Feb. 27, 1945. F. W. STUBNER 2,370,203

SEALED REED CONTACT UNIT

Filed Sept. 2, 1943

FIG. 1

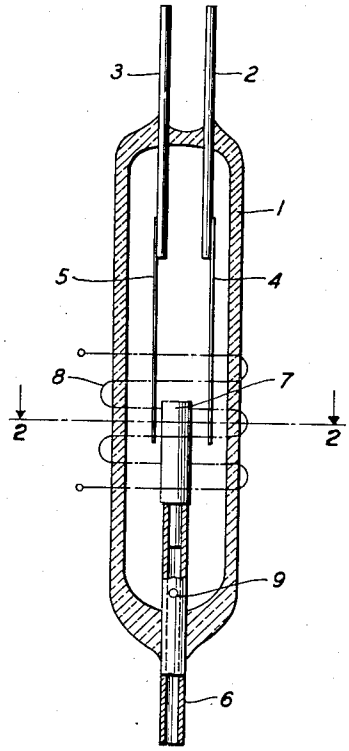
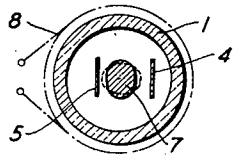


FIG. 2



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SEALED REED CONTACT UNIT

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Application September 2, 1943, Serial No. 500,919

1 Claim. (Cl. 200—103)

This invention relates to switching devices and particularly to devices for controlling electrical circuits.

An object of the invention is to produce a sealed reed contact device capable of sequentially closing a plurality of circuits.

Another object of the invention is to produce a device responsive to different degrees of external magnetic influence to selectively close a plurality of electrical circuits.

In accordance with this invention a sealed reed device is provided with a single rigid contact piece and a plurality of flexible reeds having their ends overlapping the end of the rigid element. The flexible elements are arranged to respond to different degrees of energization so that selective and sequential operation thereof may be provided. This may be accomplished by making the air gaps of different dimensions while the reeds have like properties or the reeds may be of different degrees of stiffness and be spaced equally from the rigid element.

A feature of the invention is a sealed reed contact unit selectively responsive to different degrees of external magnetic energization for closing a plurality of electrical circuits.

Another feature of the invention is a sealed reed contact unit having means to close a plurality of circuits sequentially in response to a slowly increasing magnetic influence.

Other features will appear hereinafter.

The drawing consists of a single sheet having two figures, as follows:

Fig. 1 is a longitudinal sectional view of the device with an energizing winding diagrammatically indicated as wound thereabout; and

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

The contact unit consists of an envelope 1, preferably of glass. Into one end thereof there are sealed two rods 2 and 3 of magnetic material having a coefficient of expansion matching that of the glass body 1. Two reeds 4 and 5 are welded to the rods 2 and 3 respectively and form resilient means responsive to magnetic influence to move into contact with a centrally located electrode.

Into the opposite end of the body 1 there is sealed a tube 6 of magnetic material to which the centrally located electrode 7 is fixed by welding or any other appropriate method. As indicated by the dotted line the electrode 7 may be oval in shape so that during the process of sealing in the tube 6 the electrode 7 may be rotated to adjust the normal spacing between such electrode 7 and the two reeds 4 and 5. It should especially be noted that the spacing between the electrode 7 and the reed 5 is less than that between the electrode 7 and the reed 4. Under this arrangement it will take a smaller energization, as by an externally wound coil 8, to move the reed 5 into contact with the electrode 7 than it will take to move the reed 4 into contact with the electrode 7. If in use the current traversing coil 8 is gradually increased, reed 5 will first move toward electrode 7 and later if the increase of current in coil 8 is continued, reed 4 will move into contact with electrode 7. The reverse sequence will occur upon deenergization of the coil 8.

It may be noted that the support for the electrode 7 is in the form of a tube 6 and that this has a hole 9 inside the unit. This is provided for tubulation purposes so that after assembly the unit may be evacuated or filled with any appropriate inert or non-corrosive gas. After such an operation the unit is sealed as by crushing the external end of the tube 6 or by filling such end with solder.

In the drawing the size of the parts and the adjustments are exaggerated in order to give a clear understanding of the principle of the invention.

What is claimed is:

In a circuit closing device, an enclosed vessel, a rigid contact element of magnetic material sealed into one end thereof, and a plurality of magnetic reeds sealed into the other end thereof with their ends overlapping the end of said rigid element, the said overlapping ends of said reeds constituting contact surfaces cooperating with the end of said rigid contact element, said rigid element being of elliptical cross-section whereby the spacing between the end thereof and the ends of said reeds may be adjusted through rotation of said rigid element about its longitudinal axis.

FRANZ W. STUBNER.