H. E. REEVE.

GONG STRIKING MECHANISM.

APPLICATION FILED JAN. 22, 1909.

925,439. Patented June 15, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

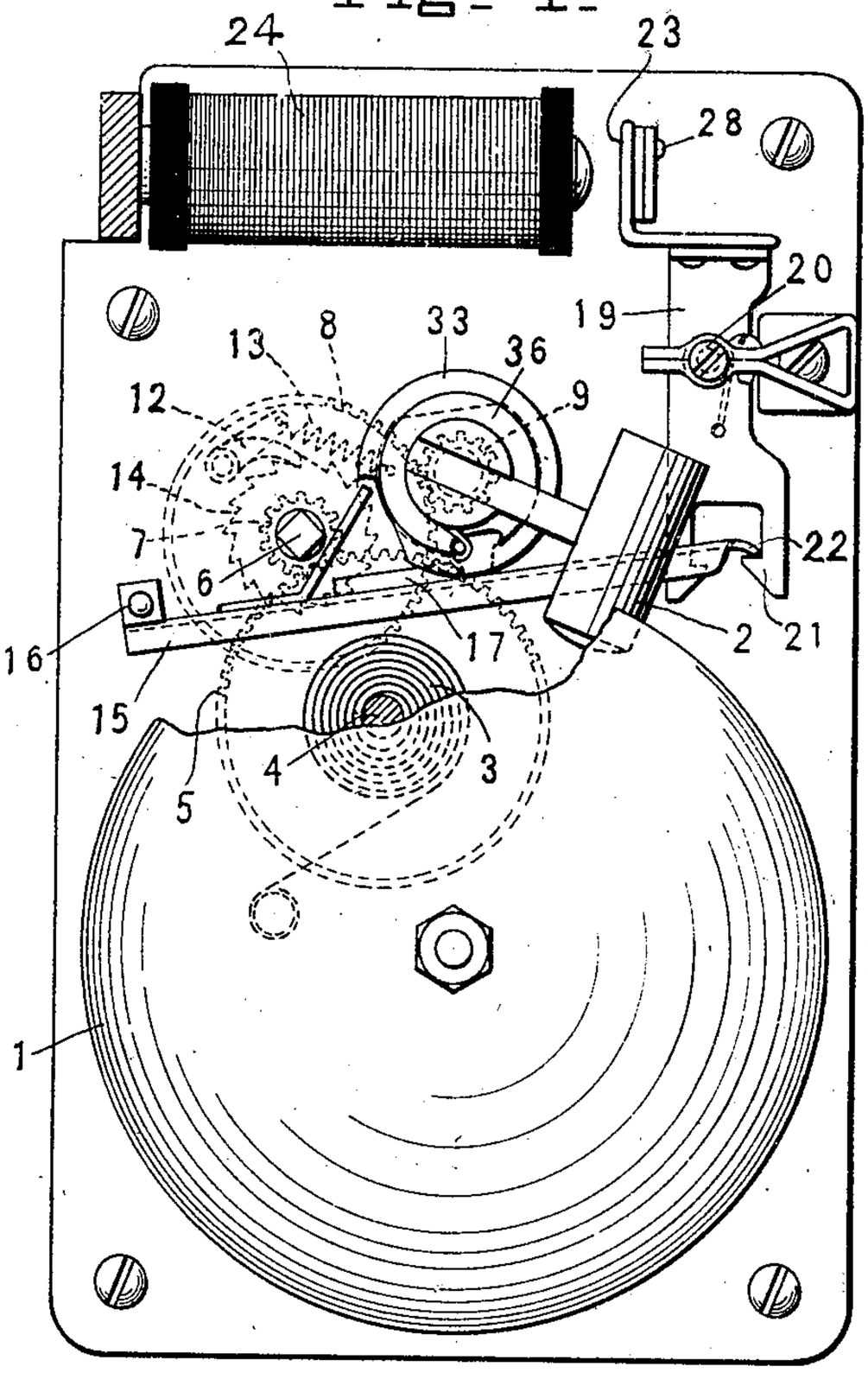


Fig. 2.

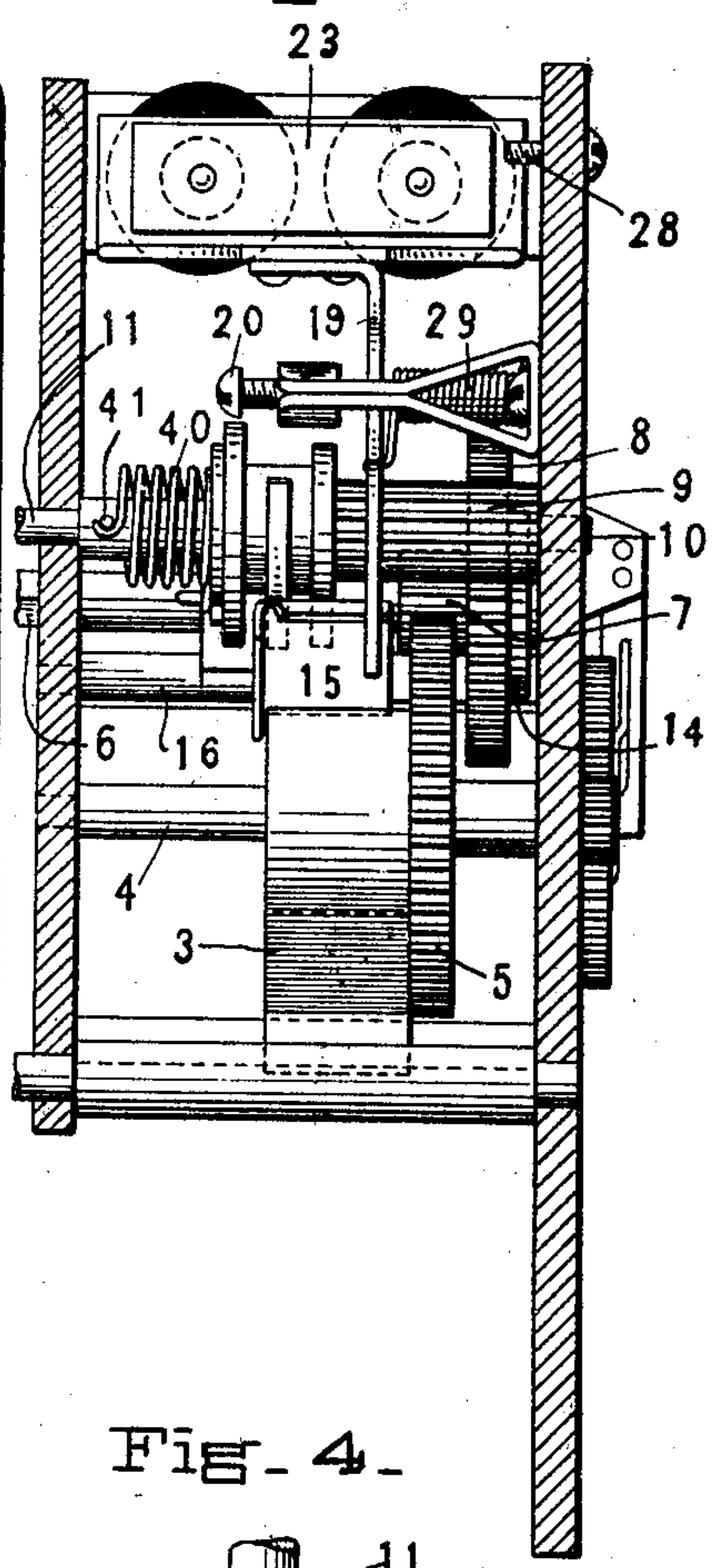


Fig. 3.

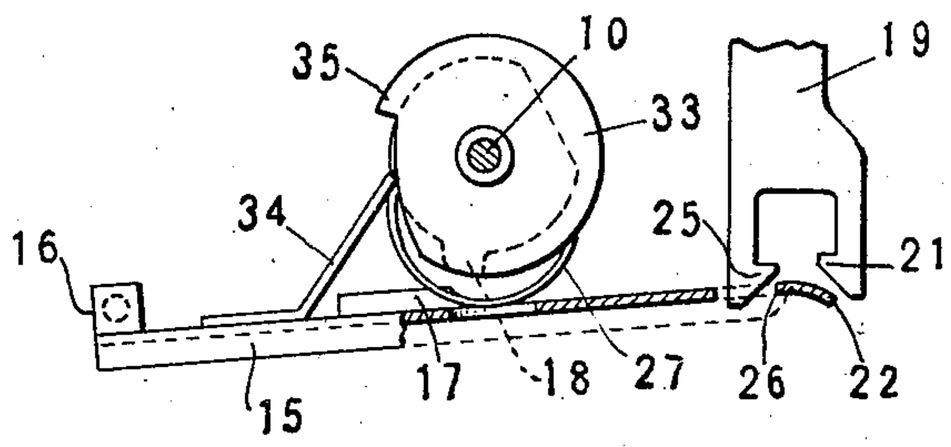
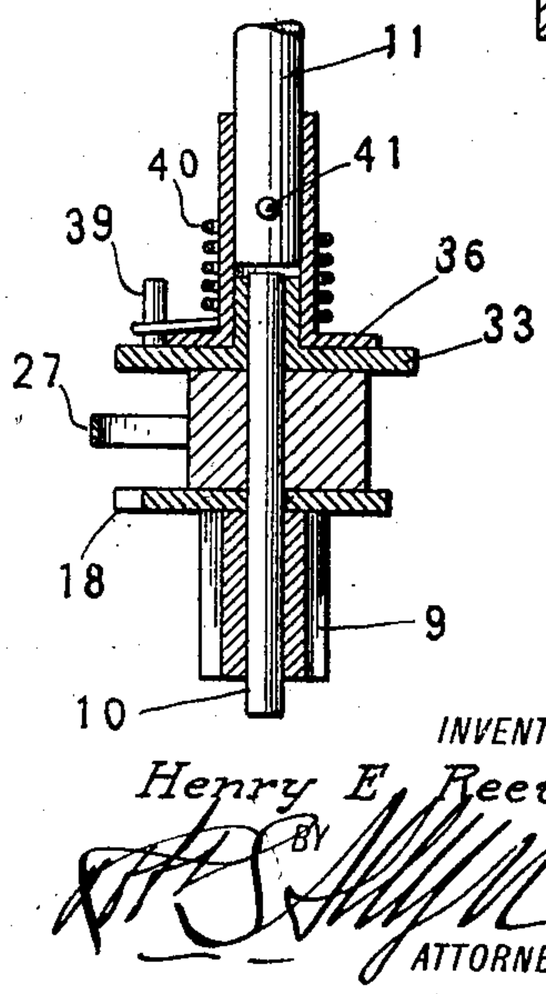


Fig. 4.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 5.

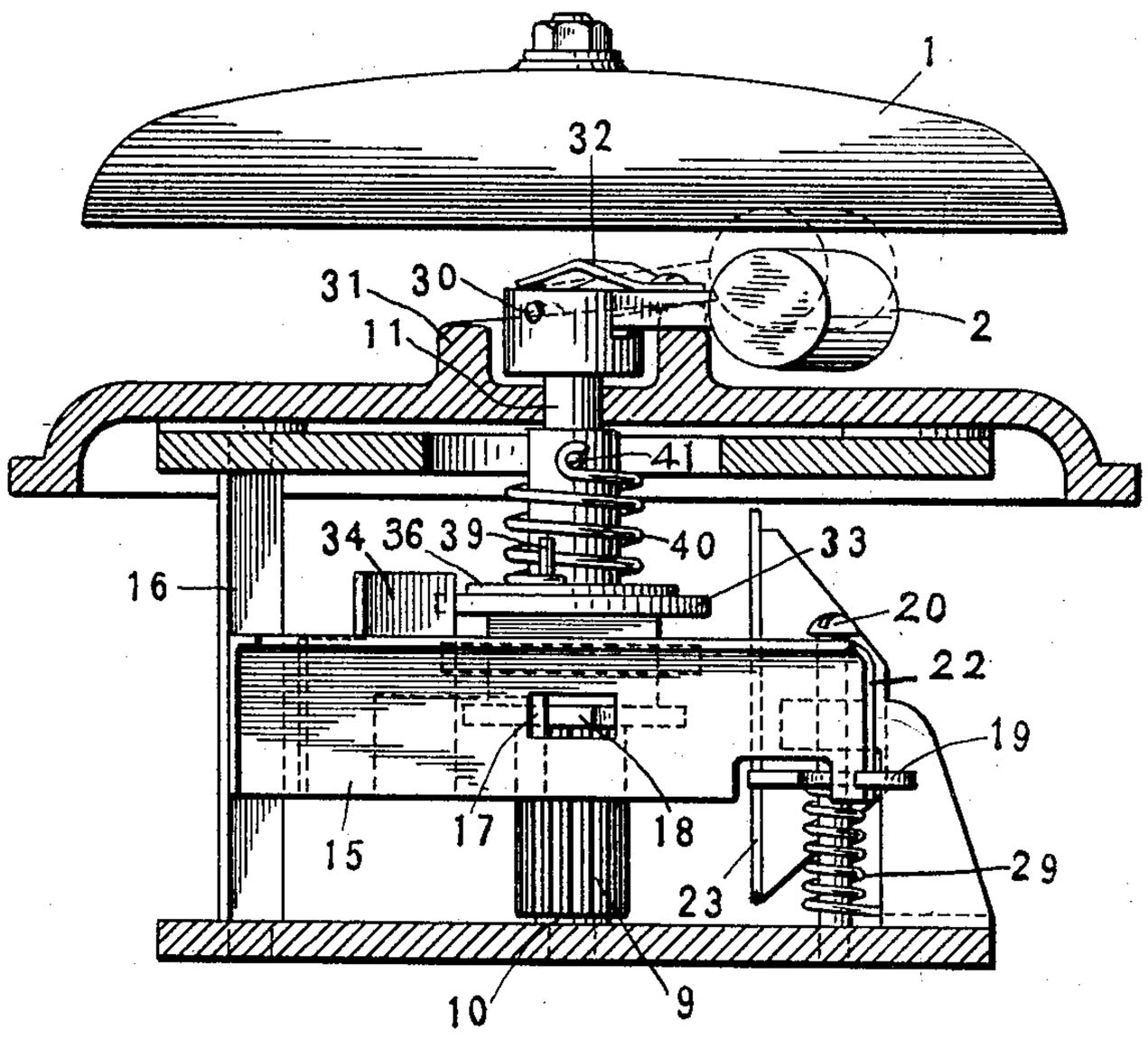
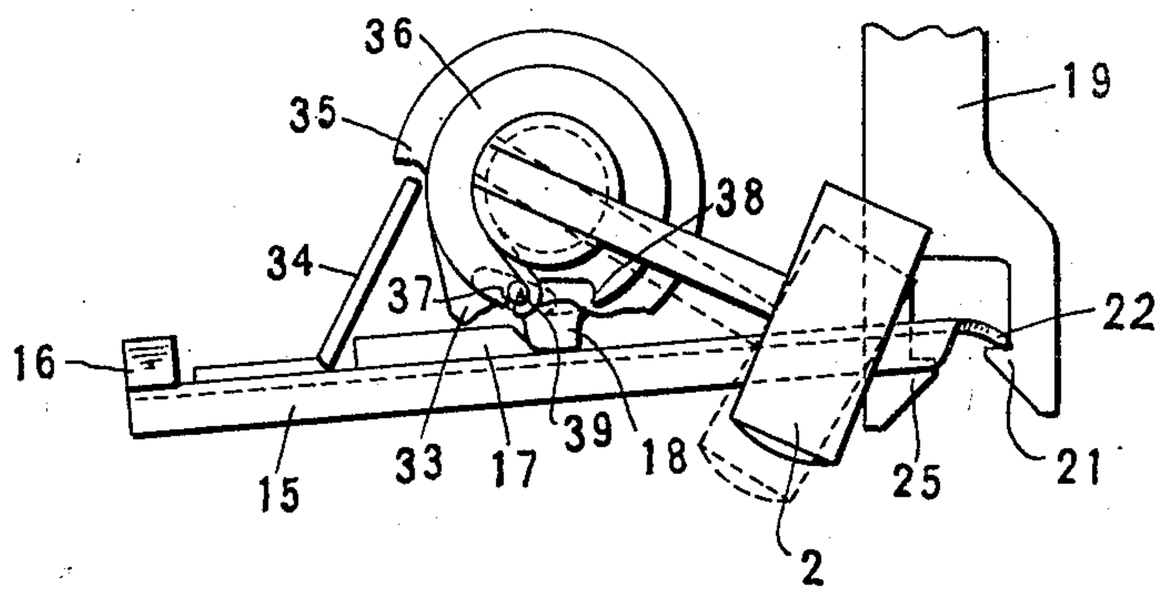


Fig. 6.



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UNITED STATES PATENT OFFICE.

HENRY E. REEVE, OF NEW YORK, N. Y.

GONG-STRIKING MECHANISM.

No. 925,439. Specification of Letters Patent. Patented June 15, 1909.

Application filed January 22, 1909. Serial No. 473,636.

To all whom it may concern:

Be it known that I, HENRY E. REEVE, a citizen of the United States, residing at New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Gong-Striking Mechanism, of which the following is a specification.

My invention relates particularly to so called "electro-mechanical bells" and is an improvement on the structure set forth in my Patent #868,221. In this type of "bell" the hammer is rotated by a spring driven train. Normally the mechanism is held quiescent by a stop device which can be disengaged by the action of an electro-magnet and its armature. To prevent injury and reduce the wear on the parts so that they will last longer and remain in better adjustment I bring the hammer to rest yieldingly and without shock instead of abruptly at the end of a rotation.

In the present embodiment of the invention the main shaft is formed in two parts which have relative rotative movements. One part is driven by the spring train and checked by the stop. The other part carries the hammer. The two parts are connected together by a spring and provided with stops for limiting the relative movements of the two parts. By this construction the checking of the shaft is made more positive and the hammer is still brought to rest by the spring without injurious shock. I have made this present construction more compact by locating the driving spring underneath the gong top and winding the spring through the medium of a shaft and ratchet intermediate the spring and hammer shafts. In this way the spring may still be wound while the gong top is in place. There are also certain features of improvements which will be pointed out in the claims. For instance the stop lever also prevents backward movement of the hammer and shaft. The cam brings the stop lever back into engagement with the latch almost immediately after the hammer starts to rotate and holds it there until the rotation is completed.

Figure 1 is a front elevation, parts being broken away and others shown dotted and showing the mechanism in the normal inactive position. Fig. 2 is a side view of the same. Fig. 3 is an elevation of parts of the escapement mechanism in the position just after release. Fig. 4 is a longitudinal section of the main shaft. Fig. 5 is a horizontal section taken looking upward in Fig. 1 and showing the main shaft and escapement. Fig. 6 is an elevation of the hammer and escapement, showing the relative position of the parts in dotted lines as the hammer comes yieldingly to rest.

The gong top, or bell 1, is of any type and is usually mounted with its axis horizontal although the position is unimportant since the mechanism is not dependent upon the action of gravity. The hammer 2 is arranged to strike the outer edge of the gong just before the end of its rotation so that normally when the gong is in place the momentum of practically the full stroke is delivered in a sound producing blow. The hammer then glances off and passes beneath the edge of the gong where it is brought to rest as hereinafter described.

The driving spring 3, its shaft 4 and gear wheel 5 are all mounted beneath the gong top and out of the way. The shaft 6 having the pinion 7 which meshes with the driving wheel 5, is just outside the gong top and adapted to receive a key or handle for winding. The gear 8 on the winding shaft 6 meshes with pinion 9 on the main shaft which is formed in two parts 10 and 11 connected as hereinafter set forth. The part 11 carries the hammer 2 which is thus rotated by the driving spring. In order to permit winding the driving spring without rotating the hammer backward I mount the gear 8 loose on shaft 6 and provide it with a pawl 12 pressed by spring 13 into engagement with ratchet 14 which is fixed on the winding shaft 6.

The stop lever 15 is pivoted at 16 and has a cam-like shoulder 17 against which the inclined shoulder 18 carried by the shaft 10, presses when the parts are in their normal position of rest as in Figs. 1, 2, 5 and 6. The latch member 19 pivoted at 20, has a hook 21 against which the tip 22 of the stop lever 15 normally rests. When the armature 23 carried by the latch member 19 is attracted by the magnet 24, the hook 21 releases the tip 22 and the hook 25 of the latch member is interposed beneath the shoulder 26 of the stop lever 15, the stop lever being under pressure of the shoulder 18 against inclined shoulder 17. The curved spring 27 secured at one end to the shaft 10 gives an added pressure against the stop lever and gives greater uniformity of action. When the magnet 24 releases the armature 23, the latch member 19 is returned

to its original position against stop 28 by the action of spring 29. The shape of the tip 22 causes the entire release of the stop lever on this return movement of the latch member so that the shoulder 17 frees the shoulder 18 and permits the main shaft and hammer to rotate.

The hammer 2 is pivoted at 30 on the main shaft part 11 so that the hammer as it rotates may ride up the incline of the cam 31 until it strikes the gong as shown in dotted lines in Fig. 5. A notch in the cam permits the hammer to drop back under pressure of the spring 32 as shown in full lines Fig. 5.

At the beginning of the rotation of the main shaft the disk-like cam 33 carried by the shaft part 10 engages the arm 34 carried by the lever 15 and forces the lever from the position of Fig. 3 back into engagement with the latch 19 as shown in Fig. 6 so that the stop shoulder 17 is interposed in the path of movement of the shoulder 18. The cam 33 and arm 34 hold the stop lever up in its checking position during a complete rotation of the hammer even if the magnet 24 should be energized and attract its armature a second time during the cycle of the first stroke. At the end of the stroke the arm 34 drops off the shoulder 35 of the cam and a second stroke may be produced by again energizing the magnet and disengaging the latch 19 and stop lever 15 as before described. The shoulder 35 prevents the hammer from rebounding and also from being rotated backward.

The plate or disk 36 carried by the shaft portion 11 turns loosely on shaft portion 10 and has a notch with shoulders 37 and 38 between which the pin 39 carried by the cam 33 on shaft portion 10 projects. The spring 40 is coiled around the sleeve of plate 36 and has one end secured at 41 to shaft portion 11 and the other end secured to pin 39. This spring is coiled so as to press the plate 36 in the direction opposite the direction of rotation of the shaft 10 and so that the shoulder 37 presses against pin 39. The normal position is shown in full lines in Fig. 6. When the hammer and shaft are rotated, the shaft portion 10, cam 33 and pin 39 are checked by the shoulder 18 striking shoulder 17 of the stop lever. The momentum of the hammer is considerable, especially if the gong top has been removed for any reason, and carries the hammer and its shaft portion 11 and plate 36 to the dotted position in Fig. 6 against the resistance of the spring 41 which is thus coiled tightly. The shoulder 38 serves to limit this relative rotative motion of the two parts of the main shaft. The spring 41 brings the hammer back to the full line position of Fig. 6 and the shoulder 37 presses against stop pin 39. This yielding connection between the two parts of the shaft also eliminates all shock of the hammer when the stop lever snaps down onto the hook 25 of the latch member as the magnet is energized at the beginning of the operation of the mechanism.

The details of construction herein illustrated and described constitute only one form of my invention and I wish it distinctly understood that I do not limit my claim except as set forth, the terms used being intended in broad significance.

What I claim is:—

1. An electro-mechanical gong mechanism comprising a rotatable hammer, a shaft, a yielding connection between said shaft and hammer permitting the hammer to have partial rotation after the shaft is brought to rest, means for giving complete rotation to said shaft and hammer, a stop for said shaft and means for retracting said stop.

2. An electro-mechanical gong mechanism comprising a gong, a hammer, a shaft, a yielding connection between said shaft and hammer allowing a limited relative rotative movement, means for rotating said shaft and hammer, a stationary cam having an inclined surface on which a part of the hammer rests for bringing said hammer into contact with said gong as said hammer rotates and means for stopping the rotation of said shaft.

3. An electro-mechanical gong mechanism comprising, a shaft, a shoulder carried thereby, means for rotating said shaft, a stop for said shoulder, means for retracting said stop, a hammer carried by said shaft, a spring connection between said shaft and hammer, and stops limiting the rotative movement of said hammer relative to said shaft.

4. A gong striking mechanism comprising, a shaft, a stop therefor, means for disengaging said stop, a hammer, a notched plate carried thereby, a pin carried by said shaft and projecting into the notch of said plate, a spring connecting said hammer and said shaft and pressing said plate against said pin at one end of said notch and means for rotating said shaft and hammer.

5. A gong striking mechanism comprising, a shaft, a hammer carried by said shaft and having a limited rotative movement with relation thereto, a spring connecting said shaft and hammer, means for giving complete rotation to said shaft and hammer and a stop for checking said shaft.

6. A gong striking mechanism comprising, a two-part shaft, a shoulder carried by one part, a stop for said shoulder, means for disengaging said stop, a hammer carried by the other part of said shaft, a spring surrounding said shaft and having one end secured to each part of said shaft and means for rotating said shaft.

7. A gong striking mechanism comprising a gong, a shaft, a hammer, a yielding device interposed between said shaft and hammer permitting a limited relative rotative movement, a movable non-yielding stop normally

restraining said shaft, means for normally holding said stop stationary, means for giving complete rotation to said shaft and hammer, means for retracting said stop and a stationary cam having an inclined surface on which a part of the hammer rests for bringing said hammer into contact with said gong as the hammer rotates.

8. A gong striking mechanism comprising a shaft formed in two parts having limited relative rotative movements; a shoulder and a cam carried by one part of said shaft, means for rotating said part, a stop lever coacting with said shoulder and having an arm acted on by said cam for moving said lever, means for disengaging said stop lever, a hammer carried by the other part of said shaft and a yielding connection between the two parts of said shaft for bringing the hammer to rest without shock after rotation.

9. A gong striking mechanism comprising a shaft, a hammer carried thereby, means for rotating said shaft and hammer, a stop lever for said shaft, electro-magnetically operated means for releasing said lever, a spring carried by said shaft and curved around one side thereof for coming gradually into action against said stop lever as the shaft rotates so as to press said lever away from said shaft.

10. A gong striking mechanism comprising, a main shaft, means for giving said shaft complete rotation, a hammer having a limited rotative movement relative to said shaft, a spring connection between said shaft and hammer, means for stopping said shaft after a complete rotation and means for disengaging said stopping means.

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