

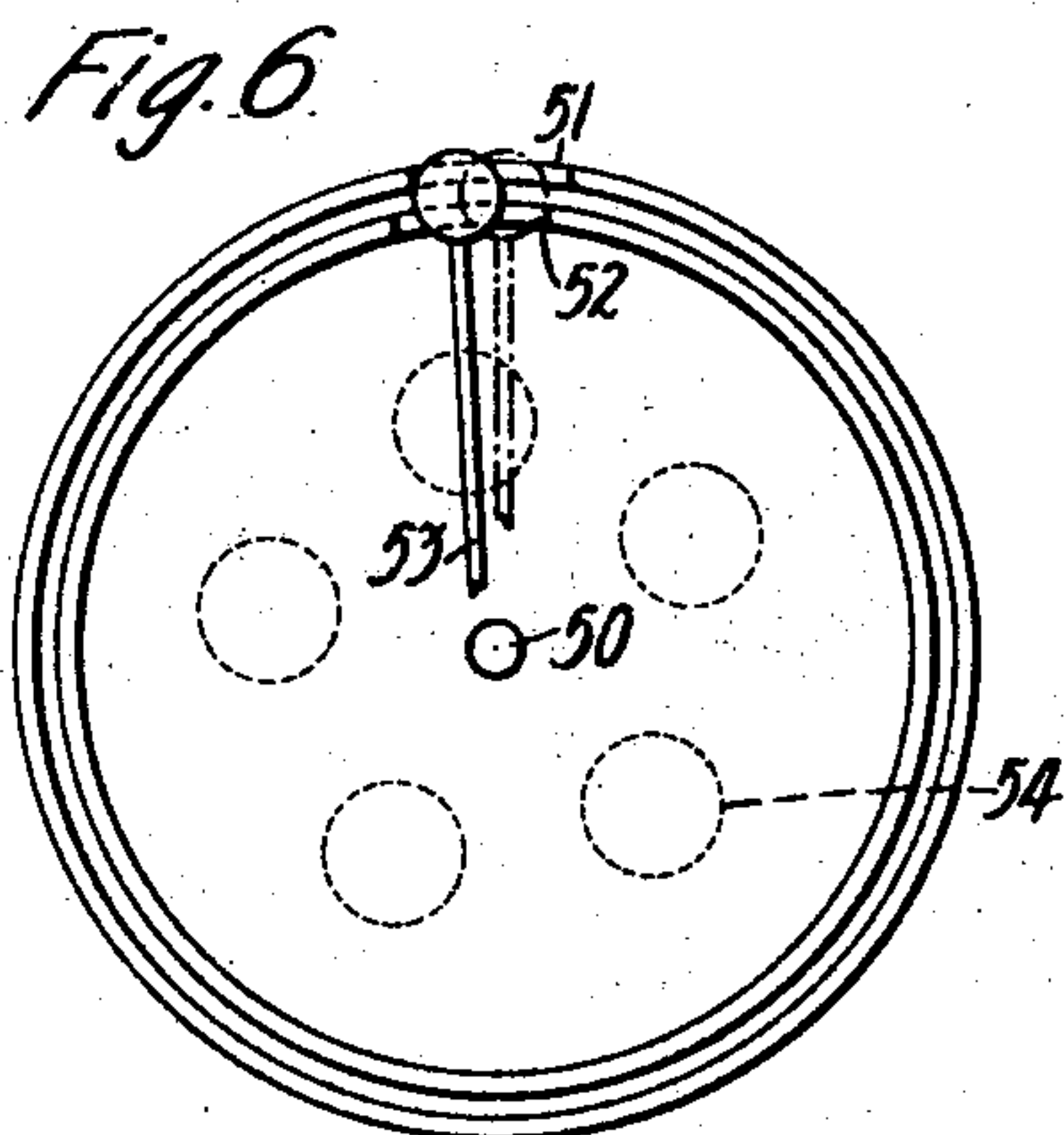
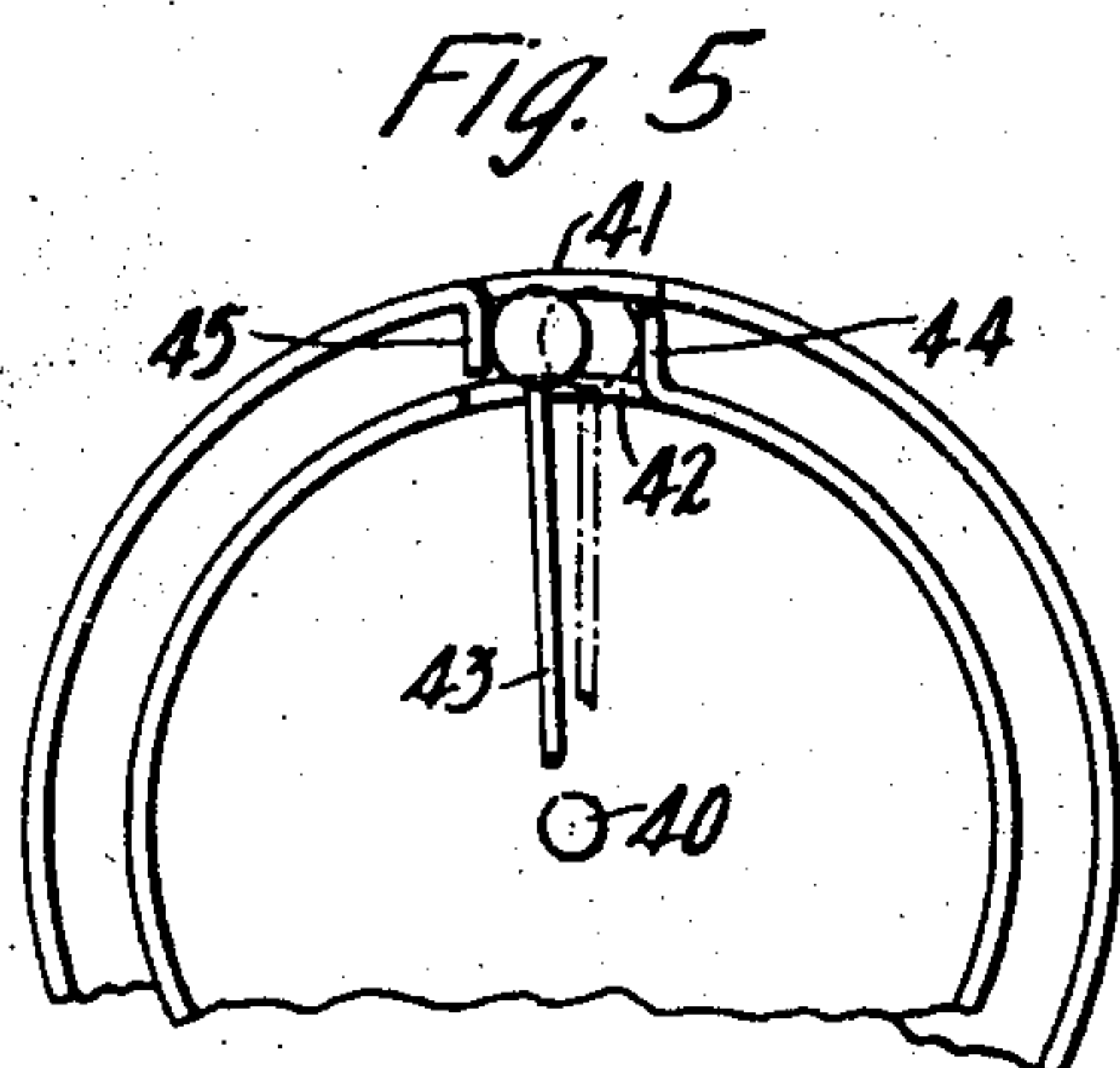
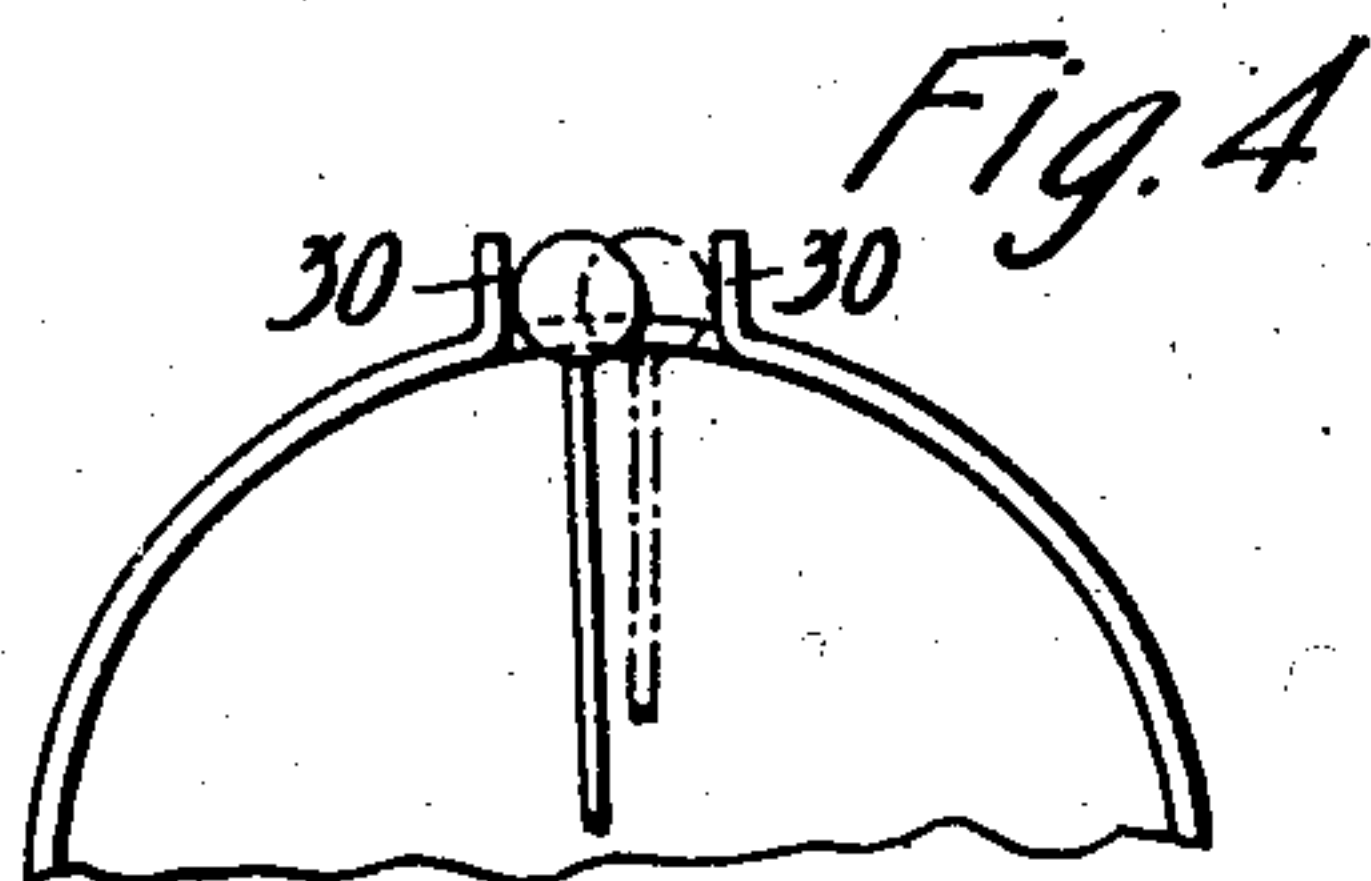
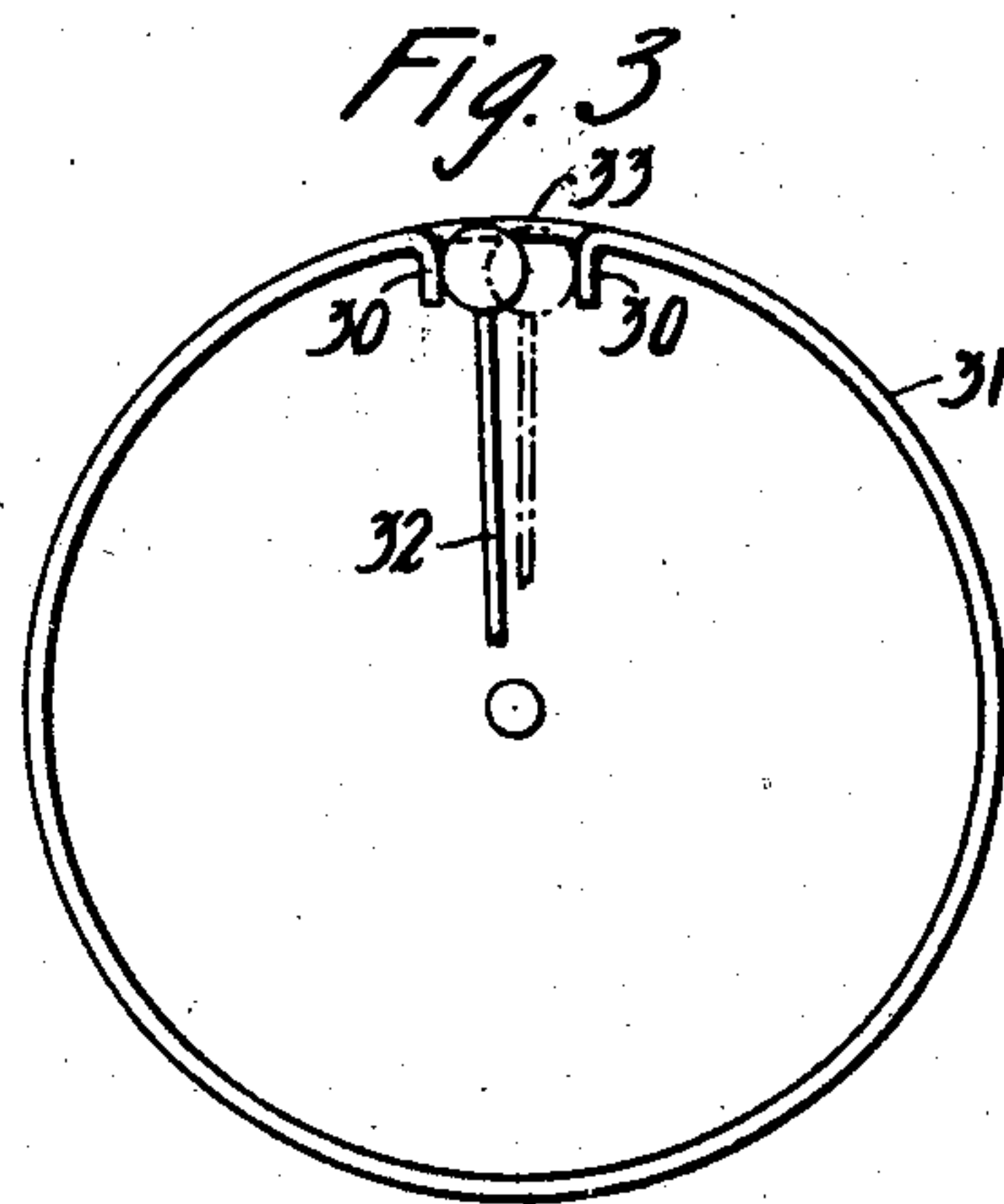
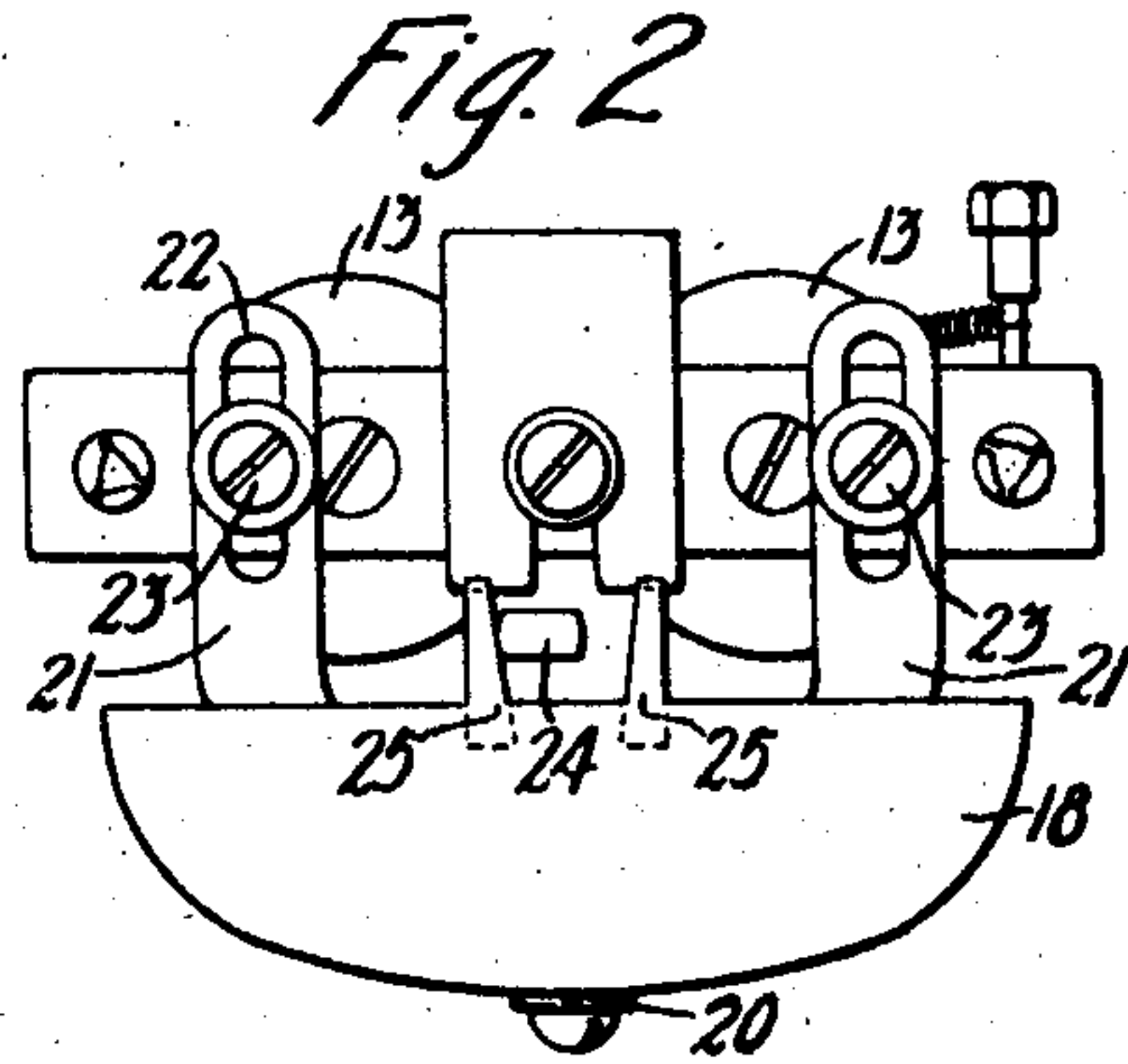
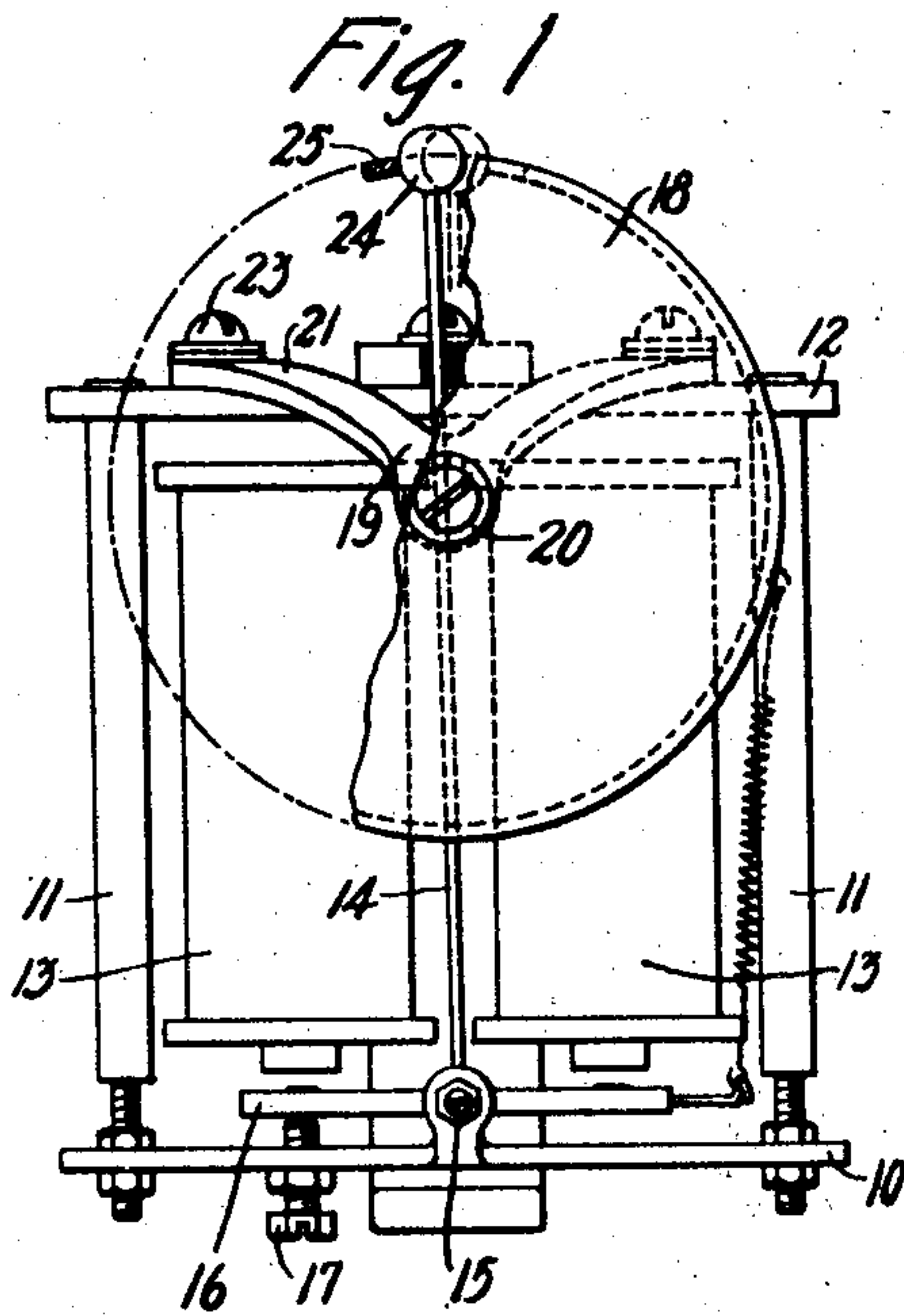
Oct. 18, 1927.

1,645,823

O. A. SHANN ET AL

SOUND PRODUCING DEVICE

Filed Aug. 20, 1925



Inventors:
Oscar A. Shann,
Frank A. Kuntz,
by *E. W. Adams* Att'y

UNITED STATES PATENT OFFICE.

OSCAR A. SHANN, OF BROOKLYN, AND FRANK A. KUNTZ, OF WOODHAVEN, NEW YORK, ASSIGNORS TO BELL TELEPHONE LABORATORIES INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SOUND-PRODUCING DEVICE.

Application filed August 20, 1925. Serial No. 51,290.

This invention relates to sound producing devices, and more particularly to apparatus adapted for use as a ringer gong or the like in telephone systems.

5 An object of the invention is the provision of an efficient and compact ringer so designed that the space heretofore required therefor is greatly reduced without reducing the volume of sound produced.

10 A further object of the invention is to provide an arrangement of gongs in space relation to each other that the volume of sound produced by a medium associated therewith may be varied to suit particular conditions.

15 A feature of the invention is the provision of a single gong in association with an actuating hammer whereby the hammer is controlled to operate within a confined space and strike a plurality of projections of the gong so that the number of times the hammer makes contact therewith is equal to the number of times the hammer would make contact with two gongs if placed therebetween.

25 A further feature is the provision of a single gong adjustably associated with a clapper whereby the space in which the clapper operates is varied at will.

30 Another feature is the provision of a plurality of gongs mounted concentrically one within the other having notches in the peripheries thereof so that a clapper may alternately strike the one gong and then the other by moving in the notches of both.

35 Another feature is the provision of a plurality of gongs concentrically mounted on a common standard, each of said gongs having a notch in the rim thereof, one side of each of said notches having a projection so that the clapper may first hit one and then the other of said projections. Further means are provided for obviating possible muffling by the outer gong of the sound produced by the inner one by having the outer gong perforated.

45 Other features not specifically mentioned will become apparent from the following description read in conjunction with the following drawing, in which, Fig. 1 is a view partly in section of the ringer means having a single gong with projections extending from the rim thereof and a clapper adapted to move between the projections.

Fig. 2 is a top view of Fig. 1. Fig. 3 shows a single gong adapted to be associated with the usual ringer having a pair of projections integral with the periphery of the gong and extending inwardly. Fig. 4 is similar to Fig. 3 with the exception that the projections integral with the rim of the gong extend outwardly from the rim. Fig. 5 shows a pair of gongs placed one within the other, each having a notch in the rim thereof. One side of each of said notches has a projection integral with the rim in which it is situated, the projection of the inner gong extending outwardly, whereas that of the outer gong extends inwardly so that said projections are substantially in opposition to and parallel with each other. Fig. 6 shows a pair of gongs with a notch in the rim of each and a clapper to move within the notches of both. Means are also shown comprising perforations in the outer gong for purposes more fully explained hereinafter.

75 Considering Fig. 1, 10 represents a supporting base on which is mounted standards 11 which in turn support pole piece 12. 13 represents the usual coils found in a bell or the like between which is positioned actuating device or hammer 14 pivoted at 15 on armature 16. 17 is the ordinary make and break device associated with the armature.

Referring more in detail to the structure of applicant's signaling device or gongs as shown in Fig. 2, 18 represents a single bell or gong adjustably mounted by means of a screw or the like to support standard 19. In order to securely position the bell on the standard, a split washer 20 may be used between the head of the screw and the body of the bell. Arms 21 of the supporting standard have slots 22 therein so that the standard may be adjustably positioned with respect to the pole piece by means of nuts or screws 23. This is for the purpose of moving the bell nearer to or farther away from the head 24 of the clapper. Projections 25 associated with the rim of the bell are so positioned that the clapper when actuated is caused to strike first one projection and then the other. It should be noted that the projections are wider at the base than at the tip so that if the bell is moved nearer the head of the clapper by sliding arms 21 under screws 23 toward the coils

of the bell, the distance in which clapper 24 would be free to vibrate is shorter than the distance between the tips of the projection. In other words, by moving the standard as aforesaid, the gap in which the clapper is adapted to move may be adjusted to suit changes in potential or to increase the vibrating efficiency of the ringer.

While the usual electromagnetic structure has been shown in Figs. 1 and 2 to more clearly illustrate the application of applicant's invention, it should be understood that similar structures are used with the devices illustrated in the other figures.

Fig. 3 shows a single gong that may be adjustably positioned on a standard which has a pair of projections 30 integral with the rim 31 of the gong and so positioned with respect to clapper 32 that when the clapper is actuated upon the energization of associated electromagnetic device it vibrates in notch 33 in the rim of the gong and alternately strikes projections 30.

Fig. 4 shows a very similar application with the exception that in this case projections 30 extend outwardly from the rim of the gong. It may be explained that projections 30 of Figs. 3 and 4, as well as projections 25 of Figs. 1 and 2, may be welded or riveted to the rim, or may be integral therewith to suit varying conditions.

Fig. 5 shows a pair of gongs placed one within the other and mounted concentrically on common standard 40. Notches 41 and 42 are respectively located in the rims of the outer and inner gongs, the gongs being so positioned that clapper 43 vibrates in the notches of both. Projection 44 is integral with the rim of the inner gong on one side of the notch therein and projection 45 is integral with the outer gong and positioned on the side of the notch opposite projection 44. Upon the actuation of the clapper, the projections are alternately struck and double action is had.

Fig. 6 shows a plurality of gongs similarly placed on a common standard 50 having notches 51 and 52 in the rims thereof, clapper 53 being adapted to vibrate in the notches of both. In this instance the clapper upon being actuated strikes the rim of first one gong and then the other. It is noted that the clapper in this case strikes the periphery of the bells directly, and no projections are provided in association with the sides of the notches. Perforations 54 are provided in the outer gong so that the sound produced by the inner gong may not be muffled by the outer one.

It may be understood that similar perforations may be placed in the outer gong of the combination shown in Fig. 5.

It is to be observed that applicant enables the use of either a single gong or a pair of gongs in a confined space without the necessity of having two gongs placed alongside each other with the clapper situated therebetween as is normally the case. With this single gong, double action is had due to the use of notches in the rim or projections associated with the rim in such manner that a single clapper or similar device may come in contact with and produce sound at each end of its stroke. In other words, the double action of the clapper is obtained without using a plurality of bells placed alongside each other in one plane. By this means as aforesaid, not only is space conserved, but a more compact and convenient arrangement is obtained especially of advantage when used with hand signaling or testing sets in the electrical field.

What is claimed is:

1. A sound producing device comprising resounding means comprising circular cup-shaped gongs and a clapper to strike said means, said clapper being arranged to move in a plane practically coincident with the plane of the edge of said means and in a line practically coincident with the edge of said means, said clapper being pivoted at such a point that the stem thereof passes beneath the center of said resounding means.

2. A sound producing device comprising resounding means and a clapper to strike said means, said clapper being arranged to move in a recess cut out of the edge of said means in a plane practically coincident with the plane of the edge of said means and in a line practically coincident with the edge of said means.

3. A sound producing device comprising a plurality of gongs concentrically mounted one within the other, a notch in the edge of each of said gongs, and a clapper adapted to vibrate in said notches.

4. A sound producing device comprising a plurality of gongs placed one within the other, a notch in the edge of each of said gongs, and a clapper positioned in said notches, whereby upon the actuation of said clapper the sides of said notches in said gongs are alternately struck, and means for preventing the sound produced by one of said gongs from being interfered with by the other of said gongs.

In witness whereof, we hereunto subscribe our names this 17th day of August A. D., 1925.

OSCAR A. SHANN
FRANK A. KUNTZ