

W. E. McGRAW.
 DEVICE FOR IMPROVING THE TONE OF CATHEDRAL GONGS FOR CLOCKS.
 APPLICATION FILED JUNE 20, 1911.

1,025,821.

Patented May 7, 1912.

2 SHEETS—SHEET 1.

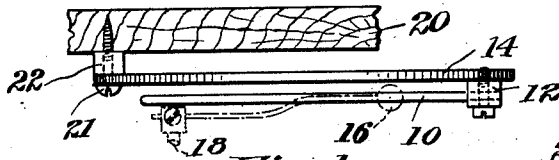


Fig. 1.

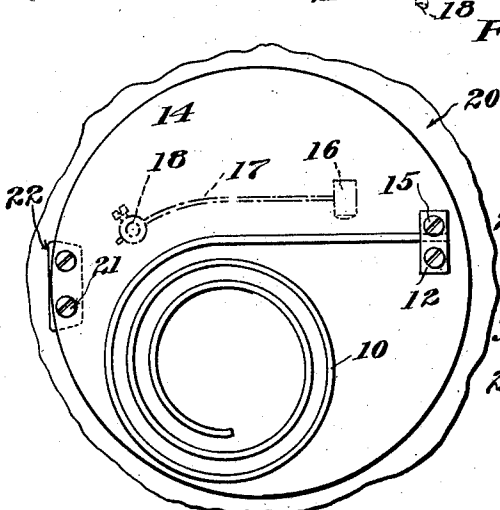


Fig. 2.

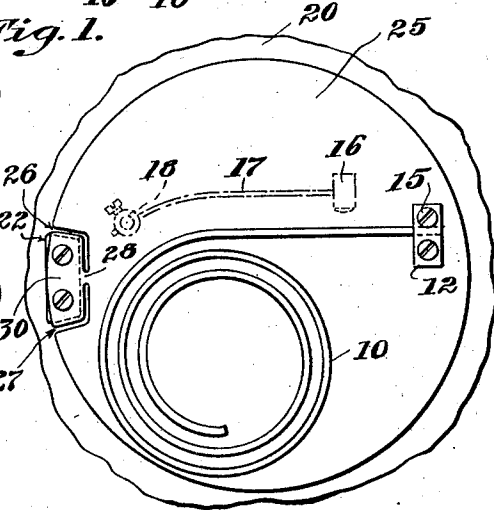


Fig. 3.

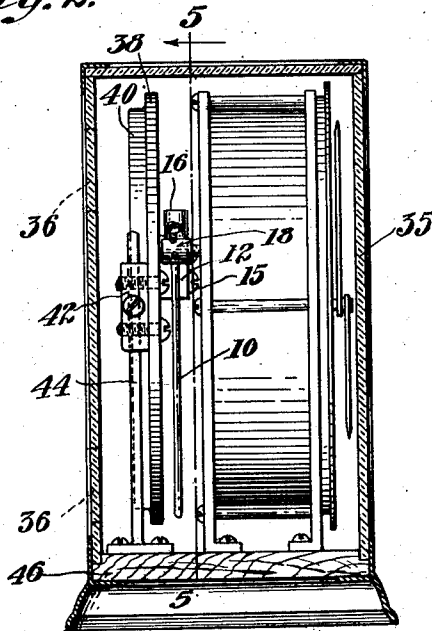


Fig. 4.

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2 SHEETS-SHEET 2.

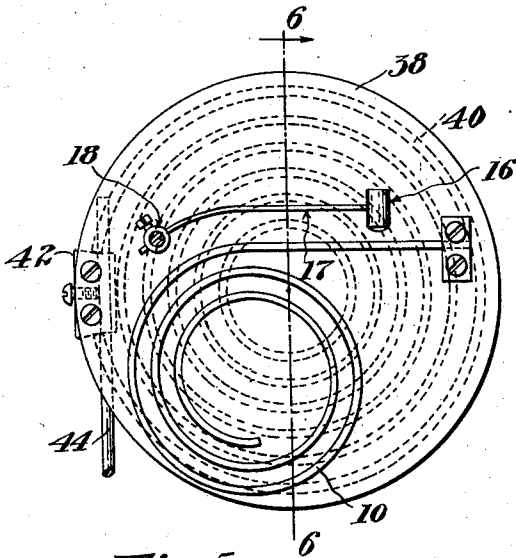


Fig. 5.

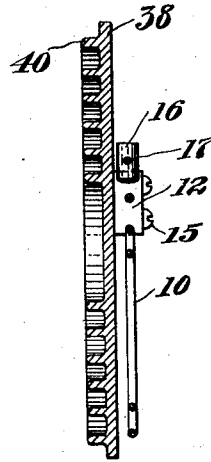


Fig. 6.

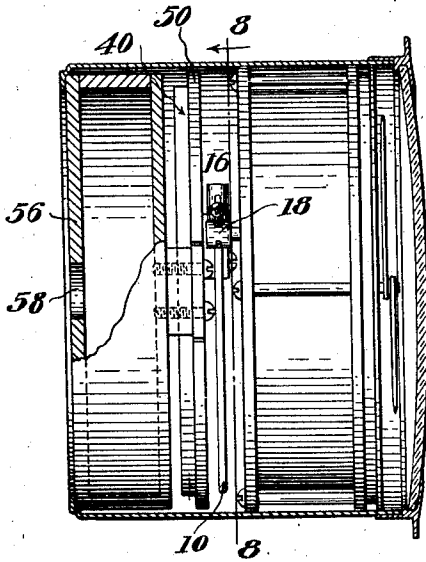


Fig. 7.

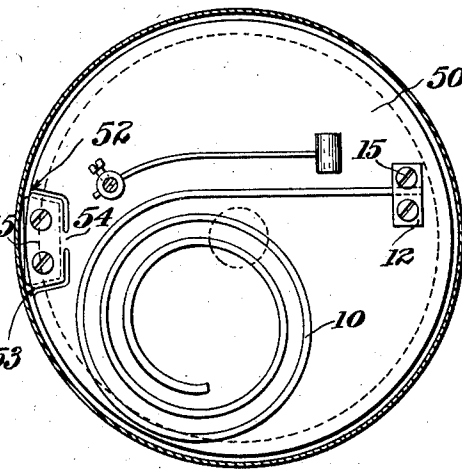


Fig. 8.

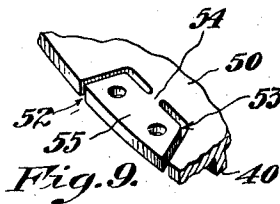


Fig. 9.

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UNITED STATES PATENT OFFICE.

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DEVICE FOR IMPROVING THE TONE OF CATHEDRAL-GONGS FOR CLOCKS.

1,025,821.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed June 20, 1911. Serial No. 634,280.

To all whom it may concern:

Be it known that I, WALTER E. MCGRAW, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Devices for Improving the Tone of Cathedral-Gongs for Clocks, of which the following is a specification.

This invention relates to a device for improving the tone of cathedral gongs for clocks.

The object of the invention is to provide means for improving the tone of cathedral gongs so that they can be employed in clocks having a small space for the sounding element, and to produce such a tone that they can be employed in clocks having glass cases and will emit a tone having great carrying power and prolongation.

Heretofore it has been impracticable to use cathedral gongs in clocks having glass cases, for the reason that the sound emitted could not be transmitted through the glass with sufficient tone to be acceptable. It has consequently been necessary to employ bells, which produce a louder tone, but their tone is not of the quality which is desired. It is for the purpose of providing a cathedral gong which shall have ample tone to be transmitted to the external atmosphere, that this invention is primarily intended.

With the above object in view, the invention consists in the device for improving the tone of cathedral gongs for clocks, hereinafter described and particularly defined in the claims, the advantages of which will be obvious to those skilled in the art from the following description.

The invention will be clearly understood from an inspection of the accompanying drawings, in which—

Figure 1 is a fragmentary plan view showing the gong suspended from a plain disk mounted upon a board which forms the back of a clock, Fig. 2 is a front elevation of the same, Fig. 3 is a view similar to Fig. 2, showing the disk slotted to form a narrow neck, Fig. 4 is a sectional side elevation of a glass-cased clock showing the gong suspended from a modified form of disk mounted upon a sounding board in the bottom of the clock case, Fig. 5 is a view in elevation taken on line 5—5 in Fig. 4, Fig. 6 is a transverse, vertical section taken on

line 6—6 in Fig. 5, Fig. 7 is a sectional elevation of a cylindrical cased clock, showing the gong suspended from a disk mounted upon a resonant chamber, Fig. 8 is a view in elevation taken on line 8—8 in Fig. 7, and Fig. 9 is a fragmentary detail of a disk showing the reduced neck.

As illustrated in said drawings the gong is suspended at one side of a plate or disk, which is connected at the opposite edge to a support or resonant medium for amplifying the sound. This support may be the wooden back of a clock case, or a sounding board mounted in the base of a clock case, or a hollow resonant chamber. The disk may also be mounted directly upon the works of the clock in cases where there is only a limited space, as for example in clocks having a cylindrical case. By having the point of suspension of the gong at the opposite edge of the disk from that of the point of support of the disk, the vibrations of the gong are taken up by the entire disk, transmitted across the same, and then transmitted to the resonant member, thus greatly amplifying the tone and increasing its carrying power and prolonging the sound so that it will dwell for a considerable interval of time after the hammer has struck the gong. This amplification of the sound may be increased by providing ribs or projections, preferably annular, on the surface of the disk, thus giving an increased area to the surface of the disk, which causes a greater vibration of the air. The amplification of the sound may be further increased by cutting through the disk adjacent to its support and leaving only a small neck of metal connecting the two portions of the disk. Thus when the gong is sounded the vibrations of the disk are concentrated through the neck, and these concentrated vibrations are transmitted to the resonant medium for amplification. This feature may be employed with the plain disk or with the reinforced disk. By experiment I have found that the disks are most efficient when made of cast metal, such for example as bronze, with the scale left on, as this scale is drawn tightly over the surface of the disk and seems to confine the metal under tension so that it takes up the vibrations of the sounding gong more effectively than when the disk is finished by removing the scale.

As shown in Fig. 1, the cathedral gong 10 consists of a spiral wire of common form, suspended at one end from a block 12, which is fastened to a plain metal disk 14 by means of screws 15. The gong is adapted to be sounded by a hammer 16, carried by an arm 17 attached to a shaft 18, which is actuated by the clock mechanism. The disk 14 is secured to a support 20 by means of screws 21, at a point substantially diametrically opposite the point of suspension of the gong. In the present instance a block 22 is held between the disk and the support, to form a connection between the disk and support at this point, and to maintain the remainder of the disk free from the support, which support may be the wooden back of a clock.

As shown in Fig. 3, the gong is similarly mounted on a disk 25, which is provided with two slots 26, 27, whereby a narrow neck 28 is formed joining the body of the disk with the portion 30. This portion of the disk is connected to the support or resonant medium by means of screws, or in any other suitable manner.

As shown in Fig. 4, the invention is embodied in a clock having a glass case 35, which may be provided with openings 36, through which the sound can pass out of the case into the atmosphere, and which may be suitably covered, as with silk, to prevent the entrance of dust into the case. In this form of the invention the gong 10 is suspended from a block 12, which is fastened to a disk 38, having projections or ribs 40, preferably annular, formed thereon. The disk 38 is mounted on a block 42, carried by a rod 44 attached to a support 46, which may be a sounding board in the bottom of the clock-case. By forming the disk with projections or ribs, the surface of the disk is increased and thus a greater area is provided for contact with the air, whereby greater vibration of the air is produced.

As shown in Fig. 7, the gong 10 is suspended from a block 12 carried by a disk 50. This disk is similar to disk 38 by having ribs 40 formed thereon, but is slotted at 52, 53 to form a narrow neck 54, which connects the body of the disk with the portion 55,

which portion is attached to a hollow, cylindrical, resonant chamber 56 provided with an aperture 58 in one end wall. This construction of the resonant chamber is particularly adapted for clocks having a cylindrical case, although it is applicable to other shapes of cases. In this modification of the device the vibrations of the gong are transmitted to the ribbed or reinforced disk where they are amplified and concentrated through the narrow neck, and then transmitted to the resonant chamber 56.

It is to be understood that the various modifications of the disk are not limited to the particular locations shown, but that either form of disk is adapted to be mounted in any of the ways shown.

While I have illustrated and described several embodiments of the invention, I am aware that many modifications of the invention can be made by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction shown and described, but

What I claim is:—

1. A device of the character described, comprising a disk, a cathedral gong suspended from said disk at one edge thereof, means for connecting said disk to a support, said disk being provided with a pair of slots extending inward from its edge and converging whereby a narrow neck is formed and said connecting means being located between the slots adjacent to the edge of the disk, substantially as described.

2. A device of the character described, comprising a disk having integral annular ribs thereon, a cathedral gong suspended from said disk at one edge thereof, and means at the opposite edge of said disk for connecting it to a support, substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WALTER E. MCGRAW.

Witnesses:

GEORGE CLARENDON HODGES,
CHAS. F. HOWE.