

No. 870,198.

PATENTED NOV. 5, 1907.

W. E. RUSSELL.  
ELECTRICAL HORN.  
APPLICATION FILED SEPT. 28, 1906.

Fig. 1.

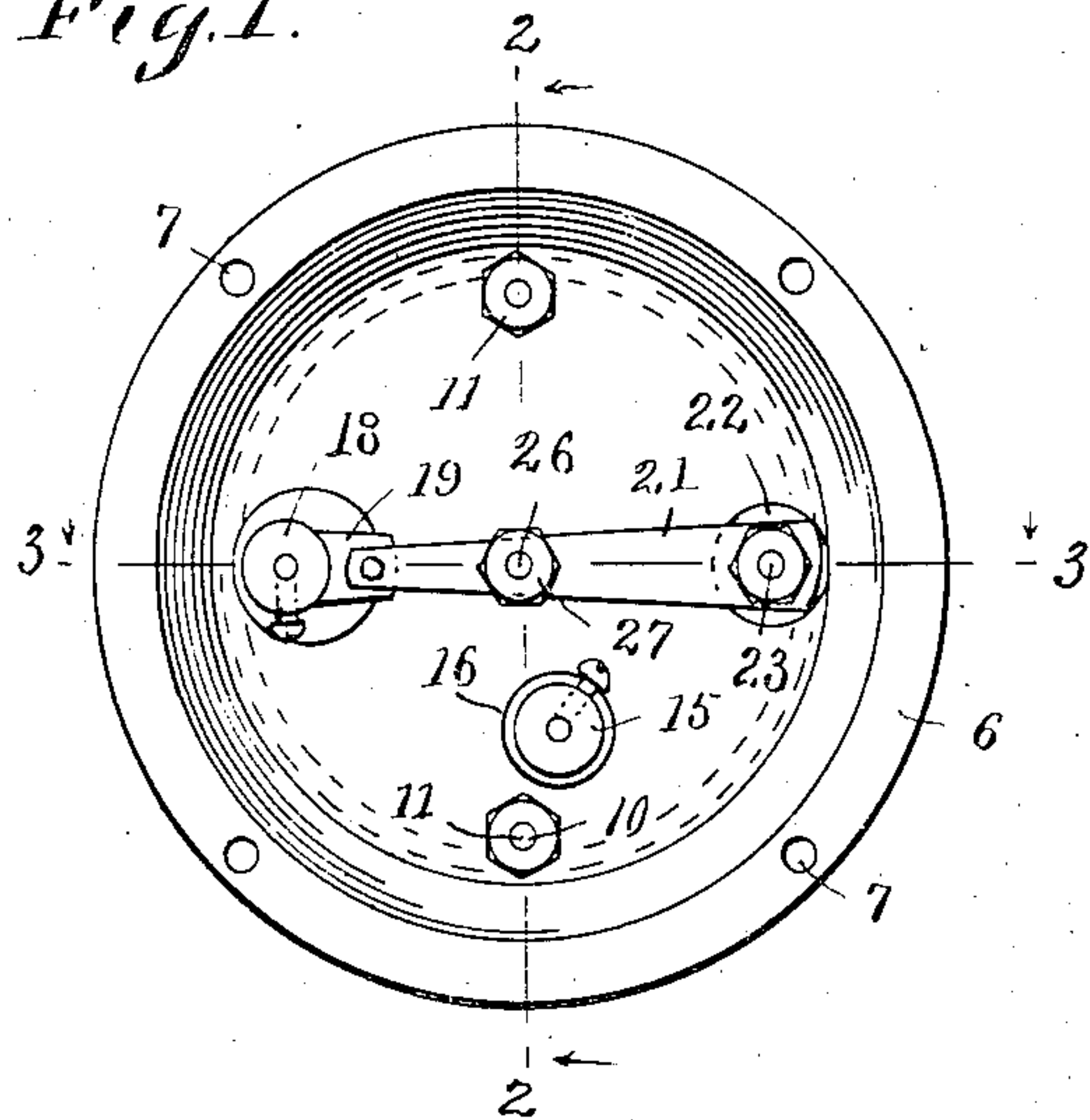


Fig. 2.

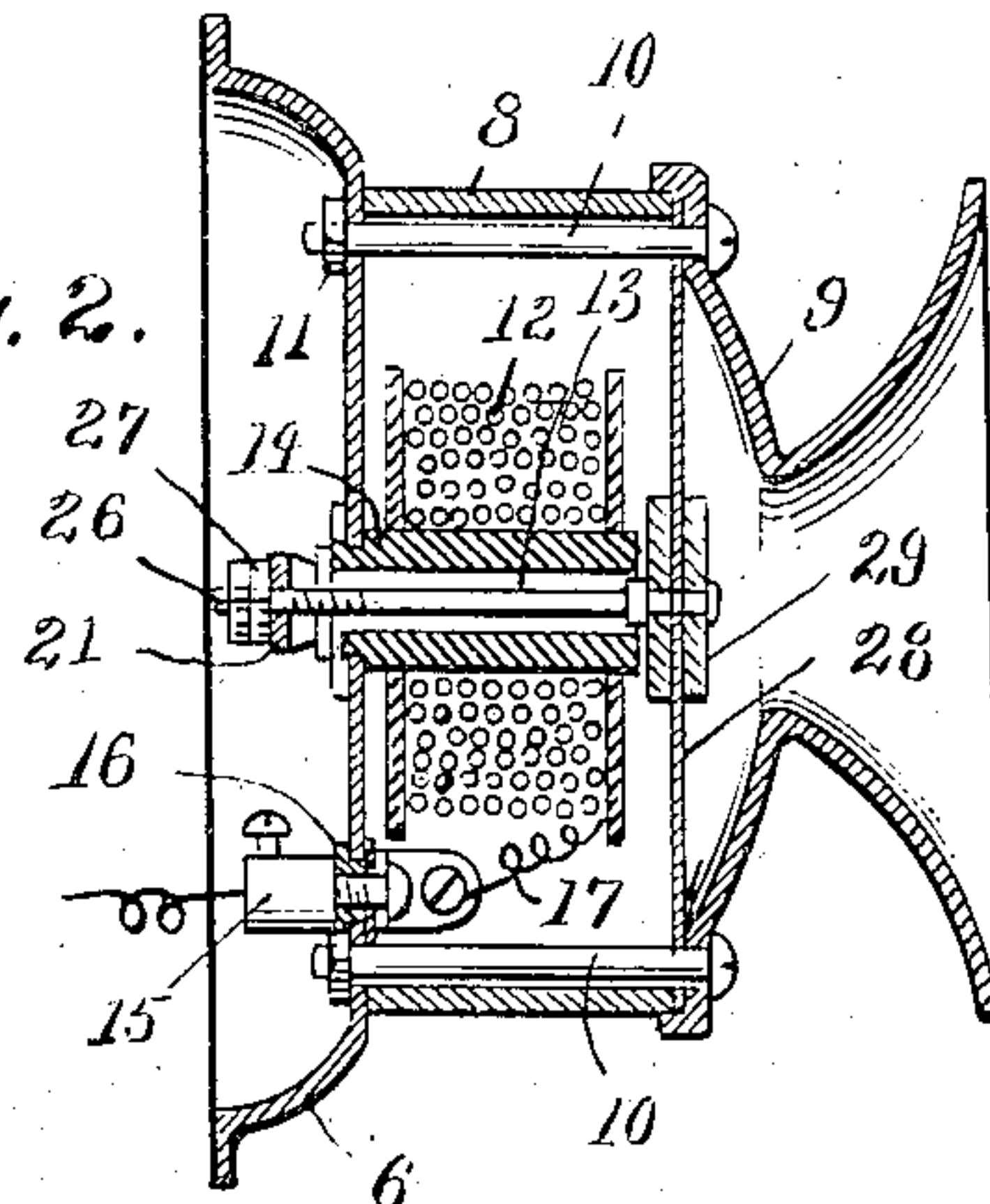


Fig. 3.

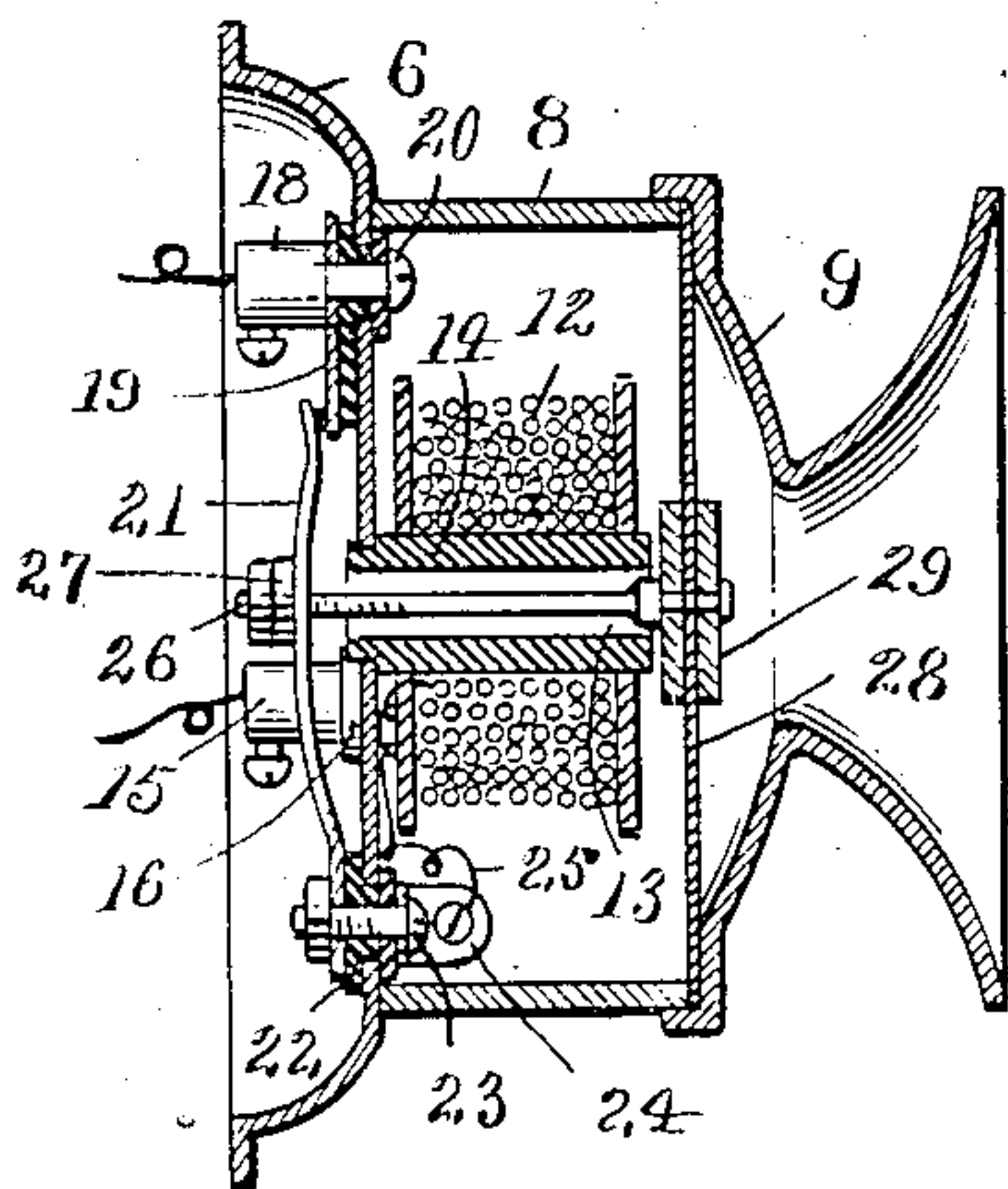
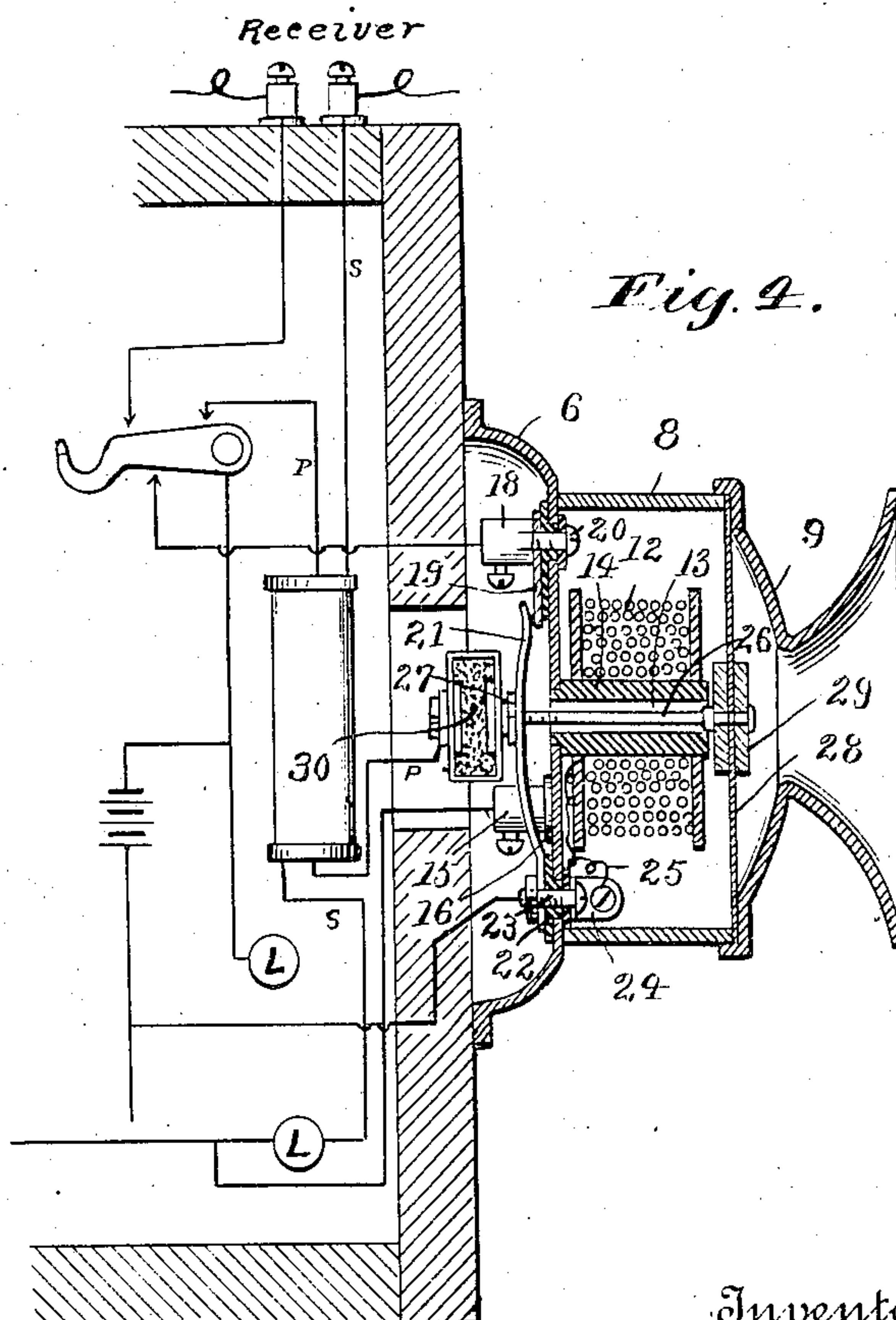


Fig. 4.



Witnesses

Richard Brown  
Elmer H. Hill

Inventor

William E. Russell

By Chamberlain & Newman  
Attorneys



# UNITED STATES PATENT OFFICE.

WILLIAM E. RUSSELL, OF DANBURY, CONNECTICUT.

## ELECTRICAL HORN.

No. 870,198.

Specification of Letters Patent.

Patented Nov. 5, 1907.

Application filed September 28, 1906. Serial No. 336,527.

*To all whom it may concern:*

Be it known that I, WILLIAM E. RUSSELL, a citizen of the United States, and resident of Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Electrical Horns, of which the following is a specification.

My invention relates to new and useful improvements in electrical horns, whistles or signaling transmitter devices for use in connection with an ordinary bell circuit for sounding an alarm as for instance in lieu of a telephone, door or other call bell.

It is the object of my invention to produce a novel device of the class specified for use in connection with an electrical circuit, which will be an improvement over a bell and more desirable in many instances; to produce a telephone signaling transmitter for use upon the ordinary telephone in lieu of the call bell; to form a device that will produce a large range of tones of sounds and thus adapted for many uses not now covered by bells; to produce an electrical horn that is especially adapted for use on automobiles, motor boats and like places and to design the horn in a compact, practicable and desirable manner so as to present a neat and attractive appearance.

Upon the accompanying drawings forming a part of this specification similar characters of reference denote like or corresponding parts throughout the several figures and of which:—

Figure 1, shows a rear elevation of my improved horn complete. Fig. 2, is a central vertical cross section taken on line 2—2 of Fig. 1. Fig. 3, is a central cross section taken at a right angle to Fig. 2, and on line 3—3 of Fig. 1, and Fig. 4 is a cross section similar to Fig. 3 and illustrating my device as applied to a telephone.

In appearance my device somewhat resembles a telephone transmitter such as are attached to the box, wall or other suitable place by means of screws. It is of a general cylindrical design, having a slightly extended base and a horn on the face through which the sounds emanate.

Referring in detail to the characters of reference marked upon the drawings, it will be seen that the casing inclosing the working parts of my device is preferably formed of three sheet steel parts, viz; a base 6 having holes 7 for the attachment of the device to a wall, a cylindrical body portion 8 that is seated upon the base, and a horn 9 secured upon the end of said cylinder. These three parts are connected together by means of bolts 10 having nuts 11 upon the underside of base as shown in Figs. 1 and 2.

An electro magnet 12 is attached to and supported upon the central flat portion of the base and contains a central hole 13 through its core 14 as seen in the several sectional views of the drawings. A binding post 15 is also attached to said base being insulated therefrom by

means of suitable insulating washers 16, and a wire 17 serves to electrically connect the said post (see Figs. 1 and 2) with the outer windings of the before mentioned magnet. A similar binding post having a connected contact plate 19 with platinum point is also insulatively attached to the said base by means of a screw 20 as shown. This post obviously serves to accommodate one of the line wires while the other post 15 serves for the other. A contact breaker 21 is connected to the base 6 through the medium of insulating washers 22 and a screw 23. Beneath the head of said screw is seated an angular clip 24 which in turn is connected by a wire 25 with the inner windings of the magnet. This contact breaker 21 is produced from a strip of spring metal and is so formed as to be normally connected with the before mentioned contact plate through the platinum points and serves to complete the circuit from post 18 through the wire 25 to the magnet. This contact breaker is provided with means of adjustment whereby the amount of movement to and from the contact plate is regulated. This means comprises a threaded connecting brass rod 26 that extends through a hole in the said breaker fitted with nuts 27 against the outer face of said contact breaker to form a stop against which it normally presses. The opposite end of this rod is rigidly connected to a sheet iron diaphragm 28 seated intermediate the end of the before mentioned cylinder 8 and the horn 9, and has sheet steel disks 29 centrally located thereon through which the connecting end of said rod passes.

The device is obviously designed to be used in connection with one or more primary batteries, in an open circuit including the usual push button, or other circuit closer. This circuit closing operation obviously charges the magnet which in turn charges the case and diaphragm thereby forming a magnetic circuit in a way to strongly attract the diaphragm which allows the spring contact breaker to operate by leaving its plate, thus disconnecting the circuit from the magnet.

The vibrations of the diaphragm are thus communicated to the breaker in very rapid succession and the sounds produced by said succession of operations of the breaker are thrown off by the diaphragm in a very much magnified manner and in a way to produce a loud and attractive sound, the tone of which can be readily changed by adjusting the nuts 27 upon the threaded rod 26. These sounds as produced closely resemble those made by some forms of whistles through which a continuous current of air passes, but can be made more attractive than the whistles commonly employed, when proper grades of materials are used.

My construction can be used to advantage in connection with an ordinary telephone as a signaling device in lieu of a bell, if desired, in which instance the several circuits would not differ materially from those now employed in ordinary telephone construction, as for instance that shown in Fig. 4 of the drawings, and to



which I have shown my improved device connected. In this instance I have shown an ordinary transmitter button designated as 30 attached to the free end of the before mentioned threaded rod and this button in turn is connected to the necessary parts of the telephone. This obviously serves to locate the magnet and circuit breaker intermediate the transmitter and transmitter button.

The diaphragm 28 would serve not only as the alarm sounding device but also as the diaphragm against which the speech is directed, when it is desired to talk therethrough, thus serving not only in the usual capacity of a transmitter but also as a signaling transmitter. The several line circuits and other elements, illustrated in Fig. 4, not being material parts of my invention, I will not describe them in detail, and only say that the connections to my instrument would be made substantially as shown to the two binding posts, the before mentioned button 30 and to the screws 23 of circuit breaker, thus forming all required connections.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. An electrical horn of the class described, comprising a magnet having a hollow core, a diaphragm across the end thereof, a rod attached to the diaphragm and extending through said hollow core, a circuit breaker also connected to said rod to control the electrical connections with the magnet.
2. An electrical horn of the class described, comprising a magnet having a hollow core, a diaphragm across the same, a rod attached to the diaphragm, a binding post and contact plate, a circuit breaker connected with both the magnet and the rod to engage the contact plate.
3. An electrical horn of the class described, comprising a magnet, a diaphragm adjacent thereto, a binding post and contact plate, a circuit breaker for engagement with said plate, connections intermediate the diaphragm and contact breaker whereby the movements of the former are imparted to the latter.
4. An electrical device of the class described, comprising a magnet having a hollow core therein, a diaphragm adjacent thereto, a circuit breaker upon the opposite side of

the magnet and connected with the magnet, a rod attached to the diaphragm and adjustably connected to the breaker.

5. An electrical device of the class described, comprising a magnet having a hollow core therein, a diaphragm adjacent thereto, a circuit breaker upon the opposite side of the magnet and connected with the magnet, a rod attached to the diaphragm, and adjustably connected to the breaker, casings inclosing the said parts and a horn covering the said diaphragm.

6. In an electrical device of the class described, the combinations of a case, a magnet attached therein and provided with a hollow core, a diaphragm covering the end of casing and extended across the magnet, a horn covering the outer surface of diaphragm, a circuit breaker connected with the magnet, and means connecting said diaphragm and circuit breaker.

7. In an electrical horn of the class described, the combination of a cylindrical case, a base attached thereto, a diaphragm inclosing the end of case, a horn covering said diaphragm, a magnet within the cylinder and having a hollow core, a circuit breaker attached to the base and connected with the magnet, and a rod connecting the diaphragm and circuit breaker.

8. In an electrical horn of the class described, the combination with a case, of a magnet contained therein, a diaphragm, a binding post connecting with the magnet, a circuit breaker connected with the opposite side of the magnet, a second binding post and a contact plate for the circuit breaker, and a rod connecting the diaphragm and circuit breaker.

9. In an electrical device of the class described, the combination of a diaphragm, a rod attached thereto, a circuit breaker connected to the opposite end of the rod, a magnet adjoining the rod and electrical connections intermediate the magnet and circuit breaker.

10. An electrical horn of the class described, comprising a diaphragm, a magnet, a circuit breaker and connections intermediate the diaphragm and circuit breaker for imparting movements from the diaphragm to the breaker.

Signed at Bridgeport in the county of Fairfield and State of Connecticut this 24th day of September A. D., 1906.

WILLIAM E. RUSSELL.

Witnesses:

C. M. NEWMAN,  
RUTH RAYMOND.