

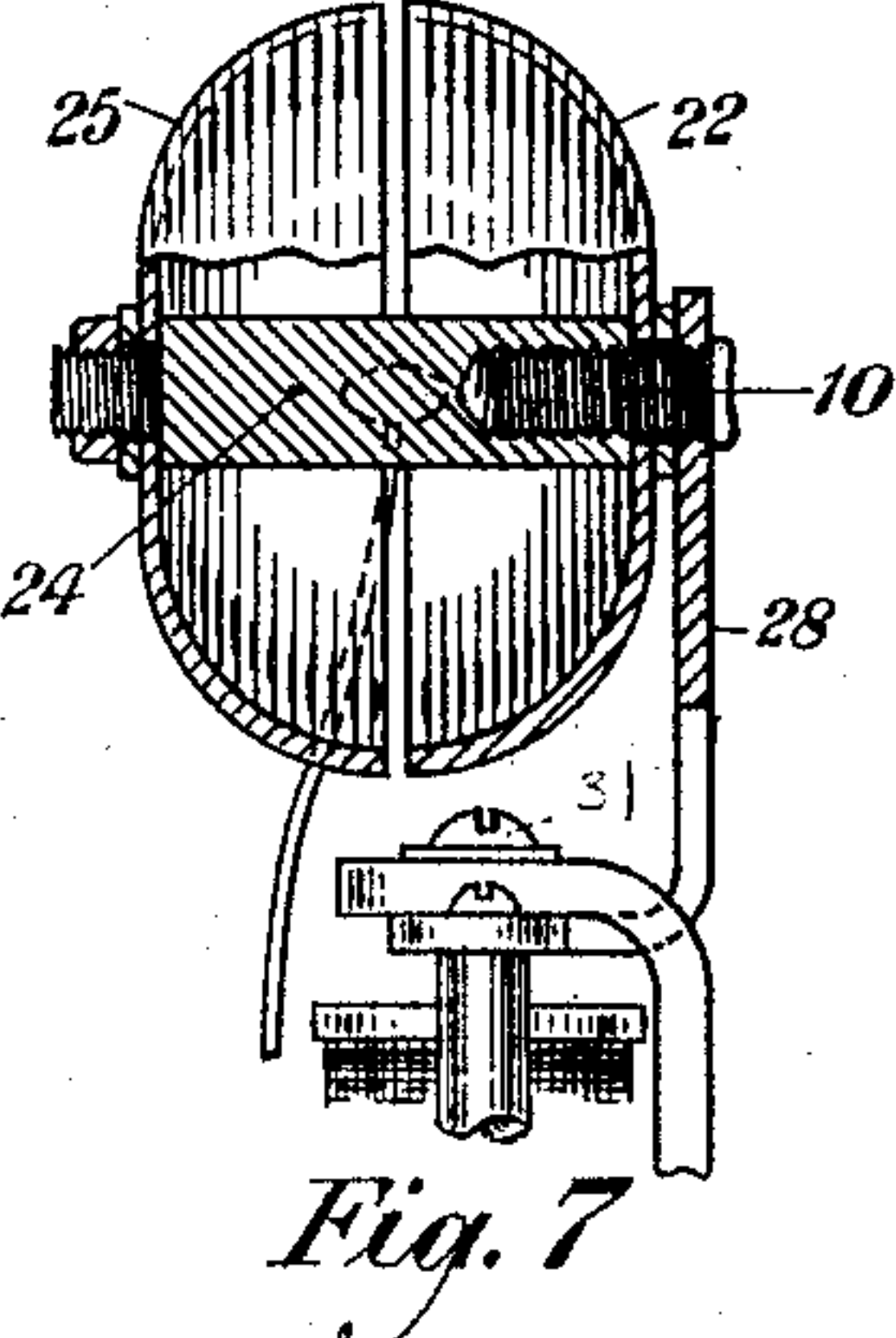
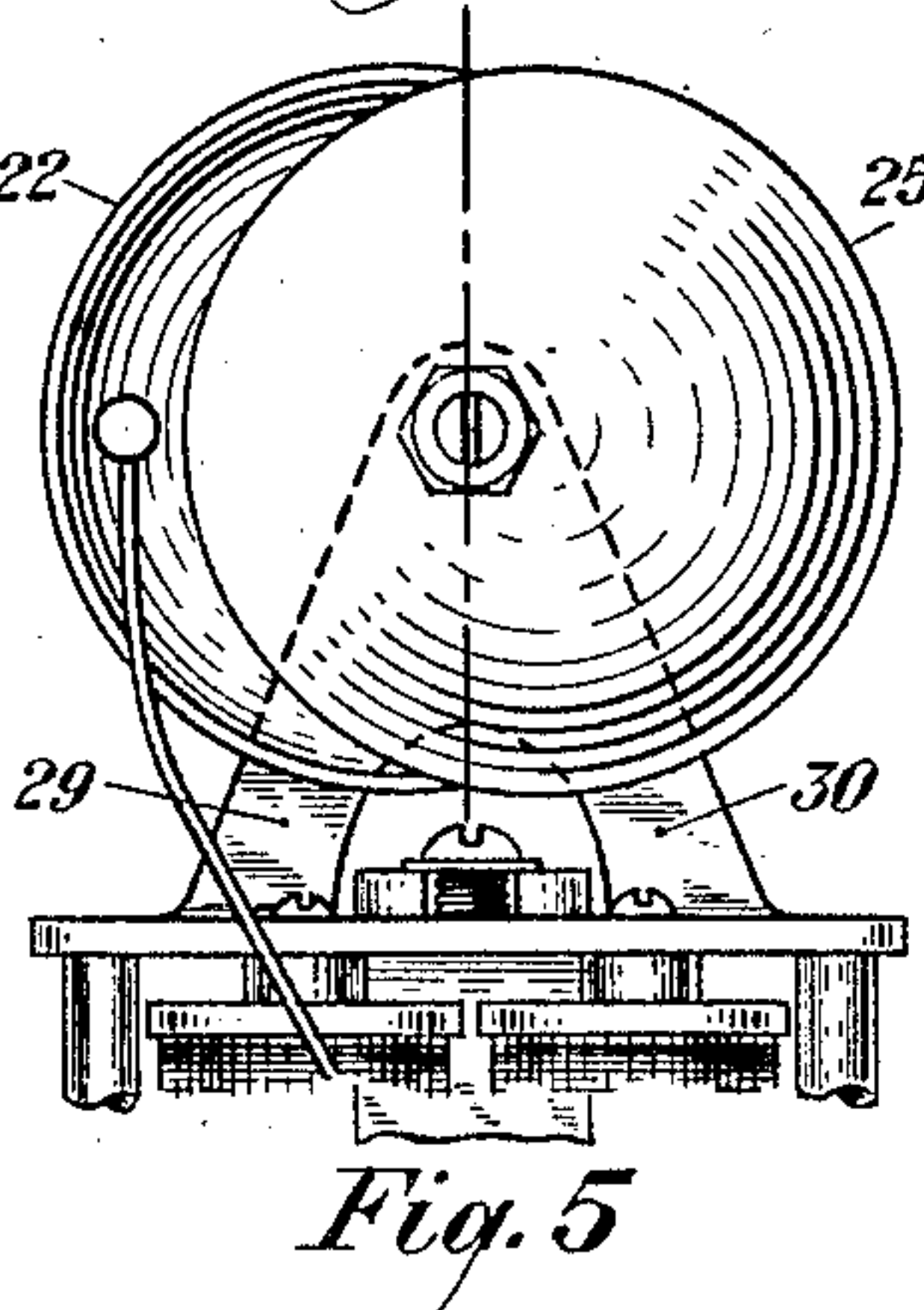
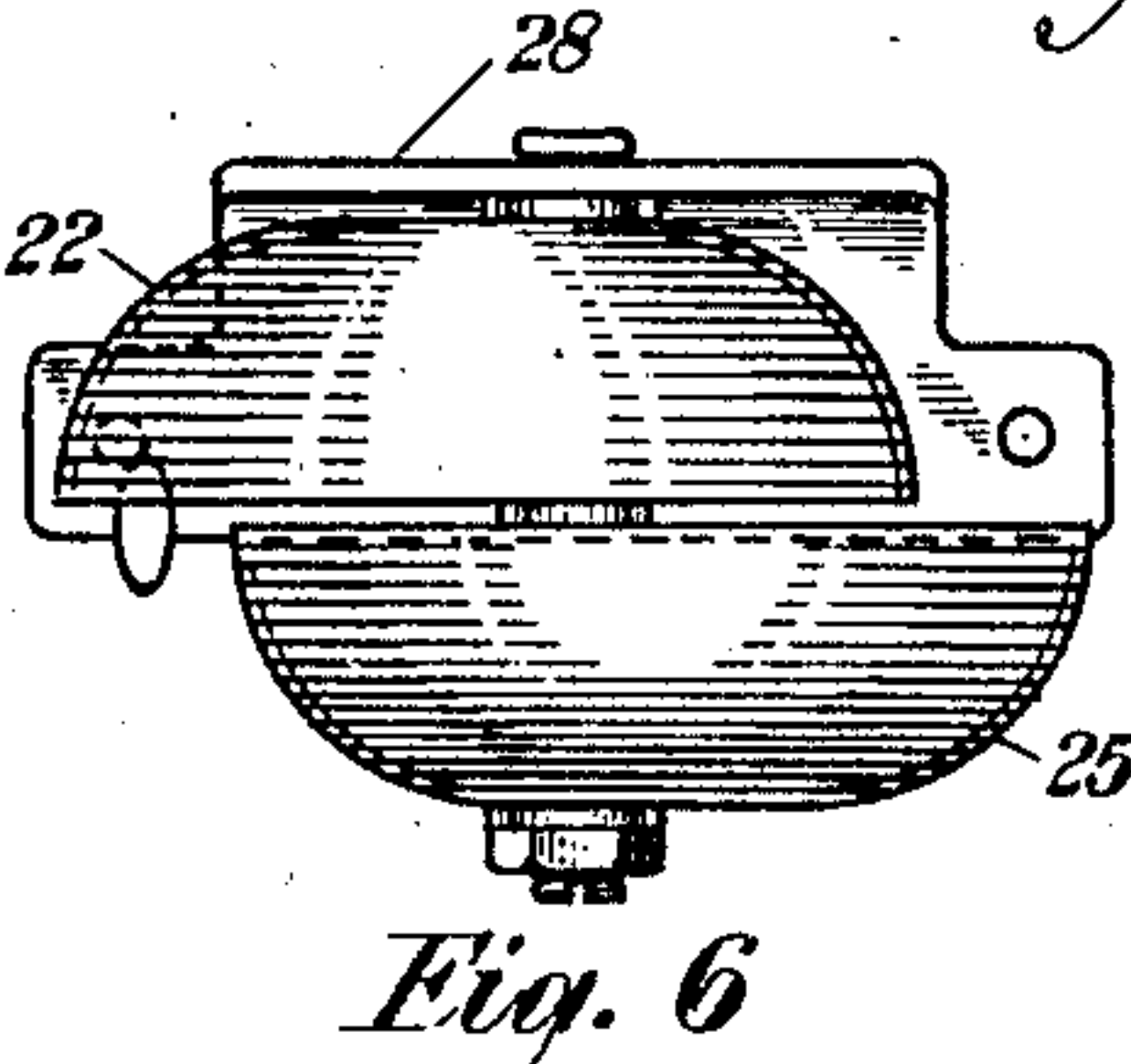
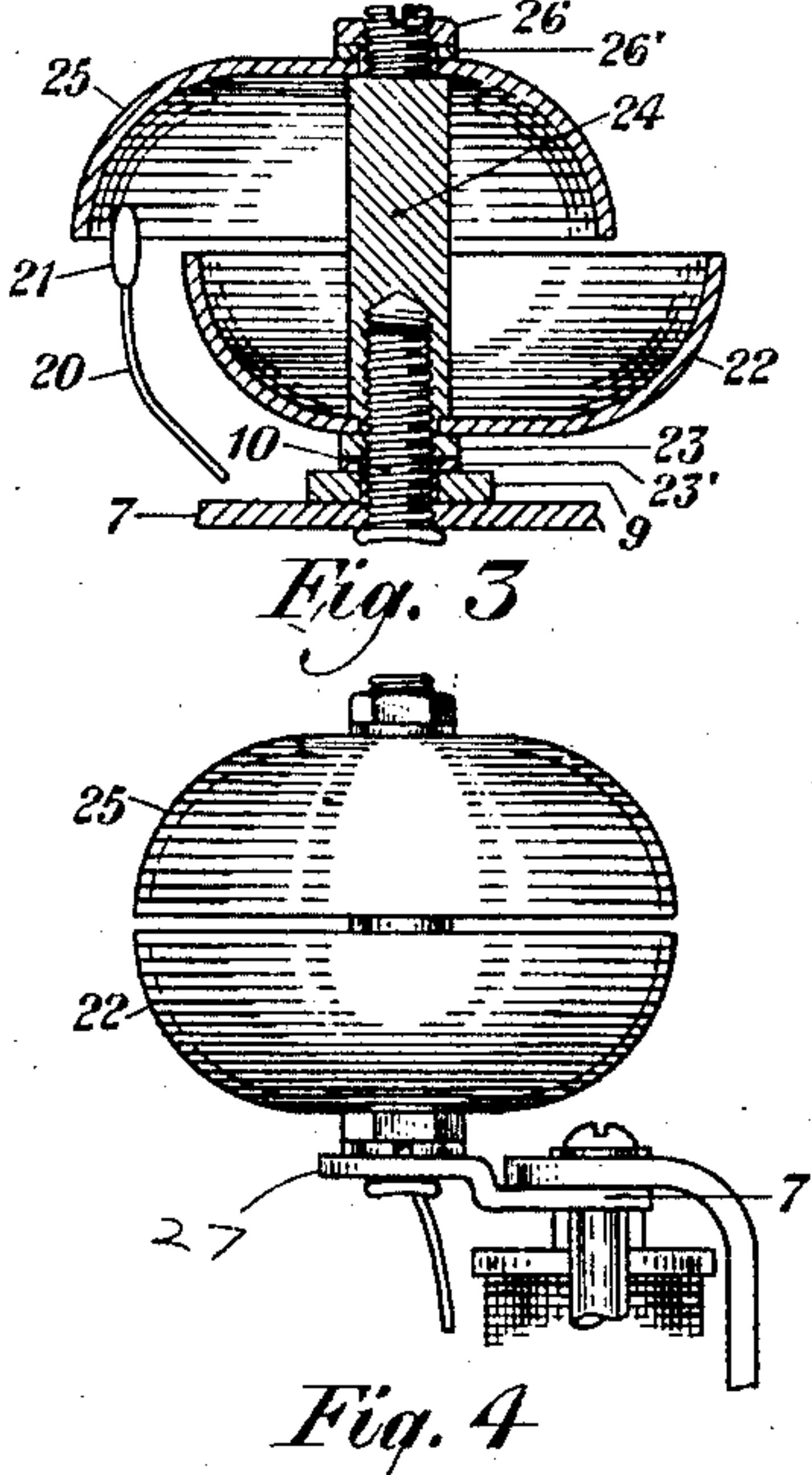
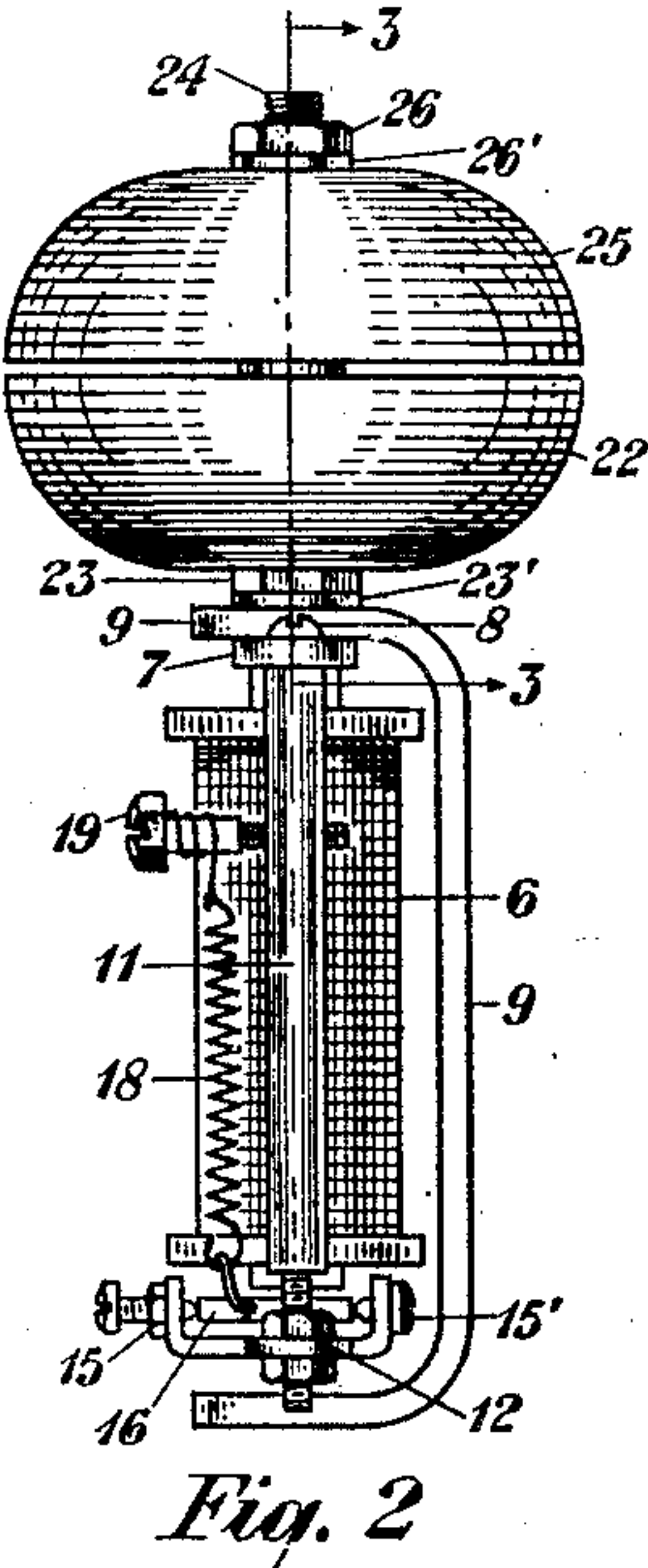
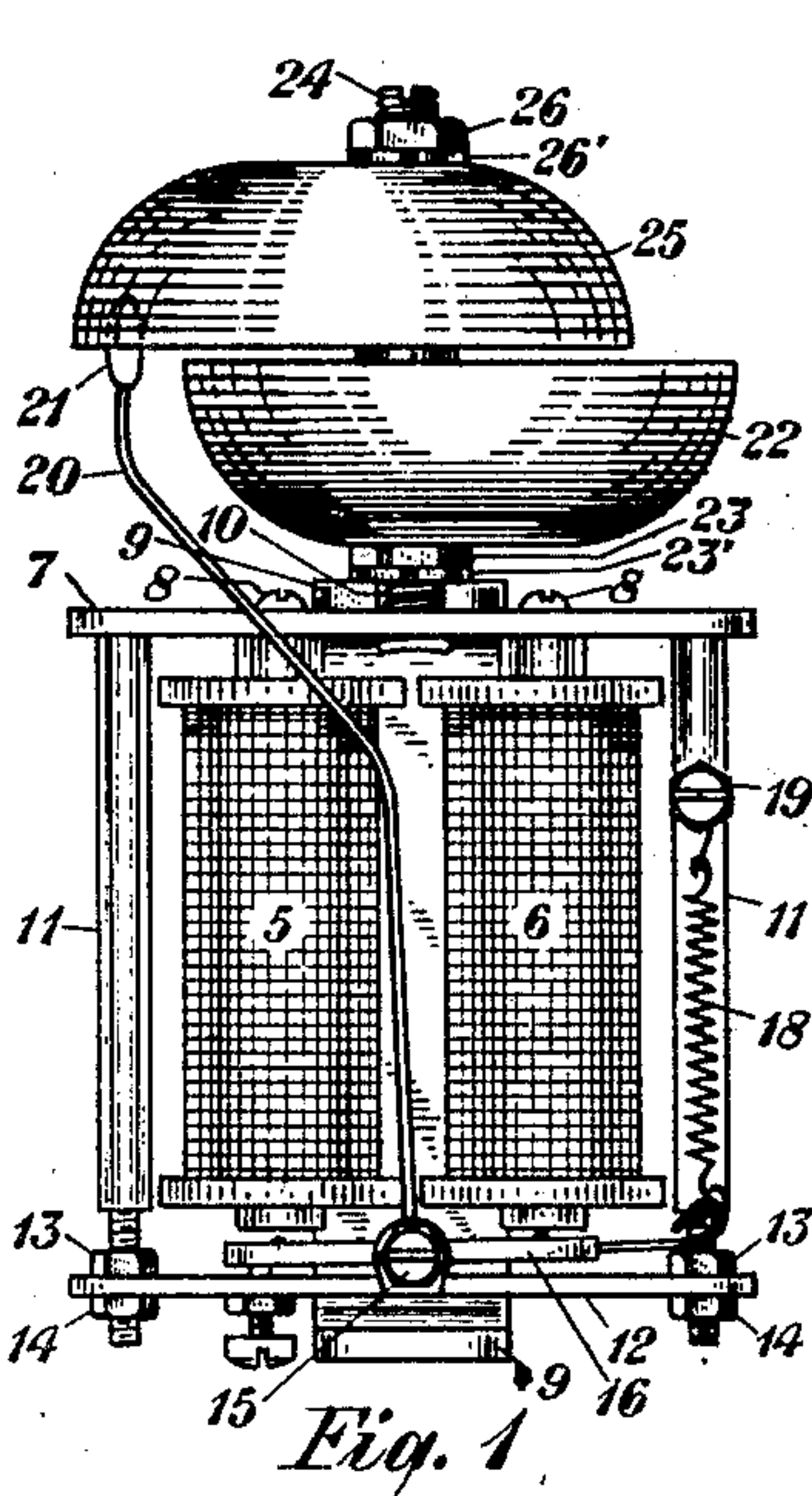
Jan. 1, 1929.

1,697,057

W. H. EDWARDS

RINGER

Filed Dec. 24, 1925



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UNITED STATES PATENT OFFICE.

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RINGER.

Application filed December 24, 1925. Serial No. 77,580.

This invention relates to such ringers as are used in electrical work, and more particularly to those which are used at telephone stations.

5 In the use of ringers in connection with telephone sets, considerable savings would result from a reduction in the size of said sets. These savings would consist of manufacturing savings due to the smaller housing
10 which would be provided for the equipment, savings due to decreased expense of handling smaller apparatus in store-rooms and in transportation, and savings in installation expenses due to the ease with which smaller
15 sets could be handled and installed. A further advantage in the use of smaller subscriber's sets would be from an appearance standpoint, as it is usually desirable to make the sets as inconspicuous as possible.

20 Accordingly it is an object of this invention to provide a ringer of such compactness that it can be used in connection with telephone sets to render them smaller and less conspicuous than heretofore.

25 Another object consists in providing a ringer of an efficient type in a simple and inexpensive manner.

30 These and further objects will be apparent from the following description, when considered in connection with the accompanying drawings, in which the invention is illustrated.

35 In the drawings, Figure 1 is a front elevation of the ringer; Fig. 2 is a side view thereof; Fig. 3 is a vertical section on the line 3—3 of Fig. 2; Fig. 4 is a modification of the improved device; Fig. 5 is a front elevation of a modified gong arrangement for the ringers;
40 Fig. 6 is a top plan view of Fig. 5; and Fig. 7 is a side elevation of Fig. 5.

Referring to the drawings, in which structures generally similar to ordinary ringers are illustrated, the numerals 5 and 6 represent
45 electromagnets which are supported substantially parallel to each other and extend in the same direction from the yoke 7 to which they may be secured by screws 8 inserted through said yoke into the upper ends of the cores of said electromagnets. The numeral 9
50 indicates a permanent magnet which is secured to the yoke by a threaded stud 10, which will be later referred to. The permanent magnet extends substantially parallel to the electromagnets 5 and 6 and is bent around
55 the lower end of the ringer and serves to

keep the cores of the electromagnets polarized.

At 11 are indicated side posts which are secured to the yoke 7 and extend downwardly therefrom parallel to the electromagnets, and
60 their threaded ends pass through perforations provided at opposite ends of a bridge member 12. The bridge member 12 is adjustably secured to the threaded stems of the
65 members 11 by upper and lower nuts 13 and 14 constituting a pair.

A front bearing 15 and a parallel rear bearing 15' are associated with the bridge member 12 in any suitable manner. For instance,
70 the bearings may be integral therewith or affixed thereto, and an armature 16 is pivoted thereon by the bearings, shown in the present instance in the form of screws. The armature
75 16 extends across the cores of the electromagnets and may be biased by a spring 18 attached to one of its ends and extended to a post 19 affixed to one of the side members 11. Thus it will be seen that the permanent magnet and electromagnets being constructed and
80 related in accordance with the usual telephone ringer constructions, the armature is free to respond to the attracting and repelling influence of the magnets, so that it will be tilted first in one direction and then in the
85 other.

A striker or clapper rod 20 equipped with a striker or clapper 21 is suitably attached to the center of the armature 16 and is adapted to vibrate in accordance with the movement
90 of said armature. The striker 21 may be slightly elongated and provided with flattened sides.

The stud 10, previously referred to, extends through the yoke 7 and permanent magnet 9 and its threaded end is staked over
95 beneath the yoke to prevent its rotation therein. The threaded end of the stud extends vertically and passes through a lower gong 22, as more clearly shown in Fig. 3 of the drawings. An interposed lock nut 23 and associated washer 23' separates the permanent
100 magnet 9, and the gong 22 is clamped on said nut and washer by a post 24 which may be threaded over the stud 10. The post may be tightened on said stud by means of a screw-
105 driver inserted in a slot provided at the outer end of the post. The gong 22 is preferably drilled with an eccentric mounting opening, so that by rotating the gong about its axis
110 when the post 24 is loosened, it may be ad-

justed with reference to the post and the striker 21 of clapper rod 20, which is preferably offset as indicated. At the outer end of the post 24 another gong 25 is mounted. 5 The gong 25 is identical with the gong 24, and is clamped to said post by a nut 26 having an interposed lock washer 26'. The gong 25 may be adjusted in the same manner as indicated in connection with the gong 24. 10 In the modification illustrated in Fig. 4, a bracket 27 which may be integral with the yoke 7, extends forwardly herefrom and then in the direction indicated. At the end of the bracket an opening is provided for the re- 15 ception of the stud 10 which is mounted with its associated gongs 22 and 25 in the same manner as described in connection with Figs. 1, 2 and 3. 20 In Figs. 5, 6 and 7, which indicate a modified arrangement to that shown in the previous figures of the drawings, the construction of the ringer may be similar to that previously described with the following variation made in the manner of mounting the gongs 25 on the ringer. In the present instance, a bracket 28 is formed from a punching which may be integral with or attached to the yoke 7 in any suitable manner. As shown, the bracket 28 is integral with the yoke 7, and its 20 forked members 29 and 30 extend vertically therefrom. The post 24 and its associated parts are of the same construction as outlined in connection with Figs. 1, 2, 3 and 4. In this case the stud 10 and post 24 are mounted so 35 that the axes of the gongs lie in a plane perpendicular to that of the coils 5 and 6 of the ringer. The space between the members 29 and 30 permits the upper horizontal portion of the magnet 9 to extend therethrough and 40 be secured to the yoke 7 by a screw 31.

It will be obvious that the gongs when mounted as described lie in eccentric relation to the yoke member and to each other so that

the clapper vibrates between the two gongs alternately, striking the inner edge of one 45 gong and the outer edge of the other.

It is pointed out that the advantage of the above described construction is the compactness of the gong arrangement. This compactness materially reduces the overall width 50 of the ringer while increasing its overall length but comparatively little, thereby decreasing by approximately 45%, for instance, in the case of the forms shown in Figs. 1 and 2, the volume of the smallest square prism in 55 which it could be included, which is an indication of the mounting space required for the ringer. In addition to this, the improved arrangement permits the use of screw machine parts for the gong mountings, instead 60 of the formed parts now used, and provides a very simple method of adjusting the gong.

While the arrangements of this invention have been embodied in certain specific forms which have been deemed desirable, it will be 65 understood that they are capable of embodiment in many and widely varied forms without departing from the spirit of the invention as defined in the appended claims.

What is claimed is: 70

1. In a ringer, a yoke therefor, a pair of gongs of like diameter mounted thereon in eccentric and opposed relation to each other, and a clapper adapted to vibrate between the inner and outer edges of said gongs in a di- 75 rection perpendicular to the axis thereof.

2. In a ringer, a yoke therefor, a pair of gongs of like diameter eccentrically mounted thereon in eccentric and opposed relation to each other, and a clapper adapted to strike 80 said gongs alternately in a direction perpendicular to the axis thereof.

In testimony whereof, I have signed my name to this specification this 23rd day of December, 1925.

WILLIAM H. EDWARDS.