June 9, 1936. W. W. GARSTANG 2,043,746

CARTRIDGE TYPE VIBRATOR

Filed April 1, 1935

Fig. 1.

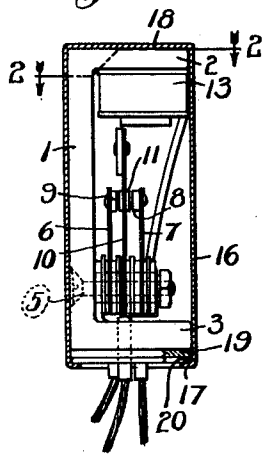


Fig. 2.

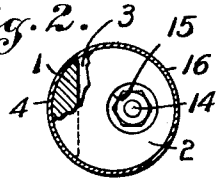


Fig. 3.

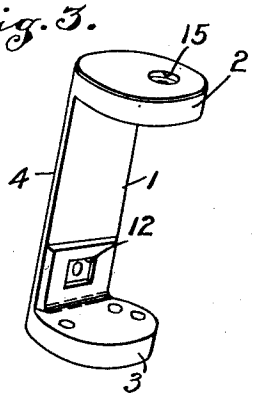


Fig. 4.

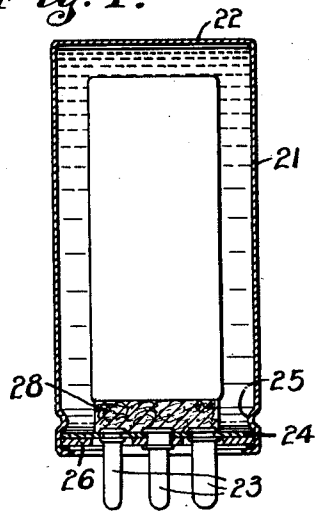


Fig. 5.

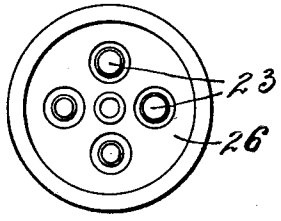
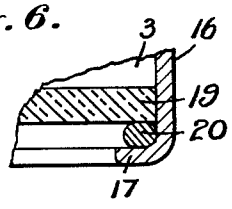


Fig. 6.



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CARTRIDGE TYPE VIBRATOR

William W. Garstang, Indianapolis, Ind.

Application April 1, 1935, Serial No. 14,091

6 Claims. (Cl. 200—90)

My invention relates to improvements in vibrators and particularly to that type of vibrator used in connection with radios and in connection with power units for radios adapted to be mounted in automobiles and the like.

One of the objects of my invention is to provide a vibrator which is enclosed in a suitable metallic cartridge type casing in order that the vibrator may be shielded from outside influences and protected from dust and dirt. In view of the fact that vibrators of the type above mentioned require extremely delicate adjustment, and it is quite essential that sparking be reduced to the minimum, it is desirable that the contact points and the associated parts of the vibrator shall be kept clean and free from dust particles. To this end I have constructed a vibrator which is enclosed in a cartridge type casing and which may, if desired, be hermetically sealed.

A further object of my invention is to provide a vibrator which may be surrounded by suitable sound deadening material and if desirable this sound deadening material may take the form of liquid such as oil or the like.

For the purpose of disclosing my invention I have illustrated certain embodiments thereof in the accompanying drawing, in which—

Fig. 1 is a side elevation of a vibrator embodying my invention, the casing being shown in section;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the vibrator base;

Fig. 4 is a side elevation of the vibrator cartridge mounted in a sound-proof casing having a suitable plug-in terminal;

Fig. 5 is a bottom plan view of the structure illustrated in Fig. 4; and

Fig. 6 is a detail of the closure member for the cartridge.

In the embodiment of the invention illustrated I provide a base which preferably constitutes a longitudinally extending portion 1 having at its opposite ends a pair of transversely extending ears or arms 2 and 3. The outside or outer periphery of the portion 1 is preferably rounded as at 4 and the two arms 2 and 3 are preferably disc-like as shown in Fig. 3. The longitudinal portion 1 has extending therethrough a suitable post in the form of a screw 5, the head of which is countersunk, and mounted on this post are the vibrator contact fingers 6 and 7 which have mounted thereon suitable contacts 8 and 9. These fingers are preferably resilient and between the fingers is the vibrating reed 10 carrying an armature at its outer or free end and having contacts 11 on its opposite faces for engagement with the contacts 8 and 9. The fingers 6 and 7, as well as the reed 10, are suitably insulated from one another by insulating washers interposed therebetween and they are insulated from the post 5 by insulated bushing which is preferably exteriorily at least rectangular and seats in a rectangular recess 12 in the base portion 1.

The bottom portion 3 of the base is provided with suitable openings through which the different leads for the fingers and reed may be taken. The electro-magnet 13 for influencing the armature of the reed 10 is mounted on the inner face of the top member 2 of the base. This electro-magnet is preferably cylindrical and is of such dimension that it will nowhere project beyond the periphery of the disc-like arm 2. The electro-magnet 13 is secured upon its arm by means of a suitable bolt or screw 14 which is countersunk in a recess 15 in the top of the arm.

This structure is inserted in a cylindrical casing 16 which is preferably formed of metal, aluminum being desirable, and in order to retain the vibrator in this casing 16 the open end of the casing is spun over, as at 17, the arm 3. It will be noted that the arm 2, when the vibrator is inserted in the casing, is in contact with the closed end 18 of the casing so that relative movement between the casing and the vibrator, during the spinning operation, is prevented.

If desired an insulating washer 19 may be interposed between the spun-over edge 17 and the arm 3 and between this insulating washer and the flange 17 is interposed a resilient sealing ring 20. The different leads for the contacts are brought through this washer, the openings being sealed in any suitable manner. This arrangement hermetically seals the vibrator in the cartridge and not only prevents the entrance of dirt and dust but also prevents the entrance of moisture.

The prevention of the entrance of moisture renders this structure particularly advantageous where it is desired to mount the vibrator in a sound-proof enclosed casing. As illustrated in Fig. 4, such a casing may take the form of a cylindrical closure member 21, likewise preferably formed of aluminum and having an integral end 22. The cartridge, as a unit, may be inserted in this casing and the terminals of the vibrator con-

nected with prongs or plug terminals 23. These plug terminals are mounted on an insulating disc 24 fitting within the casing and held against displacement in one direction by an internal bead 25 thrown in the casing and against displacement in the other direction by a metallic head 26 having openings therein which are large enough to permit the projection therethrough of the plugs 23, without coming in contact therewith. This head 26 is secured in position by spinning or turning down the edge of the casing 21 over the edge of the disc 24, a sealing gasket being interposed between the disc and the flange. Suitable sound deadening material may be interposed between the walls of the casing and the walls of the cartridge and the cartridge is preferably supported on the disc 24 by a sound deadening washer 28 which may take the form of felt or other desired material. If desired, and in view of the fact that the cartridge containing the vibrator is hermetically sealed, this may be readily done, the sound deadening material surrounding the cartridge and within the casing may take the form of a liquid such as oil or the like or a jelly like or semi-liquid material.

I claim as my invention:

1. An article of manufacture consisting of a vibrator comprising a base having an elongated intermediate member and a pair of arms at the end of said member extending at right angles to the member, an electro-magnet mounted on the inner face of one of said arms and within the periphery of said arm, a vibrating reed and associated contact fingers mounted at the opposite end of said base and having its free end within the influence of said magnet, and an enclosing metallic tubular cartridge enclosing said base and associated parts closed at one end and having a contour conforming to the periphery of said arms and in intimate contact with said base and having the edges of its open end turned over one of the arms to form a flange between which and the closed end of the cartridge the base is held against mechanical displacement.

2. An article of manufacture consisting of a vibrator comprising a base having an elongated intermediate member, the outer surface of which is rounded, and a pair of disc-like arms at the end of said base extending at right angles to the member, an electro-magnet mounted on the inner face of one of said arms and within the periphery of said arm, a vibrating reed and associated contact fingers mounted on the opposite end of said arm and having its free end within the influence of said magnet, and a cylindrical cartridge casing enclosing said vibrator closed at one end and in intimate contact with said base and having the edge of its open end turned over one of the arms to form a flange between which and the closed end of the cartridge the base is held against mechanical displacement.

3. An article of manufacture consisting of a vibrator comprising a base having an elongated intermediate member and a pair of arms at the end of said member extending at right angles to the member, an electro-magnet mounted on the inner face of one of said arms and within the periphery of said arm, a vibrating reed and associated contact fingers mounted at the opposite end of said base and having its free end within the influence of said magnet and an enclosing metallic tubular cartridge surrounding said vibrator closed at one end and having a contour conforming to the shape of said arms in intimate contact with said base, and having an inturned flange at its open end, a closure disc interposed between said flange and one of the arms of the vibrator, and a sealing gasket interposed between said flange and disc whereby said vibrator is hermetically sealed in said cartridge.

4. An article of manufacture consisting of a vibrator comprising a base having an elongated intermediate member, and a pair of arms at the end of said member extending at right angles to the member, an electro-magnet mounted on the inner face of one of said arms and within the periphery of said arms, a vibrating reed and associated contact fingers mounted at the opposite ends of said base and having its free end within the influence of said magnet, a tubular metallic enclosing cartridge closed at one end and having a contour conforming to the shape of said arm enclosing said electro-magnet and in intimate contact with said base and having the edge of its open end turned over one of said arms to form a flange between which and the closed end of the cartridge the base is held against mechanical displacement, a metallic case surrounding said enclosed vibrator and sound deadening means interposed between the walls of the cartridge and the metallic casing.

5. An article of manufacture consisting of a vibrator comprising a base having an elongated intermediate member and a pair of arms, the ends of said member extending at right angles to the member, an electro-magnet mounted on the inner face of one of said arms and within the periphery of said arm, a vibrating reed and associated contact fingers mounted at the opposite ends of said base and having its free end within the influence of said magnet and enclosing a metallic tubular cartridge closed at one end surrounding said vibrator and having a contour conforming to the contour of said arms in intimate contact with said base and having the edge of its open end turned over to form a flange, a closure disc interposed between said flange and one of the arms of said base and a sealing gasket interposed between said flange and disc, an enclosing casing surrounding said cartridge having the walls thereof spaced from said cartridge and filled with liquid to provide sound deadening material surrounding said cartridge and means for liquid sealing said casing.

6. An article of manufacture consisting of a vibrator comprising a base having an elongated intermediate member and an arm at the ends of said member extending at right angles to the member, an electro-magnet mounted on the inner face of said arm and within the periphery of said arm, a vibrating reed and associated contact fingers mounted at the opposite end of said base and having its free end within the influence of said magnet and enclosing a metallic tubular cartridge closed at one end and having a contour conforming to the periphery of said arm and in intimate contact with said base, and a closure disc for the open end of said cartridge, the edges of said cartridge being turned over onto said disc to maintain the same in position.

WILLIAM W. GARSTANG.