April 26, 1949. V. L. WESTBERG 2,468,696

PERIODICAL CIRCUIT MAKER

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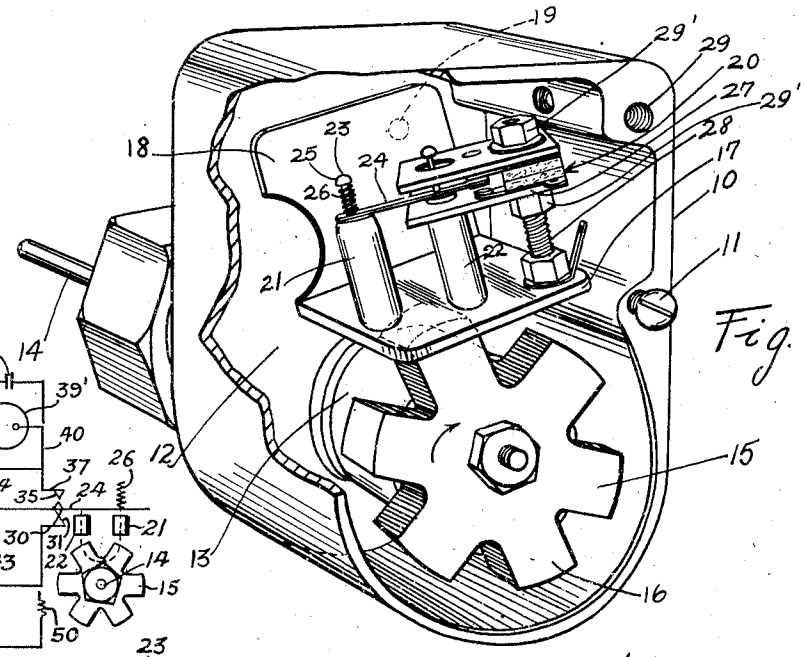


Fig. 1.

Fig. 4.

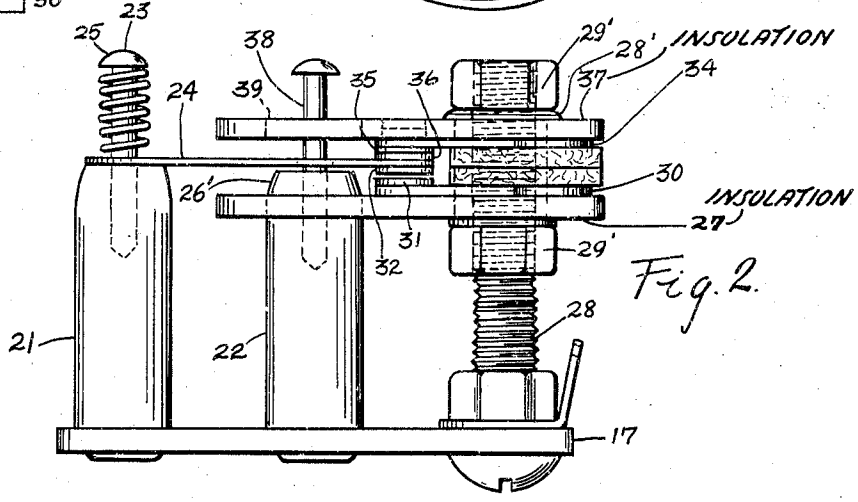
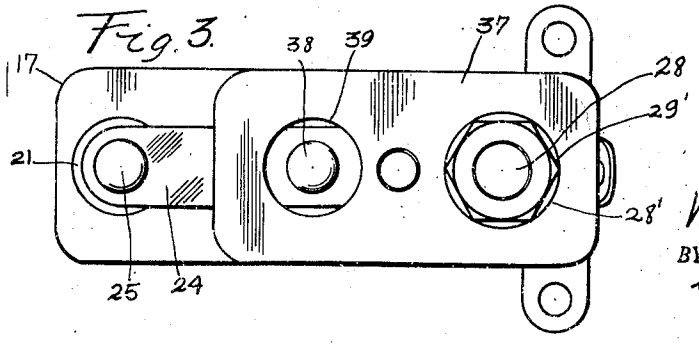


Fig. 2.

Fig. 3.



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PERIODICAL CIRCUIT MAKER

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2 Claims. (Cl. 200—19)

1

This invention relates to certain new and useful improvements in a periodical circuit maker and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

A principal object of this invention is to provide a periodical circuit maker of a construction which will perform with the maximum degree of efficiency the functions hereinafter ascribed to it.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a perspective view of the tachometer relay embodied in the invention showing its relation to a rotary magnet within a housing;

Fig. 2 is a side elevational view of the circuit maker;

Fig. 3 is a top plan view of the same;

Fig. 4 is a diagrammatical illustration of a circuit in which the circuit maker illustrated in Fig. 1 is incorporated.

The several objects of this invention are accomplished by the preferred form of construction as shown in the accompanying drawings and which structure will now be described.

Referring particularly to Figs. 1 to 3 inclusive and Fig. 5, my improved circuit maker comprises a housing 10 including a cover plate (not shown) adapted to be attached to the housing by suitable screws 11. This housing includes on the wall 12 thereof a bearing structure 13 through which is journalled a suitable shaft 14. This shaft 14 is adapted to be connected in any suitable means such as through a flexible shaft (not shown) to the device, the speed of a rotation or travel of which it is desired to measure. On this shaft 14 is fixed a permanent magnet 15 comprising a plurality of spaced arms 16.

A mounting plate is indicated at 17 and includes an angled portion 18 secured to the wall 12 as at 19 so as to support the plate 17 at substantially a right angle with respect to the wall 12. This plate 17 supports a circuit maker structure 20 which comprises spaced posts 21 and 22 of electrical conductive material, the plate 17 being of a non-magnetic character. The post 21 carries a pin 23, and this pin projects upwardly through an armature 24. Between the head 25 of the pin 23 and the armature 24 is an expansion

2

spring 26 which allows yieldable rocking of the armature 24 relative to the post 21.

The post 22 has an end portion 26' which projects through an opening formed in a plate 27 formed of non-conductive material. This plate 27 is carried by an outer sleeve 27' formed of non-conductive material and between this sleeve 27' and the plate 27 is a conductor plate 30 having a contact head 31 disposed beneath a contact head 32 carried by the armature 24. Spaced from this conductor plate 30 and carried by the sleeve 27' above the conductor plate 30 is a conductor plate 34 likewise having a conductor head 35 disposed in the path of movement of the conductor head 36 carried by the armature 24 opposite the conductor head 32. Above this conductor plate 34 is a top plate 37 likewise formed of non-conductive material. The sleeve 27' is mounted upon an inner sleeve 28', and this inner sleeve is mounted for adjustment upon a post 28, the adjustment being accomplished by adjusting screws 29' threaded upon the post 28. This post 28, like the posts 21 and 22, is carried by the mounting plate 17. By this arrangement, the entire assembly supporting the conductor plates 27 and 34 may be adjusted for micrometer air gap adjustment by adjusting the assembly relative to the post 28.

The armature 24 is guided in its movement by a guide pin 38 carried by the post 22, there being an enlarged opening formed in the plate 37 as at 39, for the projection of this pin 38.

The circuit maker thus described is incorporated in the electric circuit illustrated in Fig. 5.

In Fig. 4, I have diagrammatically illustrated an electric circuit having the relay hereinbefore described and as illustrated in Figs. 1 to 3, and this circuit will now be described in detail.

In this electric circuit, a tachometer is indicated at 39' and may be of any approved construction and any type of approved movement. One side of this meter is connected by the conductor 40 to the plate 37. The opposite side of the meter is connected by a conductor 41 to the opposite side 42 of a battery 43. This battery 43 is a constant voltage D. C. source and is of the type well-known as a flashlight battery. The negative side of this battery is connected to the conductor plate 30. The armature 24 is connected to the line 41 and has interposed therein a loading condenser 44. A calibrator is shunted across the conductors 40 and 41 as at 45. A low-speed filter circuit is indicated at 46, and in this circuit is a filter condenser 47.

The shaft 14, as before stated, is connected

by a flexible cable or the like to the device, the speed of which is to be measured.

The permanent magnet 15 will rotate in either direction and the magnetic flux therefrom will take the path indicated by the dotted line, Fig. 4, as the North and South pole field is set up directly beneath the posts 21 and 22, thereby moving the armature 24 to bring the contact head 32 thereof into contact with the contact head 31 to charge a condenser herein referred to as 44. This will set up an electrical impulse through the meter circuit and effect the operation of the meter to indicate the speed or frequency of rotation of the associated device. As the drain on the battery 43 under constant operation, may result in a substantial reduction in voltage to the inaccuracy of the meter recordings, I have connected the battery 43 in parallel with a charger. In this particular instance, the charger is in the form of a storage battery 48 in the circuit of which is a voltage divider 49. This storage battery is generally connected in circuit with a generator to maintain a constant voltage. Thus, as the voltage in the battery 43 is diminished or lowered by a constant operation, it will be instantly built up by the battery 48, and in order to prevent any overcharge of the battery 43, a blocking resistor 50 is incorporated in the charging line.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I

claim as new and desire to protect by Letters Patent is:

1. A circuit maker comprising spaced conductor plates, an armature disposed for movement between the plates, means for moving said armature for alternate contact with said plates, said means including a pair of spaced conductor posts, and a rotary magnet related to said posts for attracting said armature, and means for supporting said conductor plates for simultaneous adjustment relative to said armature.

2. A circuit maker comprising spaced conductor plates, an armature disposed for movement between the plates, means for vibrating said armature for alternate contact with said plates, said means including a pair of spaced conductor posts, a magnetic element rotatable in opposite directions and operatively related to said posts for attracting said armature, and means for supporting said conductor plates for simultaneous adjustment relative to said armature.

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