

H. J. HEENEY.
GONG STRIKING MECHANISM.
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1,024,449.

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Fig. 1,

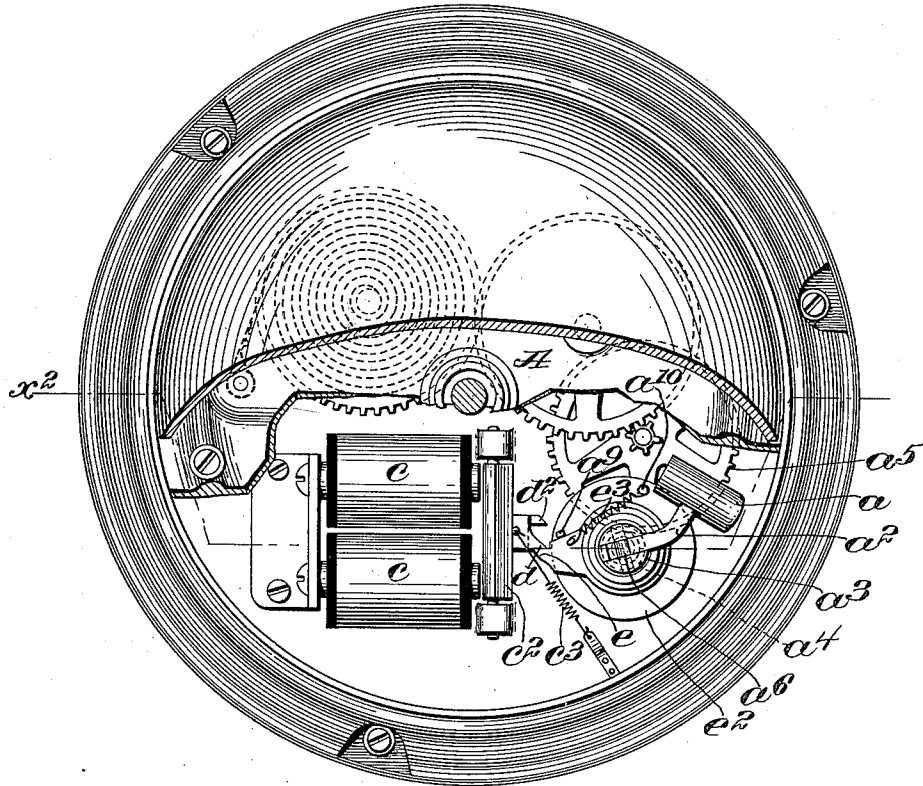
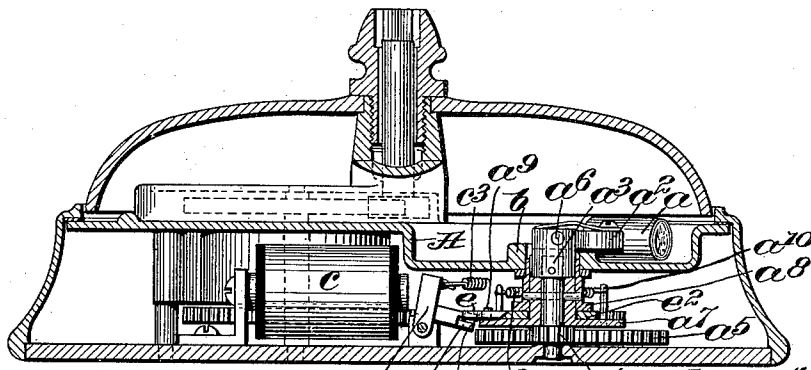


Fig. 2,



witnesses:

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Inventor:
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UNITED STATES PATENT OFFICE.

HENRY J. HEENEY, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR TO HOLTZER-CABOT ELECTRIC COMPANY, A CORPORATION OF MASSACHUSETTS.

GONG-STRIKING MECHANISM.

1,024,449.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY J. HEENEY, a citizen of the United States, residing in Brookline, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Gong-Striking Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a gong striker, or other alarm device, of the kind in which single blows are struck on the gong, the hammer being controlled by an escapement device, usually operated by the armature of an electro magnet.

The invention relates to an improvement in that class of single striker gongs in which a hammer is carried by a rotatable shaft which is adapted to make a complete rotation for each blow struck by the hammer, the hammer itself being allowed to travel past the gong during a portion of its movement, and then being brought into a position to come in contact with the gong at the end of its movement by means of a cam or equivalent device for controlling the direction of movement of the hammer. The purpose of this arrangement is to impart momentum to the hammer, in order that it may strike as heavy a blow as possible, and it is obviously necessary that there should be a rebounding effect, so that the hammer will not remain in contact with the gong after the blow has been struck, but will return to its normal position out of contact with said gong.

The present invention relates mainly to an improved escapement arrangement whereby the rebounding effect can be obtained with the hammer rigidly connected to its driving mechanism or motor, while the tripping device or detent member of the escapement mechanism is rigid and non-yielding, so that the said detent member is not complicated by levers, springs, or the like. To these ends, the detent member, which usually consists in the armature of an electro magnet is provided with the ordi-

nary arrangement consisting of two detents out of alinement with each other, so that when the armature is attracted the hammer is released by one detent and caught by the other, being released by the other detent when the armature is retracted, the same movement bringing the first detent into position to arrest the hammer at the end of its operation.

In accordance with the invention, the co-operating stop carried by the hammer has a yielding connection with the said hammer, the hammer-shaft, and motor, the resistance of said connection being slightly greater than the power of the spring or equivalent motor which operates the hammer when released, so that the entire motive mechanism will continue to travel with the shaft and hammer until the blow of the hammer has been delivered, the parts then all being restored to normal position through the action of the yielding connection between the stop and the hammer.

Figure 1 is a plan view with part of the gong and casing broken away; and Fig. 2 is a vertical section on the line x^2 of Fig. 1.

The hammer a is carried at the end of a radial arm a^2 rigidly connected with a vertical shaft a^3 which is provided with a pinion a^4 in mesh with the gear a^5 of a suitable clock train, which is herein shown as utilized as the motive power for the hammer. When free to operate, therefore, the train will rotate the shaft a^3 , causing the hammer a to travel in a circular path. In the construction shown, the hammer normally stands underneath the gong and, in its operative movement, must travel past the edge thereof, being subsequently directed toward the gong in order to strike the same at the end of its complete rotation.

As herein shown, the arm a^2 is pivotally connected with the shaft a^3 , as indicated at a^6 , and the said arm rests upon the surface of an inclined annular member b , so that after passing the edge of the gong in its initial movement, the hammer is carried upward so as to strike the gong on the inside

when its movement has been finished. The inclined or cam surface b terminates in a shoulder against which the hammer rests when in its normal position. In the operation, therefore, the inertia of the hammer is relied upon to cause the same to retain its higher position after it leaves the cam surface b , the motor, however, still acting directly upon the hammer until the blow has been struck.

To control the operation of the hammer, an escapement device is employed, and, in the construction shown, the gong is arranged to be electrically operated; being under the control of impulses of current passed through the electro magnet c . The said electro-magnet c is provided with an armature c^2 having a retracting spring c^3 which holds it in the position shown in the drawings, when no current is passing through the magnet coils. The said armature c^2 is provided with a double detent having the detent members d and d^2 lying in different planes, the said members co-operating with a stop e which is arranged to travel with the hammer shaft a^3 . With the armature retracted as shown in the drawings, the stop e lies in contact with the detent d , the movement of the armature, however, when attracted, carrying the detent d away from the stop e and bringing the detent d^2 into the path thereof. Upon the subsequent release of the armature, therefore, the shaft a^3 is released and allowed to make a complete rotation at the end of which it is arrested by the detent d .

In order to provide for the striking movement of the hammer a and the subsequent restoring thereof to the normal position shown where it is out of contact with the gong, the stop e is arranged to have a yielding connection with the shaft a^3 , the retractile force of said yielding connection being slightly greater than that exerted by the motor, so as to restore the parts after the blow has been struck. In the construction shown, the stop e is formed on a disk e^2 , the said disk surrounding the hub of the hammer which is made in two parts, the lower part having a flange a^7 which affords the bearing for the said disk e^2 . The disk e^2 is further held in place by means of a collar a^8 which is pinned to the shaft a^3 , and has upper and lower flanges bearing respectively against the disk e^2 and the upper plate A of the box or casing which incloses the mechanism. The lower flange a^7 is provided with a stop a^9 and a post a^{10} , the stop member e being held against the stop a^9 by means of a spring e^3 which extends from the stop member e to the post a^{10} . This spring e^3 , therefore, affords a yielding connection between the stop member e and the hammer shaft a^3 , so that the entire motor

mechanism carrying the hammer shaft, the hammer, &c., are free to travel so far as permitted by the yielding connection e^3 after the stop member e has been arrested by the detent d . By this construction, the power of the motor is imparted to the hammer throughout its entire movement, thus increasing the force of the blow beyond that which would result merely from the momentum of the hammer against the stress of a spring or cushion connected therewith, while the cushioning effect of the yielding stop member is distributed, so to speak, throughout the entire mechanism, relieving the shock upon the motor, as well as that upon the detent member of the escapement. In other words, the cushioning effect of the stop, when arranged as herein described, prevents the shock and strain upon the motive mechanism which would result from the sudden arrest of a powerful and rapidly moving motor by contact between rigidly supported abutments.

What I claim is:

1. In a gong striker, a rotatable shaft; a hammer connected with said shaft; a motor to operate said shaft; a stop carried by said shaft; a yielding cushioning member connecting the said stop with the said shaft; and a double detent engaging directly with said stop to release and arrest the said rotatable shaft.

2. In a gong striker, a rotatable shaft, a hammer mounted on a radial arm pivotally connected with said rotatable shaft; a motor adapted to rotate said shaft; a cam surface controlling the path of movement of said hammer; a stop member mounted concentrically with and carried by said shaft; a spring connecting said stop member with said shaft; a double detent engaging directly with said stop member; and means for controlling the movement of said detent.

3. A gong striker comprising a shaft; a clock train connected with said shaft to operate the same; a hammer mounted on a radial arm pivotally connected with said shaft; a cam surface against which said arm bears during its movement; a disk bearing on said shaft and normally traveling therewith, but being capable of rotary movement with relation thereto; a spring connecting said disk with said shaft; a stop on said disk; a double detent engaging directly with said stop; and an electro-magnet controlling the operation of said detent.

4. In a gong striker, a revolving hammer; a shaft; means for giving complete rotation to said shaft and hammer; a stop member carried by said shaft; a shoulder fixed with relation to said shaft; a spring connected with said stop member and said shaft to hold the stop member in engage-

ment with said shoulder and thereby constitute a yielding connection between the stop member and the shaft; a double detent engaging directly with said stop member; and
5 means for operating said double detent to release and arrest the hammer shaft.

In testimony whereof, I have signed my

name to this specification in the presence of two subscribing witnesses.

HENRY J. HEENEY.

Witnesses:

M. E. COENEY,
JAS. J. MALONEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."