

L. A. LITTLER,
ELECTROMAGNETIC BELL.
APPLICATION FILED APR. 28, 1916.

1,205,646.

Patented Nov. 21, 1916.
2 SHEETS—SHEET 1.

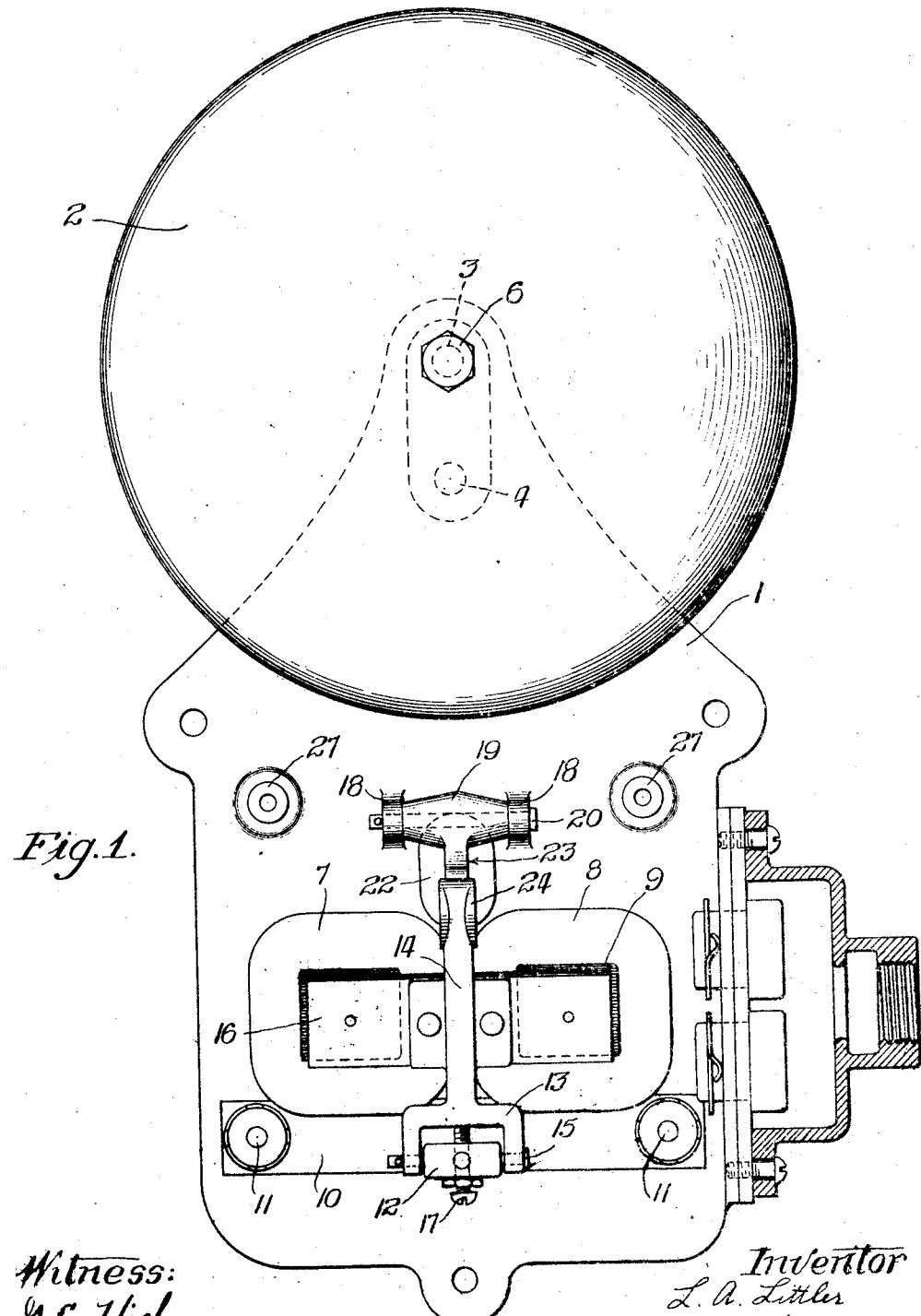


Fig. 1.

Witness:
G. C. Higham.

Inventor
L. A. Littler
By Chamberlain, Greenleaf & Co.,
Atys.

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Fig. 2.

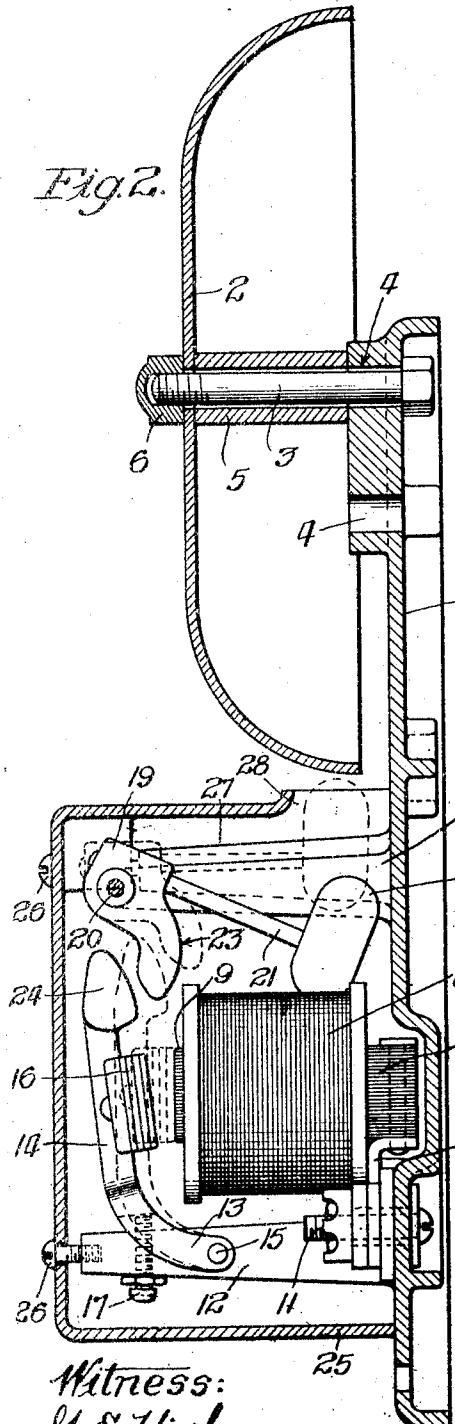
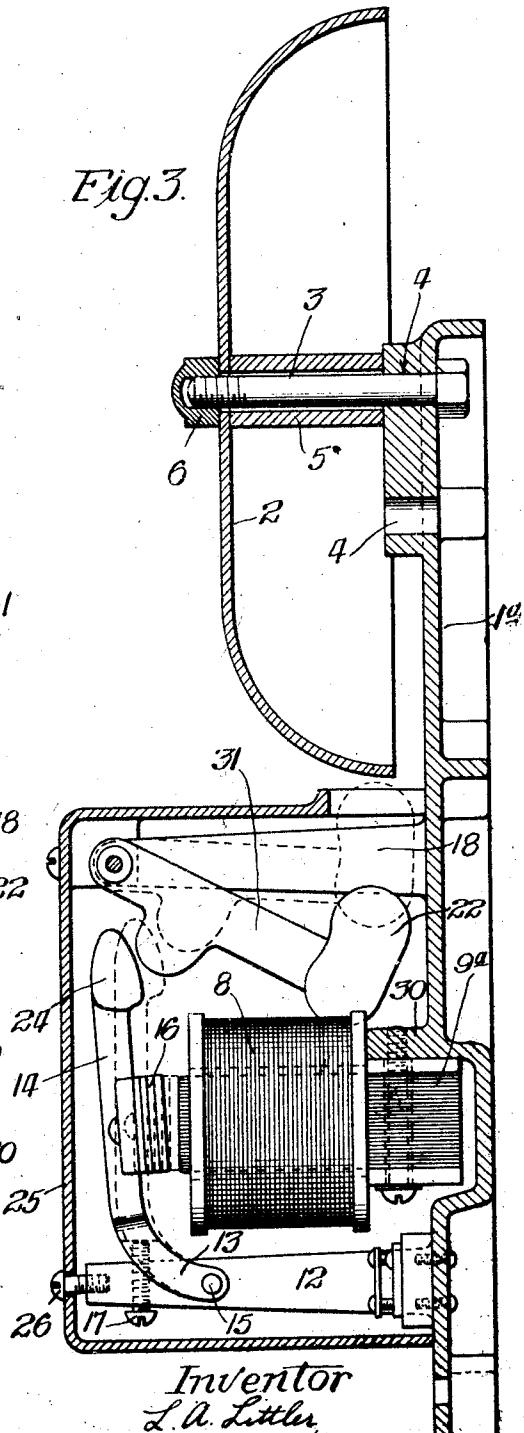


Fig. 3.



Witness:
G. C. Higham.

Inventor
L. A. Littler
By Chamberlain Braden
Attest

UNITED STATES PATENT OFFICE.

LEWIS A. LITTLER, OF SHELBY, OHIO, ASSIGNOR TO THE AUTOCALL COMPANY, OF SHELBY, OHIO, A CORPORATION OF OHIO.

ELECTROMAGNETIC BELL.

1,205,646.

Specification of Letters Patent.

Patented Nov. 21, 1916.

Application filed April 28, 1916. Serial No. 94,131.

To all whom it may concern:

Be it known that I, LEWIS A. LITTLER, a citizen of the United States, residing at Shelby, county of Richland, State of Ohio, have invented a certain new and useful Improvement in Electromagnetic Bells, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to produce a simple, compact and rugged electro-magnetic bell requiring a minimum of current consumption for its operation.

The various features of novelty whereby my invention is characterized will herein after be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a front elevation of a device arranged in accordance with a preferred form of my invention, with the casing or housing removed, the general box at one side through which the conductors are introduced being shown in section; Fig. 2 is a central vertical section through the device illustrated in Fig. 1, the casing or housing being in position; Fig. 3 is a view similar to Fig. 2, illustrating a modification.

Reference being had to Figs. 1 and 2 of the drawings, 1 represents a back or base plate of any suitable material, preferably of metal. In front of the upper end of the member 1 is a gong, 2, supported on a suitable post which may conveniently consist of a bolt, 3, passing through an opening, 4, in the base plate, a spacing sleeve, 5, and a nut, 6. If desired, a plurality of openings, 4, may be provided so as to permit the use of gongs of different diameters; the bolt, 3, being inserted in the proper hole to bring the lower edge of the gong in proper relation to the striking devices to be hereinafter described. Supported on the front side of the base plate below the gong is an electro-magnet, preferably of the double pole type comprising two coils, 7 and 8, wound upon the arms of a U-shaped core, 9, of laminated material. The rear end of

the core is supported upon a bracket, 10, lying below the core and secured to the base member by suitable fastening screws, 11. The bracket, 10, is preferably insulated from the base member so as to prevent grounding of the coils through the base member. Beneath the stationary members of the electro-magnet is a post, 12, extending forwardly from the base plate and, straddling the post is a jaw, 13, on the lower end of an arm, 14, lying in front of the magnet coils. The arm is hinged to the post, preferably by a pin, 15, passing through the side members of the jaw and the post, thus permitting the member 14 to swing from and toward the outer end of the stationary part of the electro-magnet. The member 14 carries a cross piece, 16, which may be laminated or not, as desired, this cross piece forming the armature of the electro-magnet. A set screw, 17, passing up through the post 12 and engaging with the yoke or top piece of the jaw, 13, serves as an adjustable support to limit the outward movement of the arm 14, that is the movement in the direction to carry the armature away from the core. Above the electro-magnet and on opposite sides of the vertical center line of the device are two forwardly projecting posts, 18, 18. Between the front ends of the posts 18, 18, is pivoted a block, 19, preferably by passing a pin, 20, horizontally through the posts 18 and the block 19. Fixed to the block 19 in any suitable manner and projecting therefrom is a rod or stem, 21, preferably composed of spring wire. On the inner end of the member 21 is a head, 22. The members 19, 21 and 22 constitute a swinging striker or hammer of which the parts are so proportioned that when the hammer is swung upwardly it strikes the gong. The block 19 lies just above the upper end of the swinging arm 14 which carries the armature and, projecting downwardly from the block 19, just behind the upper end of the arm 14, is a finger, 23, which is adapted to be engaged by a cam shaped head portion, 24, on the upper end of the arm. Normally the parts lie in the positions indicated in full lines in Fig. 2. When the electromagnet is energized the armature, 16, is attracted and the arm 14 swings inwardly so that the head, 24, engages with the member 23 on the striker or hammer and the striker or hammer is

swung upwardly. The parts are so proportioned that the inward movement of the actuating member 14 is arrested before the striker engages with the gong. The result 5 is that the last portion of the travel of the striker is a free swinging movement and there is nothing to interfere with the quick rebound of the striker after it has struck the gong.

10 It will be seen that all of the parts are of rugged construction so that the device will be extremely durable. It will also be seen that on account of the short travel of the moving parts it is possible to deliver 15 strokes of the hammer in rapid succession which is very much to be preferred for many purposes to a more sluggish operation, while at the same time it renders the device extremely efficient and insures a low 20 expenditure of energy. It will further be seen that the device is entirely free from springs or other elements which may easily get out of order and cause trouble, the striker and actuating arm being moved in 25 one direction by gravity and in the other direction by the electromagnet. Even the force of the blow is controlled by the position of the set screw which limits the outward movement of the actuating arm and, 30 after the lock nut on the set screw has been tightened, the latter becomes an immovable stop not much more apt to be accidentally displaced than if it were an integral part of the base plate.

35 The striking mechanism, including the electro-magnet, is inclosed within a box or casing, 25, closed at its rear end by the base member and held securely against the base member by means of screws, 26, passing 40 through the front wall of the casing and into the outer ends of the post, 12, at the bottom and a pair of similar posts, 27, at the top. The casing is provided in the top with an opening, 28, through which the 45 striker head, 22, operates.

In Fig. 3 I have illustrated a slightly different arrangement in which the core, 9^a, of the electro-magnet lies below and is secured to a horizontal forwardly projecting web, 50 20, on the base member 1^a. Furthermore, the striker or hammer, 31, including the downwardly projecting cam 32, is made in a single piece.

I claim:

55 1. In a device of the character described, a vertical base plate, a gong mounted upon and in front of the upper portion of the base plate, a striker mounted on the base plate below the gong so as to swing in a vertical 60 plane at right angles to the plane of the base plate toward and from the gong, an electro-magnet mounted on the base plate below the striker, a swinging arm extending upwardly in front of the electro-magnet, an armature 65 on said arm adapted to be attracted by the

electro-magnet, and coöperating parts on the upper end of the arm and on the striker adapted to engage with each other when the electro-magnet is energized and drive the striker toward the gong.

2. In a device of the character described, a base plate, a gong lying in front of and secured to one end of the base plate, posts projecting forwardly from the base plate below the gong, a striker pivotally supported at one end by said posts, an electro-magnet lying beneath said posts and rigidly connected to the base plate, a third post projecting forwardly from the base plate beneath the electro-magnet, an arm hinged to 75 the latter post and projecting upwardly in front of the electro-magnet into the vicinity of the striker, an armature on said arm, and coöperating parts on the arm and on the striker engaging with each other but having 80 no connection with each other and adapted to cause the striker to be driven toward the gong when the electro-magnet is energized.

3. In a device of the character described, a base plate, a gong mounted upon one end 90 of and in front of the base plate, a post projecting forwardly from the base plate below the gong, a striker hinged at one end to the outer end of said post and having at its inner end a head adapted to engage with 95 the gong, an electro-magnet fixed to the base plate below said post, a second post projecting forwardly from the base plate beneath the electro-magnet, an arm hinged at its lower end to said second post and projecting 100 upwardly in front of the electro-magnet to the striker, an adjustable stop between said arm and the post on which the arm is mounted, the stop being adapted to limit the movement of the arm in the outward direction, 105 an armature on said arm, and coöperating faces between the upper end of the arm and the striker for causing the striker to be propelled toward the gong when the electro-magnet is energized.

4. In a device of the character described, a base plate, a gong mounted upon and in front of the upper end of the base plate, a post projecting forwardly from the base plate beneath the gong, a striker lying beside the post and having a gong engaging part at its inner end, a pivotal connection between the outer end of the striker and the aforesaid post for permitting the striker to swing in a vertical plane, the striker having a downwardly projecting part near the outer end, an actuator lying in front of said part and having a cam face for engagement therewith, said actuator being moved in one direction by the weight of 110 the striker, and means for moving the actuator in the opposite direction to cause the striker to approach the gong.

5. In a device of the character described, a vertical base plate, a gong mounted upon 115

and lying in front of the upper end of the base plate, a striker mounted on the base plate below the gong so as to be freely movable in a vertical plane at right angles to the plane of the base plate from and toward the gong, an electro-magnet secured to the base plate below the striker with the core thereof extending forwardly at right angles to the base plate, an armature movably supported 10 in front of the electro-magnet, and a part associated with said armature having no connection with the striker but simply contacting therewith for throwing the striker upwardly against the action of gravity in 15 order to engage the gong.

6. In a device of the character described,

a vertical base plate, a gong mounted upon and lying in front of the upper end of the base plate, an electro-magnet secured to and projecting forwardly from the base plate 20 at a point below the gong, a striker mounted on the base plate between the gong and electro-magnet so as to be capable of swinging in a vertical plane, an armature movably supported by the base plate in front of said 25 electro-magnet, and a cam associated with said armature for engaging with the striker to throw the latter upwardly when the electro-magnet is energized.

In testimony whereof, I sign this specification.

LEWIS A. LITTLER.