April 12, 1966 R. H. MITCHELL 3,245,449

SPEAKER MOUNTING SCREW

Filed April 9, 1964

Fig. 1.

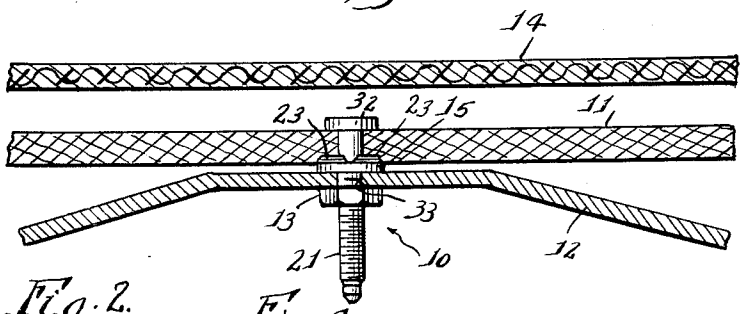


Fig. 2.

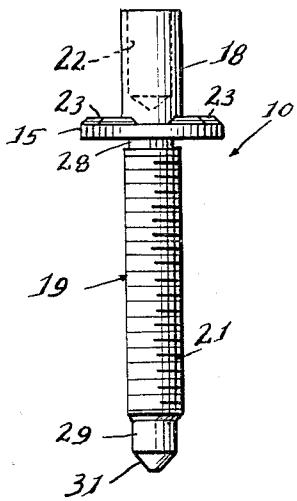


Fig. 4.

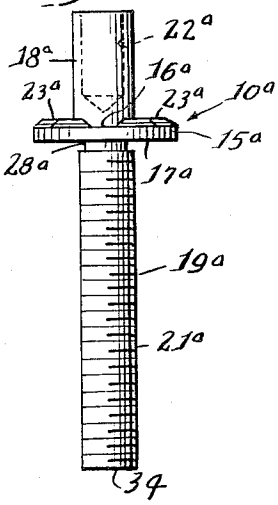


Fig. 3.

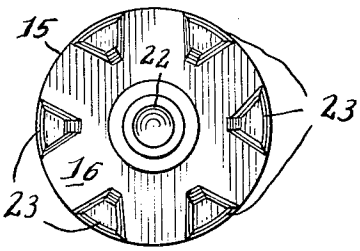


Fig. 5.

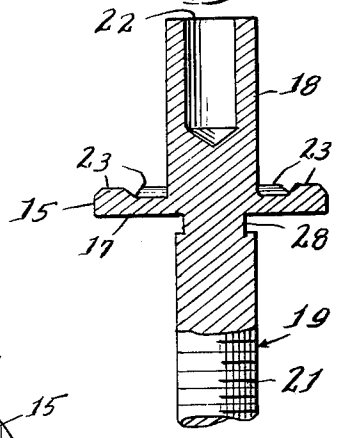
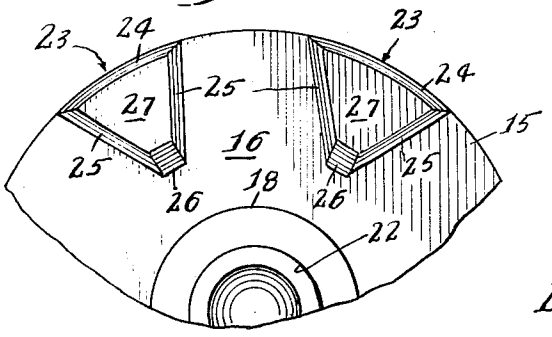


Fig. 6.



Inventor:
Robert H. Mitchell
By Wilson & Geffert
Attorneys

United States Patent Office 3,245,449 Patented Apr. 12, 1966

3,245,449

SPEAKER MOUNTING SCREW

Robert H. Mitchell, Rockford, Ill., assignor to National Lock Co., Rockford, Ill., a corporation of Delaware

Filed Apr. 9, 1964, Ser. No. 358,479
2 Claims. (Cl. 151—37)

This application is a continuation-in part of applicant's copending application Serial No. 139,404, filed September 20, 1961, now abandoned.

The present invention relates to a novel mounting screw and more particularly to a mounting screw for a speaker in a speaker enclosure or cabinet as utilized in high fidelity or stereophonic sound systems.

The mounting of a speaker or speakers in enclosures or cabinets for high fidelity or stereophonic sound systems is of particular importance to the accuracy and fidelity of reproduction of the sound, whether it results from vibrations emitted by a phonograph, tape recorder or AM or FM tuner. A speaker cabinet is accurately designed to allow sound vibrations to issue from the cabinet having true tonal quality without undesirable damping or cancelling out of certain frequencies or frequency bands. Some cabinets are designed for particular types of speakers and may reinforce the normal sound vibrations such as in the "bass reflex" cabinet. In all cabinets, the speaker must be mounted accurately and precisely to provide for the desired tonal qualities.

Any vibration occurring in the speaker mounting will tend to decrease the efficiency of the speaker in proper sound reproduction and may result in additional undesirable effects. Therefore, the screws utilized to mount the speaker in the cabinet are of utmost importance in preventing undesirable vibration.

An important object of the present invention is the provision of a speaker mounting screw which is rigidly secured or anchored to the speaker cabinet or encolsure in a manner to prevent any loosening or vibration. The screw includes a cylindrical, unthreaded portion of the shank which projects through the speaker cabinet and extends therebeyond. This shank has an outer hollow adapted to be upset to form a rivet-like head bearing against the surface of the cabinet to securely retain the mounting screw in anchored position.

Another object of the present invention is the provision of a speaker mounting screw having a limiting flange or collar separating the threaded portion of the screw from the smooth cylindrical shank portion. The flange has parallel faces with the face adjacent the smooth shank being formed with a plurality of equally or uniformly spaced nibs or projections which are adapted to engage the surface of the speaker cabinet opposite to the upset head of the screw. These nibs not only engage but are embedded in the cabinet to more securely anchor the screw therein. Also the nibs are spaced from the cylindrical shank of the screw on the circumference of the collar or flange.

The present invention further comprehends the provision of a speaker mounting screw having a cylindrical smooth shank portion with the end of the smooth shank formed with a cupped or drilled recess to aid in the upsetting of the metal and formation of the rivet head.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

In the drawing:

FIGURE 1 is a fragmentary cross sectional view of one embodiment of the speaker mounting screw shown in operative position for mounting a speaker in a speaker enclosure or cabinet.

FIG. 2 is a front elevational view of the screw shown in FIG. 1 prior to mounting and showing the smooth cylindrical shank end prior to upsetting to form the rivet head.

FIG. 3 is an enlarged top plan view of the screw of FIG. 2.

FIG. 4 is a front elevational view of another embodiment of the novel speaker mounting screw.

FIG. 5 is an enlarged partial vertical cross sectional view of the screw, collar or flange, nibs and cylindrical shank shown in FIG. 2.

FIG. 6 is a greatlly enlarged portion of the flange and nibs shown in FIG. 3.

Referring more particularly to the disclosure in the drawing and to the novel embodiments of the present invention, FIG. 1 discloses a speaker mounting screw **10** secured to a cabinet or enclosure front **11** and securely mounting and retaining a speaker **12** in assembled relation in the cabinet front by a nut **13** threaded onto the threaded shank of the screw. A grill cloth or the like **14** is mounted to cover the cabinet front **11** and present a decorative effect to the exterior of the cabinet.

The screw **10** is initially formed as a smooth cylindrical rod or wire and an integral collar or flange **15** is formed thereon by upsetting the material. The collar has upper and lower parallel flat surfaces **16** and **17**, respectively, and is formed thereon near one end **18** of the shank at approximately one-fourth the length of the screw. The end **18** of the shank remains a smooth cylindrical surface while the opposite end **19** of the screw is threaded as at **21**. An opening or recess **22** is formed in the end **18** of the screw and extends into the smooth shank for at least one-half the length of the shank above the external flange or collar **15**.

The collar **15** when formed is provided with a plurality of equally spaced nibs or projections **23** on the upper surface **16**; the nibs being shown in the drawing as six in number. Each nib **23** has a curved inwardly tapering wall or side **24** with the lower edge of said side coinciding with the outer periphery of the collar **15**, a pair of radially inwardly converging and upwardly tapering sides **25** and an inwardly tapering short wall **26** spaced from the smooth cylindrical shank **18**. The sides terminate in a generally trapezoidal shaped top surface **27** parallel to the parallel surfaces **16** and **17** of the collar. The sides **25** of each nib **23** diverge radially outwardly with the angle of divergence between the side walls of a nib **23** being greater than the angle of divergence between radii of the flange **15** extending from the axis of the screw outwardly to the outer edges of the nib **23**.

The longer end of the wire or rod is roll-threaded as at **21** except for a short portion **28** left unthreaded adjacent the collar **15** and a reduced smooth shank **29** at the outer end of the screw. The shank **29** terminates in a tapered end **31** with a flat or rounded apex or tip. The finished screw is then ready for use or assembly in a speaker cabinet.

When assembled, the smooth cylindrical shank end **18** pierces the cabinet front **11** with the recessed or cupped portion extending beyond the front of the enclosure. The end **18** having the recess **22** is upset to form a rivet head as shown at **32** in FIG. 1. When the shank **18** pierces the cabinet and is upset to form the rivet head, the nibs **23** on the surface **16** of the collar **15** become embedded in the cabinet surface to prevent rotation, loosening and vibration of the screw **10** and the speaker **12**. The speaker having openings **33** formed therein for mounting is located on the threaded portion **21** of the screws and a nut **13** is tightened onto each screw to secure the speaker **12** to the cabinet front **11** with the speaker abutting the face **17** of the collar or flange **15**.

FIG. 4 discloses another embodiment of a speaker

mounting screw 10a having a collar or flange 15a separating a smooth cylindrical end 18a from the opposite threaded portion 21a of the screw. The upper surface 16a has thereon a plurality of equally spaced nibs or projections 23a which are identical to the nibs shown in FIGS. 1 to 3, 5 and 6. The outer end of the threaded portion 21a is not shouldered as in the embodiment of FIGS. 1 and 2 but has the threaded portion 21a extending to a generally flat end 34.

When the screw is assembled, the riveted head and the plurality of nibs on the collar provide a rigid and substantially vibrationless mounting. While the improvement has been shown and described as being advantageously applicable to speaker mountings, it is not my intent or desire to unnecessarily limit the scope or the utility of the improved features by virtue of these illustrative embodiments.

Having disclosed the invention, I claim:

1. A speaker mounting for a cabinet having a front, a screw having a projection secured to said cabinet front and including a short cylindrical shank having a smooth exterior of uniform diameter with said shank piercing and projecting forwardly through an opening in and beyond the outer surface of said cabinet front, a relatively thin radial flange on said shank having parallel flat surfaces, one of which abuts the inner surface of the cabinet front and limits the depth of penetration and the other flat surface abutting the speaker, said first mentioned surface having a plurality of circumferentially equally spaced nibs formed thereon and radially outwardly spaced from said smooth cylindrical shank, said nibs each having a circumferentially curved inwardly inclined outside wall,

an outwardly inclined inner wall, and a pair of upwardly and inwardly tapering and radially outwardly diverging side walls terminating in a flat face embedded in the adjacent inner surface of the cabinet front to anchor the screw against rotation, the side walls of each nib having an angle of divergence greater than the angle of divergence between radii of the flange extending to the outer edges of the nib, a threaded shank projecting rearwardly from said flange through and upon which the speaker is securely mounted, a threaded nut for retaining and anchoring the speaker on the screw and forcing the speaker against the adjacent face of the flange, and a rivet head on the outer end of the cylindrical shank for anchoring the screw in the front of the cabinet.

2. A speaker mounting as set forth in claim 1, in which said flat face of each nib is parallel to the parallel surfaces of the flange and has the general shape of a trapezoid.

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EDWARD C. ALLEN, *Primary Examiner.*