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SOUND GENERATING DEVICE
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FIG. 1.

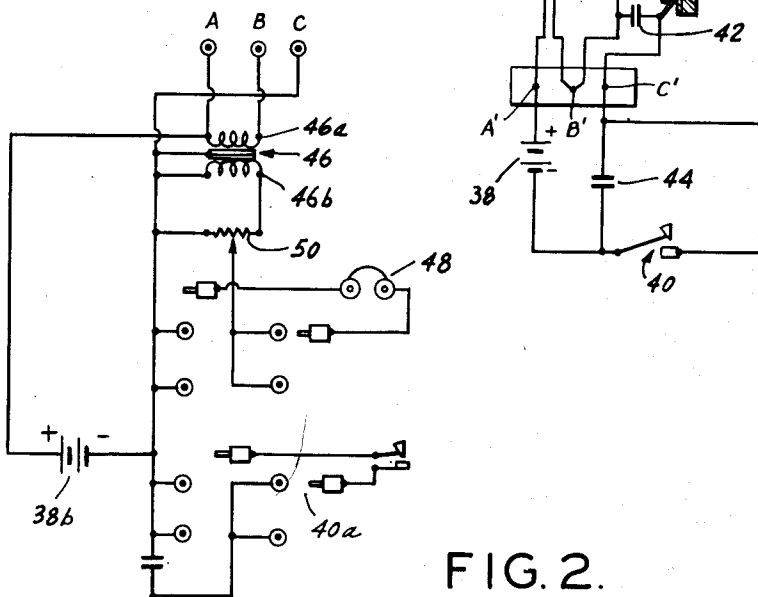
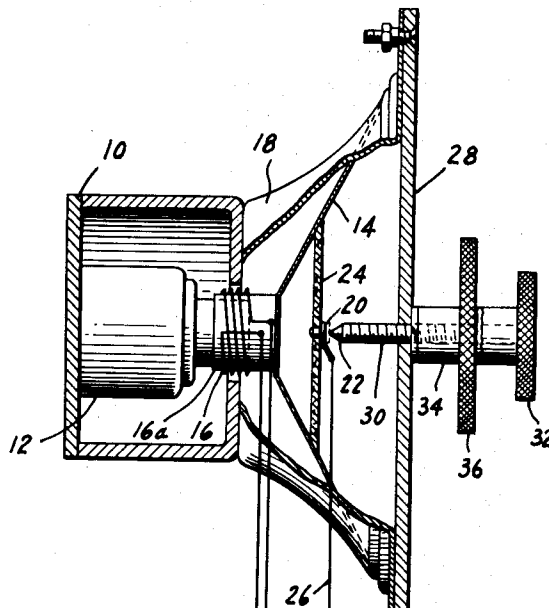


FIG. 2.

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SOUND GENERATING DEVICE

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2 Claims. (Cl. 340—388)

1

This invention relates in general to a sound producing device and more particularly to a sound producing device to be used as a telegraphic code practice instrument.

The telegraphic code practice instruments currently in use employ a loud speaker which is energized by a vacuum tube generator.

It is an object of the present invention to provide an improved audible signal device or telegraphic code practice instrument wherein an audible signal is simultaneously generated and projected by the speaker, and which is operative from a small battery source.

It is a further object of the invention to provide a telegraphic code practice instrument which is simple and economical in construction and operation. Further objects and advantages of my invention will be obvious from the description herein.

The invention in general consists of a sound reproducer of the type generally used for the reproduction of audio frequencies, and includes therewith a pair of electrical contactors susceptible to being opened and closed simultaneously with movement of the sound producer cone.

The invention accordingly comprises features of construction, combination of elements and arrangement of parts, which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the drawings, wherein:

Figure 1 is a view partly in section of my invention including the electrical circuit employed therewith.

Figure 2 is an alternate electrical circuit which may be employed with my invention, and which incorporates provisions for earphones.

Referring more particularly by numerals to the drawing, and especially to Figure 1, there is shown in section a housing 10, enclosing a conventional type permanent magnet 12, for actuating a speaker cone 14, which is provided with a voice coil 16, mounted on a form 16a, which form 16a encircles a portion of the permanent magnet 12.

Cone 14 is preferably retained in position by an apertured frame work 18 (apertures not shown) which is secured to housing 10.

A pair of electrical contactors comprising a first contactor 20 and a second contactor 22 are

2

arranged to be opened and closed as cone 14 is caused to move inwardly and outwardly with reference to the permanent magnet 12. Contactor 20 is secured to cone 14 by means of a diaphragm 24 and is provided with a flexible wire 26 for connection in an electrical circuit to be hereinafter described. Contactor 20 thus follows the movement of cone 14.

Contactor 22 is positioned to normally engage contactor 20 by means of a crossmember 28 secured to frame work 18. Contactor 22 is further made adjustable by means of a screw thread 30 which may be turned by a knob 32. Locking means for retaining the position of contact 22 is provided by a locking nut 34 which may be tightened by means of knob 36.

An electrical circuit for operating the sound producers is illustrated therewith in Figure 1 and comprises a battery 38 in series with voice coil 16, closed contactors 20, 22, and a key 40 (shown in open position). A condenser 42, is placed electrically across contactors 20, 22 and a further condenser 44 is placed electrically across the contactors of key 40. Condensers 42 and 44 act to eliminate electrical arcing at the point of contact between contactors 20 and 22, and across the contacts of key 40 as the electrical circuit is opened and closed at the respective points.

Referring to the electrical circuit and the sound producing device of Figure 1, operation of the sound producer is effected in the following manner:

Battery 38 supplies a source electrical current of proper electrical polarity, which with key 40 depressed, or in closed contact position, permits current to flow through voice coil 16, contactor 20, contactor 22, conductive crossmember 28, and key 40. As the current thus flows through the electrical circuit described, a magnetic field is produced about voice coil 16 causing the voice coil and cone to be drawn in toward the permanent magnet 12, positioning contactor 20 out of contact with contact 22 and thus stopping the flow of current. As the flow of current is stopped, the magnetic field collapses, the voice coil 16, returns to its original position again placing contactors 20 and 22 in contact and causing current to again flow through the electrical circuit heretofore described, repeating the previously described cycle. With the key in open position the sound producer is inoperative.

By adjustment of the spacing between contactors 20 and 22, it is possible to vary the frequency with which the cone moves in and out

3

relative to the permanent magnet, providing the desired audio frequency generation and projection.

An alternate electrical circuit shown in Figure 2 may be connected at points A', B', C' by means of corresponding terminals A, B and C, to permit the use of earphones in addition to the sound producing device described.

The alternative circuit of Figure 2 with battery 38b corresponding to battery 38 and key 40a corresponding to key 40 includes a transformer 46, with a primary winding 46a placed across the voice coil and a secondary winding 46b of proper impedance to match the type of phones 48 to be used with the sound producing device. Volume control is provided by a means of a potentiometer 50 which is placed directly across secondary 46b and which operates as a voltage divider.

Operation of the sound producing device is akin to operation with the use of the electrical source of power employed in Figure 1, transformer 46 obtaining a voltage across and a current through winding 46a at the same frequency as the current passing through voice coil 16. This current is in turn inductively coupled to secondary 46b for application to the earphones 48.

Having thus described and disclosed my invention so I intend that the appended claims be read and interpreted within the spirit and scope of the invention.

What is claimed is:

1. A sound producer including a combination, a frame, a permanent magnet secured to said frame, a cone secured at the peripheral edge of the base thereof to said frame, a voice coil secured to cone at the apex thereof and moveable toward said permanent magnet upon passage of a current of predetermined polarity through said voice coil, a first contactor secured to said cone, a second contactor, a threaded member secured

4

to said contactor, a cross member secured to said frame in a plane perpendicular the apex of said cone, and adapted to receive said threaded member, means for locking said second contactor respective said cross member, said contactors being in electrical circuit with said voice coil and adapted to be opened upon movement of said voice coil toward said permanent magnet.

2. A sound producer including a combination, a frame, a permanent magnet secured to said frame, a cone secured at the peripheral edge of the base thereof to said frame, a voice coil secured to cone at the apex thereof and moveable toward said permanent magnet upon passage of a current of predetermined polarity through said voice coil, a first contactor secured to said cone, a second contactor, a threaded member secured to said contactor, a cross member secured to said frame in a plane perpendicular the apex of said cone, and adapted to receive said threaded member, means for locking said second contactor respective said cross member, said contactors being in electrical circuit with said voice coil and adapted to be opened upon movement of said voice coil toward said permanent magnet.

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