Aug. 22, 1950 R. J. AUST ET AL 2,519,730

VIBRATOR SPRING LEAF CONTACT ARRANGEMENT

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Fig. 1

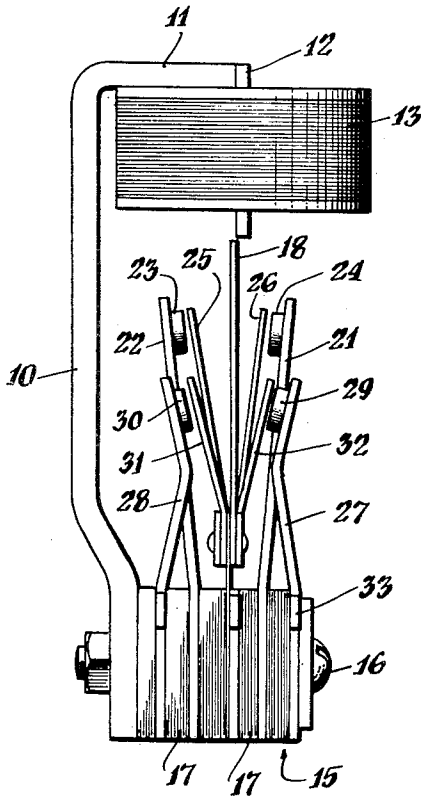
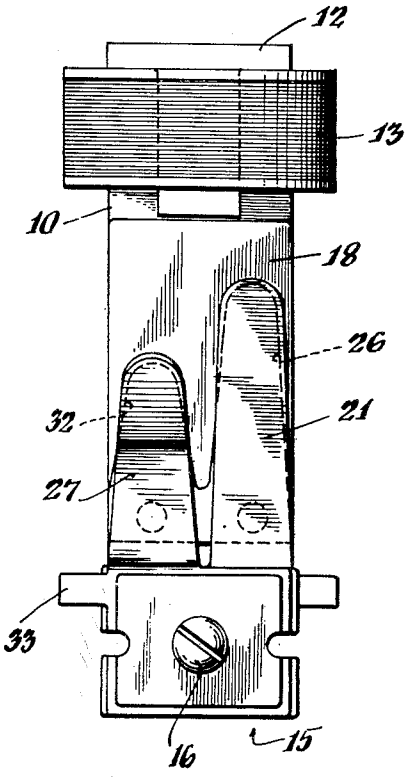


Fig. 2



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VIBRATOR SPRING LEAF CONTACT ARRANGEMENT

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2 Claims. (Cl. 200—166)

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This invention relates to vibrators and to a novel contact construction therefor.

It is an object of the invention to improve the construction and operation of vibrators and particularly of vibrator contact arrangements.

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

The invention accordingly comprises the features of construction, combination of elements, arrangement of parts, and methods of manufacture referred to above or which will be brought out and exemplified in the disclosure hereinafter set forth, including the illustrations in the drawings, the scope of the invention being indicated in the appended claims.

For a fuller understanding of the nature and objects of the invention as well as for specific fulfillment thereof, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a side elevational view of a vibrator embodying the novel contact construction; and

Figure 2 is an elevational view of the vibrator shown in Figure 1.

This invention is particularly applicable to vibrators in which two sets of contacts are provided, one for periodically interrupting the direct current supply to a transformer primary winding and the other for rectifying the output current of the transformer secondary winding.

In vibrators heretofore utilized, the springs or arms which support the two sets of contacts are ordinarily of equal length and symmetrically disposed with respect to the reed. When vibrators of this type are assembled, difficulties are experienced in properly adjusting the contact springs since the operator cannot see both sets of contacts at the same time and, hence, considerable manipulation of the vibrator assembly is necessary in order to secure proper adjustment. In accordance with this invention, the contact springs or arms for one set of contacts are longer than those of the other set with the result that all the contacts are readily visible to the operator from the side of the vibrator. Accordingly, an inspector or operator may hold the vibrator in one hand and inspect all the contacts at the same time without the necessity of turning the vibrator. An additional advantage of the novel contact arrangement resides in the fact that greater contact pressure is obtained upon the shorter set of contacts. Consequently, the shorter set may be used to interrupt the low voltage supply to the transformer primary since the current carried by this circuit is greater than that carried by the high voltage secondary circuit.

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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 means for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

The vibrator construction described herein is similar, in many respects, to the structure disclosed in the copending application of R. J. Aust and Clarence Huetten, Serial No. 579,232, now Patent No. 2,490,895, December 13, 1949, entitled High Frequency Vibrator.

Referring now to the drawings in detail, the vibrator may comprise a frame 10 having an integral inwardly bent portion 11 for supporting the pole piece 12 of a driver coil 13. The contact elements of the vibrator are carried by a stack 15 which is suitably secured to the frame as by a screw 16. It will be seen that the stack comprises a plurality of suitable insulating members or spacers 17 between which the contact springs and the reed are mounted. One end of a reed 18 is carried by the middle portion of the stack and the free end of the reed is closely spaced with respect to the pole piece 12. It will be understood that the free end of the reed may be provided with a suitable armature, if desired, in order to facilitate attraction thereof by the driver coil. In the example shown, the reed consists of a generally rectangular plate which vibrates in response to periodic excitation of the driver coil 13.

A set of side springs 21, 22 is suitably secured to the stack 15, one of the springs being disposed at each side of the reed. The free end of the side springs 21, 22 carry contacts 23 and 24, respectively, which are adapted to periodically engage arms or springs 25, 26 attached to the reed 18. A second set of side springs 27, 28 is supported by the stack 15 and the free ends of these springs also carry contacts 29 and 30, respectively, which are adapted to periodically engage arms or springs 31, 32 mounted on the reed 18. It will be understood that the springs and reed may be provided with individual lugs or terminals as at 33 for electrical connection

to a suitable vibrator circuit and that these parts insulated from each other by the insulating members 17. It will be noted that no contacts are provided on the reed arms which results in better damping qualities when the vibrator is used at high frequencies of operation. The reed arms may be conveniently plated with a suitable conducting material and the vibrators may be connected in circuit so that transference of metal due to the passage of current therethrough is from the contacts mounted on the side springs to the free ends of the reed springs. It will be apparent, however, that this invention is also applicable to vibrators wherein both the reed arms and side springs carry contacts or to vibrators where the side springs engage the reed directly without the intervention of auxiliary contacts.

According to the invention, the set of springs 21, 22 is considerably longer than the set of springs 27, 28, and springs 21 and 27 as well as springs 22 and 28 are displaced relative to each other transversely of the vibrator with the result that the free ends of the respective sets of springs are offset or staggered. In other words, a free end of one spring 21 of a first set of the side springs 21 and 27 on one side of the reed 18 is offset with respect to a free end of one spring 27 of the second set of the side springs 27, 28 in at least two different directions, the side springs on the other side of said reed being similarly offset. Consequently, as the operator looks toward the side of the vibrator, all of the contact surfaces are readily visible so that the spacing and adjustment of the springs and contacts may be varied. This is clearly apparent from an inspection of Figure 1 which shows the vibrator as it would appear to an observer or operator standing at one side thereof substantially in the plane of the reed 18. It will be apparent that the spacing between the respective sets of contacts may be readily observed from either side of the vibrator so that it is a simple matter to accurately and quickly adjust the spacing therebetween. It will also be apparent that the pressure exerted upon the contacts 29, 30 by the springs 31, 32 is considerably greater than the pressure exerted by the springs 25, 26 upon the contacts 23, 24. Consequently, the shorter set of springs is adapted to carry the heavier current in the low voltage primary circuits of the vibrator while the longer set of springs is preferably utilized for carrying the high voltage low current output of the vibratory system.

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 claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A reed and contact assembly for a self-rectifying vibrator comprising a reed adapted for vibratory motion, two sets of side springs, each set comprising a pair of springs disposed, respectively, at opposite sides of the reed, a contact mounted at the free end of each spring, and a plurality of arms mounted on the reed, the free ends of said arms being adapted, respectively, for engagement with said contacts, the first set of side springs being longer than the second set and being transversely separated therefrom in two different directions to permit visual observation of each contact and the end of the associated reed arm from either side of the vibrator.

2. A reed and contact assembly for a self-rectifying vibrator comprising a support, a reed secured to said support and adapted for vibratory motion with respect thereto, two sets of side springs mounted on said support, each set comprising a pair of springs disposed, respectively, at opposite sides of the reed, a contact mounted at the free end of each spring, and plated resilient arms mounted on the reed for engagement with each contact, the first set of side springs being longer than the second set and being transversely separated therefrom in two different directions to permit visual observation of each contact and the associated reed arm from the side of the vibrator.

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