

Feb. 7, 1933.

I. W. GREEN ET AL

1,896,195

ELECTROMAGNETIC SIGNALING DEVICE

Filed March 1, 1930

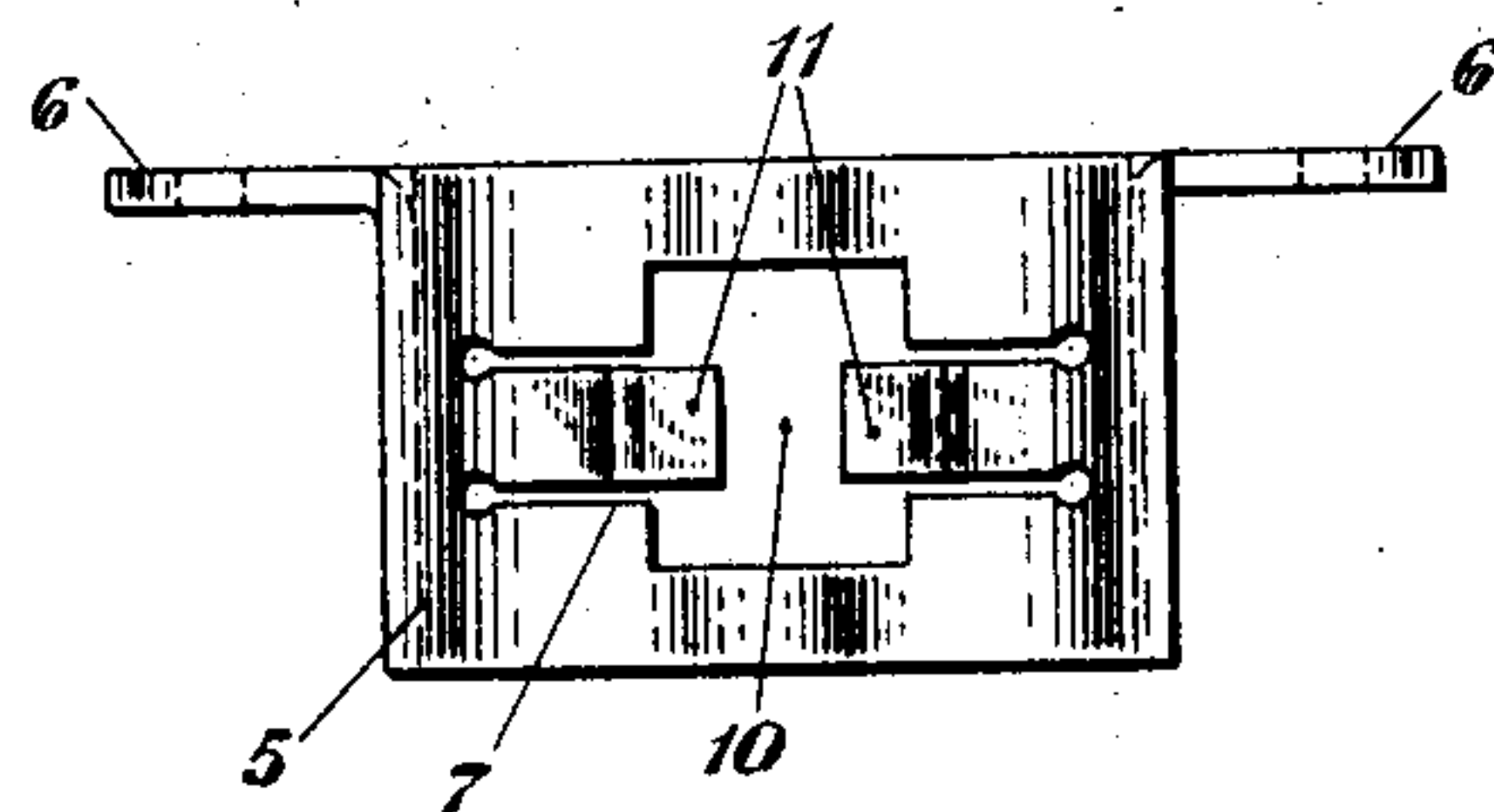


Fig. 1

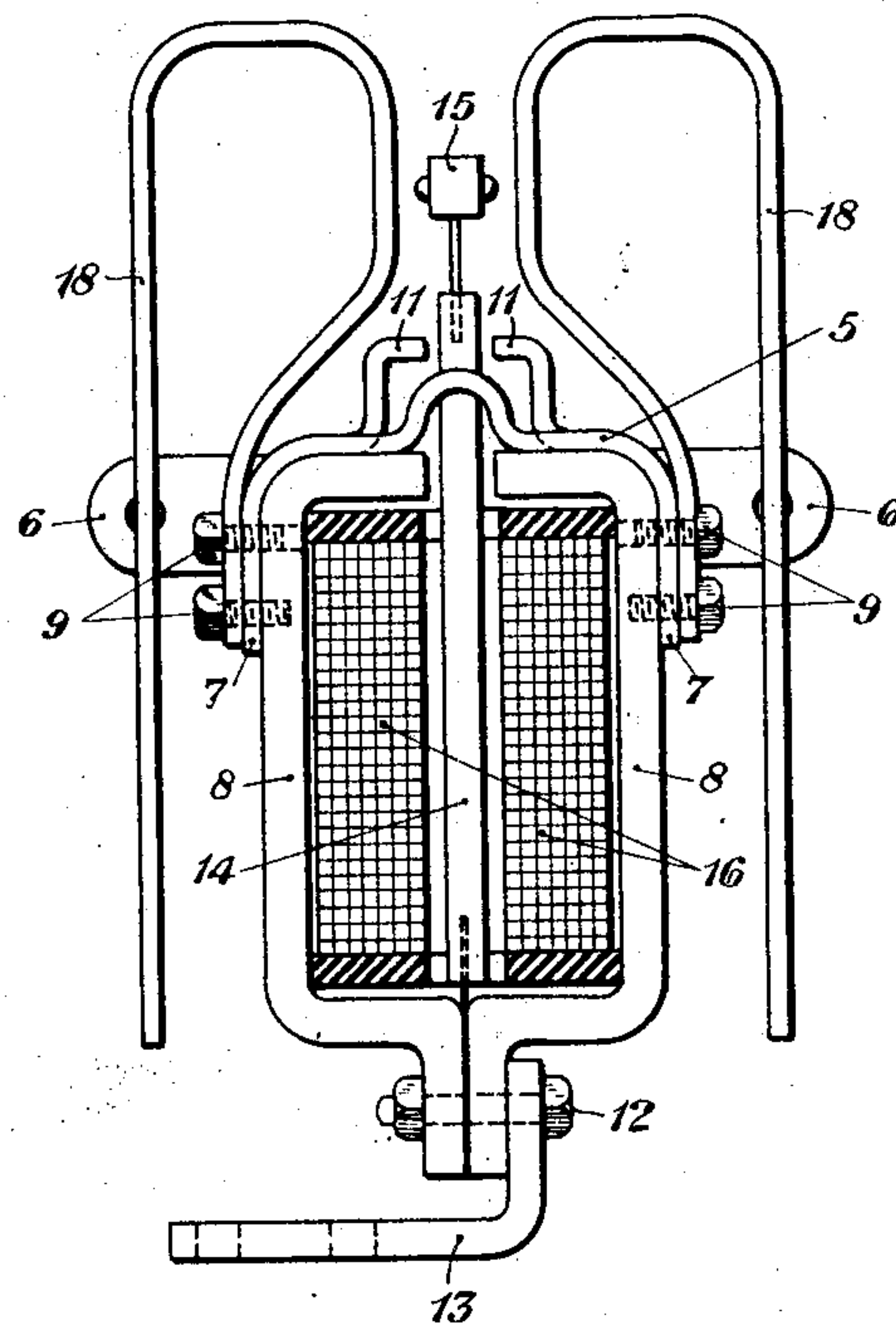


Fig. 2

INVENTORS
I. W. Green and E. C. Bisbee
BY
J. V. For
ATTORNEY

UNITED STATES PATENT OFFICE

IRVING W. GREEN, OF CRANFORD, AND FREDERICK C. BISBEE, OF ELIZABETH, NEW JERSEY, ASSIGNORS TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK

ELECTROMAGNETIC SIGNALING DEVICE

Application filed March 1, 1930. Serial No. 432,501.

This invention relates to signaling devices, and more particularly to telephone station ringers.

One of the objects of this invention consists in the provision of a signaling device having a minimum number of parts so related that they form a compact structure.

Another object of the invention consists in the provision of adjusting means for the signaling device which require no further regulation after their initial assembly at the factory.

The novel features which are considered characteristic of this invention are set forth with particularity in the appended claims. The invention itself both as to its organization and method of operation, together with other objects and advantages thereof, will be further explained in the following detailed description, having reference to the accompanying drawing consisting of the following figures:

Figure 1 is a top view of the frame member of the ringer.

Fig. 2 is a front elevation of the ringer.

Referring to the drawing, illustrating the improved device, the frame 5 is provided with mounting lugs 6, 6 having holes therethrough to permit the insertion of screws so that the structure may be attached to a suitable base. The frame has angular arm members 7, 7 which extend in a substantially perpendicular direction from its top portion. The members 7, 7 are shown as being attached to each side of a permanent magnet 8 by means of studs 9, 9. A substantially rectangular opening 10 is cut in the top crimped surface of the frame member 5. Parallel slots extend outwardly from this opening, and between each of the parallel slots an angular lug 11 is provided. The two lugs 11, 11 are oppositely positioned and extend toward each other into the opening 10. The lugs provide stops for an armature, to be presently described. The frame member 5 forms a spacer for the lugs 11, 11 and said frame may be composed of a brass punching. The frame member after being attached to the permanent magnet is subjected to side pressure, whereby the assembly is adjusted to the required limits so that the space

or air gap between the upper ends of the permanent magnet and also the space between the stop lugs 11, 11 are so initially regulated and fixed that they never require further adjustment.

A heel comprising the lower ends of the permanent magnet is shown as being clamped together by a bolt 12. This bolt also secures a mounting bracket 13 to the heel, and holes are provided through the bracket for the reception of screws whereby the structure may be attached to a suitable supporting base. The bolt 12 further functions to clamp a reed between the two portions of the permanent magnet heel. An armature 14 is mounted on this reed, and an extension carrying a bell clapper or striker 15, which may be composed of flexible fibre, is attached to the top of said armature. The armature may be tuned to respond to current of a frequency of 20 cycles, and requires no biasing. The armature is adapted to vibrate between the lugs 11, 11 when current is applied to the ringer.

A form-wound operating coil 16 is mounted within the permanent magnet 8, and supported therein by means of the extended portions of the spool heads which tightly engage the sides of said magnet. The coil 16 may be provided with the usual winding, or it may be equipped with the primary and secondary windings of an induction coil, if desired. The core of the operating coil is hollow and encircles the armature 14. Sufficient clearance is provided in the hollow portion of the core for the vibratory operation of the vertical armature 14, which passes through its center.

The bolts 9, 9 which secure the spacing piece or frame 5 to the permanent magnet 8 also serves to secure a gong 18, 18 on each side thereof. The gongs are irregular in form and consist of a short end and an extended end with an intermediate loop portion formed between the ends. The gongs are attached to the sides of the frame in opposite relation to each other, and the contiguous portions of the loop are so spaced as to permit sufficient clearance for the vibration of the striker 15 between them. Each gong has its shorter end connected to the

frame by the bolts 9, 9 while the other ends of the gongs are free and extend downwardly parallel to the sides of the magnetic unit. The gongs are so arranged and proportioned
5 as to closely conform to the contour of the ringer. The arrangement of the gongs and the associated parts of the ringer conserve space, and provide a very compact structure.

While the arrangements of this invention
10 have been illustrated as embodied in a certain specific form which has been deemed desirable, it will be understood that it is capable of embodiment in many and widely varied forms without departing from the
15 spirit of the invention, as defined in the appended claims.

What is claimed is:

1. In a permanent magnet bent into substantially rectangular shape and having a
20 gap between its opposite poles, a magnet winding mounted in the rectangular opening and having a hollow cylindrical opening therethrough, an armature pivotally mounted on one side of the rectangular permanent
25 magnet and extending through the coil and between and beyond the poles of the permanent magnet, a gong hammer on the free end of the armature, a frame of sheet metal bridging and secured to the poles of the
30 permanent magnet and having integral therewith mounting lugs for the device and stop members positioned to limit the movement of the armature, and a spring type gong secured to each of the opposite sides of
35 the magnet which are parallel to the armature.

2. In a permanent magnet bent into substantially rectangular shape and having a gap between its opposite poles, a frame of
40 sheet metal bridging and secured to said poles and having integral therewith mounting lugs for the device and stop members, a magnet winding mounted in the rectangular opening and having a hollow cylindrical
45 opening therethrough, an armature pivotally mounted on one side of the rectangular permanent magnet and extending through the coil and between and beyond the poles of the permanent magnet and also the stop
50 members of the frame, a gong hammer on the free end of the armature, a spring type gong secured to each of the opposite sides of the magnet in parallel relation to the armature, the gongs extending upwardly and
55 in close proximity to the gong hammer and thence downwardly to lie close to the sides of the permanent magnet.

In testimony whereof, we have signed our names to this specification this 28th day of
60 February, 1930.

IRVING W. GREEN.
FREDERICK C. BISBEE.