C. J. ERICKSON.

ELECTROMAGNETIC SIGNALING DEVICE.

APPLICATION FILED DEC. 15, 1916.

1,293,387.

Patented Feb. 4, 1919.

Fig. 3.

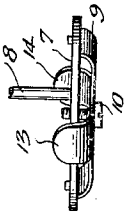


Fig. 2.

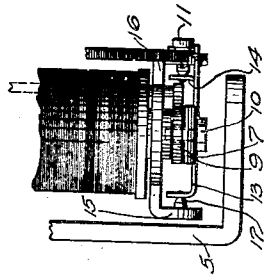
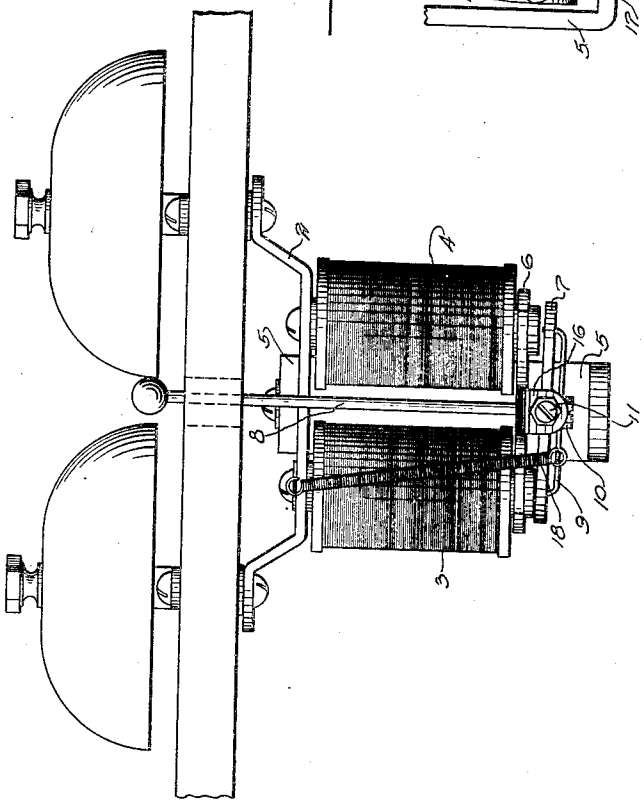


Fig. 1.



Inventor
Charles J. Erickson
by D. Tales
Attorney

UNITED STATES PATENT OFFICE.

CHARLES J. ERICKSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO AUTOMATIC ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTROMAGNETIC SIGNALING DEVICE.

1,293,387. Specification of Letters Patent. Patented Feb. 4, 1919.

Application filed December 15, 1916. Serial No. 137,160.

To all whom it may concern:

Be it known that I, CHARLES J. ERICKSON, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Electromagnetic Signaling Devices, of which the following is a specification.

My invention relates in general to electromagnetic signaling devices, but finds its chief field of application in that class of signaling devices which comprises the well known polarized ringers for substation telephone sets. The principal object of the invention is to provide a new and improved suspension and method of adjustment of the movable armature in a signaling device of the above character.

The particular means employed in attaining the desired ends and the operation thereof will be fully described hereinafter, reference being had to the accompanying drawing, in which Figure 1 is a front view of a polarized substation ringer embodying the principles of my invention, while Fig. 2 is a side view showing details of the armature suspension, and Fig. 3 is a perspective view of the spring member 9 and armature 7 which more clearly illustrates the principle of my invention.

Referring to Fig. 1, the general construction of the polarized ringer, with the exception of the armature mounting, may follow any approved lines, and since the particular type chosen to illustrate the invention is clearly set forth in the drawing, it will not be described in detail. Briefly, the ringer shown comprises a bracket 2, to which are attached the cores of the magnet coils 3 and 4 and the permanent magnet 5. Opposite the bracket 2, the bridge 6 is supported by the magnet cores in the usual manner. Midway between the cores the bridge 6 is provided with two oppositely extending arms 15 and 16, which at a short distance from the bridge are bent at right angles as shown clearly in Fig. 2. The armature 7 is mounted between the arms 15 and 16 through the medium of an auxiliary member 9 in a manner which will now be described.

The member 9 is preferably of spring brass and is formed in the shape of a flattened U shaped spring the two legs of which are provided with prongs which pass through slots in the armature 7 as seen clearly in Figs. 1 and 3. The member 9 and the armature 7 are held together under pressure by the hexagonal headed machine screw 10. The member 9 is provided with oppositely extending central arms 13 and 14 which correspond to the arms 15 and 16 of the bridge 6 and which are likewise bent at right angles near their extremities. Conical pivot seats are punched or drilled in the vertical portions of the arms 13 and 14 to receive the rear pivot 17 and the front pivot screw 11, as shown clearly in Fig. 2. To sum up the foregoing briefly, the armature 7 is supported by the member 9, which latter is pivotally mounted on the bridge 6 in such manner as to hold the armature at approximately the correct distance from the magnet cores.

It is customary to provide a polarized ringer of this character with a biasing spring which will be effective to maintain the armature normally in contact with the same magnet core, whereby the ringer is made responsive or irresponsive to uni-directional current impulses, depending on the direction of the current flow. I have shown, therefore, for this purpose, a biasing spring 18, whose method of attachment is shown clearly in Fig. 1.

Considering now the manner in which the armature 7 may be adjusted relative to the magnet cores, the ready accomplishment of which is the chief object of my invention, it will be obvious that such adjustments may be made by simply regulating the screw 10. Thus if it is desired to move the armature farther away from the magnet cores, the screw 10 may be tightened, thereby drawing the center of the armature 7 closer to the center of the spring member 9. Since the member 9 is pivoted on a line with the screw 10, its position at that point will be relatively fixed and such operation will have the effect of causing the armature to recede from the magnet cores. On the other hand if it is desired to move the armature toward the magnet cores, the screw 10 may be turned in the opposite direction, thus relaxing the spring member 9 somewhat and permitting

the armature to approach the pole pieces. It is to be understood that the auxiliary spring member 9 is very stiff so that whatever adjustment is finally determined on, the armature will be held substantially rigid, and the result is for all practical purposes the same as though the armature were pivoted directly.

Having described my invention, what I consider to be new and desire to have protected by Letters Patent will be pointed out in the appended claims.

What I claim as my invention is:

1. In a signaling device, an electro-magnet, a pivoted spring member supported adjacent the cores of said magnet, and an armature adjustably mounted on said member.

2. In a signaling device, an electro-magnet, a pivoted spring member supported adjacent the cores of said magnet, an armature attached to said member, and means coöperating with said spring for varying the position of said armature relative to the cores of said magnet.

3. In a signaling device, the combination with an electromagnet and an armature therefor, of a pivoted spring member for supporting said armature in position, a mechanical connection between the armature and spring member retaining the latter under tension, and means rendering said connection adjustable, whereby the said connection and spring coöperate to regulate the distance of the armature from the poles of said magnet.

4. In a signaling device, the combination with an electro-magnet and an armature therefor, of a suspension for said armature comprising a flat spring member movable about a central axis, bends in the opposite ends of said member adjacent the poles of said magnet, said armature resting across the displaced ends of said member, and a central mechanical connection between the armature and spring member holding the latter under tension.

5. In a signaling device, the combination with an electro-magnet and an armature therefor, of a suspension for said armature comprising a flat spring member movable about a central axis, bends in the opposite ends of said member adjacent the poles of said magnet, said armature resting across the displaced ends of said member, a central mechanical connection between the armature and spring member holding the latter under tension, and means for rendering said connection adjustable to alter the tension in said spring, whereby the said armature may be removed relative to the poles of said magnet.

6. In a substation ringer, the combination with an electromagnet, of an armature for said magnet, a pivoted member to which the armature is secured in a position adjacent the poles of said magnet, and means for relatively adjusting the said armature and member to alter the distance of the former from the poles of said magnet.

7. In a substation ringer, the combination with a bipolar electromagnet, of a U shaped spring member centrally pivoted in such position that the said magnet and member form an open rectangle, an armature supported on the two legs of said spring member and adjacent the poles of said magnet, and an adjustable mechanical connection between the spring member and armature holding the former under tension.

8. In a substation ringer, the combination with an electromagnet, of an armature for said magnet, a pivoted member to which the armature is secured in a position adjacent the poles of said magnet, and means for adjusting said armature comprising oppositely extending flexible arms integral with said member and engaging opposite ends of said armature and an adjustable mechanical connection joining the said armature and member at a point between the two arms.

9. In a substation ringer, the combination with an electro-magnet, of an armature for said magnet, a pivoted member to which the armature is secured in a position adjacent the poles of said magnet, said pivoted member having projections extending through said armature opposite the poles of said magnet.

10. In a signaling device, an electro-magnet, a pivoted spring member supported adjacent the cores of said magnet, an armature attached to said member, said pivoted member having projections extending through said armature opposite the poles of said magnet for preventing said armature from contacting with the cores of said magnet.

11. In a substation ringer, an electro-magnet, a pivoted flexible member supported adjacent the cores of said magnet, an armature secured to said member, means for adjustably moving said armature by flexing said member.

12. In a substation ringer, the combination with an electro-magnet, of an armature for said magnet, a flexible member to which the armature is secured in a position adjacent the poles of said magnet, and means for adjusting the said armature relative to said member to alter the distance of the former from the poles of said magnet.

13. In a signaling device, the combination with an electro-magnet, of a U shaped flexible member, an armature supported on the two legs of said flexible member adjacent the poles of said magnet, and an adjustable mechanical connection between the flexible member and armature holding the former under tension.

14. In a signaling device, the combination

with an electro-magnet, of a U shaped spring having a stationary portion and two flexible arms, an armature supported on the two flexible arms adjacent the poles of said magnet, means for adjustably moving said armature relative to said stationary portion of the spring by flexing said flexible arms to vary the relation of said armature to the poles of said magnet.

Signed by me at Chicago, Cook county, State of Illinois, this 12th day of Dec., 1916.

CHARLES J. ERICKSON.