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TUBULAR CHIME

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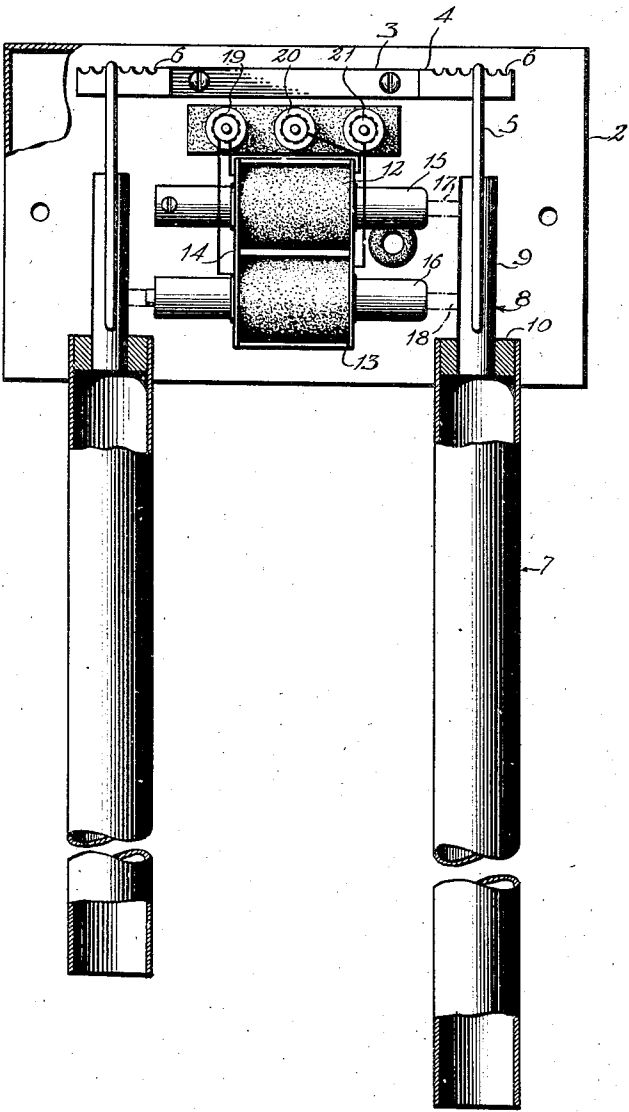


Fig. 1

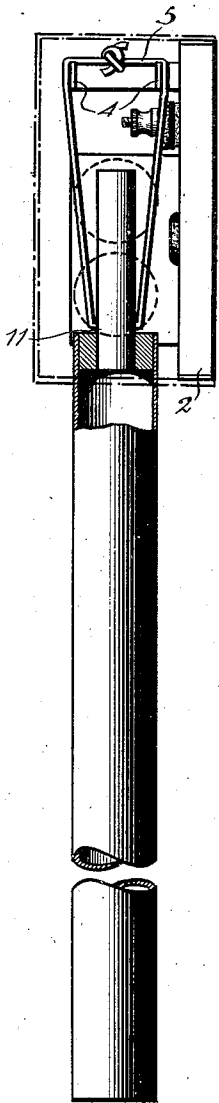


Fig. 2

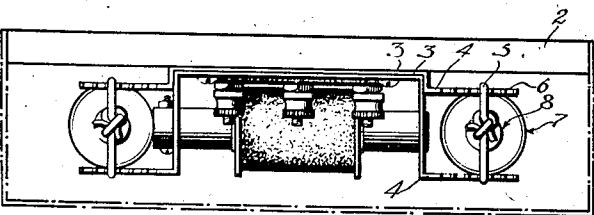


Fig. 3

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TUBULAR CHIME

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3 Claims. (Cl. 116—169)

This invention relates to chimes of the type comprising a vibratable, tubular chime or sounding element, and a striker for vibrating it. The striker is either of the mechanical type or one comprising a plunger and solenoid electro-magnetically operable by a push button switch. The chime element itself is an elongated tube which when struck vibrates to produce a resonant sound.

10 The primary object has been to provide a tubular chime element which is capable of providing sounds of a fuller and more pleasant tone when struck, than the chime elements which heretofore have been available.

15 With few, if any exceptions, the sounds produced by the typical tubular chimes have been comprised of overtones of a brassy, metallic and very undesirable character. One of the principal features of the present invention resides in the improvement of the quality and tonal value of the sound of the chime element.

Another object of the invention has been to improve the arrangement of the chime elements and the strikers for operating them. In using the conventional chime elements, it has been very difficult to position two solenoid strikers so that both strike the tube at some point which proves most efficient for sound production. In some instances the strikers are located radially around the tube adjacent the upper end of it. This arrangement, however, makes it necessary to have a bulky and large cover to house the chime operating mechanism. If the striker units are placed side by side, with their cores parallel to one another, then one of them can be positioned to strike the tube at a nodal point, but not both. Neither is it effective or convenient to angulate the strikers relative to one another so that their axes converge at a nodal point. The present invention contemplates a structure in which the solenoid strikers may be spaced adjacent one another, so that they do not necessarily strike the same point, without impairing the quality of the sound produced from the chime or the volume of it.

It is also very desirable that the electromagnetic striker units be operable upon the six-volt electric current furnished by the ordinary doorbell ringing transformers usually installed in the homes. The chime tubes themselves, however, are relatively heavy; consequently sharp, quite powerful impact blows upon them are required for full development of the sound. When the usual electromagnetic strikers are operated upon

six volts the blows which they deliver tend to be, or are too feeble for the purpose.

To overcome this disadvantage the object has been to provide a tubular chime element which is capable of developing a full resonant tone even when operated upon voltages furnished from conventional doorbell ringing transformers or similar means.

The present invention is based upon the discovery that a pronounced improvement in the tone quality and the volume of sound produced by a chime is obtained when a prong or rod-like anvil is provided at the end of the chime tube for receiving the striking blows. This anvil is mounted rigidly upon the tube, or is made as an integral part of it, and projects axially beyond the end of the tube for the reception of blows either from one or a series of strikers disposed at various points along its length. When this anvil is struck instead of the tube then full resonant tones are produced from the chime and no metallic overtones or harsh sounds are developed. The sound produced by the instrument is noticeably different, both qualitatively and quantitatively, from the sound produced from a chime tube of the conventional structure. The sound developed by the chime does not vary as the anvil is struck at different points upon its length. This characteristic enables two solenoid strikers to be placed side by side for operating upon the anvil without variation in the volume of sound or purity of its tone. Moreover, the volume of sound produced from a relatively feeble blow upon the anvil, for example, a blow from a solenoid operated upon six-volt current, is at least equal to, and in most cases much greater than the sound produced from a striker operated from an eight or fourteen volt transformer and arranged to strike the tube in the conventional manner.

Other objectives and further features of the invention are disclosed in the description which follows.

A preferred embodiment of the invention is shown in the accompanying drawing in which:

Figure 1 is a front elevation of a chime unit embodying two chime tubes.

Figure 2 is a side elevation.

Figure 3 is a top plan view.

The chime of Figure 1 embodies a base 2 upon which hangers 3—3 are mounted. These hangers are comprised respectively of arms 4—4 which are in spaced parallel relationship and serve to spread the strings 5—5 from which the chime tubes are suspended. The upper edges of the hangers preferably contain notches 6 in

spaced relationship for holding the support strings 5—5 in predetermined positions.

The chime tubes are designated generally at 7. Each tube is of elongated form and is made of metal, preferably brass. The tubes, as shown, are open at their lower ends though they may contain caps or closures. At the upper end each tube contains an anvil indicated generally at 8.

In the preferred structure the anvil of each tube is comprised of an elastic portion 9. This preferably is of rod-like nature and it terminates in a plug portion 10 engaging the end portion of the tube. It is requisite that the anvils be affixed tightly to the tubes; loose connections give rise to the production of harsh metallic sounds when the anvils are struck.

The anvil may be constructed several ways without departing from the spirit of the invention. The rod portion of the anvil is integral with the plug, or it may be press-fitted into the plug, as shown in the drawings. Alternatively, it may be sweated on by solder or held in the plug by threaded connection. Likewise, the plug can be held in its position inside of the chime tube in any of these ways, or the anvil may be made in one piece and fastened into the tube as above described. The anvil elements also may embrace the tubes in exterior connection instead of being fitted within the interior of them.

The portion 9 of the anvil is of sufficient length to accommodate the various strikers from which it is to receive blows along the length, and it preferably is of relatively slender configuration, to facilitate compactness in the structure and avoid the use of wide spreaders for keeping the support strings from contacting the anvil and dampening the sound vibrations. However, other supporting structures may be employed in place of the one which is illustrated. The anvils are preferably made of steel or brass, and may be round, as shown, or square, or of other suitable shape. The rod portions of the anvils are bored as at 11 to receive the support strings 5.

The chime tube is operated by applying a lateral impact blow upon the anvil. In the device shown in Figure 1 a striking mechanism is of a typical arrangement and embodies solenoids 12 and 13 supported from the base 2 by means of the bracket 14. The solenoids 12 and 13 contain sleeves 15 and 16 within which plungers 17 and 18, shown in the phantom lines in Figure 1, are slidable. The plungers carry non-metallic hammer heads. These preferably are of wood or felt, or leather, to avoid the production of metallic sounds.

The base 2 of the device contains terminals 19, 20 and 21. The terminals of the solenoids are connected to the leads in the conventional

manner and the terminals in turn are in electrical connection with the appropriate signal buttons energized from a six-volt battery, or a six-volt transformer or the like.

One of the sleeves, 15, of the solenoid is closed at one end so that the plunger is free to move in one direction only. This sleeve contains an appropriate spring abutment for retracting the plunger within the sleeve upon deenergization of the solenoid. The other sleeve is open at both ends and the plunger of it contains a hammer head at each end. This plunger is free to be projected in one direction to strike one of the anvils and a spring (not shown) is located within the sleeve to retract it and cause it to rebound through the sleeve and be impact against the other end of it. This phase of the structure, disclosed in Figure 1, is conventional and need not be described here in detail.

In place of the striking mechanism which is shown other types of electromagnetic strikers, including swinging hammers and the like, may be employed. Those skilled in the art will understand that the invention is not limited to the foregoing description of a typical embodiment but only by the claims which follow.

Having described my invention, I claim:

1. A sounding device, comprising a chime tube, a metallic member comprising a slender elongated portion which is of lesser diameter than the tube, attached to the tube at one end thereof with the slender portion extending substantially axially from the end of the tube, said member including means for suspending the tube, said slender portion comprising an anvil element which, upon being struck, is adapted to sound said chime tube.

2. A sounding device, comprising a chime tube, a metallic anvil member comprising an anvil which is of lesser diameter than the tube, the anvil member being attached to an end of the tube with the anvil extending substantially axially from the end of the tube, and means for supporting the tube from the anvil member, the anvil of said anvil member being of sufficient length to be struck by several hammer devices disposed along its length.

3. A sounding device, comprising a chime tube, a metallic member comprising a slender elongated portion which is of lesser diameter than the tube attached to the tube at one end thereof with the slender portion extending substantially axially from the end of the tube, said slender portion comprising an anvil element which, upon being struck, is adapted to chime said chime tube.

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