Nov. 21, 1939. J. A. ROSTRON 2,180,881

ALTERNATING CURRENT BUZZER

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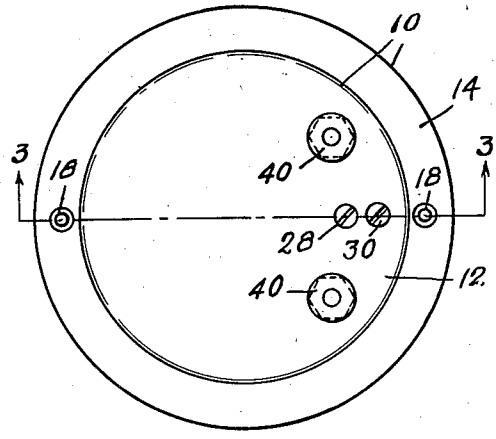


Fig. 1.

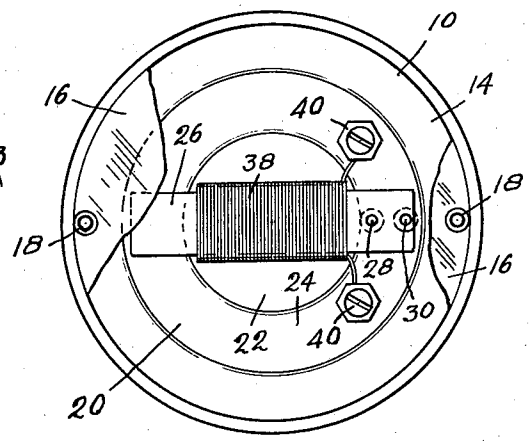


Fig. 2.

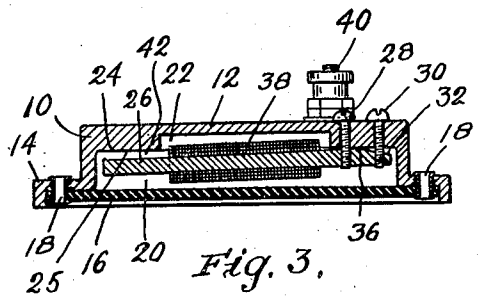


Fig. 3.

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ALTERNATING CURRENT BUZZER

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3 Claims. (Cl. 177—7)

This invention relates to electric buzzers intended for operation by alternating electric current to produce a sound the frequency of which is dependent upon the frequency of the current. The buzzer is especially intended for use in houses to operate from the bell ringing transformer that is usually a part of the equipment of an electrically equipped house.

One of the objects of the present invention is the provision of a buzzer that is exceptionally simple in construction and inexpensive and is free from contacts and springs.

A further object of the invention is the provision of a buzzer wherein the vibrating element is relatively massive and carries the magnetizing coil that when energized causes the element to vibrate.

Another object of the invention is the provision of a buzzer having such construction that the compartment containing the vibrating element can be tightly sealed at the factory.

A further object is generally to improve the construction of electric buzzers.

Fig. 1 is a plan view of the buzzer embodying the present invention.

Fig. 2 is a reverse view of the buzzer of Fig. 1 with the bottom cover plate partly broken away to illustrate the vibrating element.

Fig. 3 is a sectional view taken along line 3—3 of Fig. 1.

The buzzer comprising the present invention comprises a casing 10 composed of magnetic material, as cast iron or a steel stamping, and preferably although not necessarily, is of circular configuration. The casing includes an upstanding boss 12 which has an annular flange 14 outstanding at its bottom edge. The flange 14 is internally recessed to receive a cover plate 16 of any suitable material, preferably non-magnetic, the cover plate being secured in position by hollow eyelets 18 which provide passages in which attaching screws, not shown, may be passed to secure the buzzer to a support. The boss 12 is provided with an internal recess 20 herein shown as circular in configuration and a deeper cylindrical central recess 22, thereby providing an annular ledge 24 surrounding the recess 22.

A vibrating element is located within the recess 20. Said element comprises a magnetic bar 26 suitably of rectangular cross section and formed conveniently of what is known as cold rolled steel. Suitable dimensions for the bar for operation on sixty cycle alternating current is a length of 2", a width of ½" and a thickness of $\frac{1}{16}$". These dimensions can be varied, however. A bar of this material of the width and thickness and short length herein employed is not commonly considered springy material but has been found to be well suited for the present purpose. The bar is longer than the diameter of the recess 22 so that it overlies diametrically opposite portions of the annular ledge 24. Said bar is secured to the ledge at one end by a pair of clamping screws 28 and 30 which are loosely extended through the boss 12 and are screw-threaded into the end of the bar. The end of the bar is tapered as at 32 so as to provide a fulcrum 36 which bears on the ledge 24 intermediate the screws 28 and 30. Thus by tightening one screw and slackening off the other screw the spacing between the free end of the bar and the diametrically opposite part 25 of the ledge 24 can be adjusted while at the same time the clamped end of the bar is held rigid.

The bar carries a magnetizing coil 38 the terminals of which are connected to the two binding posts 40 upstanding from the upper face of and insulated from the boss 12 and by which the coil can be connected to a source of alternating current power.

Since the casing 10 and the bar 26 are of magnetic material a closed magnetic circuit is provided for the coil except at the air gap 42 between the free end of the bar 26 and the overlying portion 25 of the ledge 24. Thus the free end of the bar 26 is attracted toward the ledge at each half cycle of the current wave and thus is caused to vibrate at twice the frequency of the alternating current. The dimensions of the bar and of the coil are adjusted so that good vibration is obtained. The amplitude of vibration is intended to be sufficiently great to cause the free end of the vibrating bar to strike against the part 25 of the ledge 24 at each vibration so as to produce a distinct sound over and above the sound produced by the vibration per se of the bar when the device is operated. The adjusting screws 28 and 30 permit ready adjustment of the length of the air gap 42 either for initial adjustment of the device at the factory or for subsequent adjustment for good operation on a different voltage.

I claim:

1. An electric buzzer comprising a casing of magnetic material closed at the top and open at the bottom and provided with opposed abutments confronting the bottom opening, a resilient vibratory bar of magnetic material having one end

clamped to one abutment and having its freely vibratory end overlying and adapted to vibrate against another part of said abutment by reason of its own resiliency, a magnetizing coil surrounding and carried by and vibrating with said bar between said abutments, and a cover plate closing the bottom opening of said casing and attached thereto.

2. An alternating current buzzer comprising a casing of magnetic material having opposed ledges and an intervening recess, a resilient vibratory bar of magnetic material traversing said recess and having its one end clamped upon one ledge and its other end closely spaced from said other ledge, and a magnetizing winding surrounding and carried by and vibrating with said bar and at least partly located in said recess.

3. An alternating current buzzer comprising a cylindrical casing of magnetic material having an annular ledge surrounding a cylindrical recess, a vibratory bar of magnetic material diametrically bridging said recess and having means clamping one end of said bar upon a part of said annular ledge and having the opposite freely vibratory end of said bar closely confronting and adapted to vibrate against the diametrical opposite side of said ledge, and a magnetizing coil surrounding and carried by and vibrating with said bar in said recess.

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