Oct. 21, 1958 S. E. LEVY 2,857,012

UNIVERSAL SUPPORT SYSTEM FOR REFLEX-TYPE LOUDSPEAKER

Filed Jan. 23, 1957

FIG. 1.

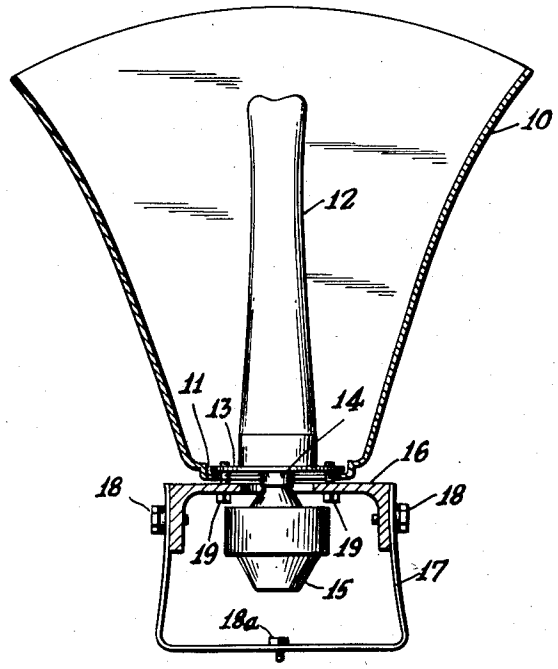


FIG. 2.

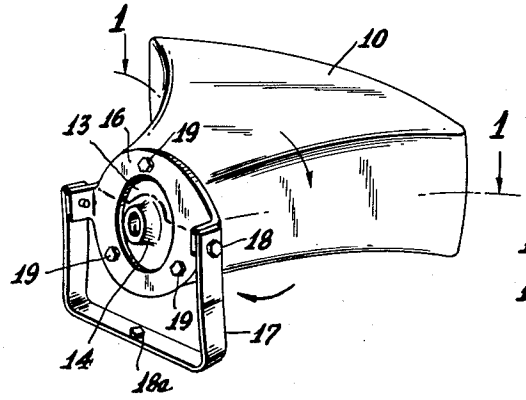
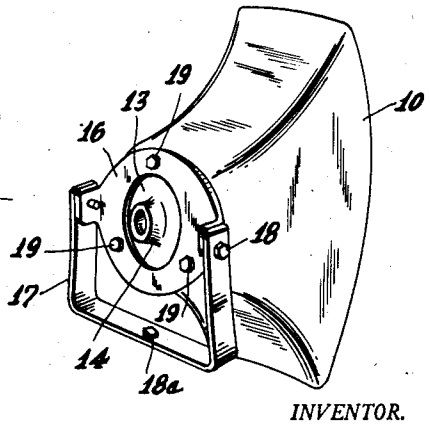


FIG. 3.



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United States Patent Office 2,857,012
Patented Oct. 21, 1958

2,857,012

UNIVERSAL SUPPORT SYSTEM FOR REFLEX-TYPE LOUDSPEAKER

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Application January 23, 1957, Serial No. 635,750

2 Claims. (Cl. 181—27)

This invention relates to a universal support system for a horn loudspeaker having a non-circular horn opening producing a generally planar sound pattern, by which the horn may be oriented in any desired plane in a simple manner.

Previously, loudspeakers of this type have not been provided with means for changing the orientation of the horn after it had been mounted. The particular orientation secured was determined by the direction in which the loudspeaker was mounted and any change in orientation could only be secured by moving the mounting as a whole.

I have devised a horn whose rear mounting section or end wall is in a plane substantially perpendicular to the central axis of the horn and has therein a centrally disposed generally circular hole. Backing up the external side of the end wall is a mounting plate, and a readily tightened and loosened clamping means passes through the hole to bring the mounting plate against the end wall. The mounting plate is pivotally mounted on a support member so that it swings about an axis perpendicular to the central axis of the horn, with means to prevent this swinging when desired. The support member in turn is pivotally mounted on a stationary member so that it swings about an axis perpendicular to the axis about which the mounting plate swings, with means to prevent this swinging when desired. I have also provided an arrangement for taking advantage of the inner horn assembly which extends from the rear section of the horn toward the non-circular opening in horns of this type, by utilizing the inner horn assembly as part of the clamping means, especially when a simple support system is desired.

In the drawings,

Fig. 1 is a plan view of a loudspeaker with a horn and sound driver, with the horn shown partly in section, along the line 1—1 of Fig. 2;

Fig. 2 is a perspective view of the loudspeaker with the major axis of the horn mouth disposed along the horizontal plane; and

Fig. 3 is a perspective view of the loudspeaker with the major axis of the horn mouth disposed along the vertical plane.

In the drawings, Fig. 1 shows the completed assembly of a loudspeaker and mounting system in accordance with the invention. The horn comprises an outer bell-shaped member **10** in section and an inner member which includes a tone arm and reflector assembly **12**. The outer member **10** is a shell whose mouth opening is generally rectangular or oblong in shape. The shell **10** tapers from its mouth to an end wall **11**. This wall is provided with a circular opening for receiving the inner member assembly **12**, hereinafter described.

The tone arm and reflector assembly **12** is shown in full view and may be any such device known in the art for elongating the effective length of the expansion sound path of a horn. In the art, such an assembly is known as a reflex-type horn, although this assembly is not limited

to reflex horns. The assembly **12** is affixed to a generally ring-shaped base plate **13** which is adjacent to the inner side of the end wall **11**. On the side of the plate **13** remote from the reflector assembly **12** is a boss **14** which may be attached to the plate **13** or may be made an integral portion of the plate by casting or forging methods. The boss is internally threaded for receiving an externally threaded hollow portion of a sound driver unit **15**, which is any means for converting electrical energy to sound energy. The hollow portion of the boss and the attached driver unit provide a sound path from the sound chamber of the driver unit to the mouth of the tone arm. The electrical connections to the sound driver unit are not shown but are understood to be connected in any known manner.

Adjacent to the outer side of the end wall **11** is a mounting plate **16** which is a generally ring-shaped member with a pair of ears for pivotally attaching thereto a U-bracket **17**. The central opening of the mounting plate **16** is sufficiently large to pass the boss **14**. The mounting plate **16** is pivotally attached to the U-bracket **17** by a pair of mounting bolts **18**. The U-bracket **17** is pivotally attached to a stable support by a mounting bolt **18***a*.

Three clamping bolts **19** pass through aligned holes in mounting plate **16** and internally threaded holes in base plate **13**, so that the bolts **19**, the mounting plate **16** and the base plate **13** can operate as a clamp on the rim of the end wall **11** of horn **10**. The bolts **18**, **18***a* and **19** are readily tightened to prevent rotation and readily loosened to permit rotation of the horn **10** about the axis of the assembly **12**.

The end wall **11** is freely rotatable between the outer periphery of base plate **13** and the mounting plate **16** when clamping bolts **19** are sufficiently loosened. When clamping bolts **19** are tightened, the horn **10** at the end wall **11** is clamped in a rigid position depending on the desired orientation of the horn **10**.

It is to be appreciated that the orientation of the horn member **10** may be rotated to any desired plane other than the horizontal or vertical, as shown in Figs. 2 and 3 respectively. Thus, in accordance with the mounting bracket means of the invention, a horn having an oblongitudinal mouth for producing a generally planar sound pattern may be used to direct the sound pattern along any desired plane.

Although the loudspeaker has been described in terms of a reflex-type horn in which a tone arm and reflector assembly **12** is an essential element, it is to be appreciated that any horn having a generally non-circular mouth opening, not necessarily a reflex-type horn, may be used in accordance with the principles of the invention. For example, the inner member for clamping the bell shell to the mounting bracket **16** may be simply the base plate **13**.

I claim:

1. A loudspeaker capable of broadcasting in any selected direction, comprising a horn having an outer member of generally oblong form at the mouth tapering to a throat with an end wall a part of which is substantially perpendicular to the axis of the horn, the tapered section of said outer member being generally oblong for a substantial portion of the length from the mouth to the throat, said wall having a generally circular hole, and an inner plate-like member; in combination with a universal support system including a support member capable of being connected to a stationary base, a first rotation-prevention means for preventing the support member from rotating with respect to the stationary base, a mounting plate pivotally mounted on the support member to rotate about an axis perpendicular to the axis about which the support member rotates, a second rotation-

prevention means for preventing the mounting plate from rotating with respect to the support member, and clamping means connecting the plate-like member to the mounting plate, said clamping means extending within the circular opening of the outer member of the horn, and the peripheral portion of the circular opening of said outer member being clamped between the mounting plate and the plate-like member to support solely and fix the horn in position, said peripheral portion being freely rotatable when said clamping means is in an unclamped position.

2. A loudspeaker according to claim 1 and wherein said inner plate-like member is affixed to a reflector and

tone-arm assembly, said assembly being disposed coaxially with the axis of said horn.

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