

W. C. WILKINS.
CHIME RINGING MECHANISM.

No. 516,559.

Patented Mar. 13, 1894.

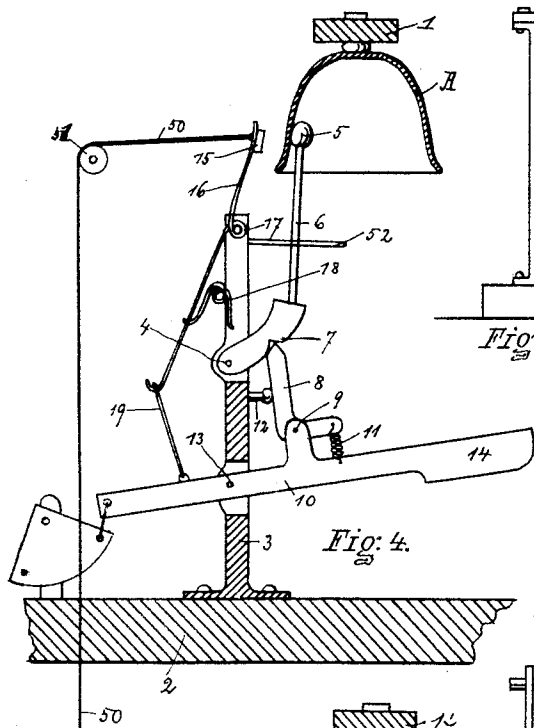


Fig. 4.

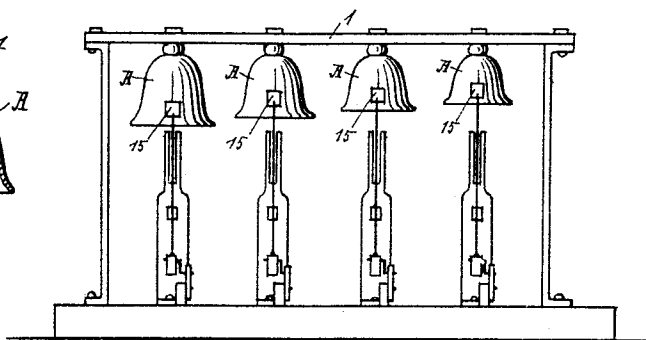


Fig. 1.

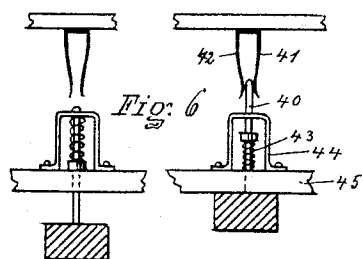


Fig. 6.

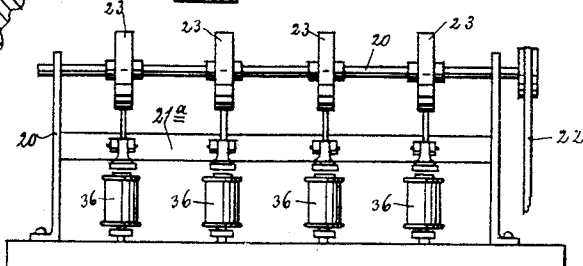


Fig. 2.

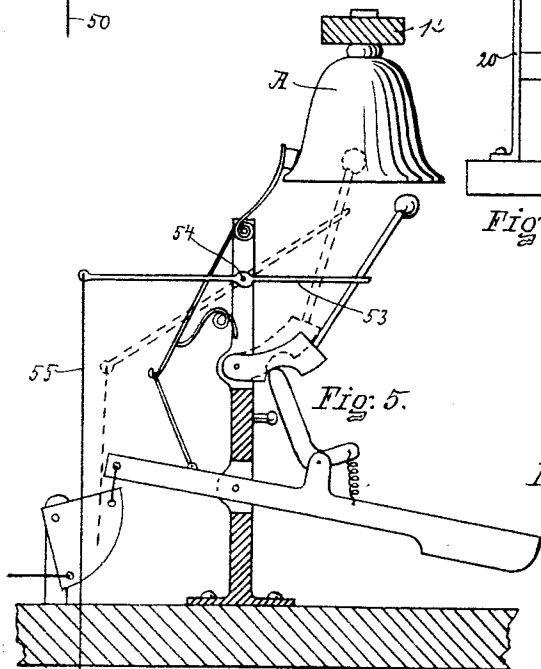


Fig. 5.

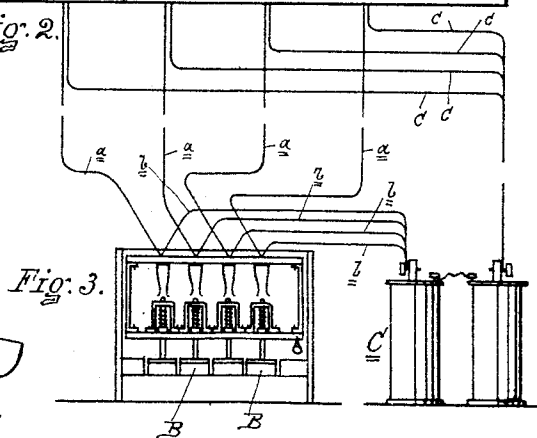


Fig. 3.

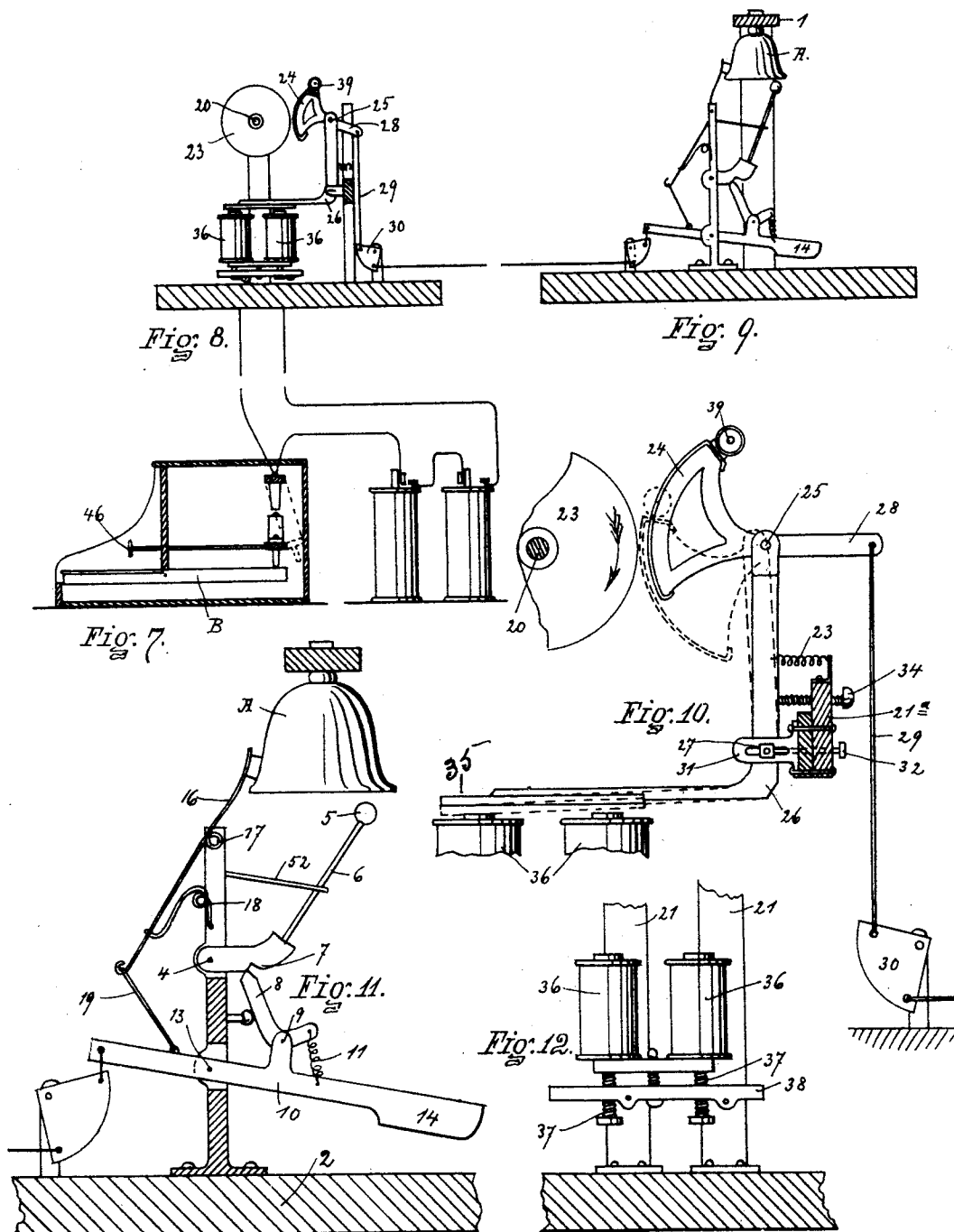
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UNITED STATES PATENT OFFICE.

WILLIAM C. WILKINS, OF UTICA, NEW YORK, ASSIGNOR OF ONE-HALF TO
WILLIAM A. FISH, OF SAME PLACE.

CHIME-RINGING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 516,559, dated March 13, 1894.

Application filed April 10, 1893. Serial No. 469,662. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. WILKINS, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Chime-Ringing Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

My invention relates to improvements in mechanism for ringing chimes.

In the drawings which accompany and form a part of this specification and in which similar letters and figures of reference refer to corresponding parts in the several views Figure 1 shows a frame-work holding four bells, and shows in edge elevation the mechanism for operating the hammer and damper. Fig. 2 shows a shaft with a series of friction pulleys mounted thereon in connection with electro-magnets and connecting mechanism by which motion is transmitted to the hammer operating mechanism. Fig. 3 shows the keys and circuit making and breaking devices in connection with each key, and also two cells of a battery used for operating the device. Fig. 4 shows an enlarged detail of hammer and damper operating mechanism in its position at the completement of the stroke. Fig. 5 shows the same parts shown in Fig. 4 in their normal position, and also shows modified forms of construction for obtaining softer tones. Fig. 6 shows in enlarged detail the mechanism connected with the key for making and breaking the electric circuits, for operating the device. Fig. 7 shows in side elevation the key-board and case in connection with the two cells of battery, being the same parts shown Fig. 3 from another view. Fig. 8 shows details of the parts shown in Fig. 2, the details being shown from the side. Fig. 9 shows in side elevation the details of the mechanism for striking the bell. Fig. 10 shows in enlarged detail, the parts shown in Fig. 8, showing in dotted lines the movement of the parts. Fig. 11 shows in enlarged detail the same parts shown in Figs. 9 and 5, with

the modified attachments omitted. Fig. 12 shows details of the electro-magnets and the adjusting screws by which they are mounted in the frame-work.

Referring more particularly to the reference letters and figures in a more specific description of the device, A, A, &c., indicate the bells of the chime; four being shown in the drawings as sufficient for the purpose of description, although any number of bells may be used. The bells are supported in the frame-work 1 in much the usual manner, and a sufficient number of frames as 1 may be provided side by side or above one another, to carry the desired number of bells. Substantially under the edge of each bell, I erect from a base 2 a post or bar 3, on which I pivot at 4 the bell striking hammer 5 by means of a suitable arm 6. The hammer 5 is adapted to strike the inside of the bell near its edge, although it is not material about the hammer striking on the inside of the bell. The hammer arm is provided with a notch 7 in which engages an automatic dog or catch 8, which catch is pivoted at 9 upon a main operating lever arm 10 and is operated in one direction by the spring 11 and in the other by a pin or projection 12 from the post 3. The main lever or arm 10 is pivoted in the post 3 at 13 and may be provided with a counter-weighted end 14 to return the parts to their normal position.

15 is a damper adapted to engage upon the edge of the bell to stop the vibration or sound of the bell when in contact with it. The damper is mounted upon an arm 16 pivoted to the post 3 at 17 and is pressed against the bell by the operation of the spring 18. The lower end of the arm 16 is connected by a link 19 with the main arm or lever 10. It will thus be noted that when the left hand of the arm 10, as shown in Fig. 5, is drawn down, the operation of the parts is to bring the hammer 5 against the inner face of the bell, and at the same time remove the damper from the bell.

By the operation of the dog 8 and co-acting parts, the hammer is allowed to fall away from the bell a trifle so as not to hinder its free vibration, and the bell is free to vibrate until the lever 10 is released when the damper comes in contact with the bell and causes

its vibrations to cease. For operating the lever 10, I provide a rotary shaft 20 mounted in suitable bearings on a frame 21, and which shaft is driven by a belt 22, preferably from an electric motor, so as to carry the friction pulleys 23, 23, &c., in the direction indicated by the arrow in Fig. 10. Opposed to the face of each of the friction pulleys 23, 23, &c., I provide a friction segment 24 pivoted at 25 upon a bell-crank lever 26, which lever is mounted upon an adjustable pivot 27 on the frame-work. The friction segment 24 is provided with an arm 28 to which is attached a connection 29 which may extend directly, if desired, to the lever 10; the direction of the connection being changed by passing over suitable pulleys, if necessary, the object being to transmit the motion of the arm 28 of the segment to the lever 10.

I show in the drawings, for the purpose of changing the direction and continuing the connection between the lever-arm 28 and the lever 10, segmental rocking pieces 30 pivoted on stationary supports and to which the connections are secured. This particular form of construction, however, is immaterial, as it will be changed under varying circumstances to adapt the mechanism to the room available for it. The pivot 27 of the bell-crank 26 is adjustable in the slotted ears 31 in which it is mounted by means of an adjusting screw 32. The bell-crank is operated to carry the face of the friction segment 24 out of contact with the friction pulley 23 by means of a spring 33, and the movement of the bell-crank-lever is limited by an adjusting screw 34. On the horizontal arm of the bell-crank 26, is provided an armature 35 for the electro-magnet 36. The electro-magnet is mounted by means of adjusting screws 37, 37 upon a bar 38 secured in the frame-work for holding the shaft and several electro-magnets. At the end of the face of the friction segment 24, I provide an anti-friction roller 39 adapted to run in contact with the face of the friction pulley 23 when the segment is still held in contact with the friction pulley after it has made its movement.

For operating the electro-magnets 36 to bring the friction segment into contact with the friction pulley, I provide a series of keys as B, B, &c., arranged in a key-board, one key for each bell. The key board may be the board of an organ or other instrument with which the bells chord and which may be played in unison for the information of the player and to overcome the disadvantage of the bells being at a distance. The keys are arranged to operate a contact pin 40 adapted, when the key is depressed, to be inserted between the contact springs 41 and 42 and establish connection between them and their conductors *a*, *b* and *c* and the battery C operate the electro-magnet. When the pressure is removed from the key, it is returned to its normal position and the contact pin 40 withdrawn by a spring 43. The pin 40 and

spring 43 are held and retained in position by a yoke 44, and the several pins are mounted on swinging bar 45 operated by a stop 46 at the key-board, whereby the circuit making and breaking mechanism may be swung out of position so as not to be engaged by the inner ends of the keys, as shown in Fig. 7. The keys could be operated by a "barrel organ."

The operation of the device is substantially as follows:—When it is desired to ring the chimes, the shaft 20 with the several friction pulleys 23 mounted thereon, are put in motion by means of a suitable power operated through belt 22 so that the friction pulleys are rotated at a comparatively high rate of speed in the direction indicated by the arrow in Fig. 10. Any bell in the chime may then be sounded by striking the key in the key-board corresponding with the bell. Upon the depression of the key, the pin 40 is inserted between the contact springs 41 and 42, which establishes a circuit to the electro-magnet corresponding with the desired bell. When the magnet 36 is charged, it draws down its armature 35, operates the bell-crank 26 to bring the segment 24 into contact with the rapidly rotating pulley 23. This instantly operates the segment and connecting parts from the position shown in full lines to substantially that shown in dotted lines in Fig. 10, and which movement is communicated by connection 29 to the lever 10 and the movement of the lever 10 operates to strike the bell and remove the damper, as before described, and the bell is sounded. The bell is allowed to freely vibrate as long as the key is held down and the segment 24 held in contact with the friction pulley 23; the friction pulley partially slipping on the face of the segment 24 and partially running on the friction roller 39, the point of contact being below the line between the centers. As soon as the key in the key-board is released, the electric circuit is broken, the armature is released and the bell-crank 26 is returned to its normal position by the spring 33. As soon as the armature 35 is released, the face of the segment 24 is relieved of its pressure against the face of the pulley 23, and it and its several connecting parts are returned to their normal positions by the counter-weight 14 on the end of the arm 10, at the bell operating mechanism.

In Fig. 4 is shown details of mechanism for removing the dampers from the bells and holding them out of contact for any desired interval. I purpose to accomplish this by connecting with the damper 15 a flexible connection 50 which will extend over suitable pulleys as 51 and connect with a segment similar to 24 adapted to engage another friction pulley 23 provided for operating the dampers alone. This mechanism will be operated in all respects the same as the bell mechanism, except that the key for operating the dampers will preferably be a foot key. For giving a softer tone or stroke, I provide in lieu of the fixed

holder 52 for the hammer arm, a pivoted hammer holder as shown at 53 in Fig. 5. This holder is pivoted on the post 3 at 54 and extends to a point beyond the pivotal point and
5 has attached to it a connection 55. The several connections 55 from the several bells are preferably united and extend to one treadle or hand lever adjacent to the key-board, so that the operator by operating the treadle or
10 lever will draw the hammer holder up to the position shown in dotted lines in Fig. 5, in which the swinging movement of the hammer is reduced to about half the distance, and of course is only capable of striking a much
15 lighter blow than when it has its full swinging movement.

It is evident that many other changes and variations in and from the construction herein described, may be made without departing
20 from the equivalents of my construction.

What I claim as new, and desire to secure by Letters Patent, is—

In a chime ringing mechanism a number of bells a hammer arranged to strike each bell,
25 a rotating shaft having a series of friction pul-

leys mounted thereon, a corresponding series of bell crank levers each independently adjustably pivoted to a support adjacent to the angle therein and adapted to swing in the plane of the pulley, one arm thereof extending up the side and the other under the pulley, a friction segment pivoted in the upright arm of each and adapted to engage the pulley, an armature mounted on the other arm, a series of electro magnets mounted on a support in positions to act on the armatures of the several levers a set of keys and circuit making and breaking devices in the independent circuits with the several electro magnets operated by the keys and operating connections between the segments and several hammers for the various bells combined, substantially as set forth.

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

WILLIAM C. WILKINS.

Witnesses:

PETER P. SMITH,
G. A. GAYMERDS.