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A. C. SCHUMAN.
CLOCK STRIKING MECHANISM.

(Application filed Dec. 18, 1901.)

(No Model.)

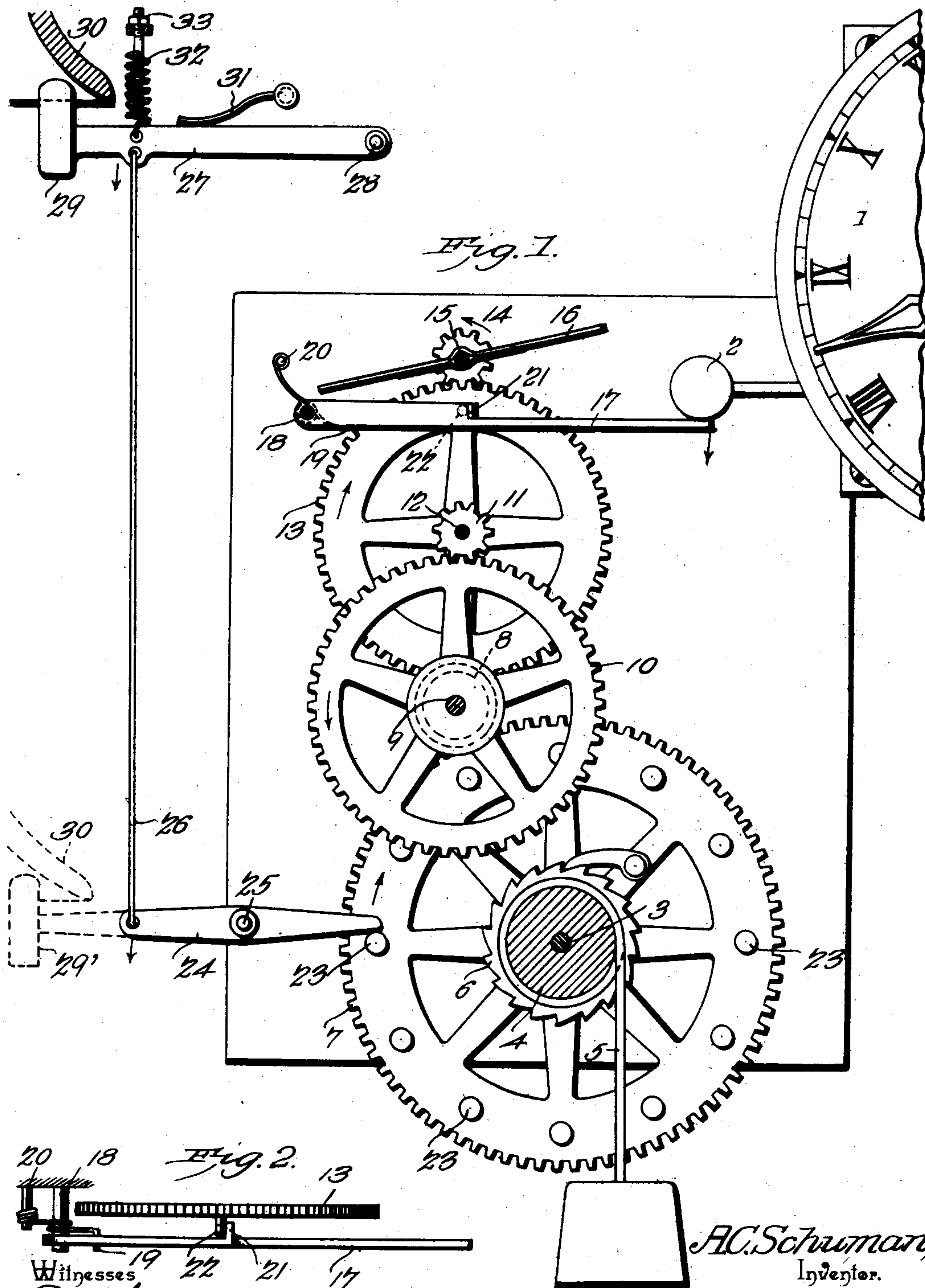


Fig. 2.
Witnesses
E. C. Stewart
Geo. E. Carter

by

Chas. H. Snow & Co.
Attorneys

A. C. Schuman,
Inventor.

UNITED STATES PATENT OFFICE.

ALEXANDER C. SCHUMAN, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO
SPALDING COLEMAN, OF LOUISVILLE, KENTUCKY.

CLOCK STRIKING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 713,696, dated November 18, 1902.

Application filed December 18, 1901. Serial No. 86,438. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER C. SCHUMAN, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Bell-Striking Mechanism, of which the following is a specification.

My invention relates to certain improvements in mechanism for striking or sounding bells, gongs, or similar alarms, and has for its object to construct a striking mechanism which may be automatically set into operation by an ordinary clock to sound the hours on a large bell or gong either adjacent to or at a distance from said clock.

The device is intended principally for use on farms or country villages or large manufacturing establishments to sound the hours, the bell being of any desired size and situated at the top of a tower or other desired point, the striking mechanism being automatically set into operation each hour or fraction thereof by an ordinary clock placed at a convenient point for winding.

With these and other objects in view the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is an elevation of a bell-striking mechanism constructed and arranged in accordance with my invention and showing the same in position to be operated upon by the bell hammer or clapper of an ordinary clock. Fig. 2 is a view of a detail of construction.

Referring to the drawings, 1 represents a portion of an ordinary clock having the usual bell-striking hammer or clapper 2.

In a suitable framework at a point adjacent to the clock is mounted a shaft 3, to which is secured a barrel 4, on which may be wound a weighted cord or chain 5. Mounted loosely on the shaft 3 and connected thereto by a ratchet mechanism 6 is a gear-wheel 7, the teeth of which intermesh with a pinion 8, secured on a shaft 9, the latter being adapted to suitable journals in the carrying-frame. To the shaft 9 is secured a gear-wheel 10, intermeshing with a pinion 11, secured to a

shaft 12, also mounted in the frame, and on said shaft 12 is secured a gear-wheel 13, the latter intermeshing with a pinion 14 on a fly-shaft 15. The shaft 15 carries an ordinary form of fly or governor of the character ordinarily employed in clockwork mechanism, as indicated at 16.

17 designates a lever or bar fulcrumed at one end on a stud 18, projecting from the frame and normally held in the position indicated in the drawings by a torsion-spring 19, surrounding the stud 18 and having one end connected to a fixed pin 20 and its opposite end to the lever 17.

On one side of the lever 17 is a finger 21, forming a stop for a pin 22, which projects laterally from the side of the gear-wheel 13, the finger and pin when in engagement forming a stop which holds the train of gearing from rotating under the influence of the weighted cord 5. The free end of the lever 17 is normally in contact or at a point immediately below the hammer or clapper 2, and when the latter is operated, as in the direction of the arrow, by the clockwork mechanism the lever 17 will be depressed to an extent sufficient to disengage the finger 21 and the pin 22, the gearing then rotating and continuing to rotate until the stop-pin is again engaged by the finger 21, the engagement taking place and the mechanism being stopped during the intervals between the descending movements of the hammer 2, so that said gearing will be started and stopped the same number of times the hammer 2 is reciprocated.

On the large gear-wheel 7 are a number of tappets 23, adapted to successively engage one end of the lever 24, pivoted on a fixed stud 25. The opposite end of the lever is connected by a rod 26 to a lever 27, fulcrumed on a stud or pin 28 and situated at any desired distance from the clockwork mechanism. The free end of the lever 27 is provided with a hammer 29, adapted to strike a bell 30. The hammer is normally held a slight distance from the bell, in order not to interfere with the vibrations of the latter, by a small spring 31, which presses on the lever 27 at a point between its fulcrum and the hammer 29. In order to secure uniformity of stroke, the

hammer is forced against the bell by a tension-spring 32, and the latter is provided with a suitable adjusting-nut 33, in order that its tension may be regulated to any desired extent.

In the operation of the device the hammer or clapper 2 of the clock is moved downwardly one or more times at each hour, forcing the finger 21 from the pin 22 of the gear-wheel 13 and permitting the train of gearing to rotate under the influence of the weighted cord 5. The hammer 2 almost immediately returns to its initial position after each stroke, and the lever 17 is moved upwardly to engage in position by the spring 19, in readiness to engage with the pin 22, when the latter has completed a rotation, or there may be a number of such pins 22 on the gear-wheel 13, in accordance with the relative size of the various gears and the time between the strokes of the hammer 2. The gear-wheel 7 is rotated in the direction of the arrow, one of its tappets 23 raising the inner end of the lever 24 and through the rod 26 pulling on the lever 27 against the stress of the spring 32. As soon as the tappet passes beyond the end of the lever 24 the spring will pull the hammer-lever and cause the hammer to strike against the bell or other sounding-body, the strength of the stroke being regulated by the tension of the spring. The hammer-lever is then forced down by the spring 27 to move the bell from contact with the hammer. This operation is repeated each hour or fraction of an hour, the number of strokes given being in accordance with the number of movements imparted to the hammer 2 by the clockwork mechanism. In some cases where the larger bell is located adjacent to the clockwork mechanism the lever 24 may carry the bell-striking hammer at its outer end, as indicated by dotted lines at 29'.

In lieu of employing a mechanically-operated bell-hammer I may employ an electro-magnet, the hammer-lever being arranged to form the armature thereof, said magnet being located in a circuit including a battery and the circuit being opened and closed by the movement of the bell-hammer 2 or by other suitable moving member of the clockwork mechanism.

While the construction herein described,

and illustrated in the accompanying drawings, presents the preferred form of the device, it is obvious that various changes in the form, proportion, size, and minor details of construction may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of my invention.

Having thus described my invention, what I claim is—

1. The combination with a clock having a member movable by the striking mechanism, of a bell, a hammer for said bell, an independently-operated and normally locked train of gearing comprising a series of intermeshing wheels one of which is provided with hammer-actuated tappets adapted for successive operative movement, means for driving said gearing, a stop-pin projecting from the face of one of said gears, a pivoted lever having a finger normally engaging the stop-pin to lock said gear, said lever being moved to unlocked position by the movable member of the striking mechanism and returning automatically to locking position after each single vibration of the hammer, substantially as specified.

2. The combination in a clock having a movable member, of a bell, a hammer therefor, a lever carrying a hammer, a spring adapted to move the hammer into contact with the bell, a second spring normally holding the hammer slightly out of contact with the bell, an independently-actuated and normally locked train of gearing comprising a series of intermeshing wheels one of which is provided with actuating-tappets adapted for successive operative contact with the hammer-lever, a stop-pin projecting from one of the gears, a pivoted lever normally engaging and locking said pin, said lever being movable to unlocked position by the movable member of the clock and being automatically returned to locking position after each single vibration of the hammer.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALEXANDER C. SCHUMAN.

Witnesses:

C. E. DOYLE,

FRANK S. APPLEMAN.