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ELECTRIC CHIME SIGNAL

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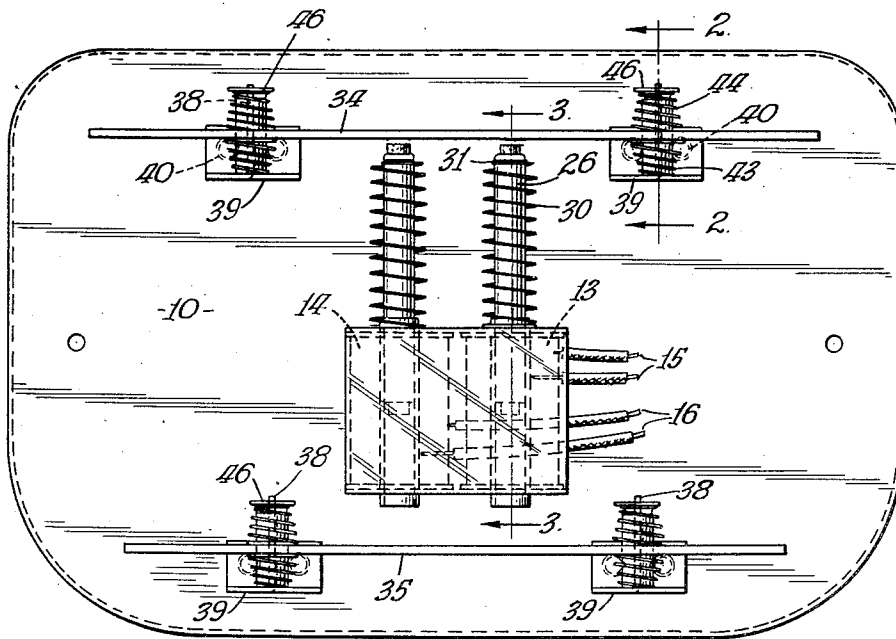


Fig. 1.

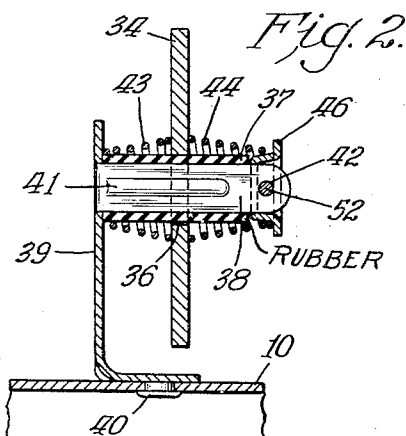


Fig. 2.

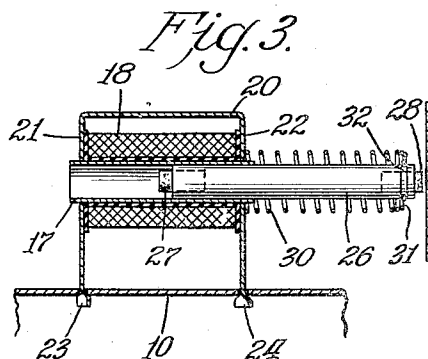


Fig. 3.

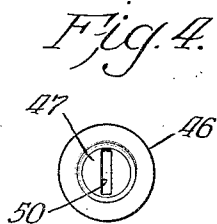


Fig. 4.

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ELECTRIC CHIME SIGNAL

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4 Claims. (Cl. 177-7)

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This invention relates to an electric signal and particularly to a chime structure for use in signaling.

One object of the present invention is to provide a simple and economical construction for a chime, which construction will be economical to manufacture and which may be assembled in a simple and convenient manner. A further object is to provide a simple construction for mounting the chime plate whereby such chime plate may be secured in a simple and expeditious manner to result in a chime support having desirable properties. Other and ancillary objects will become apparent in connection with a detailed description of the invention illustrated by the drawings.

Referring, therefore, to the drawing, Figure 1 is a plan view looking down upon a chime embodying the present invention. Figure 2 is a sectional detail on line 2-2 showing the mounting means for a chime plate. Figure 3 is a sectional detail on line 3-3 of Figure 1 showing the solenoid and striker. Figure 4 is a detail of the retaining washer in connection with the chime plate support of Figure 2.

The chime striker is mounted upon base 10 of metal, plastic or other rigid material. Base 10 may have any desired shape and, as shown here, has a generally rectangular shape with rounded corners. Secured to an intermediate portion of base plate 10 are two solenoids 13 and 14 having leads 15 and 16 respectively for their windings. The solenoids may be constructed in any desired manner and, as shown here, are provided with metal tube 17 which may be either of brass or iron over which is disposed winding 18. Sheet iron cover 20 has downwardly depending sides 21 and 22. Sides 21 and 22 pass down along the ends of winding 18 and have suitable apertures in which tube 17 has its ends. Casing 20 may be made of sheet iron so that the magnetic circuit around the outside of winding 18 may be completed. Sides 21 and 22 have ears 23 and 24 projecting through suitable apertures in base 10. These ears may be twisted as shown to lock the casing in position.

It will be evident from Figure 1 that both solenoids may have one casing 20 in common. It is understood, however, that each solenoid may have its individual casing and that the number of solenoids may be as desired.

Operating in tube 17 of each solenoid is ferromagnetic plunger 26 of soft iron. This plunger carries inserts 27 and 28 at the ends thereof. Such inserts may either be of suitable striking

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material such as wood, or one of the inserts of one plunger may be of felt for preventing a striking action. The inserts may be disposed in plunger 26 in any suitable manner, such as by pressing into suitable blind recesses at the ends of the plunger. Each plunger 26 has disposed around it coil spring 30 having one end 31 of reduced diameter and adapted to lock in annular slot 32 at one end of plunger 26. Coil spring 30 bears against side 22 of the solenoid casing and is adapted to bias the plunger to a position as shown in Figures 1 and 3.

Cooperating with the plungers are chime bars 34 and 35. These bars may be made of steel or other material such as brass or bronze having desired pitch when struck. Since the two chime bars are supported in similar manners, only one will be described in detail. Thus, referring to chime bar 34, apertures 36 are provided at spaced points for purposes of support. Only one mounting means need be described in detail. Aperture 36 is round and has passing through it tube 37 preferably of flexible material like rubber. Disposed within tube 37 and passing through the same is metal finger 38 having one end rigidly supported from arm 39. Arm 39 extends upwardly from base 10 and may either be cut out therefrom and bent up or may be riveted thereto, as shown at 40. Finger 38 is flat but may be strengthened by flange 41 pressed out therefrom along its length.

Finger 38 has the free end thereof provided with eye 42. Disposed around tube 37 on opposite sides of chime plate 34 are tapered coil springs 43 and 44. Coil spring 43 is disposed between chime plate 34 and arm 39. Coil spring 44 is disposed on the other side of chime plate 34 and is maintained in place by the following. Washer 46 having cup-shaped interior 47 has elongated slot 50 in cup-shaped portion 47. Slot 50 is adapted to accommodate finger 38, while cup-shaped portion 47 registers with the edge of tube 37. Rim portion 46 furnishes support for the end of coil spring 44. To maintain the assembly intact, pin 52 passing through eye 42 is provided. Pin 52 may be a simple rod or may be a split cotter pin. Pin 52 is preferably short enough to lie along the bottom of cup-shaped portion 47 of the washer. Spring 44 will press washer 46 so that the bottom of the washer is adjacent pin 52, this pin being long enough so that it is impossible for the pin to be removed from the eye while the cup-shaped washer is in the position shown. It is evident that pin 52 may be inserted or removed only by forcing

washer 46 clear of the pin against the compression of spring 44 and the resilience of rubber tube 37. Thus, the chime plate may be simply and effectively mounted at each point.

It will be noted that the chime plate is resiliently supported so that vibration induced in the chime plate by striking is not damped by the mounting.

In use, one or the other of the two solenoids may be energized. Thus, solenoid 13, when energized, may be adapted to strike chime plate 35. Upon deenergization of solenoid 13, chime plate 34 may be struck. Thus, solenoid 13 will provide two tones.

Solenoid 14, on the other hand, when energized, may be adapted to strike chime plate 35 to produce a single tone. Upon deenergization of solenoid 14, its hammer may be provided with a deadening pad to prevent chime plate 34 from being vibrated. Other combinations may be provided as desired.

What is claimed is:

1. An electric chime signal comprising a base plate, solenoid means on said base, a chime plate adapted to be struck by said solenoid means when energized, and means for supporting said chime plate on said base plate, said means including a rigid finger extending through an aperture in said chime plate, coil springs around said finger bearing against opposite sides of said chime plate, a washer slidable on said finger, said finger having a free end with an eye at the free end and a retaining pin passing through said eye and engaging said washer to provide a locked assembly.

2. An electric chime signal comprising a chime plate, means for supporting said chime plate at spaced points thereon, each of said means comprising a finger extending through an aperture in said chime plate, said finger being flat and having one free end with an eye therethrough and having the other free end rigidly anchored, coil springs around said finger on opposite sides of said chime plate, one coil spring being locked between said chime plate and other end of said finger, a cupped washer slidably disposed on said

finger at the one free end and adapted to retain the end of said coil spring and a locking pin passing through said eye to lock said washer in position on said finger, and solenoid means on said base for striking said chime plate.

3. An electric chime signal comprising a base plate, at least one solenoid carried on said base plate, a plunger cooperating with said solenoid and adapted to function as a striking means, at least one chime plate cooperating with said plunger to be struck thereby, said chime plate comprising a flat bar having a pair of spaced apertures therethrough, and means for supporting said bar at said apertures, each of said means comprising an arm extending from said base plate, a finger carried by said arm passing through an aperture in said chime plate and having a free end with an eye at said free end, a coil spring anchored between said chime plate and said arm around said finger, a second coil spring around said finger on the other side of said chime plate and extending toward the free end of said finger, a cupped washer having a slot permitting said finger to be threaded through said washer, said washer being adapted to maintain said other spring in position and pin means passing through said eye and lying along the bottom of the cupped portion of said washer for locking the washer upon said finger.

4. The structure of claim 3 wherein a rubber tube is disposed around said finger between said arm and cupped washer with said rubber tube passing through said chime plate and the coil springs around said rubber tube.

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