No. 800,677. PATENTED OCT. 3, 1905.

H. G. PAPE.

SOUND AUGMENTING RECEIVER.

APPLICATION FILED JUNE 16, 1904.

2 SHEETS—SHEET 1.

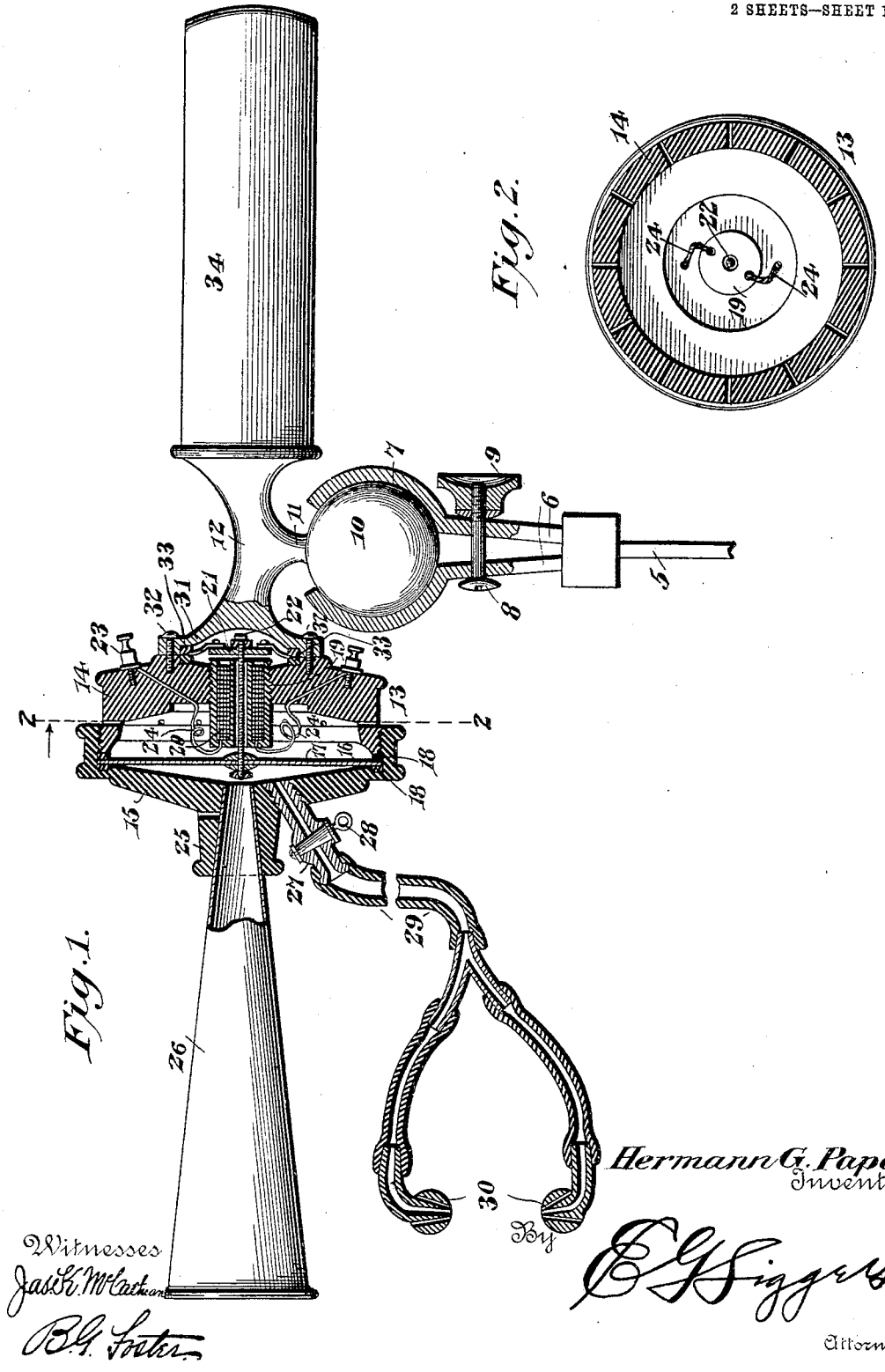


Fig. 1.

Fig. 2.

Witnesses
Jas. K. McCutcheon
B. G. Foster

Hermann G. Pape,
Inventor

By E. G. Siggers
Attorney

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2 SHEETS—SHEET 2.

Fig. 4.

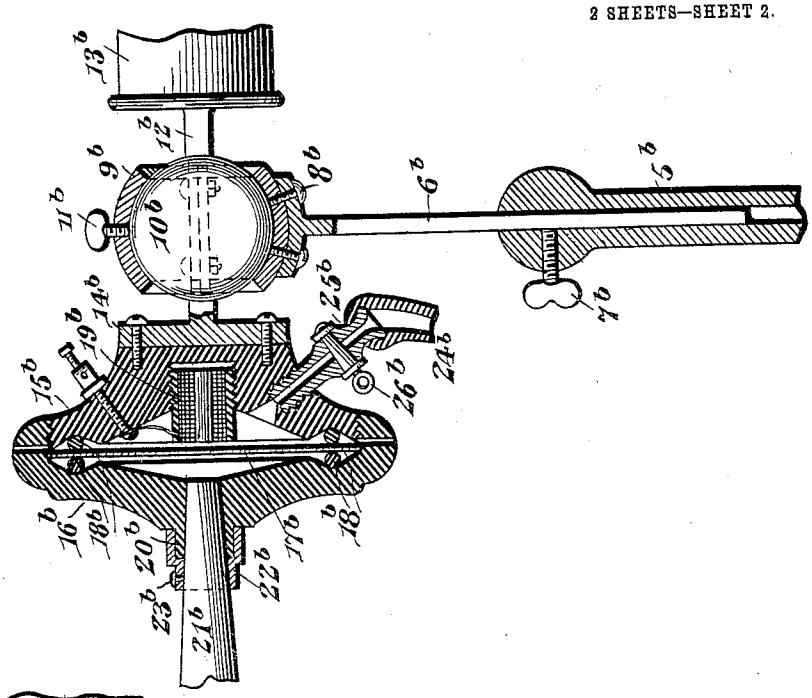
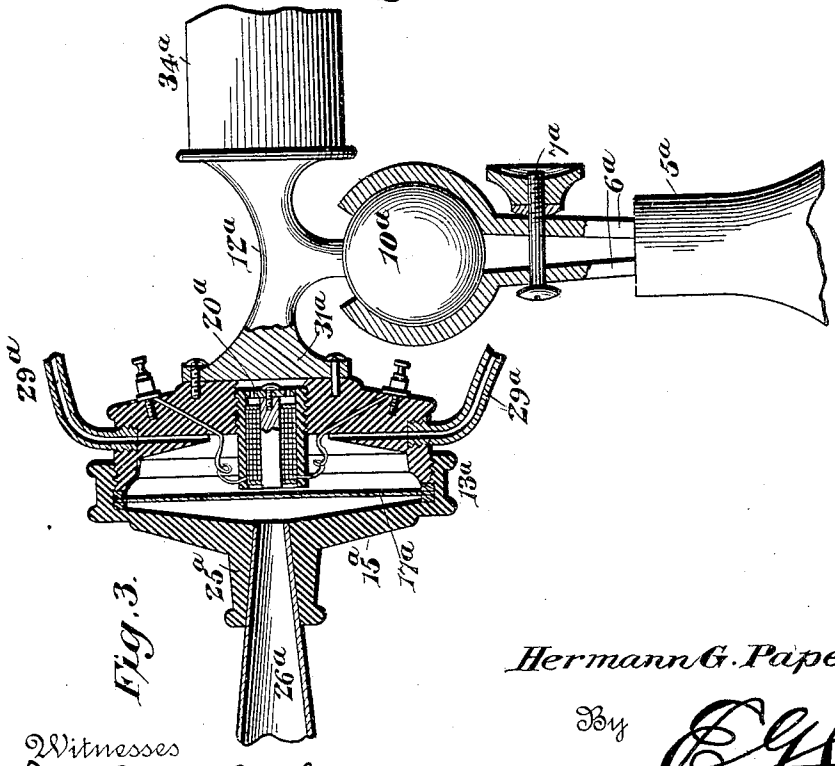


Fig. 3.



Witnesses

Jas. E. McCathran

B. G. Foster

Hermann G. Pape, Inventor

By E. G. Siggers

Attorney

UNITED STATES PATENT OFFICE.

HERMANN G. PAPE, OF NEW YORK, N. Y.

SOUND-AUGMENTING RECEIVER.

No. 800,677. Specification of Letters Patent. Patented Oct. 3, 1905.

Application filed June 16, 1904. Serial No. 212,823.

To all whom it may concern:

Be it known that I, HERMANN G. PAPE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Sound-Augmenting Receiver, of which the following is a specification.

The invention is in the nature of an electrically-operated speaking-trumpet primarily intended for use in communicating between vessels at sea, but capable of application for many other analogous and diverse purposes—as, for instance, a signal or alarm trumpet for automobiles, a speech-delivering device, or the like—all of which will be apparent when the nature of the invention is comprehended.

There are many advantageous features comprised in the invention, among which may be enumerated means for supporting the receiver so that the same may be swung to practically any position desired to direct the emitted sounds toward various points; means for properly balancing the receiver upon its support, so that the same will always be maintained in the position desired and may more easily be manipulated, said balancing means constituting the actuating device by means of which the mechanism is moved; an arrangement of elements whereby the sound is reproduced and will be properly magnified to the fullest extent, and, finally, the employment of mechanism which is simple in structure, easily assembled, and as readily dismembered should the necessity arise.

Three slightly-different embodiments of the invention are illustrated in the accompanying drawings and described in the following specification. The invention, however, is not limited to these structures alone, but the same are open to various changes and modifications, as will be apparent upon an inspection of the claims hereto appended.

In the drawings, Figure 1 is a view, partly in elevation and partly in section, of the preferred embodiment of the invention. Fig. 2 is a sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a sectional view, partly in elevation, of a slightly-modified form of construction; and Fig. 4 is a similar view of still another embodiment.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

Referring first to the embodiment illustrated in Figs. 1 and 2, a supporting-standard 5 is employed carrying at its upper end a socket member that consists of a pair of clamping-sections 6, the socket 7 being formed partially in each section. The sections are movable toward each other, and their movement in the former direction is secured by means of a clamping-bolt 8, connecting the sections and having a thumb-nut 9 threaded thereon and bearing against one of said sections. A ball member 10 is located in the socket 7 and is capable of a partial revolution therein, the said ball having on its upper side a projection 11, carrying a neck 12, disposed transversely of the standard and extending on opposite sides of the projection 11. A receiver 13 of any desired form may be employed, the one illustrated, however, being preferable because of the intensity and clearness of the sound reproduced and emitted thereby, said receiver being illustrated, fully described, and covered by claims in a copending application filed June 16, 1904, Serial No. 212,820. Briefly described, this receiver consists of a casing having a body portion 14, upon which is threaded a cap 15, forming an inclosed chamber 16, across which extends a diaphragm 17. The margin of the diaphragm is located between a pair of gaskets 18, the whole being clamped between the cap 15 and the body of the casing. The rear side of said body is recessed, and an opening 19, the walls of which are threaded, communicates with said recess and with the interior chamber 16. A magnet 20, threaded into the opening 19, projects into the chamber 16 and into the recess, said magnet having a hollow core. An armature 21, yieldingly supported in the recess, has a connection with the diaphragm 17 by means of a rod or shank 22 passing through the hollow core of the magnet. Binding-posts, one of which is shown and designated 23, located upon the exterior of the casing, have electrical connections 24 with the magnet. So far as thus described the receiver is substantially the same as that set forth in the copending application, to which reference has already been made, and no claim is herein made to the same. The cap 15 is provided with an outwardly-projecting centrally-disposed tubular boss 25, the bore thereof tapering inwardly and being in axial alinement with the diaphragm and the magnet.

This boss receives the smaller end of a sound-augmenting device 26, that is in the form of a tapering trumpet which projects beyond the said casing to a very considerable degree. At one side of the boss is located a nipple 27, containing a turning-valve 28 and having attached thereto a tubular connection 29, carrying suitable ear-pieces 30. The neck 12 of the ball member has at one end a cap element 31, covering the open side or recess of the casing and secured to said casing by suitable fasteners, as screws 32. This cap element thus constitutes not only the attaching means between the receiver and the neck, but also a closure for the recess, a covering for the armature, and, furthermore, a clamp member bearing against gaskets 33, located on opposite sides of the armature-supporting means. The end of the neck opposite the cap element is provided with a counterpoise in the form of a weight 34, said weight projecting in a direction opposite to that of the sound-augmenting horn and being preferably disposed in alinement therewith. It is also in the form of a handle, by means of which the receiver can be turned to any position desired. It is thought that the manner of using this structure will be readily understood. A transmitter of any suitable form is connected with the binding-posts 23, thereby placing the magnet in circuit therewith. Audible sounds produced at or contiguous to the transmitter will be reproduced in the receiver and may be heard by placing the earpieces in the ears and opening the valve 28. It will furthermore be emitted through the horn 26, which will greatly augment or intensify the sound, so that the same can be heard at a comparatively great distance. If it is desired to communicate with a particular point, the receiver is swung by means of the handle or counterweight until the horn extends toward the point desired, whereupon the sounds reproduced in the receiver will be directed to said point. Moreover, the apparatus will maintain its position wherever placed, due partially to the employment of the counterpoise or weight and also to the frictional engagement in the ball-and-socket joint, which engagement is preferably just sufficient to hold the parts against accidental movement, yet permitting the manual operation thereof without the necessity of loosening the clamping-screw. The device may also be employed as a signal or alarm trumpet for automobiles. Thus by attaching an electrically-operated buzzer to the receiver a clear and efficient alarm may be made. Again, the apparatus may be employed in speech-making, the orator employing any ordinary transmitter at his home or some distant point and one or more of the receivers being in circuit with the transmitter and located at the hall or place of assemblage will reproduce the speech with great power and force.

The embodiment illustrated in Fig. 3 is very similar to that already described. A supporting-standard is shown at 5^a and carries at its upper end the clamping-sections 6^a of the socket member, a clamp-bolt 7^a connecting the same. A ball member 10^a has a transversely-disposed neck 12^a, carrying at one end a counterpoise 34^a and at its other end a receiver 13^a. The receiver has a cap 15^a, provided with a centrally-disposed projecting boss 25^a, in which is inserted the smaller end of the sound-augmenting horn 26^a. The diaphragm 17^a is actuated by the core and shell of a magnet 20^a, said core in this instance being solid. The earpieces employed communicate, through tubular connections 29^a, with the interior of the casing, but in this instance on the opposite side of the diaphragm to the sound-augmenting trumpet. The rear side of the casing, however, as in the previous structure, is closed by the cap element 31^a of the neck. The operation of this apparatus is similar to the embodiment illustrated in Figs. 1 and 2, and a description thereof is therefore believed to be entirely unnecessary.

A still simpler form of construction is illustrated in Fig. 4, wherein the standard is composed of telescoping sections 5^b and 6^b, normally held against relative movement by a set-screw 7^b. The upper end of the section 6^b has detachably secured thereto by fasteners 8^b a socket member 9^b, within which is mounted a ball member 10^b, the latter being normally held against movement by a holding-screw 11^b. The ball member 10^b is provided with diametrically opposite projections 12^b, constituting a neck, one of said projections carrying a counterpoise or weight 13^b. The other projection has a cap element 14^b, to which is attached the receiver. Said receiver consists of a casing comprising a body portion 15^b, secured to the cap element and having a cap 16^b screwed thereupon. A diaphragm 17^b extends across the interior of the casing, and the margins thereof are located between yielding rings 18^b, clamped between the body 15^b and cap 16^b. A magnet 19^b, threaded into the rear portion of the body 15^b of the casing, acts upon the diaphragm, and a centrally-disposed projecting boss 20^b receives the usual trumpet 21^b. In this instance an additional holding device for said trumpet consists of a sleeve 22^b, held upon the boss by yielding frictional engagement and secured to the trumpet by a set-screw 23^b. An earpiece has a tubular connection 24^b with the nipple 25^b, that is attached to the casing-body and communicates with the interior thereof on the side of the diaphragm opposite the trumpet. A turning-valve 26^b is located in the nipple. Though there are considerable differences in structure between this last form and the embodiments illustrated in Figs. 1

and 2, it will be apparent that so far as the operation is concerned the two structures are substantially the same, and no description thereof is consequently thought to be necessary.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention. While in the present embodiment of the invention ball-and-socket joints are shown, an inspection of the claims will show that said invention is not limited to this particular form of joint, but the same may be changed and modified to a considerable extent.

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

1. In apparatus of the class described, the combination with supporting means including a fixed member and a movable member supported thereon and having a jointed connection therewith, of a receiver fixed upon the movable member against relative movement with respect thereto and on one side of the joint, said receiver having its axis disposed longitudinally of the movable member; a sound-augmenting trumpet projecting from the receiver and longitudinally of the movable member, and a counterpoise carried by the movable member and located on the opposite side of the joint to the receiver.

2. In apparatus of the class described, the combination with supporting means including a fixed member and a movable member supported thereon and having a jointed connection therewith, of a receiver fixed transversely upon one end of the movable member against relative movement with respect thereto and on one side of the same, a sound-augmenting trumpet projecting from the receiver longitudinally of the movable member, and a counterweight fixed against movement to the movable member on the opposite side of the joint to the receiver, said counterweight and trumpet projecting longitudinally in opposite directions.

3. In apparatus of the class described, the combination with a standard, of a neck located transversely of the standard and having a universal-joint connection therewith, a receiver rigidly secured to one end of the neck, a sound-augmenting trumpet projecting from the other end of the receiver longitudinally of the neck, and a counterweight rigidly carried by the other end of the neck.

4. In apparatus of the class described, the combination with a standard, of a neck located transversely of the standard, a ball-and-socket connection between the neck and standard, a receiver rigidly secured to one end of the neck, a sound-augmenting trumpet projecting from the outer free end of the receiver, and a counterweight rigidly carried by the other end of the neck and projecting longitudinally of said neck in an opposite direction to the trumpet.

5. In apparatus of the class described, the combination with an upright standard having a socket member at its upper end, of a neck located transversely of and over the standard, said neck being provided with a ball located in the socket, a receiver secured to one end of the neck portion in line with the same, and a counterweight carried by the other end of the neck portion in line with the same.

6. In apparatus of the class described, the combination with an upright standard, of a neck portion extending transversely thereof, a ball-and-socket connection between the standard and neck portion, a receiver rigidly carried by one end of the neck portion and having a longitudinally-disposed projecting sound-augmenting trumpet, and a hand-grip carried by and projecting longitudinally beyond the other end of the neck portion, said grip being of sufficient weight to counterbalance the receiver and trumpet.

7. In apparatus of the class described, the combination with an upright standard, of a neck portion extending transversely thereof, a ball-and-socket connection between the standard and neck portion, a receiver rigidly carried by one end of the neck portion and located in line with the same, said receiver being disposed on one side of the ball-and-socket connection, and a counterweight carried by the other end of the neck portion in line with the same and located on the opposite side of the ball-and-socket connection.

8. In apparatus of the class described, the combination with a standard, of a neck portion having a pivotal connection between its ends with the standard and having a cap element located transversely of the same at one end, a receiver rigidly secured to said cap element, and a counterweight carried by the other end of the neck portion.

9. In apparatus of the class described, the combination with a standard, of a neck portion having a ball-and-socket connection between its ends with said standard, said neck portion being provided with a transversely-disposed cap element extending on opposite sides of the neck portion, a receiver secured to the cap element and located in line with the neck portion, and a counterweight connected to the opposite end of the neck portion.

10. In apparatus of the class described, the combination with a receiver comprising a casing having an open side, a magnet located within the casing, a diaphragm, and an armature actuated by the magnet and coöperating

with the diapragm, said armature being located at the open side of the casing, of a support, a counterweight adjustably mounted on the support, and a cap element carried by the counterweight said cap element being attached to the receiver-casing and covering the open side thereof.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERMANN G. PAPE.

Witnesses:
M. J. H. FERRIS,
E. J. HIGGINS.