Dec. 15, 1936. P. O. DERRINGER 2,064,418

ELECTRIC VIBRATOR

Filed Aug. 20, 1935

Fig. 1.

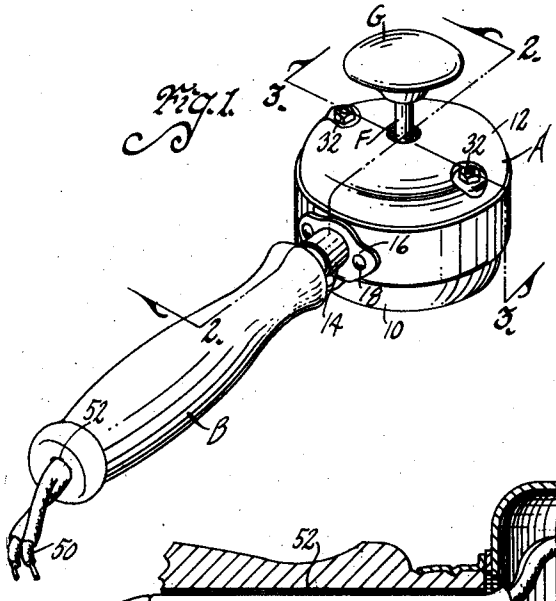


Fig. 2.

Fig. 4.

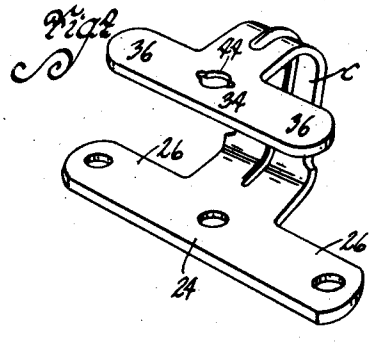
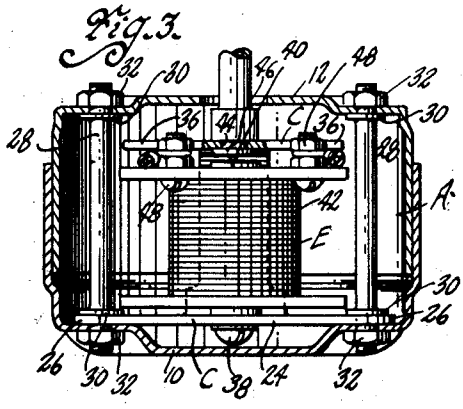


Fig. 3.



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ELECTRIC VIBRATOR

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3 Claims. (Cl. 128—52)

An object of my invention is to provide an electric vibrator of very simple construction, yet which operates efficiently for vibrating various vibration applicators, which can be applied to the human body for the purpose of promoting health.

A further object is to provide a magnetic type of vibrator which operates efficiently on alternating current without any contacts or commutators to cause mechanical trouble.

A further object is to provide a magnetic vibrator having a single stamping, which serves as an electromagnet support, armature, magnetic circuit transmission means and applicator support, this single stamping being itself supported within a casing, so that the electromagnet is thereby supported without any independent connection of its own to the casing.

Still a further object is to provide a U-shaped stamping with an electromagnet secured to one arm thereof and projecting toward the other one, and the other one thereby acting as an armature, a projecting stud being connected with the armature and arranged for interchangeable connection of various vibration applicators thereto.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my electric vibrator, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view of an electric vibrator embodying my invention.

Figure 2 is an enlarged, sectional view on the line 2—2 of Figure 1.

Figure 3 is an enlarged, sectional view on the line 3—3 of Figure 1; and

Figure 4 is a perspective view of a stamping of the invention, which serves several purposes, which will hereinafter appear.

On the accompanying drawing, I have used the reference character A to indicate generally a casing, and B a handle therefor. The casing A comprises a dish-shaped bottom part 10, and a somewhat similarly shaped upper part 12.

The parts 10 and 12 telescope together and the handle B is secured to the casing by a ferrule 14 having attaching feet 16. These feet may be secured as by rivets 18 to the casing part 10.

The vibrator mechanism comprises a stamping C, an electromagnet E, and an applicator support F.

On the drawing, I have shown a knob top type applicator G and a vacuum cup type H, which are interchangeably connected with the support F by means of screw-threaded studs 20 extending from the applicators and coactible with a threaded socket 22 of the support F.

The stamping C is U-shaped in end elevation as shown in Figure 2; one arm thereof being indicated at 24 and provided with a pair of perforated extensions 26 adapted to serve as supports for the stamping C.

Bolts 28 extend through the perforations of the extensions 26 and through perforations in the casing parts 10 and 12 for holding the parts assembled. These bolts are provided with up-set flanges 30 and nuts 32 for retaining the casing parts relative to each other, and the stamping C relative to the casing.

The other arm of the stamping C is indicated at 34 and it has armature extensions 36 adapted for increasing the magnetic pull of the solenoid E on the arm 34, the arm acting as an armature.

Secured to the arm 24 as by a screw 38 is an electro magnet core 40. It projects toward the armature 34 and has thereon a winding 42.

It is obvious that energization of the winding 42 will magnetize the core 40 for attracting the armature 34.

The vibrator is designed specifically for alternating current, so that the successive alternations of current will cause successive increases in the magnetic strength of the core 40, thus vibrating the armature 34 against the inherent tendency of the armature to remain in the position of Figure 2, in which position it is originally stamped.

The lower end of the vibration applicator support F is shouldered as shown in Figure 3 to extend through a perforation 44 of the armature 34. The support F is then riveted as indicated at 46 to retain it in position, the perforation 44 being other than round so that when the support F is riveted in position, it can not be loosened and rotated by the vibration of the device.

The stamping C may be of brass or other resilient material, although I preferably form it of steel or the like, so that it will provide a magnetic path from the lower end of the core 40 to the armature 34 and the support F. If it is made of brass or the like, then the electromagnet will cause successive attractions of the support F, which would necessarily have to be of magnetic material, but not as efficiently as when the stamping is made of steel or the like,

thus providing a magnetic path so as to minimize the air gap between the armature **34** and the upper end of the core **40**. This gap is made as small as possible without making it so small, however, that the riveted end **46** of the support F will rattle against the core when the electro magnet E is energized.

For the winding **42**, I provide terminals **48**, with which a supply cord **50** may be connected, the cord preferably extending through a bore 52 of the handle B and the usual current supply connector (not shown) being provided on the outer end of the cord **50**.

Various applicators, such as a knob G of wood or the like or a vacuum cup H, formed of rubber or other resilient material may be provided, and these are quickly interchangeable relative to the support F.

In operation, the applicators are merely held against the face or other part of the body to impart vibrations thereto.

By providing a magnetic type of vibrator as disclosed, maximum vibration energy can be imparted to the user without the use of electric motors or other means to operate vibrating mechanisms.

I am thus able to provide a very simple vibrator and this is especially true by making the single stamping C serve as a support for the electro magnet and for the applicator support, the stamping then being secured within the casing, and thereby supported by the casing, without other parts or securing means being necessary for the electromagnet and the support F.

The parts can be inexpensively manufactured and easily assembled in a minimum of time, thus making it possible to produce a very inexpensive and efficient vibrator.

Some changes may be made in the arrangement and construction of the various parts of my electric vibrator without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In an electric vibrator, a single supporting member of magnetic metal comprising a stamping of C-shape having diverging arms on the terminal ends of the arms of the supporting member, a casing, the diverging arms on one terminal arm of the supporting member being secured at their outer ends thereto, an electromagnet supported by said last mentioned terminal end and an applicator secured to the other terminal end of said supporting member, said last terminal end being adjacent the portion of said electromagnet opposite the supported end thereof.

2. In an electric vibrator, a single supporting member of magnetic metal comprising a stamping of C-shape having diverging arms on the terminal ends of the arms of the supporting member, a casing, the diverging arms on one terminal arm of the supporting member being secured at their outer ends thereto, an electromagnet supported by said last mentioned terminal end and an applicator secured to the other terminal end of said supporting member, said last terminal end being adjacent the portion of said electromagnet opposite the supported end thereof, the C-shaped portion of said member having a central rib formed therein to stiffen said member against excessive vibration.

3. In an electric vibrator, a casing, an armature formed of a single piece of sheet metal bent U-shape, one arm thereof having a widened portion, means for securing the terminal ends of said widened portion to said casing, a core secured to said arm of said armature between said terminal ends and projecting toward and terminating adjacent the other arm of said armature and an applicator carried by said other arm, said casing having an opening adjacent said other arm through which said applicator extends to a point exterior of said casing.

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