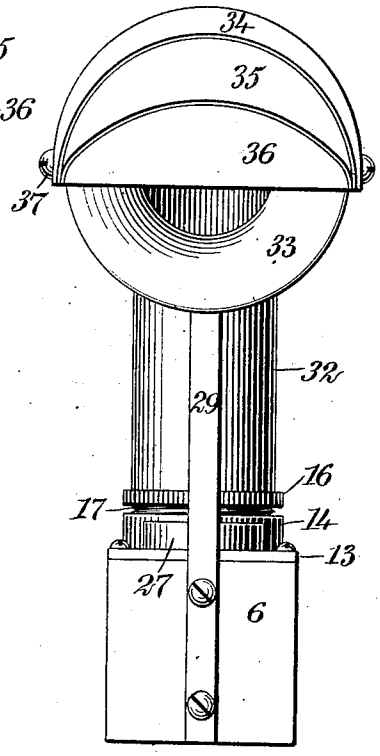
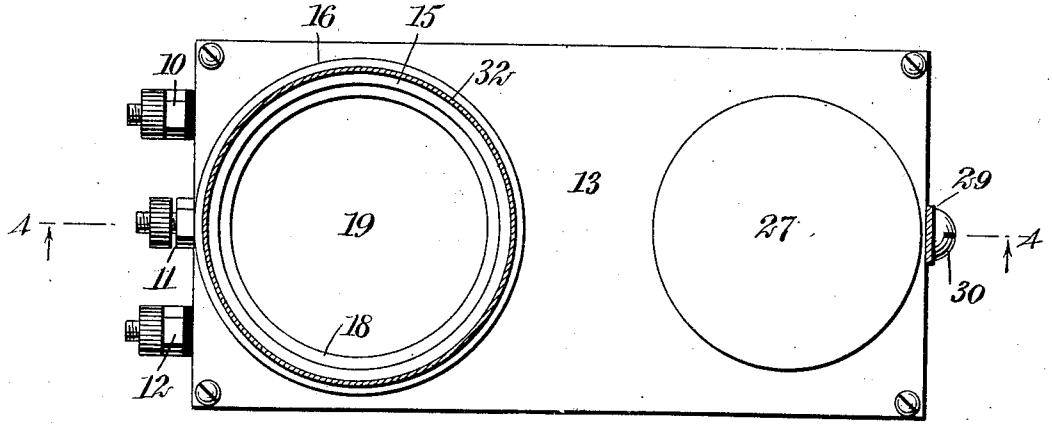


Fig. 3,



WITNESSES

Edward Thorpe.

Walton Harrison

INVENTORS

William F. Seidel

Ernesto Sassenhoff

BY

Munn & Co.

ATTORNEYS

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Fig. 4.

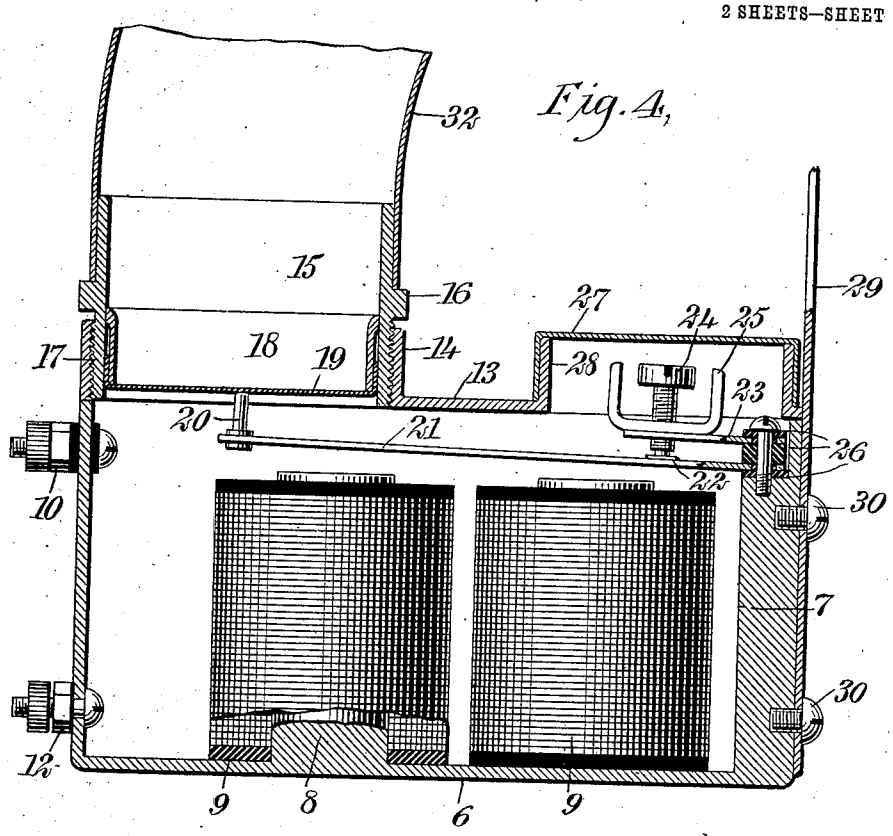
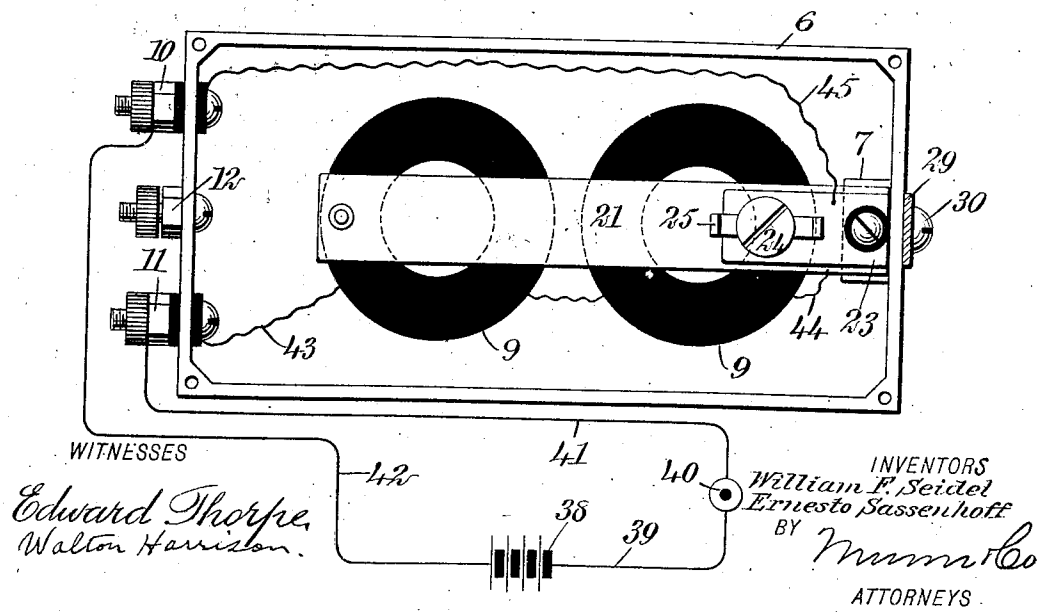


Fig. 5.



WITNESSES

Edward Thorpe.
Walton Harrison.

INVENTORS
William F. Seidel
Ernesto Sassenhoff
BY Munn & Co
ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM F. SEIDEL AND ERNESTO SASSENHOFF, OF ELKHART, INDIANA.

ELECTROMAGNETIC SOUNDING APPARATUS.

No. 863,322. Specification of Letters Patent. Patented Aug. 13, 1907.

Application filed September 1, 1906. Serial No. 333,024.

To all whom it may concern:

Be it known that we, WILLIAM F. SEIDEL and ERNESTO SASSENHOFF, citizens of the United States, and residents of Elkhart, in the county of Elkhart and State of Indiana, have invented a new and Improved Electromagnetic Sounding Apparatus, of which the following is a full, clear, and exact description.

Our invention relates to electro-magnetic sounding apparatus capable of general use but of peculiar service upon automobiles, motor-boats and the like in which it is desirable to sound signals at will.

Our apparatus may be operated by either direct or alternating currents, and may by adjustment be employed either as a horn or as a whistle. The device may be operated either by hand or by foot.

Among the objects of our invention is the production of an economical efficient instrument, easily regulated and admitting of a variety of uses, and having certain special advantages hereinafter described and pointed out in the accompanying claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the sounding box complete; Fig. 2 is a front elevation of the same, showing it as seen from the right of Fig. 1; Fig. 3 is an enlarged fragmentary section upon the line 3—3 of Fig. 1, looking in the direction of the arrow; Fig. 4 is a fragmentary section upon the line 4—4 of Fig. 3, looking in the direction of the arrow and showing the magnets, interrupter, and other parts confined within the casing 6, and also showing the arrangements of the vibratory diaphragm for producing the sounds; and Fig. 5 is a plan view of the casing 6 with its top removed, and showing the magnets and interrupter, together with all of the electrical connections.

A casing 6 is provided internally with a pilaster 7 and with upwardly projecting bosses 8 integral with the casing and serving as cores for the electro-magnets 9. Binding posts 10, 11, are mounted upon the casing 6 and insulated therefrom. Another binding post 12 is mounted directly upon the casing 6 and is in metallic communication therewith as indicated at the left of Fig. 5. The casing is provided with a removable lid 13, the latter having an annular bearing surface 14 integral therewith and threaded internally. A ring 15 is provided with a milled or knurled edge 16, the latter being comparatively narrow and adapted to be used for turning the ring 15. The ring 15 is provided with a lower portion 17, which is threaded externally and fits into the annular portion 14. By turning the milled edge 16 the ring may be raised or lowered, as will be understood from Fig. 4.

Mounted within the ring 15 is a diaphragm support 18 of annular form, and stretched over this diaphragm support is a diaphragm 19. A vibratory hammer 20 is adapted to strike this diaphragm and is mounted upon a vibratory spring 21, of magnetic material. A platinum contact point 22 is provided upon this spring 21, which is in electrical communication with the casing 6, or in other words is not insulated therefrom. A bracket 23 carries a threaded screw 24 which passes vertically through it. A jam nut 25 engages the bracket 23 and is movable relatively thereto for the purpose of tightening the screw 24. The screw 24 is adjusted by turning, and by aid of the jam nut 25 is clamped rigidly in position. Insulating members 26 are used for the purpose of preventing electrical communication between the bracket 23 and the casing 6, these parts being of metal. A cap 27 fits removably upon an annular projection 28 through which the parts may be inspected or adjusted. The support 29 having the form of a longitudinal bracket is connected with the casing 6 by screws 30, connection being so made that those screws pass directly into the pilaster 7 which is integral with the casing 6. The pilaster thus serves to strengthen the casing for the purpose of supporting the bracket 29, and also serves as a mounting for the vibratory spring 21 and parts connected immediately therewith. Mounted upon the upper end of the bracket 29 is a collar 31 which encircles and serves as a support for a sound tube 32. The outer end 33 of this sound tube is flared, being thus given a horn shape and is provided with hoods 34, 35 and 36, all connected thereto by pivots 37 and being adjustable. These hoods together form a vizor for the purpose of excluding moisture and dust from the sound tube. A battery is shown at 38 and is connected by a wire 39 with a push button 40. From the latter a wire 41 leads to the binding post 11. The binding post 10 is connected by a wire 42 with the battery 38. A wire 43 connects the binding post 11 with the magnets 9, and these are connected by a wire 44 with the armature 21. A wire 45 connects the bracket 23 with the binding post 10.

The operation of our device is as follows: By depressing the push button 40 the magnets 9 are energized and cause the circuit to be made and broken rapidly through the contact screw 24 and the contact spring 21. The circuit is as follows:—battery 38, wire 39, push button 40, wire 41, binding post 11, wire 43 to magnets 9, wire 44, contact spring 21, contact screw 24, wire 45, binding post 10, and wire 42 back to battery 38. The magnets 9 being energized and drawing downward the contact spring 21 now serving as an armature causes the circuit to be open between the contact point 22 and the contact screw 24. The break-

ing of the circuit allows the spring 21 to rise by its own resilience, thus closing the circuit and again energizing the magnets.

Where the device is to be operated by means of an alternating current the binding posts 11, 12 are used as the terminals, the binding post 10 being temporarily out of service. The circuit inside of the casing 6 would then be as follows: binding post 11, wire 43, magnets 9, wire 44, armature 21, casing 6 and binding post 12. It will thus be seen that while the magnets 9 are energized the current does not pass through the interrupter but goes directly from the armature 21 into the casing and thence to the binding post 12. As the alternating current needs no interruption the interrupter is simply thrown out of service. By turning the ring 15 the position of the diaphragm 19 relatively to the annular portion 14 and also to the magnets 9 is adjusted. Also the diaphragm 19 increases the tension of the spring armature 21 and therefore within certain limits tends to increase the speed of the interruption and consequently the frequency of the tap given by the hammer 20 upon the diaphragm 19. Due regard being had for proportion, this adjustment of the diaphragm enables the apparatus to be adjusted to sound like a horn or like a whistle, according to the frequency of the beat of the hammer 20.

Our purpose in casting the casing, magnets and pilaster all in one piece is to make the apparatus cheaper, simpler and stronger than would otherwise be the case. In building the magnets coils are preferably first wound and then slipped over the magnet cores.

It will be noted that the vibratory diaphragm is not actuated directly by the pull and release of the magnets, but indirectly through the stroke of the hammer.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:—

1. A device of the class described, comprising a casing having at the end thereof a pilaster and having integral cores projecting upwardly from the bottom thereof, windings on the cores, a resilient armature connected with the pilaster and having a hammer at the free end thereof, an insulated bracket provided with a contact point for engaging the armature on the back stroke, said casing being provided with a circular opening having a threaded flange adjacent to the hammer, a ring threaded into the flange, a diaphragm connected with the ring, a plurality of binding posts connected with the casing and insulated therefrom, said binding posts being connected with the bracket and with the armature through the windings of the cores, respectively, and a source of electrical supply having its terminals in the binding posts.

2. A device of the class described comprising a casing having integral cores projecting upwardly from the bottom thereof, windings on the cores, a resilient armature connected with the casing and having a hammer at the free end thereof, an insulated bracket provided with a contact point for engaging the armature on the back stroke, said casing being provided with a circular opening having a threaded flange adjacent to the hammer, a ring threaded into the flange, and a source of electric supply connected with the windings and having its terminals in the casing and the bracket, respectively.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM F. SEIDEL.
ERNESTO SASSENHOFF.

Witnesses:
MATHIAS HOETGER,
LOUIS B. WOODFORD.