



Application Date : 24th Dec., 1941. No. 4009/41.

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| <i>Applicant (Assignee of Actual Inventor)</i>                | AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED. |
| <i>Actual Inventor</i> .. .. .                                | LESLIE CECIL BUBB, of New South Wales.      |
| <i>Application and Provisional Specification</i>              | Accepted, 16th March, 1942.                 |
| <i>Complete Specification after Provisional Specification</i> | Lodged, 27th July, 1942.                    |
| <i>Complete Specification</i> .. .. .                         | Accepted, 24th December, 1942.              |
| <i>Acceptance Advertised (Sec. 50)</i> .. .. .                | 14th January, 1943.                         |

**Classes 02.5 ; 04.2.**

*Drawing attached.*

### COMPLETE SPECIFICATION.

#### “Improvements in split reed synchronous vibrators.”

We, AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED, carrying on business as Wireless Telegraph Engineers, and whose Registered Office is at 47 York Street, Sydney, in the State of New South Wales, Commonwealth of Australia, hereby declare this invention and the manner in which it is to be performed to be fully described and ascertained in and by the following statement:—

This invention relates to vibrators or current interrupters and particularly to the synchronous type in which the vibrating element comprises two separate reeds insulated from each other and mechanically linked at the ends for vibration as a unitary structure in a common magnetic field. One of the above mentioned reeds carries the primary circuit contacts and also the starting contact, whilst the other reed carries the secondary circuit contacts.

This particularised type of reed construction is adopted for the purpose of insulating the secondary contacts from

earth, thus permitting the development of back bias by the use of a resistance connected between the negative high voltage terminal and earth.

Although the use of split reeds, which latter term is the designation usually employed in referring to above specified reed construction, facilitates the achievement of above stated purpose, said split reeds are exceedingly difficult to adjust to a condition of optimum efficiency and stability by standard adjustment methods, which latter are quite effective for vibrators employing unsplit reeds.

This difficulty in the adjustment of vibrators of the split reed type restricts commercial production and adds to manufacturing costs. Furthermore, if the adjustment is not accurately effected, the life and stability of the vibrator is seriously impaired.

As a result of experiments carried out for the purpose of ascertaining a satisfactory method of overcoming the above-mentioned difficulties, it was found that

the latter are mainly due to the fact that, in the split reed synchronous type vibrator, there is no mechanical linkage between the primary and secondary reeds in the region of the contacts. In these circumstances, the two reeds tend to behave as separate units rather than as one rigid assembly as is the case when an unsplit reed assembly is employed to carry both sets of contacts.

This tendency for independent action on the part of primary and secondary reeds is accentuated by reason of the fact that the mechanical loading of the two reeds is different. As already pointed out, the primary reed carries the starting contact in addition to the primary contacts. This means that, in operation, the action of the starting contact and the starting contact damping plate affects only the primary reed and tends to set up a twisting unstable motion of said reed.

It is the main object of this invention to overcome the abovementioned disadvantages and provide a split reed arrangement for synchronous vibrators and which permits simple and accurate adjustments by standard methods.

It is a further object of the invention to increase the life and improve the stability of split reed synchronous vibrators.

The above mentioned objectives are achieved, in accordance with this invention, by mechanically bridging the primary and secondary reeds of a split reed vibrator by means of a linkage composed of heat resistant insulating material secured to each of said reeds at a point intermediate the ends of the latter.

For a more complete understanding of the invention and the manner in which it is to be carried out, one practical embodiment will now be described with reference to the drawings accompanying the provisional specification and in which,

Fig. 1 is a perspective view of an assembly of the primary and secondary reeds, of a split reed vibrator in accordance with this invention,

Fig. 2 is a side view of the assembly shown in Fig. 1, and

Fig. 3 is an elevation of the bridging member **C** indicated in the foregoing Figures.

Referring now to said drawings, in which like parts are identified by similar reference letters, the primary and secondary reeds are indicated by the characters **F** and **G** respectively. As will be seen from the drawings, the reeds **F** and **G** are arranged with their major surfaces in a common plane and are mechanically linked at one end by means of the armature **L**. The nature of the link is such that the reeds are insulated from the armature **L** and from each other.

The primary reed **F** carries the primary contacts **A** and **D**, which are arranged on opposite sides of the reed and rivetted thereto at **M**. The starting contact **H** is attached to an extension of the primary reed **F**, said extension together with a damping member **E** being located in a clearance space between reeds **F** and **G**.

The secondary reed **G** carries the secondary contacts **B** and **O** arranged on opposite sides of the reed and rivetted thereto at **N**.

The ends of the reeds **F** and **G**, which are remote from the armature **L**, are provided with apertures **P** to facilitate the mounting of the reed assembly in the so-called stack in customary manner. As the method of assembling the various elements of a vibrator and their relative inter-dependence in the finished device is well known to those skilled in the art, this description will be confined to the reed assembly to which the invention relates.

From the drawings it will be seen that the starting contact **H** is carried by an integral part of the primary reed **F** only, and the starting contact damping plate **E** is an integral part of the primary contact **D** only, and, in operation, the re-actionary forces of the starting contact **H** and the damping plate **E** affect the primary portion **F** of the reed assembly to set up a twisting unstable

motion of said primary reed and, through armature **L**, the secondary reed **G** is also affected to a lesser extent.

In accordance with this invention a heat resisting insulating strip **C** is employed to mechanically bridge the two reeds **F** and **G** at the points **M**, **N** intermediate of the ends of the respective reeds.

10 In the present example the bridging strip **C** is composed of mica, .015 inches thick, placed under the two reed contact pieces **A** and **B** at the points **M**, **N** before the rivetting operation is carried out.

15 The addition of the strip **C** causes the split reed to behave substantially in the manner of the non-split reed type, insofar as the separate reeds operate as a rigid, unitary assembly since the primary and secondary reeds **F** and **G** are mechanically bonded together at the contact carrying regions whereby the mass of the starting contact and its associated damping plate is distributed to affect the two portions **F** and **G** of the complete reed to an equal extent and hence prevent the reed portion **F** from twisting.

20 Having now fully described and ascertained our said invention and the manner in which it is to be performed we declare that what we claim is:—

25 1. A vibrator or the like of the particularised type herein specified, and wherein the primary and secondary reeds thereof are mechanically bridged,

intermediate of their ends, by means of a linkage composed of heat-resistant insulating material.

2. A vibrator or the like as claimed in Claim 1, and wherein said linkage is mechanically secured to said primary and secondary reeds.

3. A vibrator as claimed in Claim 1 or 2, and wherein the said linkage comprises one or more strips of mica.

4. A vibrator or the like as claimed in any preceding Claim, and wherein the opposite ends of said linkage are secured to the primary and secondary reeds at the points where primary and secondary contacts are attached to the respective reeds.

5. A vibrator or the like as claimed in Claim 4, and wherein each end of said linkage is secured to its associated reed by means of a rivet which is also the common securing means for contact members carried by said reed.

6. Split reeds for vibrators or the like, constructed, arranged and linked for synchronous operation substantially as herein described with reference to the drawings accompanying the provisional specification.

Dated this 24th day of July, 1942. 30

AMALGAMATED WIRELESS (AUSTRALASIA)  
LIMITED,

By their Patent Attorneys,

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Fig. 1.

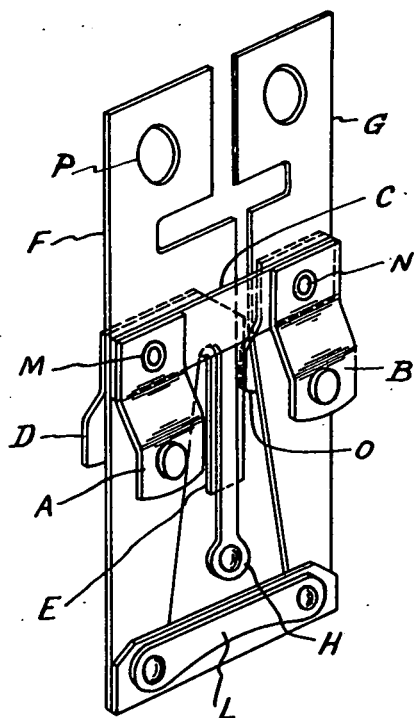


Fig. 2.

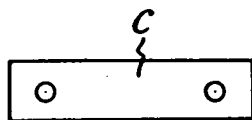
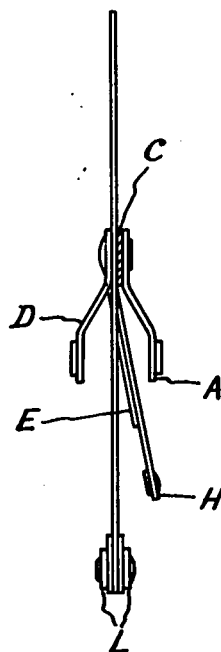


Fig. 3.