

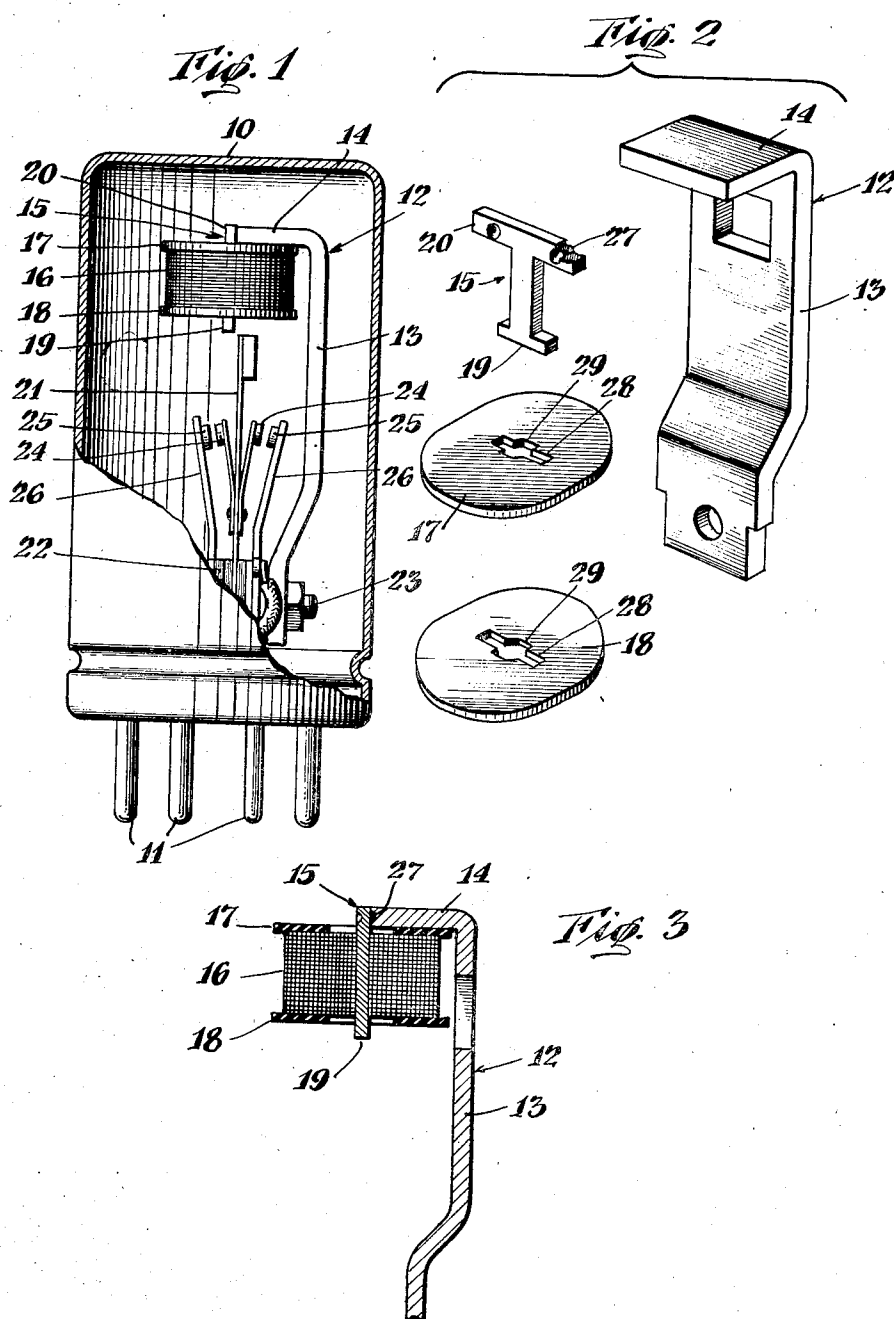
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R. J. AUST

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METHOD OF MAKING VIBRATORS

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BY

INVENTOR.
Robert J. Aust
Robert J. Aust
ATTORNEY

UNITED STATES PATENT OFFICE

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METHOD OF MAKING VIBRATORS

Robert J. Aust, Indianapolis, Ind., assignor to
P. R. Mallory & Co., Inc., Indianapolis, Ind., a
corporation of Delaware

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1 Claim. (Cl. 29—155.5)

This invention relates to a method of making vibrators.

An object of the invention is to improve vibrator construction and to improve and simplify the method of making and assembling vibrators.

Other objects of the invention will be apparent from the following description and accompanying drawing taken in connection with the appended claim.

The invention comprises the features of construction, combination of elements, arrangement of parts, and methods of manufacture and operation referred to above or which will be brought out and exemplified in the disclosure hereinafter set forth, including the illustrations in the drawing.

In the drawing:

Figure 1 is a side view, partly in section, of a vibrator embodying features of the present invention;

Figure 2 is a view of certain parts of the vibrator illustrating the method of assembly; and

Figure 3 is a section through a sub-assembly forming part of the vibrator.

A feature of the present invention resides in the vibrator frame construction and method of assembly wherein a separate core or pole piece of paramagnetic material, such as iron, is used upon which the vibrator electromagnetic winding is directly wound after which the pole piece is assembled with the remainder of the vibrator frame in a manner which will be made evident by the following description.

While a preferred embodiment of the invention is described herein, it is contemplated that considerable variation may be made in the method of procedure and the construction of parts without departing from the spirit of the invention. In the following description and in the claims, parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the drawing, Figure 1 shows a vibrator comprising a metal can 10 carrying projecting connecting terminals 11 and containing the vibrator mechanism 12. The mechanism comprises a frame 13 of paramagnetic material, such as iron, having a substantially right angle bend at one end thereof to provide a transverse portion 14. A T-shaped pole piece 15 is welded against the outer end of transverse portion 14, the cross arm 20 of the T being laid along and against the end of portion 14.

The coil 16 of the vibrator is wound around

the body of the pole piece and is confined by two end discs 17 and 18, preferably of insulating material. The base 19 of the T forms the pole face of the electromagnet.

5 The remainder of the vibrator may be of standard and well known construction and may comprise, for example, a vibratory reed 21 clamped to the base of frame 13 by stack assembly 22 comprising insulating sheets clamped together by bolt 23 extending through an aperture in the frame. The vibrator reed carries contacts 24 which co-operate with stationary contacts 25 mounted on contact support arms 26 which are also clamped in the stack assembly.

10 Figures 2 and 3 illustrate in greater detail the preferred method of assembly. As shown in these figures T-shaped pole piece 15 is provided with a pair of welding projections 27 on the cross arm 20. End discs 17 and 18, which may preferably be slightly oval in shape to correspond to the shape of the finished coil are each provided with central transverse slots 28, longer than base 19 of the T so that the discs may readily be slipped over the base 19 and on to the body portion of the pole piece. Slots 28 are notched at their central portion to provide slots 29 crossing slots 28.

15 The coil assembly is produced by first slipping end discs 17 and 18 over the body of the pole piece and then rotating them 90° to bring notches 29 into engagement with the edges of the body portion of the pole piece with one disc at one end and the other disc at the other end of the body portion. Coil 16 of insulated wire is then wound directly upon the body portion of the pole piece. This may suitably be done in an automatic winding machine which holds the pole piece and rotates it. If desired a protective covering of insulating tape or the like may be placed over the outside of the coil after it is wound.

20 The pole piece 15, carrying wire winding 16 and end discs 17 and 18 is now placed against the free end of portion 14 of the frame and the parts are clamped between welding electrodes and welding current is applied to weld the pole piece directly to the frame. During welding projections 27 are fused and the pole piece is brought into direct abutment with the frame to form an integral frame unit as shown in Figure 3.

25 Heretofore it has been customary in making vibrators of this type to bend the frame into such shape as to provide a pole piece comprising part of the frame. The coil was then separately produced by winding the wire upon a hol-

low bobbin. The bobbin was then slipped over the pole piece to complete the assembly.

The present invention makes possible the elimination of the bobbin and also enables the winding to be brought closer to the body of the pole piece. This produces more effective coupling of the coil and the core or pole piece and improves voltage performance of the vibrator mechanism enabling starting and operation at lower voltages.

By the present invention it is also possible to provide a wider pole face than was heretofore possible.

The invention also simplifies the construction of the frame and reduces the number of forming operations required in making the frame.

While the present invention, as to its objects and advantages, has been described herein as carried out in specific embodiments thereof, it is not desired to be limited thereby but it is intended to cover the invention broadly within the spirit and scope of the appended claim.

What is claimed is:

The method of making an electromagnetic vibratory interrupter magnet assembly including the following steps: bending over an end of an

5 elongated piece of strip metal stock at substantially right angles to the main body thereof, threading a pair of end discs onto the body of a pole piece having a straight body portion with a long cross-arm integrally formed at one end thereof and a shorter cross-arm integrally formed at the other end thereof, said end discs having central slots therein longer than the shorter cross-arm of said pole piece, said slots being 10 notched at their central portion to provide shorter cross slots, said longer slots being aligned with the shorter cross-arm of the said pole piece when said discs are threaded thereover, then rotating said discs through 90° to bring said shorter cross slots into engagement with the edges of the body portion of said pole piece near its ends, then 15 winding an insulated wire directly onto the body of said pole piece, and then welding the cross-arm of the pole piece against the free end of the bent over portion of said piece of strip metal stock with the body of said pole piece extending in the same direction as the body of said strip metal stock in spaced parallel relation thereto.

ROBERT J. AUST.