Nov. 6, 1923.

1,473,485

F. B. LITTLE

SOUND PRODUCING MECHANISM

Filed Oct. 20. 1921

2 Sheets-Sheet 1

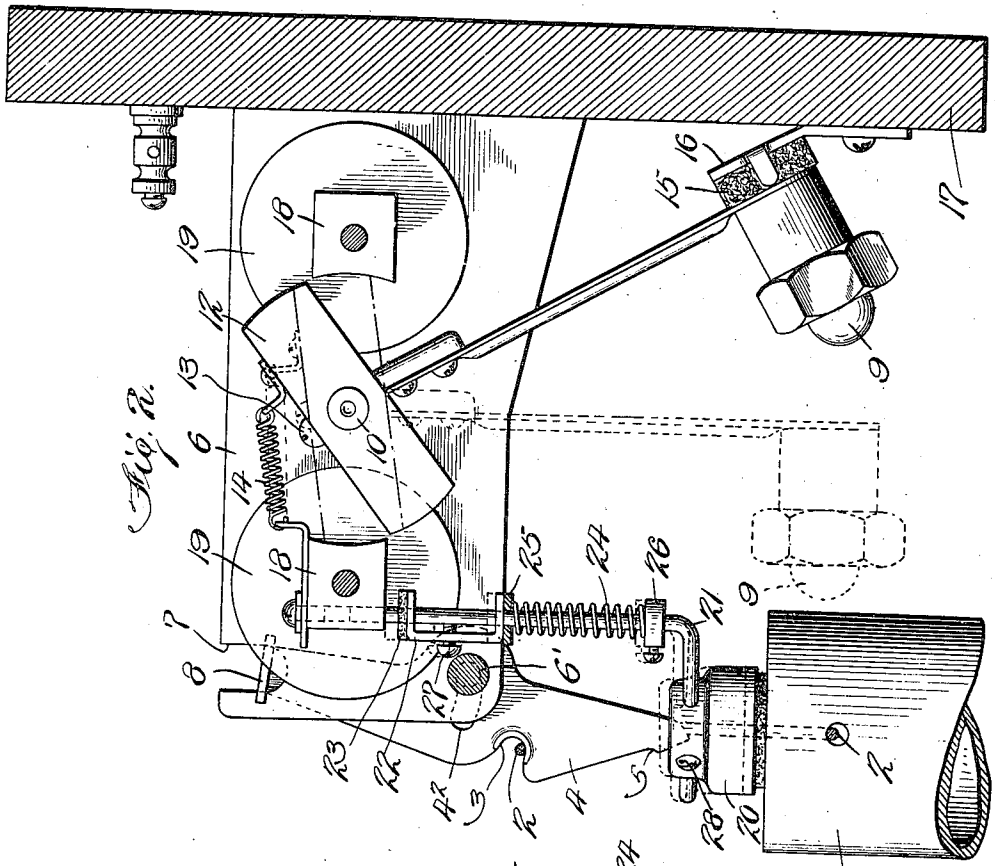


Fig. 2.

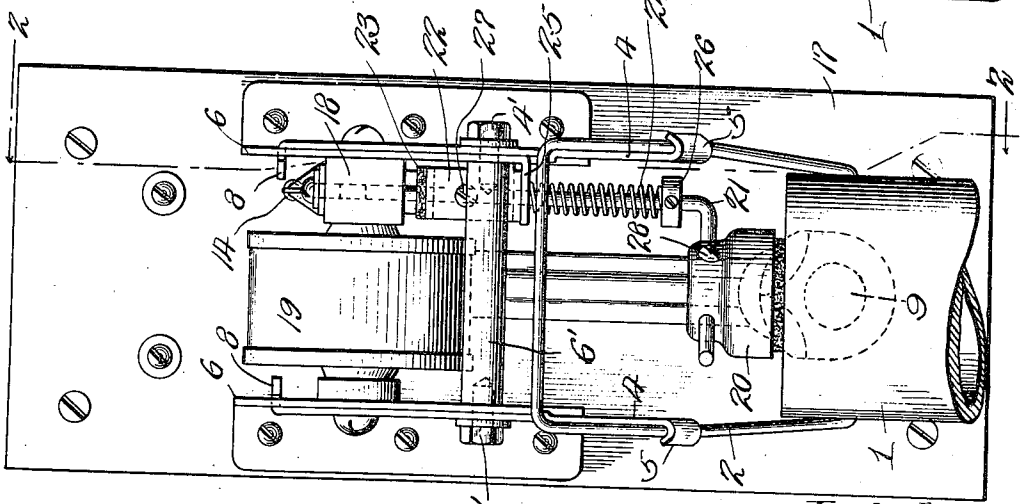


Fig. 1.

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Fig. 3.

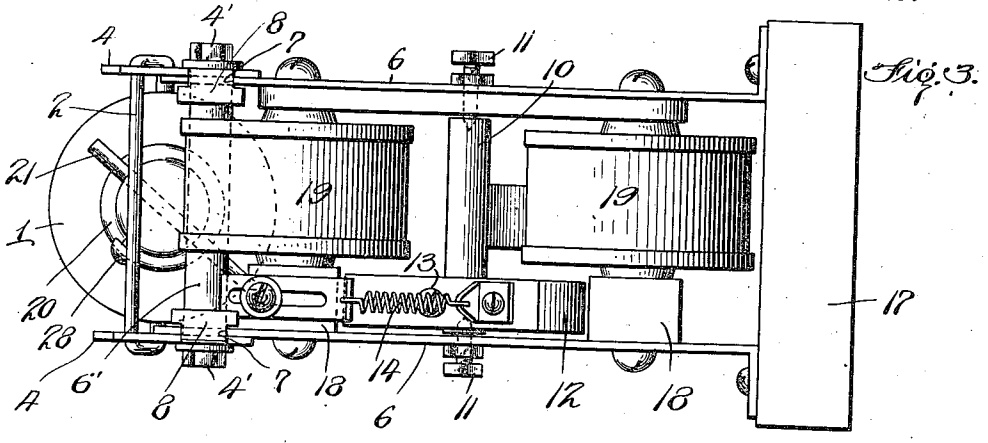
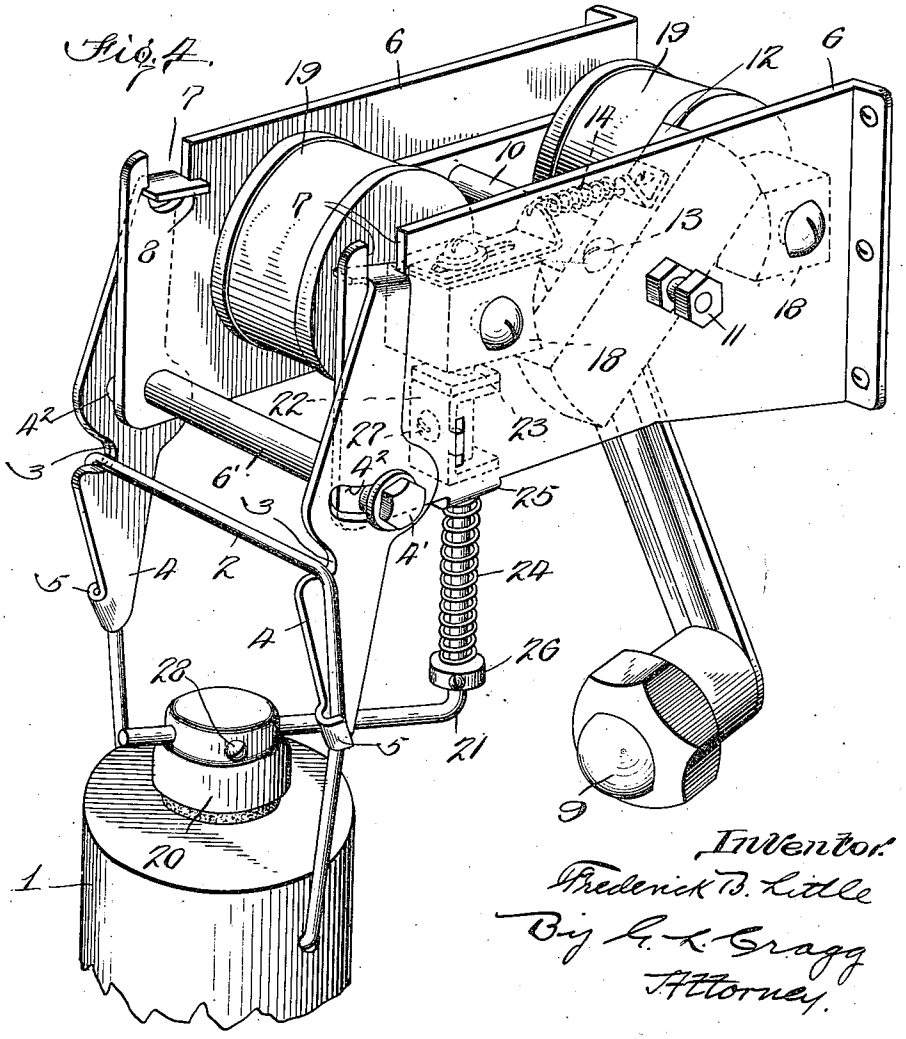


Fig. 4.



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Patented Nov. 6, 1923. 1,473,485

UNITED STATES PATENT OFFICE.

FREDERICK B. LITTLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO J. C. DEAGAN, INC., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SOUND-PRODUCING MECHANISM.

Original application filed April 2, 1920, Serial No. 370,834. Divided and this application filed October 20, 1921. Serial No. 508,997.

To all whom it may concern:

Be it known that I, FREDERICK B. LITTLE, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Sound-Producing Mechanism, of which the following is a full, clear, concise, and exact description.

My invention relates to sound producing devices and has a number of objects and advantages in view, the invention being of particular service when employed in mechanism for suspending and operating tubular chimes, the present application being a division of my original application Serial No. 370,834, filed April 2, 1920.

The invention has for its general object the provision of an improved sound dampener having several novel aspects. The sound dampener is preferably made engageable with the top of the corresponding tubular chime or other vibrant element, being adjustable in position to follow the positions of the vibrant element if the latter is adjustable. In carrying out this aspect of the invention the sound dampener is desirably both swingingly and slidably mounted. Suitable mechanism is employed for withdrawing the sound dampener when the vibrant element is to be struck, a spring being employed for applying the dampener when the vibrations of the vibrant element are to cease.

The invention has for another of its objects the provision of improved electro-magnetic mechanism for operating the hammer and withdrawing the dampener. The same electro-magnet desirably performs both functions, there being one armature for the magnet which serves to operate the hammer and another armature for withdrawing the dampener. The armature that controls the hammer is provided with adjusting means to alter the range of movement of the armature and thereby control the force with which the hammer strikes the corresponding vibrant element.

All of the characteristics of my invention will be fully set forth by a description of the preferred embodiment of the invention shown in the accompanying drawings and in which Fig. 1 is a front view of the preferred form of the invention; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a plan view; and Fig. 4 is a perspective view.

Like parts are indicated by similar characters of reference throughout the different figures.

The vibrant element illustrated is in the form of a tubular chime 1 whose ends are closed. Each vibrant element has a bail 2, preferably made of string. This bail is received within hook forming notches 3 provided in plates 4 which together constitute a hanger. Each of these plates also has a laterally projecting external ear 5, the bail being tucked behind these ears so as to hold it within the recesses 3. The two hanging plates 4 are pivotally mounted upon supporting plates 6 which are provided with notches 7 in their upper sides into which the angular extensions 8 are received. These angular extensions permit the hanger plates 4 to be swung in the planes of these plates along the supports 6 to adjust the position of the vibrant elements 1 with respect to the hammer 9 that is carried upon a shaft 10 pivoted to turn upon the trunnion screws 11. The hanger plates are secured in the positions to which they are swung by means of the heads of bolts 4′ which engage the plates at the recesses 4^2 through which the shanks of these bolts pass into threaded engagement with the distance preserving rod 6′ interposed between the plates 6. A block 12 is clamped upon the shaft 10 by means of a screw 13, the block being angularly adjustable upon the shaft when the screw is loose, the screw serving to secure, when tightened, the selected adjustment of the block. A coiled spring 14 is stationarily anchored at one end and has its other end in connection with the block 12 for the purpose of normally maintaining the hammer in an idle position and against a buffing block 15 of felt or other suitable cushioning material clamped to the plate 16 that is screwed to a mounting board 17.

In the preferred embodiment of the invention the hammer is actuated by means of an electro-magnet in which event the block 12 is in the form of an armature preferably oscillating between the pole pieces 18 that are at the ends of the horseshoe magnet core which carries electro-magnetic windings 19 which may be in serial relation or in parallel relation as desired. When the mag-

net is energized the hammer will be removed from its back stop 15 and applied to the vibrant element 1 whereafter (the magnet still being energized) the hammer will be slightly withdrawn by the spring 14 to occupy a position slightly removed from the vibrant element as indicated by the view of the hammer shown in dot and dash lines in Fig. 2. The force of the impact of the hammer upon the vibrant element is adjustably determined by the position to which the armature 12 is angularly adjusted upon the shaft 10. Whenever the magnet is energized it serves to remove the sound dampener from engagement with the vibrant element 1, the sound dampener being maintained in its withdrawn position during the time the magnet is energized. To this end the angular rod 21 which carries the sound dampener supports an armature 22 within the range of one of the poles 18, there being a cushion of felt or other suitable material 23 between the armature 22 and the corresponding pole 18 to avoid noise when said armature is attracted. When the magnet is energized to apply the hammer the rod 21 is lifted by the magnet before this hammer can strike the vibrant element 1, the ensuing vibrations being maintained until the magnet is deenergized to permit the sound dampener to be reapplied to the vibrant element. The sound dampener is preferably applied to the vibrant element by means of a coiled spring 24 intervening between the stationary abutment 25 and the collar 26 upon the rod 21. The range of movement of the armature is adjustably determined by means of a screw 27 which serves to secure the armature upon the rod in any selected position along the rod. The speed and force of the application of the dampener to the vibrant element are determined by adjusting the tension of the spring 24 by adjusting the collar along the rod 21. Said rod may be turned upon its upright axis to swing the sound dampener to correspond to the change in position of the vibrant element 1 which is effected by the adjustment of the hangers 4. The position of the sound dampener is further determined by sliding the same along the lower horizontal branch of the rod, the position of the sound dampener on this branch being secured by means of a set screw 28.

While I prefer to employ the same magnet for withdrawing the sound dampener that applies the hammer I do not wish to be limited to this arrangement.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:

1. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger supporting the vibrant element and having an angular extension; and a support formed with a notch in its upper side into which said extension is dropped.

2. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger supporting the vibrant element and having an angular extension; a support formed with a notch in its upper side into which said extension is dropped and in which the hanger is mounted to swing to adjust the hanger and the vibrant element toward and from the hammer; and means for securing the hanger in positions to which it is swung.

3. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger supporting the vibrant element and having an angular extension; a support formed with a notch in its upper side into which said extension is dropped and in which the hanger is mounted to swing to adjust the hanger and the vibrant element toward and from the hammer; and a bolt for holding the hanger in positions to which it is swung by clamping said hanger and support together, one of these latter two elements carrying the bolt and the other having a recess through which the bolt shank passes and at which recess the bolt is adapted for clamping engagement, throughout the range of adjustment of the hanger, with the element having the recess.

4. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger formed with a hook forming notch and provided with a laterally extending ear; a support upon which the hanger is mounted to swing; and a vibrant element supporting bail received in said notch and positioned by engagement with said ear.

5. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger formed with a hook forming notch and provided with a laterally extending ear; a support upon which the hanger is mounted to swing; a vibrant element supporting bail received in

said notch and positioned by engagement with said ear; and means for holding the hanger in positions to which it is adjusted.

6. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger including two upright plates each having a hook forming notch and each provided with a laterally extending external ear; and a vibrant element supporting bail received in said notches to embrace portions of said plates and positioned by engagement with said ears.

7. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger including two upright plates each having a hook forming notch and each provided with a laterally extending external ear; a support upon which said plates are mounted to swing; and a vibrant element supporting bail received in said notches to embrace portions of said plates and positioned by engagement with said ears.

8. A sound producing device including a vibrant element; a hammer mounted to swing, the vibrant element being within the range of movement of the hammer to be struck thereby; a hanger including two upright plates each having a hook forming notch and each provided with a laterally extending external ear; a support upon which said plates are mounted to swing; a vibrant element supporting bail received in said notches to embrace portions of said plates and positioned by engagement with said ears; and means for holding the plates in positions to which they are adjusted.

In witness whereof I hereunto subscribe my name this 29th day of July, A. D. 1921.

FREDERICK B. LITTLE.