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1,462,585

E. M. SORENG

ARMATURE CONSTRUCTION

Filed Nov. 24. 1917

FIG. 1.

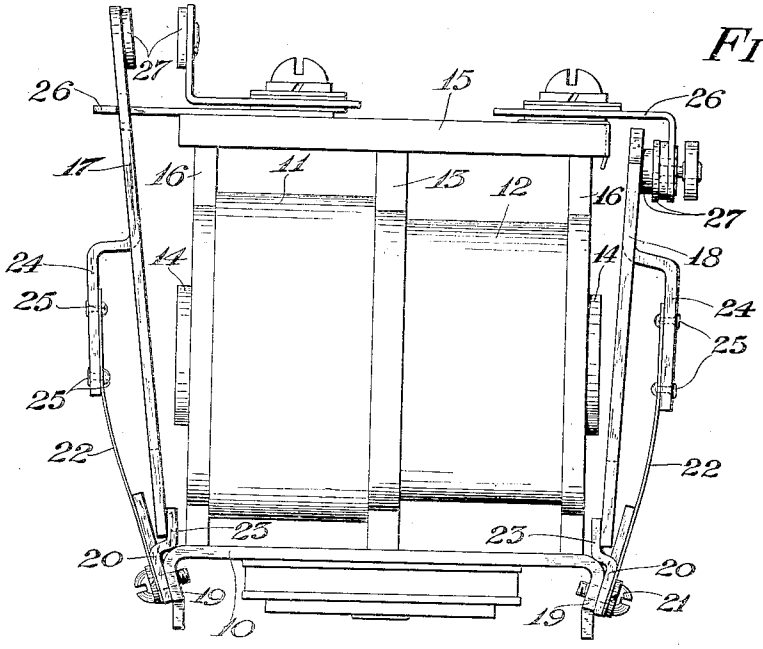
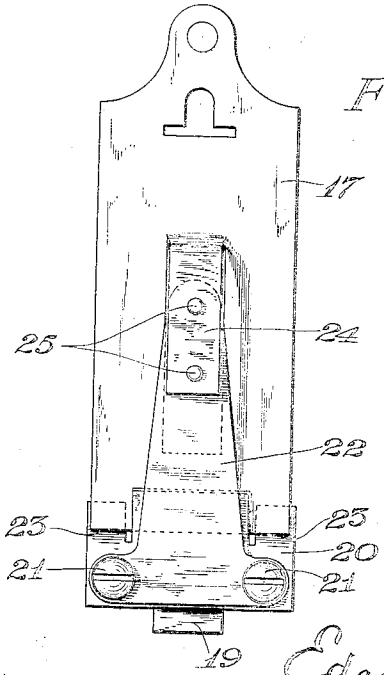


FIG. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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ARMATURE CONSTRUCTION.

Application filed November 24, 1917. Serial No. 203,789.

To all whom it may concern:

Be it known that I, EDGAR M. SORENG, a citizen of the United States, and resident of Milwaukee, Milwaukee County, Wisconsin, have invented new and useful Improvements in Armature Constructions, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide an armature construction for electromagnetic devices which will be inexpensive to manufacture and which will firmly hold the armature in place while freely permitting its required movements without appreciable wear, and which will give adjustable spring action thereto.

With the above and other objects in view, the invention consists in the armature construction, its parts and combinations of parts, as herein claimed and all equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in different views:

Fig. 1 is a view of a vibrating regulator for storage battery charging systems provided with armatures constructed in accordance with this invention; and,

Fig. 2 is a face view of one of the armatures thereof.

In these drawings 10 indicates a pole piece which is common to the magnet windings 11 and 12 as it connects with the partition pole piece 13 mounted on the core 14 which serves for both magnets. Another pole piece 15 is common to both magnets as it is mounted on the other end of the partition pole piece 13. The magnet heads 16 are formed of insulating fibre or other non-magnetic material so that the armature members 17 and 18 respectively, extending from the pole piece 10 to the pole piece 15 and close to the end of the core 14, bridge the air gaps and complete the magnetic circuits of the two magnet coils 11 and 12.

The ends 19 of the pole piece 10 are bent away from the core 14 to a suitable degree, preferably so as to form acute angles with the major straight portion thereof, and the material of which this pole piece is made is such that the angularity of these ends may be slightly varied by hand by grasping the downwardly extending portions with pliers and bending them more or less to suit the requirements.

As the construction of the armature mountings on the two bent ends 19 is essentially the same, a description of one will answer for both.

A bearing plate 20 is secured to the angularly bent end 19 of the pole piece 10 by means of screws 21, two of which are preferably used at the ends of the bearing plate. A leaf spring 22 is also attached by means of these screws 21 and the main portion of the bearing plate 20 as well as the broader attaching part of the spring 22 take the angular position of the end 19 and are changed with it in its adjustments.

The upper edge of the bearing plate 20 has a pair of vertical slots and the portions between said slots and the ends of the plate are bent reversely to extend upwardly in a different plane from the bearing plate proper. This forms a pair of spaced open bearings 23 within which the lower end of the armature 17 fits. A tongue 24 is cut from the armature and bent out at right angles thereto and then down approximately parallel therewith, and is connected by rivets 25 or in any other suitable manner with the end of the upstanding spring tongue 22. The position of the tongue 24 is angular with respect to the normal direction of the spring 22, requiring the latter to be bent as shown in order to be attached thereto. This bend of the spring places it under tension for drawing the armature away from the core of the magnet and against a stop 26. The spring action on the armature may be varied by bending the tongue 24 nearer to or farther from the armature proper and the tongue is of such material that such bending is easily accomplished by the use of ordinary pliers.

The armature construction of the present invention has many advantages over the ordinary pivotal connections or the spring hinge connections commonly used. It is less expensive to manufacture than many of the other forms and is more durable for the parts are not subjected to material wear. The armature is practically supported by its retrieving spring 22 by which it is prevented from displacement from its engagement with the bearing plate 20 and in its movements its lower end is caused to slide on the bearings 23, ensuring an unrestricted path for the flow of electrical current controlled by contacts 27 engaged during the move-

ments of the armature, in addition to the path of current flow afforded by the spring 22. The bearing plate 20 is preferably of iron and because of its engagement by the end of the armature avoids the formation of an air gap in the magnetic circuit at this point to reduce the effective pull of the magnet on its armature, which air gap would naturally be formed if a spring hinge of brass or other non-magnetic material were employed. The armature is capable of an approximate adjustment of its spring action at the time of assembling the parts at the factory by the bending of the end 19 of the pole piece, the upwardly projecting unbent portion of the bearing plate 20 serving as a reinforcement to prevent a sharp bend of the spring, and a final accurate adjustment of spring pressure is obtained by bending the tongue 24 more or less. A very accurate adjustment of spring pressure on the armature may thus be obtained which is very essential in a regulator for storage battery charging systems for determining the rate of charge of the battery at which regulation takes place.

While the armature construction of this invention has special merit as applied to a vibrating regulator for storage battery charging systems, it may also be applied with more or less merit to various other electromagnetic devices.

What I claim as new and desire to secure by Letters Patent is:

1. An armature construction, comprising an armature member, an angularly adjustable plate against which the armature member bears, and a spring secured to the armature member and to the plate and having its spring action on the armature varied by the angular adjustment of the plate.

2. An armature construction, comprising an armature member, a stop therefor, an armature supporting leaf spring fixed at one end and connected with the armature member at the other end, and a current-conducting flux-carrying bearing against which the end of the armature member slidably bears.

3. A magnet armature construction, comprising an armature member, an armature supporting leaf spring fixed at one end and connected to the armature member at the other end, a stop for one end of the armature member and a current-conducting slidable bearing for the other end of the armature member constituting the pole piece of the magnet.

4. A magnet armature construction, comprising an armature member, an armature supporting leaf spring fixed at one end and connected at the other end to the armature, a stop for one end of the armature member, and an open current-conducting bearing against which the other end of the armature slidably bears to form a path for the magnetic flux.

5. An armature construction, comprising an armature member, a stop for one end thereof, a slidable bearing for the other end thereof, an adjustable bendable support for the bearing, and a spring secured to said support and engaging the armature member.

6. A magnet armature construction, comprising an armature member, a magnet pole piece forming a bendable support, said armature member having a bearing on the said support, and a spring with one end connected to the support and the other end connected to the armature member.

7. An armature construction, comprising an armature member, a magnet pole piece forming a bendable support, a bearing plate secured to the support, arms bent from said bearing plate to form open bearings in which the armature member is seated, and a spring secured to the bearing plate at one end and to the armature member at the other end.

8. An armature construction, comprising a pivotally mounted armature member, a bendable tongue on the armature member, and a leaf spring with one end fixed and the other end secured to the tongue.

9. An armature construction, comprising a pivotally mounted armature member, a bendable tongue cut therefrom and extending approximately parallel thereto, and a leaf spring with one end fixed and the other end riveted to the tongue.

10. An armature construction, comprising an armature member, a magnet pole piece with an angularly bent end forming a bendable support, a bearing plate secured to the support and having arms bent therefrom to form open bearings for one end of the armature member, a spring secured to the support, a bendable tongue on the armature member secured to the spring, and a stop for the other end of the armature member.

In testimony whereof, I affix my signature, in presence of two witnesses.

EDGAR M. SORENG.

Witnesses:
MARY E. SMITH,
R. S. C. CALDWELL.