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SIGNAL OR MUSICAL INSTRUMENT

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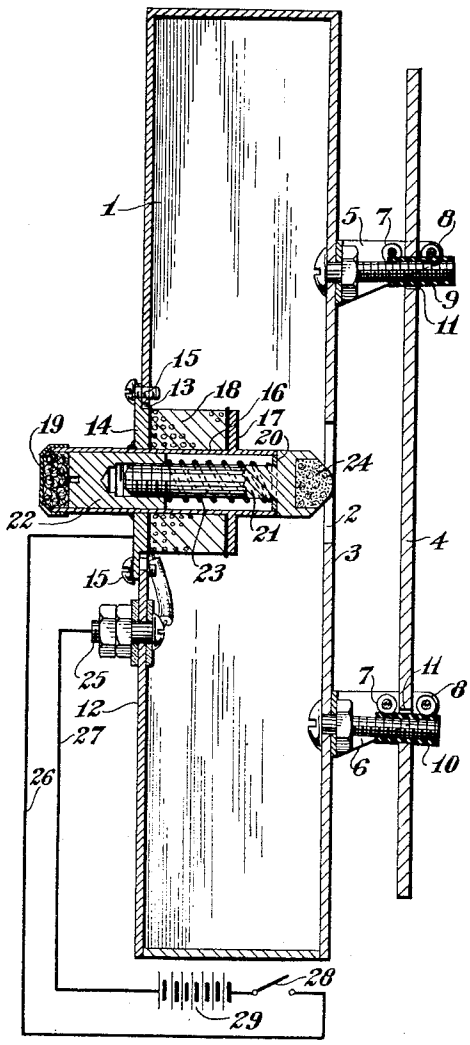

Fig. 1

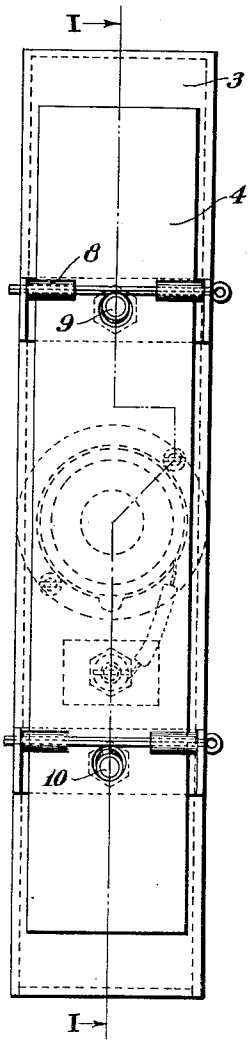

Fig. 2

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1,994,559

SIGNAL OR MUSICAL INSTRUMENT

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Application December 6, 1932, Serial No. 645,966

5 Claims. (Cl. 177—7)

Our invention is an improvement in signalling devices or musical instruments and relates more particularly to such devices of the percussion type.

It is one of the objects of our invention to enclose the striking mechanism of a signal device of the percussion type within the resonance chamber associated therewith.

It is a further object of our invention to construct a simple device of the above named character in which the striker is carried or mounted in the resonance chamber, so that upon actuation of the striker it will be projected outwardly of the chamber to impart a sharp momentary blow to the gong or other sounding element.

Still another object of our invention is to materially reduce the cost of manufacture of devices of this character and to render them more attractive and durable in use.

Other objects and advantages of our invention will become more apparent as the following description of an embodiment thereof progresses, reference being made to the accompanying drawing, in which like reference characters are employed to designate like parts throughout the same.

In the drawing:—

Figure 1 is a vertical section through an apparatus embodying our invention, the section being taken on line 1—1 of Figure 2.

Figure 2 is a front elevation of the device shown in Figure 1.

In carrying out our invention, the resonance chamber or box is indicated at 1 and consists primarily of an elongated tube closed at its ends and having an opening 2 in its forward face or wall 3. A gong or other vibratable member 4 is suitably mounted on the resonance box by means of brackets 5 and 6 so that the gong 4 is disposed in spaced relation in front of the opening 2 in the wall 3 of the resonance chamber. The gong 4 is supported against bodily movement away from or toward the resonance chamber 1 by means of the cushioned pins 7 and 8. Likewise longitudinal bodily movement of the gong is also prevented by means of the cushioned pins 9 and 10 carried by the resonance chamber 1, these pins projecting through suitable openings 11 formed in the gong.

In further carrying out our invention we have mounted the striker mechanism within the resonance chamber 1 in such a manner that the entire device may be readily set in a wall or other structure leaving only the gong exposed, if desired, and thereby affording neatness in appearance as well as protection to the device.

The rear wall 12 of the resonance chamber is also provided with an opening 13 which receives the striker operating mechanism. When the device is assembled a plate 14 is screwed or otherwise removably attached to the wall 12 of the chamber as indicated at 15. In this manner, the striker unit may be bodily removed from the chamber for repair or adjusting. A tube 16 may be fixed to the plate 14 and carries near its outer end a plate 17 for supporting an electro-magnetic coil of wire 18 between the plates 14 and 17. A suitable cap 19 may be placed over the outer end of the tube 16 while the forward end of the tube may be flanged inwardly as at 20 to provide a guide for the armature stem 21 during its movement axially in the tube. The armature stem 21 is threaded on its rear end to receive the armature 22 in any desirable adjusted position, there being provided a coil spring 23 about the stem 21 engaging the flange 20 and the armature 22 to normally restrict the armature to the approximate position shown in Figure 1. Adjustment of the armature may be effected by turning the same on the threaded stem 21. It may be said that the armature and its stem, carrying on its forward end a cushioned striking member 24, constitutes the striker which operates through the opening 2 in the front face of the resonance chamber.

One end of the coil of wire 18 is connected to a binding post 25 mounted on and insulated from one of the walls of the resonance chamber, the other end of the coil 18 being grounded to the resonance chamber, if the latter is made of metal, although a separate binding post can be provided, if desired. The wires 26 and 27 leading from the coil may be connected with a control switch 28 and a source of electrical energy 29 respectively to complete the operating circuit.

It will be noted that the resonance chamber enclosing an air column is in resonance with the period of vibration of the gong 4 and that upon closing the switch 28 the solenoid 18 is energized to thrust the armature 22 and the striker 24 forwardly to deliver a sharp momentary blow to the gong 4, the spring 23 being thereby placed under compression, immediately retracts the striker from contact with the gong. The vibrations of the gong are transmitted to the air column within the resonance chamber 1 through the opening 2, which, being in resonance, greatly amplifies the musical note. We have found, by mounting the striker mechanism within the

resonance chamber, that it does not materially reduce the efficiency of the resonance chamber or the air column therein and a clear loud tone or note will be projected through the opening 2.

Although we have shown but one unit, it will be understood that these units may be grouped together in various combinations to produce any desired tone combination or chord. Furthermore, the units in such groups may be operated simultaneously or in succession, as desired.

Our invention also embodies a kind of unit construction by virtue of the mounting of the essential parts. For instance, a very compact and durable construction involving this phase of our invention is shown in the drawing, where it will be seen that the resonance chamber serves as a unitary support for the gong and the striker mechanism. By such arrangement the construction and assembly is greatly simplified and consequently is less expensive to manufacture.

Various changes in the details of construction and arrangement of parts may be made without departing from the spirit of our invention or the scope of the appended claims.

We claim:

1. A signal device including a substantially closed resonance chamber having a restricted opening in one face thereof, a vibratable element, means for supporting said vibratable element exteriorly of said chamber and overlying said opening, a striker normally housed within the said chamber, and electromagnetic means for thrusting said striker quickly through the opening and against the vibratable element.

2. In a signal device of the percussion type, an elongated resonance chamber closed at both ends and having a restricted opening between said ends, a vibratable element, means for mounting said vibratable element exteriorly of said chamber and overlying said opening, a striker normally housed within the said chamber, and means for thrusting said striker through said opening and into momentary contact with the vibratable element.

3. In a signal device of the percussion type, an elongated resonance chamber closed at both ends and having a restricted opening in one face thereof adjacent a vibratable element, a vibratable element mounting exteriorly, means for mounting said vibratable element of the chamber, a striker operating through the opening to deliver a sharp blow to said vibratable element, and means within the chamber for actuating said striker.

4. In a signal device of the percussion type, an elongated tubular resonance chamber closed at both ends and having an opening in one face thereof adjacent a vibratable element, a vibratable element mounting exteriorly, means for mounting said vibratable element of the chamber, a retractible striker operating through the opening to deliver a sharp blow to said vibratable element, and means within the chamber for actuating said striker, said means including an electromagnet having connection with a source of controlled electrical energy, an armature directly connected with said striker, and means for retracting the striker.

5. A signal unit comprising a resonance chamber having a restricted opening in one of its walls, a vibratable element spaced exteriorly of said chamber and a striker, and means for projecting the striker from within the chamber through the opening to deliver a sharp blow to said element.

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ROBERT. B. BREWER.

CERTIFICATE OF CORRECTION.

Patent No. 1,994,559. March 19, 1935.

LAWRENCE G. BERGERON, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, lines 11 and 20, claims 3 and 4 respectively, strike out the words "mounting exteriorly"; and lines 12 and 21, of said claims 3 and 4, after "element" insert the word exteriorly; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 23rd day of April, A. D. 1935.

Leslie Frazer

(Seal) Acting Commissioner of Patents.

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