

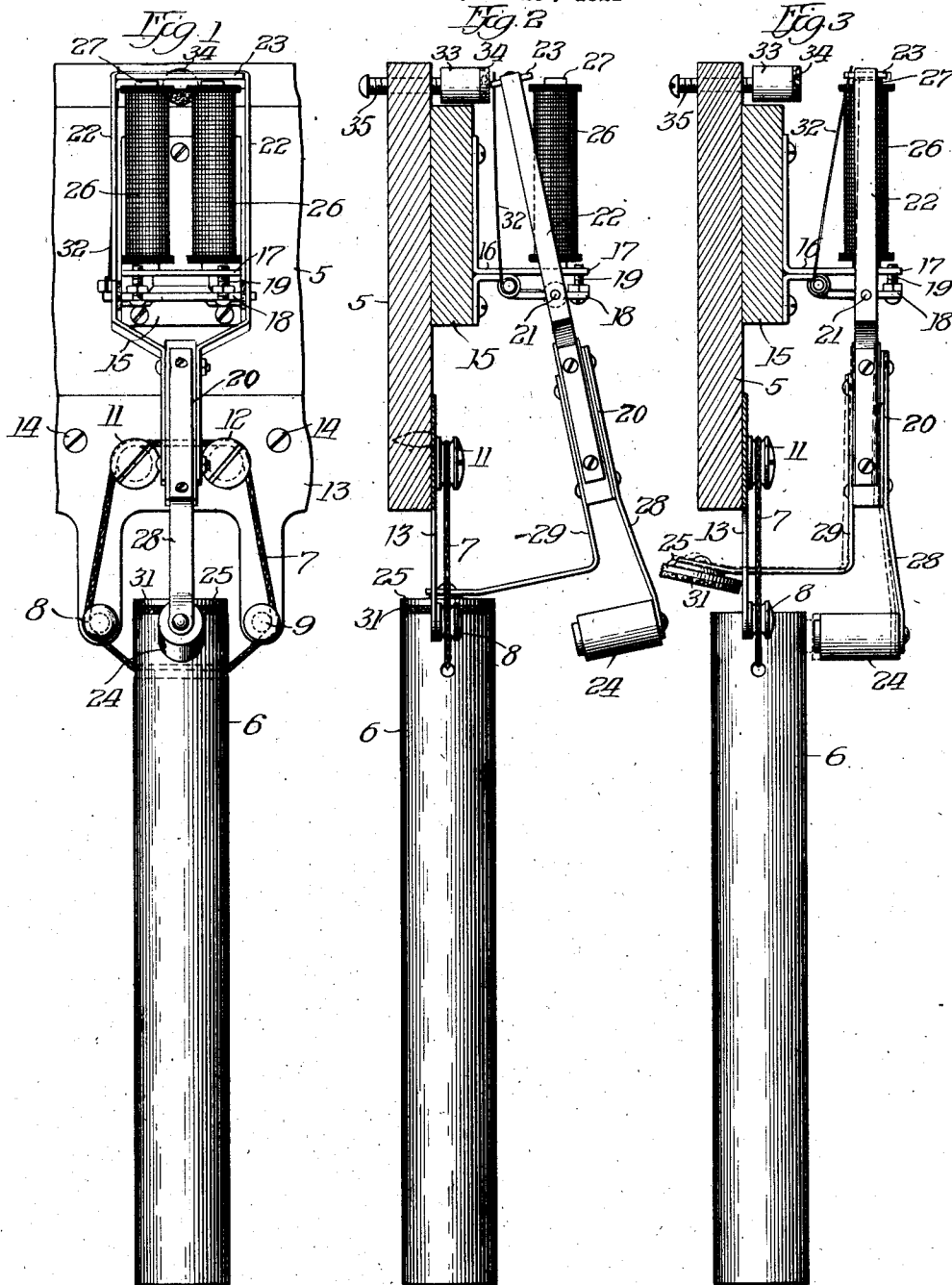
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CHIME STRIKING ACTION

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CHIME STRIKING ACTION.

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To all whom it may concern:

Be it known that I, LEONARD D. MORRIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Chime Striking Actions, of which the following is a specification.

This invention relates to actions for striking and causing the resonant vibration of resonant objects, such as chimes, bells, and the like, and while the invention is capable of embodiment in various forms, I have shown for purposes of illustration in the present application, an action adapted to operate upon a chime.

One of the primary purposes of this invention is to produce an action which will be reliable and effective in operation so as to deliver a sharp impact to the chime, which will cause it to resound loudly and clearly.

Another object of the invention is to provide novel and simple means for damping the vibrations of the chime to thereby control the resonance and the sounds produced so that the tones will not be unduly prolonged or continued to an extent which will produce an inharmonious effect in conjunction with tones produced by subsequently actuated chimes.

Another object of the invention is to produce an action which will be positive and reliable in operation, one which will be simple in construction and not liable to get out of order, and which can be cheaply manufactured and readily installed.

Other objects and many of the inherent advantages of this invention should be readily appreciated as the same becomes better understood, by reference to the following description when considered in connection with the accompanying drawings.

Referring to the drawings:

Fig. 1 is a front view of an action embodying my invention;

Fig. 2 is a side view thereof, with the parts in normal position; and

Fig. 3 is a similar view showing the position of the parts just prior to engagement of the chime by the hammer.

Referring now to the drawings more in detail, reference character 5 indicates a member of the frame upon which the chimes and striking actions are mounted. It will be understood that a series of chimes are all

mounted on the same frame, and that since they are all alike, one only is shown in the present instance for purposes of illustration.

The chime 6 is suspended by a cord 7 encircling a plurality of buttons 8, 9, 11 and 12 carried by a plate 13 which is attached by screws 14 or otherwise to the front of the frame member 5. While a tubular chime is illustrated in the present instance, it is to be understood that other resonant objects adapted for vibration by a hammer may be substituted therefor within the scope of my invention.

Upon the forward face of the frame member 5 above the chime, there is mounted a transversely extending block or board 15, upon the forward face of which there is mounted a bracket 16 projecting forwardly from the member 15 and comprising spaced members 17 and 18, the distance between which may be regulated by an adjusting screw 19, the lower member 18 having fulcrumed thereon at 21 a yoke 22 carrying an armature 23 at its upper end and shaped to provide a shank 20 at its lower end, which carries the hammer 24 and damper 25, as will be later explained.

Upon the member 17 of the bracket, there is fixedly mounted an electromagnet 26, the upper pole or poles 27 of which are disposed in proximity to the armature 23 carried by the yoke 22. The armature and yoke mounting is described in detail in my prior Patent #1,282,276 issued October 22, 1918.

The hammer 24 is suspended from the yoke by a resilient shank 28 and the damper 25 is also suspended from the yoke by an angle-shaped shank 29 which may also be resilient in character. The damper 25 comprises a body of appreciable weight, preferably made of metal and faced on its lower surface by a cushion or damping disc 31 which is adapted to engage the upper end of the chime and damp the vibrations thereof. The weight of this damper being disposed laterally of a vertical plane through the yoke fulcrum 21 tends to swing the yoke into the inclined position illustrated in Fig. 2, wherein the damper is shown in engagement with the chime, the hammer in spaced relation with respect to the chime, and the armature 23 positioned laterally of the magnetic pole 27. The parts may be restored to this position solely by gravity since the hammer being made of wood is

considerably lighter than the damper, but I have found that it is preferable in order to hasten the damping action, to employ a small spring 32 attached at one end to the bracket member 18 and projecting upwardly into engagement with the armature 23, which spring tends to restore the parts to the normal position shown in Fig. 1. To steady the action and decrease the rebound as well as to afford an abutment for the yoke 22, I prefer to mount in the path of the armature 23 a cushion block 33 having a cushion face 34, the block being capable of adjustment through the instrumentality of an adjusting screw 35.

In the operation of my invention, upon energization of the electromagnet 26, the pole or poles 27 will attract the armature 23, causing the yoke carrying the hammer and the damper to swing from the full line position shown in Fig. 2 to the dotted line position shown in Fig. 3, thereby causing the hammer 24 to impact the chime 6. It will be observed that when the armature 23 is directly in alignment with the magnetic poles, the parts will be in the full line position shown in Fig. 3, but the momentum of the parts in swinging from the inclined position shown in Fig. 2 carries them past this vertical position and causes a sharp blow to be struck by the hammer against the chime and an immediate withdrawal of the hammer to the full line position shown in Fig. 3 so that it will not interfere with the vibrations of the chime. As soon as the electromagnet is de-energized, the parts will return by gravity to the position shown in Fig. 2, thereby engaging the damper with the upper end of the chime to damp the vibrations, and this return movement is in the present instance expedited by the light spring 32.

It will be apparent from the foregoing that I have provided an action which is simple in construction, positive and accurate in operation, one which is not liable to get out of order, and which can be economically manufactured and quickly installed, and while I have shown and described a preferred embodiment of the invention, the details of construction are capable of considerable modification and variation without departing from the spirit of the invention as defined in the following claims:

1. In a chime striking action, the combination of a vertically disposed cylindrical chime, a bracket projecting laterally above said chime, a yoke pivotally mounted between its ends upon said bracket at one side of a vertical plane intersecting said chime, an armature carried by the upper end of said yoke above said pivot, a hammer and a damper carried by said yoke below the pivot, said damper being offset relatively to the pivot so as to be disposed above said

chime and being heavier than the hammer so as to engage said chime under the action of gravity, and an electromagnet mounted above said pivot in position to attract said armature whereby the yoke is actuated to lift the damper from and contact the hammer with said chime.

2. In a chime striking action, the combination of a cylindrical chime, a pivotally mounted yoke, a hammer suspended from the lower end of the yoke, an angle arm fixed to the lower portion of said yoke, a damper heavier than said hammer carried by the free end of said angle arm in position to overbalance said hammer, and electrically actuated means disposed above the yoke pivot for swinging said yoke on its pivot against the action of said damper to impact the hammer against said chime.

3. In a chime striking action, the combination of a vertically disposed cylindrical chime, a yoke suspended between its ends on a horizontally disposed pivot, a hammer carried by the lower portion of said yoke, an angle arm fixed to the lower portion of said yoke, a damper carried by said angle arm laterally of a vertical plane intersecting said pivot and overbalancing said hammer to normally engage with the upper end of said chime, a cushion block for the upper portion of said yoke, a spring normally urging the upper portion of the yoke towards said cushion block, and means for swinging said yoke about its pivot against the force of said spring.

4. In a chime striking action, the combination of a vertically disposed cylindrical chime, a yoke pivoted between its ends above and at one side of said chime, an armature carried upon the upper end of said yoke, a hammer suspended from said yoke, a damper also suspended from said yoke but projecting laterally therefrom over the upper end of said chime, the weight and leverage of said damper being adapted to overbalance the hammer and normally engage the damper with the chime and retract the hammer therefrom, and electromagnetic means acting upon said armature for swinging the yoke to retract the damper from and impact the hammer against said chime.

5. In a chime striking action, the combination of a bracket, comprising a pair of spaced members, an electro-magnet carried by one of said members, a yoke pivoted upon the other member, said yoke extending upwardly above said magnet and having a shank depending below said magnet, means whereby the distance between said members may be varied, a chime, a hammer suspended from said shank at one side of said chime, and a damper carried by said shank in position to engage said chime in alternation with said hammer upon oscillation of said yoke.

6. In a chime striking action, the combination of a bracket, an electro-magnet mounted thereon, a member carried by said bracket, a yoke pivotally mounted on said member, comprising an armature above said magnet, a shank depending below said pivot, means for adjusting said member to regulate the position of said yoke with a respect to said magnet, a chime suspended beneath and at one side of said pivot, a hammer carried by said shank, and a damper carried by said shank at one side of said hammer in position to normally engage said chime and to be retracted therefrom when said hammer is impacted against the chime. 10

LEONARD D. MORRIS.