Oct. 9, 1945. J. R. CORBETT 2,386,738

CHIME SIGNAL

Filed July 5, 1943

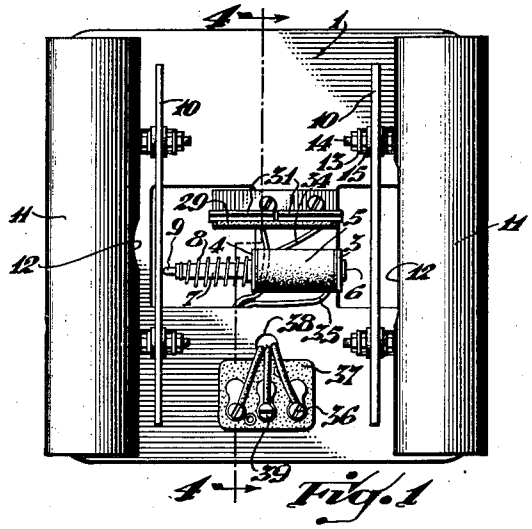


Fig. 1

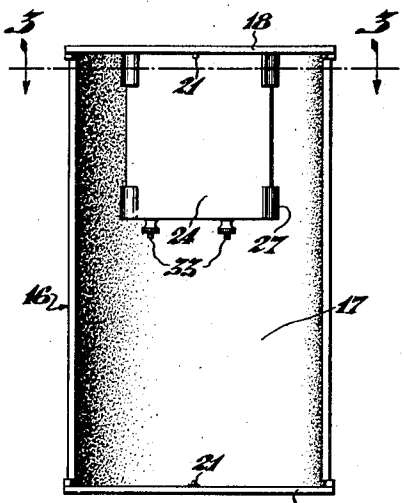


Fig. 2

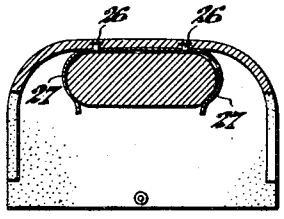


Fig. 3

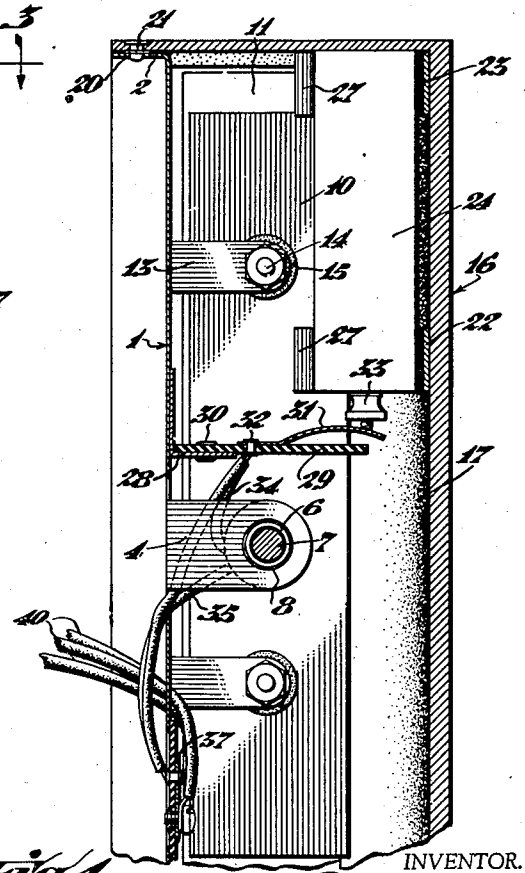


Fig. 4

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CHIME SIGNAL

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4 Claims. (Cl. 177—7)

This invention relates to electrically operated chimes and signals which are adapted particularly to be used in residences and apartment buildings.

The principal objective of the present invention has been to provide a unitary chime signal device which embodies a battery in its structure whereby the installation of the usual transformer and attendant wiring is avoided. It frequently occurs in many homes and apartment buildings that the point at which the chime signal is desired is remote from a bell-ringing transformer, or else no transformer whatever is available and considerable expense would be incurred in the provision of one. The chime units of the present invention are self-energized; they may be mounted for instance at a convenient point adjacent a door, with control wiring passing through the door frame or the wall to a push button at the other side. These structures, therefore, enable the chimes to be used in many places where cost of installation would otherwise be too expensive or too difficult to provide.

A further objective of the present invention has been to provide a self-energized chime unit which is neat and attractive in appearance and compact in size so that the unit as a whole does not become conspicuous.

A still further objective of the invention is to provide a structure containing a chime bar, a resonator which responds to bar vibrations to emit the signal, an electromagnetic striker for vibrating the bar and a battery for energizing the electromagnetic striker under push button control, with all of these elements contained in a simplified and compact unit readily adapted to be mounted upon a wall or door.

In more detail the objective of the present invention has been to provide a structure in which the sounding apparatus, including the resonator, chime bar and striker, is mounted rigidly upon a back plate and a cover which encloses the operating apparatus and keeps it free from dirt and at the same time provides a receptacle for holding the operating battery, with a simple arrangement for establishing circuit connections between the battery and striker as the cover is disposed in place upon the plate.

Other objectives of the invention and further features of it are shown in the drawing in which a preferred embodiment of the improved apparatus is disclosed.

In the drawing:

Figure 1 is an elevation showing the back plate of the apparatus with the resonator, striker and chime bar elements mounted upon it.

Figure 2 is a rear elevation of the cover or the housing which is adapted to be associated with the cover plate to complete the structure.

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a cross sectional elevation taken on the line 4—4 of Figure 1.

The back plate of the apparatus is indicated generally at 1. It preferably has a marginal flange 2 extending laterally from the plane of the plate so that the plate itself is spaced or offset from the rearward extremity of the flange to provide a recess within which suitable connections, nuts and fastenings may be disposed when the rearward extremity of the flange rests against a wall or door surface. This plate conveniently may be made as a dish-shaped stamping.

Ears 3 and 4 are bent forwardly from a central portion of the plate in spaced relationship to one another to carry in between them a striker consisting of an electromagnetic coil 5 which is disposed around a barrel 6, the latter being sustained by the ears 3 and 4. A plunger 7 slides within the barrel 6 and a compression spring 8 is provided in the usual manner for returning the plunger after it has been actuated through an electromagnetic impulse of the coil. The plunger contains the usual striking tip 9. Chime bars 10 are located at opposite sides of the striker unit and these elements are all located with respect to one another so that the striker, when idle engages neither bar, and when energized, first draws the plunger through the barrel to cause it to hit one of the chime bars, then rebound under the influence of the spring 8 to hit the opposite bar, and finally comes to rest at a point somewhere between them.

Resonator chambers 11 are located adjacent the chime bars and are provided with the usual openings 12. In the structure disclosed in the drawing a two-tone effect is provided when the chime bars and resonators respond at different frequencies. However, it will be understood that one of these units may be omitted if a single tone or simpler apparatus is desired.

In the structure shown in the drawing the chime bars 10 are mounted upon ears 13 which are bent up from the back plate; the ears carry screws 14 which pass through resilient grommets 15 upon which the chime bars are sustained and then on into connection with the resonator tubes 11 so that the tubes and chime bars are supported as unitary assemblies from the ears. In place of this

structure the resonator chambers may be fastened to the base plate independently of the chime bars or the chime bars may be suspended from them.

It has been found that better tone is usually provided by using resonator chambers which are of the closed end tube form shown in the drawing, but the invention also contemplates structures in which the resonator chambers are formed integrally in the apparatus by suitable bending and stamping of the metal.

Cover 16 is arranged to form a housing for the apparatus and it may also carry or constitute one or more resonator chambers as desired in place of the resonator chambers 11. In the preferred structure which is shown in the drawing the cover 16 has a front surface 17 shaped somewhat arcuately for appearance sake, a top wall 18 and a bottom wall 19 and is sufficiently wide to extend part way across the resonator tubes. Flanges 2 at the top and bottom edges of the back plate are pierced as at 20 while detents 21 are provided at the top and bottom walls 18 and 19 for engagement in these apertures. The top and bottom walls may be spread apart sufficiently to lead the edges of the detents over the surfaces of the flanges 2 whereupon they snap into place as they enter the apertures. In this manner the casing is removably sustained upon the back plate.

At the inside of the cover 16 yieldable clips 22 and 23 are provided to removably sustain a battery 24. The battery is located in offset relationship to the striker and also in offset relationship to the resonator chambers, whereby it is positioned to occupy otherwise unused space enabling a compact apparatus to be obtained. The battery conveniently may be of the "C circuit" type for radios, providing three and one-half volts.

The battery support clips 22, 23 are fastened to the cover by means of lugs 26, which in the case of plastic covers are moulded in place to extend inwardly beyond the inner surface thereof so that the clips may be riveted to them. These clips provide side arms 27 which embrace the opposite edges of the battery. The arms are yieldable and may be spread apart when the battery is to be inserted.

To form a circuit connection between the battery and striker unit a ledge 28 extends forwardly from the back plate 1. This ledge may be bent from the back plate or may constitute an angle bracket which is fastened to it in the manner shown in the drawing. The ledge supports an insulator plate 29 which is held thereto by means of rivets 30 while spring contact clips 31, which are spaced apart in insulated relationship from one another, are fastened to the insulator plate 29 as by means of the rivets 32. There are two spring contacts 31, one for each of the terminals 33 of the battery. These contacts extend forwardly toward the cover in such manner that when the cover is in place the battery terminals press upon them to establish the desired contact. It may be seen therefore that if the cover is removed the connection is broken. The arrangement is a particularly desirable one inasmuch as no wiring disconnections or connections are necessary for battery replacements.

Terminals lead from the contacts 31 to the solenoid, the push button and return in the usual manner. Thus a lead 34 is taken from one of the spring contacts 31 to one end of the solenoid coil 5; the other terminal of the solenoid is connected through a lead 35 to a terminal 36 on a terminal plate 37 which may be mounted on the back plate just beneath a wire entrance hole 38. The other spring contact 31 is connected to another terminal 39 on the contact plate and lead 40 from the usual push button is connected with the terminals 36 and 39. A third contact at the terminal plate also may be provided for suitable interconnection if the apparatus is to be controlled independently from a second push button at a different point.

The batteries employed in the chime units have been found to give satisfactory service over a long period of time because they operate infrequently for momentary periods only and are not called upon to furnish a sustained current. Batteries are particularly suited for this type of operation and therefore the cost of maintaining the units is considerably less than the cost would be of installing and furnishing wiring from a transformer located at a remote point.

Having described my invention, I claim:

1. A chime signal comprising a supporting member which is adapted to be fastened to a wall, a cover member having side wall members adapted to be attached to said supporting member to form a housing therewith, clips spaced apart from one another and mounted on the inside face of said cover for holding a battery therebetween, a bracket extending laterally from said supporting member and having yieldable contacts projecting therefrom for engaging the terminals of said battery supported between said clips, an electromagnetic striker unit positioned within said housing and comprising a solenoid having its terminals in partial circuit connection with said yieldable contacts and a chime bar contained within said housing, the said electromagnetic striker unit being offset from said bracket and having a striker positioned for striking engagement with said chime bar.

2. A chime signal comprising a supporting member which is adapted to be fastened to a wall, a cover member adapted to be attached to said supporting member to form a housing therewith, clips spaced apart from one another and mounted on the inside face of said cover for holding a battery therebetween, a bracket extending laterally from said supporting member and having yieldable contacts projecting therefrom for engaging the terminals of said battery when said battery is supported between said clips, an electromagnetic striker unit mounted upon said supporting member within said housing and comprising a solenoid having its terminals in partial circuit connection with said yieldable contacts, and a chime bar contained within said housing, said electromagnetic striker unit being offset from said bracket and having a striker positioned for engagement with said chime bar.

3. A chime signal comprising a supporting member which is adapted to be fastened to a wall, a cover member adapted to be attached to said supporting member to form a housing therewith, clips spaced apart from one another and mounted on the inside face of said cover for holding a battery therebetween, a bracket extending laterally from said supporting member and having yieldable contacts projecting therefrom for engaging the terminals of said battery when said battery is supported between said clips, an electromagnetic striker unit mounted upon said supporting member within said housing and comprising a solenoid having its terminals in partial circuit connection with said yieldable contacts, and a pair of chime bars located at opposite

sides of said electromagnetic striker, said striker unit comprising a striker positioned for alternative engagement with said chime bars.

4. A chime signal comprising a supporting member which is adapted to be fastened to a wall, a cover member adapted to be attached to said supporting member to form a housing therewith, clips spaced apart from one another and mounted on the inside face of said cover for holding a battery therebetween, a pair of yieldable contacts carried by said supporting member for engaging the terminals of said battery when said battery is supported between said clips, an electromagnetic striker unit positioned within said housing and comprising a solenoid having its terminals in partial circuit connection with said clips, and a chime bar contained within said housing, said electromagnetic striker unit being offset from said clips and having a striker positioned for striking engagement with said chime bar.

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