

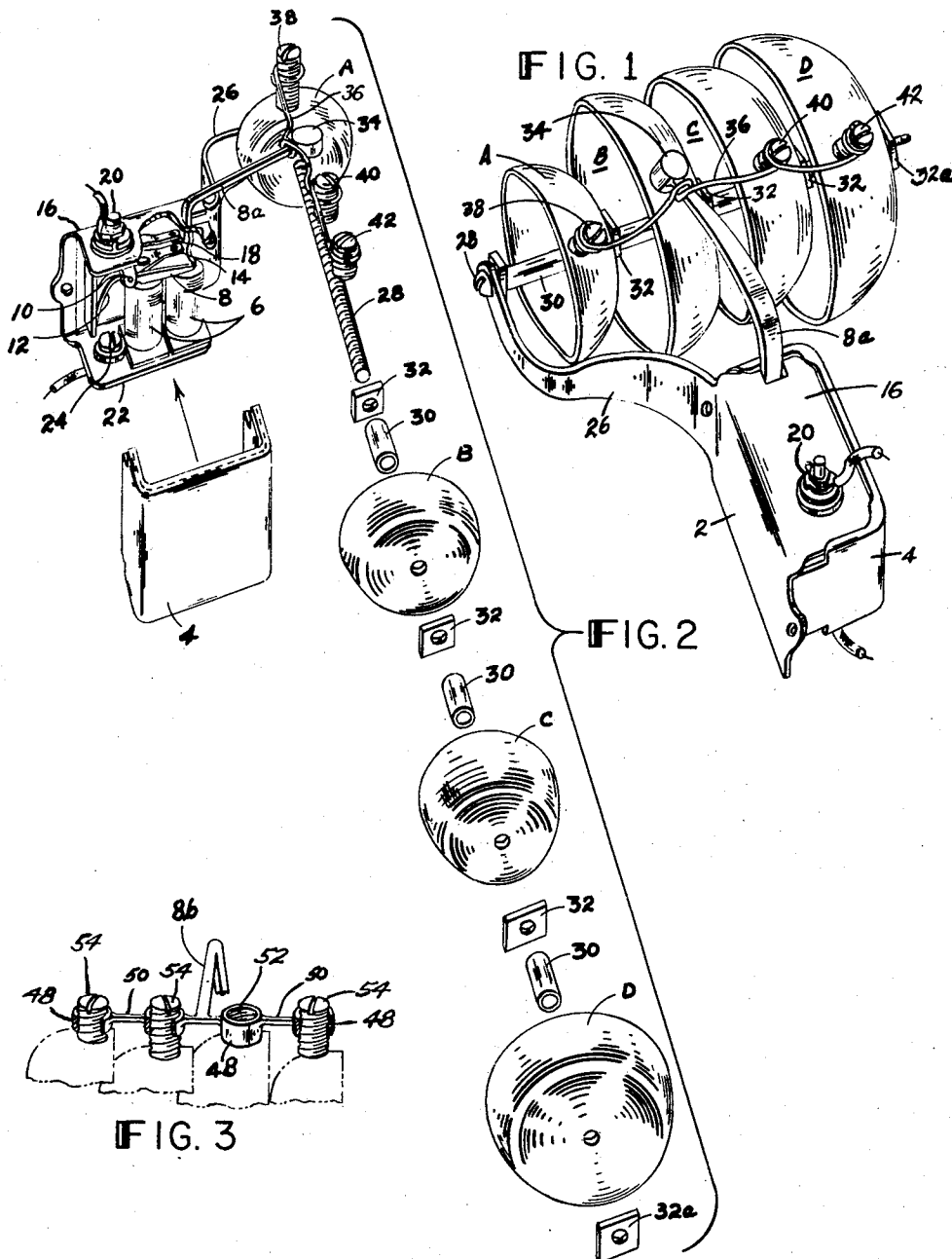
Sept. 15, 1959

D. W. TIBBOTT

2,904,783

AUDIBLE MULTITONE ALARM

Filed March 19, 1959



INVENTOR.
DAVID W. TIBBOTT

BY *Porter, Chittick & Russell*

ATT'YS.

1

2,904,783

AUDIBLE MULTITONE ALARM

David W. Tibbott, West Newton, Mass.

Application March 19, 1959, Serial No. 800,422

2 Claims. (Cl. 340—392)

This invention relates to audible alarms and more particularly to an electrically operated alarm comprising a plurality of bells.

The object of this invention is to provide an audible multitone electrically operated alarm comprising a plurality of bells and electrically operated means for simultaneously ringing all of the bells.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view of one form of the invention;

Fig. 2 is an exploded view of the same device taken from a different viewpoint; and

Fig. 3 is a perspective view of a modification of the hammer unit used to ring the bells.

Referring now to Figs. 1 and 2, the device comprises a casing consisting of a base member 2 and a removable cover 4. Base member 2 supports a pair of series connected electromagnets 6 and an arm 8 which is pivoted at 10. The arm is biased away from the electromagnets 6 by a conductive leaf spring 12. Arm 8 carries a contact 14 connected to leaf spring 12. Leaf spring 12 is connected in series with electromagnets 6.

Base member 2 has a top wall 16 to which is secured a second contact 18. The latter is connected to a terminal 20 carried by top wall 16. Base member 2 also has a bottom wall 22 which carries a second terminal 24 which is electrically connected in series with electromagnets 6. Electric power is applied to the circuit by way of terminals 20 and 24. The two contacts are normally engaged; and when engaged, the electromagnet circuit between terminals 20 and 24 is closed. When the electric energy is applied across the terminals, the electromagnets are energized to attract arm 8, causing the latter to pivot downward to move contact 14 away from contact 18. This interrupts the flow of current to the electromagnets, allowing arm 8 to be moved upward again by spring 12. As soon as the two contacts reengage, current flows again through the electromagnets. This again draws arm 8 downward to separate the contacts. This cycle is repeated so long as the electromagnets are closed to the source of power.

To the extent already described, the apparatus shown in the drawings is conventional and well known.

Base member 2 has an extension 26. Attached to the end of extension 26 is a bell assembly. The bell assembly comprises an elongated screw 28 which extends through a suitable opening in extension 26. Mounted on screw 28 are four bells A, B, C, and D of different sizes. These bells are spaced from each other by means of a plurality of spacer sleeves 30 and nuts 32.

Arm 8 is provided with an extension 8A having at its free end a solid cylindrical hammer element 34. Hammer element 34 is positioned to strike bell B. Also secured to arm 8A is a wire member 36. Wire member

2

36 is wound around arm 8A and extends laterally of arm 8A in opposite directions. At one end, wire 36 is coiled about a screw element 38. Screw element 38 is positioned to strike bell A. Wire 36 is bent at two additional points to encompass two additional solid screw members 40 and 42 which are positioned to strike bells C and D respectively. Preferably, wire 36 is wound about screw elements 38, 40, and 42 several times, automatically forming a helical thread which mates with the threads formed in the outer surface of these solid elements 38, 40, and 42. Thus, while the position of hammer 34 with respect to bell B is fixed, elements 38, 40, and 42 are adjustable. Turning these elements clockwise, as seen in Fig. 1, moves them closer to bells A, C, and D. Turning them counterclockwise moves them away from these bells. Thus by turning these elements, it is possible to vary the force with which they strike their associated bells; and if desired, any one or all of the three bells A, C, and D may be made inactive by backing off screw elements 38, 40, and 42.

Although, as shown in Figs. 1 and 2, the device comprises three bells, it is to be understood that the number of bells may be varied as desired. Moreover, the size of the bells may be varied. It is preferred, but not absolutely necessary, that the bells be spaced from each other by an amount sufficient to prevent overlapping. It is to be understood also that nuts 32, with the exception of the last nut 32A, are not necessary and may be omitted. The advantage of nuts 32 is that they forcibly lock the bells against rotation. However, where the intermediate nuts are omitted, the bells may still be held against rotation by the frictional force applied by nut 32A acting through sleeves 30.

Fig. 3 shows a modified form of hammer assembly that may be substituted for the hammer assembly shown in Figs. 1 and 2. In Figs. 1 and 2, the arm 8A and hammer element 34 form part of a conventional bell unit and the wire 36 and the additional hammer elements 38, 40, and 42 have been added thereto. In Fig. 3, the hammer assembly is a unitary device consisting of an arm 8b which would be attached to the movable arm 8. Four cylindrical sleeves 48 are attached to each other and to the free end of arm 8b by means of connecting struts or bars 50. These sleeves 48 are provided with internal threads 52 to mate with threaded hammer elements 54.

The embodiment of Fig. 3 has one advantage over the embodiment of Fig. 1. In Fig. 3, any one of the hammers may be retracted to an inoperative position whereas in Fig. 1 the hammer 34 cannot be made inoperative. However, the principles of operation are the same in both cases.

The primary advantage of the present invention is that it provides an audible alarm in the form of a musical chord, this result being achieved by simultaneously ringing a plurality of bells timed to different resonant frequencies by a like plurality of hammers which are actuated by a single electromagnet unit. A more specific advantage is that it permits variation in the size of the bells so as to produce different musical chords. Thus, if bell C should be replaced by a larger or smaller bell, hammer 42 may be retracted or extended so as to render the new bell operable. Another advantage is that the number of bells that are operated may be reduced without physically removing any balls. Instead, the hammer associated with the bell desired to be made inactive is backed off by an amount sufficient to prevent it from striking the bell when the electromagnet unit is energized. This makes it possible to change the output of one bell unit so as to distinguish it from the output of an identical bell unit.

It is not essential for the obtainment of a musical

3

chord that the several bells differ in size. Instead, a musical chord can be produced by using bells which have the same size but differ in wall thickness or composition.

It is to be understood also that the invention is not limited to bells, and other elements which resonate when struck, such as tubes or flat bars made of metal, may be used in place of the bells.

While there is no thought of limiting the uses to which the invention can be put, it is especially useful in automobiles to provide a warning signal which is much more pleasing than the strident blasts produced by conventional horns. The output of the present invention can be made loud enough to be heard in heavy traffic but not so loud as to be offensive.

Obviously, many modifications and variations of the present invention are possible in the light of the above teachings. Therefore, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts specifically described or illustrated, and that within the scope of the

4

appended claims, it may be practiced otherwise than as specifically described or illustrated.

I claim:

1. An audible multitone alarm comprising a base member, an electromagnet carried by said base member, an arm pivotally supported by said base member in a position to be repeatedly attracted magnetically by said electromagnet, a shaft supported by said base member, a plurality of metal cup-shaped bells mounted on said shaft in coaxial-spaced relation with each other, an extension on said arm oriented at right angles to said shaft, a like plurality of hammer elements, means connected by said extension for supporting said hammer elements, said hammer elements disposed in position to strike said bells each time said arm is attracted by said electromagnet.

2. An alarm as defined by claim 1 wherein said hammers are solid elements of circular cross section connected by screw threads to said hammer supporting means.

No references cited.