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2,317,665

MOUNTING FOR ELECTRICAL APPARATUS

Filed March 5, 1942

FIG. 1

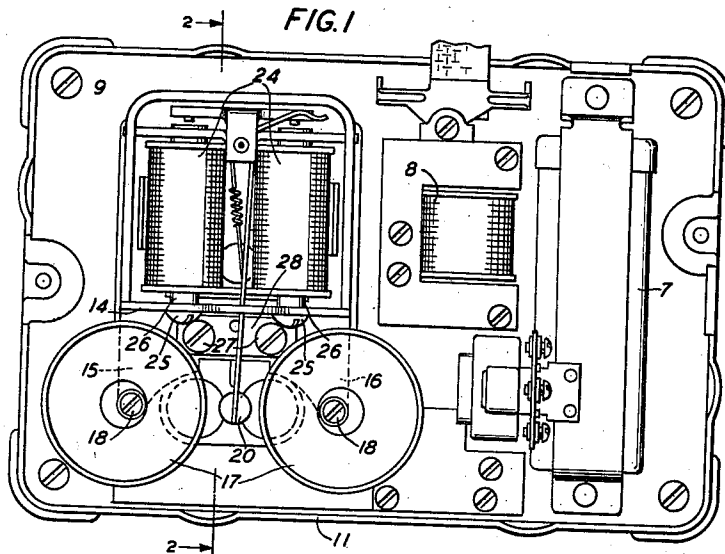


FIG. 2

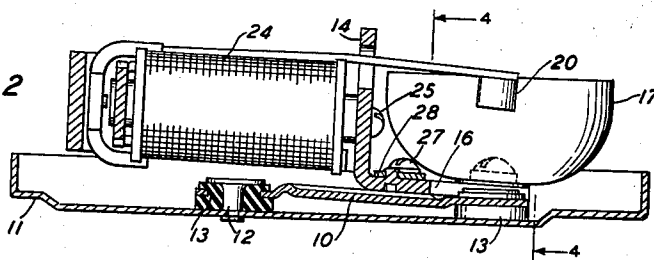


FIG. 3

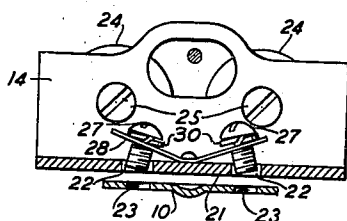


FIG. 4

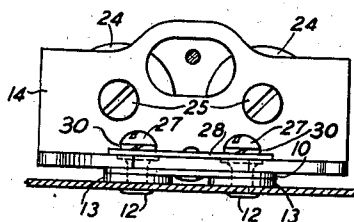
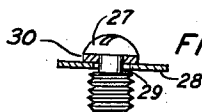


FIG. 5



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MOUNTING FOR ELECTRICAL APPARATUS

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6 Claims. (Cl. 177—7)

This invention relates to mountings for electrical apparatus and particularly to improvements in telephone ringer mountings.

In the mountings of electrical devices, particularly such devices which are utilized in telephone systems and are located at a subscriber's station, the space available is generally of a limited area with the result that difficulty is frequently experienced in attaching a device, such as a telephone ringer, to its support, and also in detaching it therefrom. In what is commonly known as the combined telephone set, the telephone ringer is attached to a bracket secured to the base of the telephone set by means of screws, which of necessity are relatively short. The attaching screws pass through suitable holes in the gong supporting element of the ringer structure and are then screwed into tapped holes in the bracket. Owing to the relatively short length of the screws and the confined area available in which to work on the screws, difficulty has been encountered in aligning the holes of the ringer structure with those of the supporting base and in then inserting the screws therein to be screwed so as to fasten the ringer to the base. Similarly, when the ringer is to be removed from its support, the screws, though readily accessible to a screw driver, invariably drop out of the holes when unscrewed therefrom, fall, and are lost.

It is the object of this invention to facilitate the mounting and removal of an electrical device on, and from a supporting member to which the device is adapted to be affixed by means of screws.

This object is attained in accordance with a feature of the invention by the provision of a screw suspension, or retaining device which is permanently fixed to the device to be mounted, and which functions to hold the mounting screws on the device when the latter is removed from its support, in such a manner that the screws are held in communication with their respective holes in the device, and in readiness to be screwed into their respective tapped holes in the support when the holes of the device and support are brought into alignment.

In accordance with another feature of the invention, the screw retaining device comprises a leaf spring fixed at its mid-point to the device to be mounted, and has its two ends pretensioned, or preflexed in such a manner that when the screws, which secure the electrical device to its support, are screwed out of their respective holes in the support, the spring ends function to withdraw the screws from the support holes and to

retain them partially inserted in their respective holes in the electrical device.

A further feature of the invention resides in so proportioning the dimensions of the screws and their respective holes in the retaining device that when the screws are withdrawn from their respective holes in the support, they are held against accidental detachment from the electrical device by the screw retaining device.

These and other features of the invention will be readily understood from the following detailed description made with reference to the accompanying drawing in which:

Fig. 1 is a plan view of the interior of the base of a combined telephone set showing several electrical devices, including a telephone ringer mounted thereon;

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1 and looking in the direction of the arrows;

Fig. 3 is a view of the gong-supporting bracket of the ringer shown in Figs. 1 and 2, and shows the screws, which secure the ringer to its support, in the positions in which they are held by the screw-retaining device when the ringer is detached from the support;

Fig. 4 is a view taken along the line 4—4 of Fig. 2 looking in the direction of the arrows; and

Fig. 5 is a view of one of the screws employed in securing the ringer to its support, and illustrates the particular design of the shank thereof.

In Fig. 1, the base 11 is that of a combined telephone handset which serves to support the telephone substation apparatus, such as the ringer 9, induction coil 8 and condenser 7. The ringer, the mounting of which on the base 11 is concerned with the present invention may be of any suitable design, such for example, as the design disclosed in H. A. Bredehoft Patent No. 2,082,095, issued June 1, 1937.

Referring particularly to Fig. 2 the ringer per se, which is similar to the ringer described in the above-identified patent, is shown mounted on a substantially triangular shaped bracket 10 which, in turn, is fixed to the base 11 of the telephone handset by means of three eyelets and a corresponding number of rubber grommets through which the eyelets extend. The three eyelet-grommet assemblies are disposed in triangular relation, there being one located at the narrow end of the bracket 10 and two others spaced from one another and located near the outer corners of the wider end of the bracket. These latter two eyelets 12 and grommets 13

are clearly shown in Fig. 4. This particular type of support for the bracket 10 lends resiliency to the ringer mounting.

The ringer yoke 14 is provided with two integrally formed right-angle extensions 15 and 16, to the extremities of each of which is secured a ringer gong 17. These gongs are provided with eccentric holes which accommodate the screws 18. The eccentricity referred to provides means for adjusting the position of the gong edges with respect to the clapper 20, thereby furnishing a desirable method of adjusting the ringer volume. The extensions 15 and 16 are integrally joined to provide a flat portion 21 which is provided with two untapped holes 22. The bracket 10 is provided with two tapped holes 23 which are spaced from one another a distance corresponding to the spacing of the holes 22. The yoke 14 supports the ringer coils 24 by means of screws 25 which are screwed into tapped holes in the core members 26.

The screws 27 serve to secure the ringer structure to the bracket 10. A substantially V-shaped spring 28 has its mid-point riveted to the right-angle extension of the yoke 14 at a point midway between the two holes 22 and is preflexed, or pretensioned so as to normally assume the configuration shown in Fig. 3. Near each end of the spring 28 is located a hole 29 of slightly smaller diameter than the thread-bearing portion of the screws 27. Between the thread-bearing portion of each of the screws 27 and their respective heads is a shank portion of smaller diameter than the thread-bearing portion. It is apparent that the screws 27 may be screwed into the holes 29 of the spring 28 with a little effort, and once screwed therein to the positions shown in Figs. 3 and 5 cannot become accidentally detached from the spring.

Prior to attaching the ringer structure to the bracket 10, the screws 27 and their retaining spring 28 assume the positions shown in Fig. 3, in which the screws are held partially inserted in the holes 22. When the ringer is to be mounted on the bracket 10, the ringer is positioned so as to bring the holes 22 of the ringer structure into alignment with the holes 23 of the bracket 10 and, by means of a screw driver, the screws are screwed into the tapped holes 23. When the screws 27 are fully screwed into their respective holes in the bracket 10, the spring 28 assumes the flat position shown in Fig. 4. The lock washer 30 interposed between the head of each screw 27 and the spring 28 serves a well-known purpose.

When the ringer is to be removed from the bracket 10, a screw driver is applied to the heads of screws 27 and the screws are screwed out of their respective tapped holes 23 in bracket 10. As the screws are disengaged from the holes 23 by unscrewing, the spring 28, in tending to resume its normal shape, shown in Fig. 3, acts upon the screws and withdraws them into the holes 22 of the ringer structure as soon as the pressure exerted by the screw driver is removed. By virtue of the fact that the diameter of the holes 29 in the retaining spring is smaller than the diameter of the screw thread, the screws cannot accidentally become detached from the spring, so that the screws are held in the position shown in Fig. 3, and the ringer structure may be removed from the bracket 10 with the screws fixed thereto.

The adjustment of the spring tension is such that the screws are not lifted clear of the holes 22 in the ringer structure, but are held with their

threaded ends partially inserted in the holes 22, thus they are retained in a position which facilitates the remounting of the ringer on the bracket. When it is necessary to mount the ringer on the bracket 10, all that is required is that the holes 22 of the ringer be brought into alignment with corresponding holes 23 of the bracket 10 which automatically positions the screw ends opposite their respective tapped holes 23 of the bracket. A screw driver is then applied to the screw-heads and the screws are screwed into their respective holes 23 to securely fix the ringer on the bracket.

By virtue of the screw-retaining device described, the screws which serve to secure the ringer on its mounting bracket are always held in a position on the ringer such as to facilitate and expedite the mounting of the ringer on the bracket, and the difficulties heretofore encountered in mounting and detaching the ringer are obviated.

What is claimed is:

1. In combination, a support having a pair of tapped holes, a device to be secured to said support having a pair of untapped holes, the holes of said support and of said device adapted to be brought into alignment when said device is to be secured to said support, a screw passing through each pair of aligned holes and adapted to be screwed into its respective tapped hole in said support to secure said device to said support, and means effective when said screws are screwed out of their respective tapped holes in said bracket for withdrawing the screws part way out of their respective holes in said device.

2. In combination, a device, screws for attaching said device to a support, and means for supporting said screws on said device comprising a substantially V-shaped leaf spring fixed at its mid-point to said device and having each portion thereof, which extends from the point of attachment to the device, apertured to receive a screw, the apertures in said spring having a smaller diameter than the diameter of the screws.

3. In combination, a device having a pair of untapped holes, screws for attaching said device to a support, and means for supporting said screws on said device so that the screw-ends are normally located in the untapped holes of said device, comprising a flat spring having its mid-point fixed to said device at a point mid-way between the untapped holes of said device and having each portion thereof which extends from its point of attachment of said device flexed, so as to be angularly spaced from the untapped holes in said device, and each spring portion having an aperture, for receiving a screw, of lesser diameter than the diameter of the screw.

4. In combination, a device, a support for said device, means for attaching said device to said support comprising a pair of screws, and means for maintaining said screws attached to said device when said device is detached from said support, comprising a spring fixed at its mid-point to said device and having a hole for the screws near each end thereof of such diameter relative to the diameter of said screws as to maintain said screws loosely fixed to said spring.

5. In combination, a mounting bracket having a tapped hole, a device to be secured to said bracket having an untapped hole, the hole of said bracket and of said device adapted to be brought into alignment when said device is to be secured to said bracket, a screw passing through the aligned holes and adapted to be screwed into the tapped hole in said bracket so as to secure said

device to said bracket, and means effective when said screw is screwed out of the tapped hole in said bracket for automatically withdrawing it part way into the untapped hole in said device, and for maintaining the screw in such position during the removal of the device from the bracket.

6. In combination, a device to be screwed to a support by means of screws which pass through untapped holes in said device and are screwed into tapped holes in the support, and means for supporting the screws on said device in such a position as to facilitate the attachment of said device to the support, comprising a flat spring which is preflexed so as to assume, substantially, a V-shape, and has its mid-point fixed to said

device so as to locate the ends of the inclined portions thereof spaced from and in superposed relation to the untapped holes in said device, and each portion thereof having an aperture for receiving a screw, and each screw having a shank construction such that a threaded portion thereof is of greater diameter than the diameter of the apertures in said spring and is spaced from the screw head by a shank portion of lesser diameter than the apertures in said spring, whereby the screws are loosely held by said spring against accidental detachment therefrom after the threaded portions thereof have been screwed past the spring apertures.

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