E. B. CRAFT.

ELECTROMAGNETIC DEVICE.

APPLICATION FILED NOV. 15, 1915.

1,263,383. Patented Apr. 23, 1918.

Fig. 1.

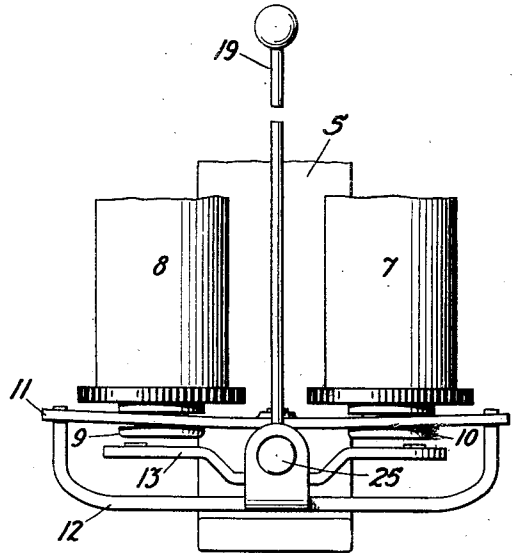


Fig. 2.

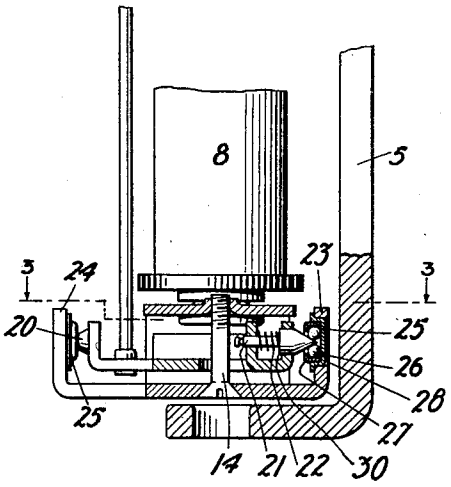


Fig. 3.

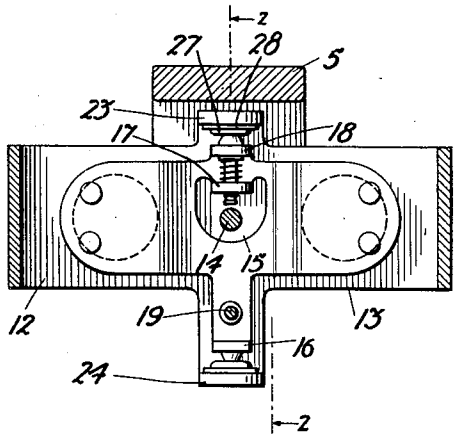
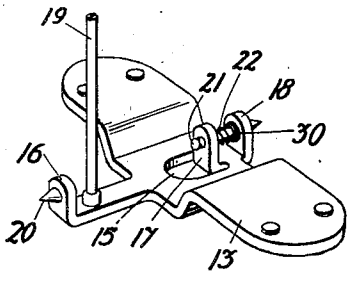


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD B. CRAFT, OF HACKENSACK, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTERN ELECTRIC COMPANY, INCORPORATED, A CORPORATION OF NEW YORK.

ELECTROMAGNETIC DEVICE.

1,263,383. Specification of Letters Patent. Patented Apr. 23, 1918.

Application filed November 15, 1915. Serial No. 61,712.

To all whom it may concern:

Be it known that I, EDWARD B. CRAFT, a citizen of the United States, residing at Hackensack, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Electromagnetic Devices, of which the following is a full, clear, concise, and exact description.

This invention relates to electromagnetic devices, and more particularly to electromagnetic devices in which a rapidly vibrating armature is employed for producing a signal.

The object of this invention in general is to prolong the life, improve the operation and simplify the construction, assembly and adjustment of such devices.

In accordance with the general features of this invention, the armature of the device is adapted to be pivotally supported in a bracket member, and means are provided whereby the armature, when mounted on the device, is automatically adjusted in operative relation, and any wear upon bearing parts is compensated for automatically. More specifically, this invention comprises the use of relatively movable pivotal bearings for the armature having spring-pressed means for maintaining them in adjustable relation and compensating for wear. Preferably, there is a bracket member provided with ball bearings adapted to receive pivotal members carried by the armature, one of which pivotal members is longitudinally movable and is adapted to be pressed by a spring into its coöperating bearing member to hold the armature in place and adjustment, and also to automatically compensate for wear on the parts.

This invention is illustrated in the accompanying drawings, in which Figure 1 is a fragmentary front elevation of a polarized ringer embodying this invention; Fig. 2 is a sectional view taken upon line 2—2 of Fig. 3; Fig. 3 is a plan view of the armature and mounting therefor taken upon sectional line 3—3 of Fig. 2; and Fig. 4 is a perspective view of the armature showing the manner of mounting the pivots carried thereby.

This invention is shown in connection with a polarized ringer as disclosed and fully described in a patent to Craft #1,096,287 of May 12, 1914. In the following description only the parts necessary to illustrate this invention will be described in detail.

As is usual in ringers of this class, there is provided a permanent magnet 5 and an electromagnet consisting of a pair of spools 7 and 8 suitably supported and having pole pieces 9 and 10 projecting as indicated. The pole pieces carry a forked or slotted mounting plate 11 for supporting a bridge piece 12, the latter carrying an armature 13. A screw 14 passing through the central portion of the bridge piece 12, perforation 15 provided in the armature and into the plate 11 which is adapted to receive it, secures said parts together. The armature 13 comprises a punching for a body portion shaped substantially as shown, with ears 16, 17 and 18 punched therefrom and bent at right angles thereto. The ear 16 is formed upon the extremity of an extension arm, which arm also functions as a supporting means for a clapper 19. Inserted into the ear 16 is a pivot 20 which is rigidly secured thereto. As shown, the ears 17 and 18 are spaced comparatively close and are provided with alined apertures for accommodating a pivot pin 21 capable of movement in the direction of its axis, having one end pointed and the other one grooved. Surrounding the body of the pin 21, and intermediate the ears 17 and 18, is placed a helical spring 22, one end of which engages a shoulder 30 formed upon said pin 21, while the other end abuts against the ear 17, thus causing the pin 21 to be normally held in an extended position relative to edge of the armature 13.

The bridge piece 12 is provided with projecting ends 23 and 24, each of which has inserted therein a ball bearing 25 comprising a metal cup suitable to contain a plurality of small steel balls 26. The cup 25 may be constructed of hollow cylinders 27 and 28, having one of their ends closed and being of unequal diameter so that one may be inserted within the other. An aperture is made in the center of the closed end of each of the smaller cylinders, and said apertures are in alinement and suitable to admit the points of the pivot members 20 and 21.

The armature 13 will be maintained suspended between the bearings 25 by virtue of the spring 22 being placed under compression when the pivot points engage said bearings.

This construction renders the adjustment

between the armature and its bearings automatic and provides a means for compensating for any wear suffered by the engaging parts. The removal of the armature from its mounting, when desired, may be accomplished by the use of a tool suitable to engage the groove formed upon the inner end of the pivot pin 21.

From the above it will be seen that the armature 13 may be pivotally mounted between the ball bearings 25, and that the friction between the bearings and the pivot points may be maintained constant through the agency of the spring 22; also that frictionally the armature 13 is self-adjustable when suspended from its mounting.

What is claimed is:

1. In an electromagnetic device comprising a vibrating armature and a bracket for said armature, conical pivots on said armature, ball-bearings in said bracket for receiving said pivots, a resilient member tending to force the respective pivots and bearings into closer relationship, one of said pivots and its ball-bearing being relatively movable in the direction of the axis of the pivot in opposition to said resilient member to permit their separation and the removal of the armature from between said ball-bearings.

2. In an electromagnetic device, a vibrating armature, a supporting bracket therefor, antifriction means for supporting said armature from said bracket, said means including ball bearings carried by said bracket, pivots carried by said armature having points adapted to engage said bearings, one of said pivots being movable in the direction of its axis, and a spring cooperating with said movable pivot for automatically adjusting the armature in operative relation to said bracket when said armature is mounted therein.

3. In an electromagnetic device, a vibrating armature, a supporting bracket therefor, means for supporting said armature from said bracket, said means including a plurality of cups adapted to contain steel balls so arranged as to comprise bearings, pivots carried by said armature having points adapted to engage said bearings, one of said pivots being movable in the direction of its axis, and a spring coöperating with said movable pivot for automatically adjusting the armature in operative relation to said bracket when said armature is mounted therein.

4. In an electromagnetic device, a vibrating armature, a supporting bracket therefor, and anti-friction supporting means to support the armature in the bracket; said supporting means comprising a relatively movable ball-bearing and pivot, elastic means to hold the ball-bearing and pivot normally in engagement and means to cause the disengagement of the ball-bearing and pivot in opposition to said elastic means.

5. In an electromagnetic device, a vibrating armature, a supporting bracket therefor, and anti-friction supporting means to support the armature in the bracket; said supporting means comprising a ball-bearing, a spring-pressed movable pivot, a spring to hold the pivot normally in contact with the ball-bearing, and means to move said pivot out of engagement with the ball-bearing against the pressure of the spring.

In witness whereof, I hereunto subscribe my name this eighth day of November, A. D. 1915.

EDWARD B. CRAFT.