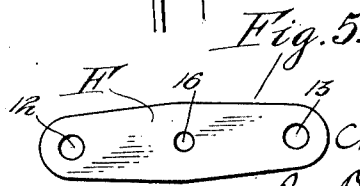
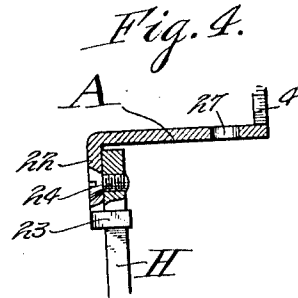
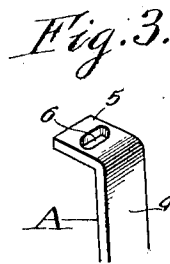
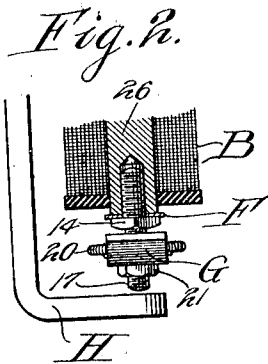
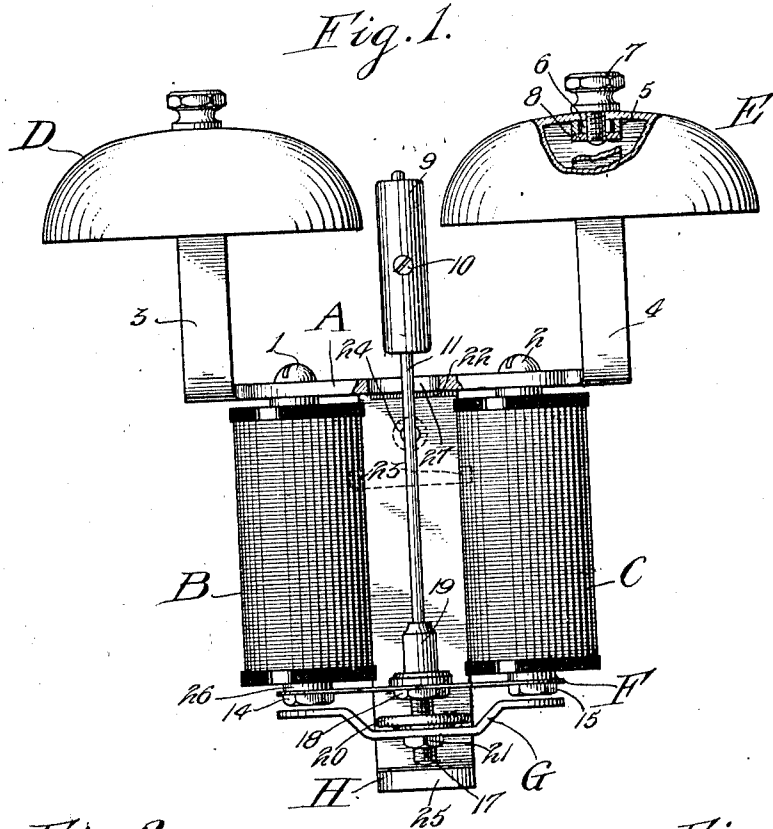


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HARMONIC ELECTRIC BELL OR RINGER.
APPLICATION FILED DEC. 18, 1905.

Patented May 13, 1913.

1,061,733.



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UNITED STATES PATENT OFFICE.

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HARMONIC ELECTRIC BELL OR RINGER.

1,061,733.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed December 18, 1905. Serial No. 292,187.

To all whom it may concern:

Be it known that I, CHARLES J. ERICKSON, a citizen of the United States of America, and resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Harmonic Electric Bells or Ringers, of which the following is a specification.

My invention relates to harmonic ringers in general, but more particularly to harmonic ringers of the polarized type, such, for example, as the ringers or electric bells employed in selective ringing party-line systems. In a telephone system it has been found to be of great advantage for the operator to be able to ring any bell on a party-line without ringing the bells of the other subscribers on the same line; for with this arrangement, it is not necessary to use a different number of rings for each subscriber. Consequently, in a selective ringing system, and regardless of the number of subscribers on any one line, only the bell of the called subscriber will ring.

Generally stated, the object of my invention is the provision of an improved and highly efficient harmonic ringer for use in selective signaling systems.

Special objects of my invention are the provision of improved means for adjusting the ringer to different frequencies or periods of vibration; the provision of improved means for mounting the striker and armature of a harmonic ringer; the provision of an improved construction and arrangement whereby the yoke of a polarized electric ringer can be made to serve as the flexible reed or tongue for the tuned striker; and the provision of certain details and features of improvement tending to increase the general efficiency and serviceability of a ringer or electric bell of this particular character.

To the foregoing and other useful ends, my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a harmonic ringer or electric bell embodying the principles of my invention. Fig. 2 is a detail sectional view

of the lower end of one of the electro-magnets and adjacent parts. Fig. 3 is a detail perspective of one of the posts or mountings for the gongs. Fig. 4 is a detail sectional view of the bracket-plate and the connection between the same and the upper end of the permanent magnet. Fig. 5 is a plan view of the combined yoke and spring or reed upon which the striker is mounted.

As thus illustrated, my invention comprises a frame or bracket-plate A and two electro-magnets B and C secured thereto by the screws 1 and 2. The said frame or bracket-plate is provided with two upwardly-extending arms 3 and 4 which are bent into positions parallel with the coils of the electro-magnets, but which extend upwardly instead of downwardly. The end portions of the said arms 3 and 4 are then bent at right angles, thus forming end sections to which the gongs D and E are secured. As shown in Fig. 3, the angle section 5 is very clearly shown, which section is provided with an opening 6 through which the bell screw 7 passes, said screw being locked in place by a nut 8 on the under side of the section 5. The arms 3 and 4 are, furthermore, arranged at a suitable distance apart in order that the gongs D and E may be adjusted to receive a striker 9 between them. Said striker may, of course, be of any suitable shape; but as shown in Fig. 1, the said striker is cylindrical and secured by a screw 10 to the striker-rod 11. In this way, the striker 9 can be adjusted along the length of said rod, according to requirements and with a view to adjusting the bell or ringer to different frequencies or periods of vibration. As illustrated, the pole-pieces of the magnets B and C have a strip F secured thereto, said strip being of thin flexible and non-magnetic material, and secured in place by means of the holes 12 and 13. Screws 14 and 15 are inserted through these holes and serve to hold the said combined yoke and spring-mounting in place. With this arrangement, it will be seen that the member F constitutes the yoke for connecting the

cores of the two electro-magnets. Furthermore, and between the said clamping sections, the said spring F is provided with a second opening 16 which receives the threaded end portion 17 of the striker-rod 11. To the spring-plate F the said rod is clamped by a nut 18 and a shoulder 19, the same being arranged on opposite sides of the said springy member F, whereby the latter constitutes the sole means for supporting the striker and its rod. Near the extreme threaded end of the threaded section 17 the armature G is clamped between the nuts 20 and 21, and may be adjusted thereon with respect to the pole-pieces of the electro-magnets B and C, by the adjustment or movements of said nuts. It will be seen that the nut 20 is in the nature of a thumb-nut and can be rotated or adjusted without the aid of a tool. Again, and from the under part of the frame or bracket-plate A, a flange 22 extends toward the front thereof, and carries on each side of its end a lug 23. To this flange the permanent magnet H is secured by a screw 24. With this arrangement, the said magnet H extends below the electro-magnets B and C, and beyond the latter, and with its end 25 arranged in close proximity to the lower threaded end portion 17.

Referring to Fig. 2, it will be seen that the screw 14, the head of which is hexagonal, is swung into the core 26, the latter being threaded. When the striker-rod 11 is in normal position it extends through the opening 27 in the frame A; and in this opening said striker-rod vibrates when a current of suitable frequency passes through the electro-magnets B and C. It is obvious that the striker-rod is able to vibrate, since the thin and springy and resilient yoke F is flexible enough to permit the tilting of the armature G when acted upon by the electro-magnets B and C.

With the foregoing arrangement, it is obvious that the bell or ringer may be so adjusted as to respond to different frequencies or periods of vibration.

The spring F can be tuned to respond to any desired frequency. In other words, the spring of one bell or ringer can be of a certain gage or weight or flexibility, so as to be responsive to one frequency of current, and the springs of the other ringers on the same party line can then each be of a different gage or weight or flexibility, thus making them responsive to different frequencies of current. With this arrangement each striker or striker-rod is secured to a spring, and each striker-rod and its striker is adapted to swing about an axis at its point of connection with the spring. Preferably, as illustrated, the striker-rod extends at right angles to the spring, and the spring is preferably straight and secured at each end.

What I claim as my invention is:—

1. In a bell or ringer, gongs, electro-magnets, a permanent magnet, a spring yoke of sheet-metal connecting the ends of said electro-magnets, a striker rigidly secured to the middle portion of said yoke, the striker being entirely free except where connected with said spring, and an armature rigidly connected with said striker and arranged between the permanent magnet and the ends of the electro-magnets.

2. In a bell or ringer, electro-magnets, a leaf spring yoke connecting the ends of said magnets, a striker-rod secured to the middle portion of said spring yoke, an armature for operating said striker-rod, a striker adjustably mounted upon said rod, the striker being entirely free except where connected with said spring yoke, and sound-producing means adapted to be engaged by said striker.

3. In an electric bell or ringer, a thin resilient spring member, suitable means for supporting said member, a rod secured at right angles to and supported by said thin resilient member, an armature rigidly secured to said rod, the said member and armature being disposed in parallel planes, a striker rigidly mounted on the free or swinging end of said rod, the striker being held in its normal position by the said spring, electromagnetic means for operating said armature, and sound producing means to be engaged by said striker.

4. In an electric bell or ringer, a thin resilient member, suitable means for supporting said member, a rod secured at right angles to and supported by said thin resilient member, an armature rigidly secured to said rod, a striker rigidly mounted on the free or swinging end of said rod, electromagnetic means for operating said armature, sound producing means to be engaged by said striker, means for permitting adjustment of the striker on the rod, and means for permitting adjustment of the armature on the rod, said thin resilient member disposed between the armature and the striker.

5. In a bell or ringer, an electromagnet, a spring mounted at its opposite ends, a striker mounted upon the middle portion of said spring, an armature for operating the striker, said spring and armature being disposed in parallel planes, the armature being magnetically propelled in both directions to reverse the tension of the spring by which it is carried, which spring normally holds the armature at the center of its vibratory movement, and sound-producing means adapted to be engaged by said striker.

6. In a bell or ringer, a spring mounted at its opposite ends, a striker rigidly secured to an intermediate portion of said spring, an armature rigidly connected with said striker, electromagnetic means for operating said

armature, said spring and armature being disposed in parallel planes, the armature being magnetically propelled in both directions to reverse the tension of the spring by which it is carried, which spring normally holds the armature at the center of its vibratory movement, and sound-producing means adapted to be engaged by said striker.

Signed by me at Chicago, Cook county, Illinois, this 2nd day of November, 1905. 10

CHARLES J. ERICKSON.

Witnesses:

EDW. D. FALES,
JOHN ERICKSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."