

A loudspeaker unit generally comprises a framework serving as a sound guide with an opening for the passage of sound and a loudspeaker attached thereto. The framework may be, for example, the front framework of a television receiver, the front wall of a loudspeaker enclosure, the wall of a radio apparatus or the dashboard of a car.

It is known, e.g. from DE-U 8 402 128, to attach the loudspeaker to the framework by means of an interlocking joint, a so-called snap-in. Thereby, the attachment may result from a purely translational movement of the loudspeaker which is especially advantageous for an automated assembly. Moreover, with this solution, screws, which represent additional components and prolong the attachment process, are not needed. Such a joint is especially advantageous for loudspeakers which have a basket of synthetic material.

On the other hand, it is known, e.g. from GB-A-1 336 522, and it is in many cases necessary, to attach the loudspeaker to the framework with screws. This solution is preferred particularly for loudspeakers having a metal basket because a snap-in attachment is less advantageous therefor. In some devices, loudspeakers having a basket of synthetic material or a metal basket are used selectively so that it may be necessary to provide different types of fastenings.

The object of the invention is to construct a framework for a loudspeaker such that loudspeakers can be selectively attached in automated manner to the same framework by means of an interlocking joint and a screw fastening.

This object is achieved by the invention defined in claim 1. Advantageous developments of the invention are specified in the appendant claims.

Due to the solution in accordance with the invention, both types of attachment, namely, that by means of an interlocking joint without screws and that with screws, to the same framework are optimised. Thus, the same framework can be used for both types of attachment which is especially advantageous for the construction and the stock keeping of the framework. Both types of attachment can be effected by a purely translational movement of the loudspeaker i.e. a movement in which every point of the loudspeaker moves in a straight line. This is especially advantageous for the automated assembly of the loudspeaker.

The invention will be explained hereinafter with the help of the drawing. Therein

Fig. 1 shows the detail of the front framework of a television receiver from the rear side and

Fig. 2 a top view of Fig. 1, partly in section.

Fig. 1 shows the front framework 1 of a television receiver having the opening 2 for the passage of sound for an oval loudspeaker. There is provided at diametrically opposed positions of the opening 2, a respective rigid lug 3 having an opening 4 which forms a synthetic injection moulding with the framework 1.

Moreover, at diametrically opposed positions of the opening 2, there is provided a respective lug 5 projecting from the plane of the framework 1 which, by means of a slit 6, is formed to be resilient in the direction of the plane of the framework 1 and has a barblike tongue 7 including an inclined surface at its upper end. Moreover, the framework 1 is provided with four tapped holes 8 for the reception of self-tapping screws.

For the attachment of a loudspeaker having a basket of synthetic material in the sense of an interlocking joint without screws, the loudspeaker is placed on the framework in a direction perpendicular to the plane of the framework 1. Thereby, resilient lugs on the basket of the loudspeaker are deflected by the lugs 3 until barblike ends of the lugs on the loudspeaker finally engage in the openings 4 of the lugs 3. The loudspeaker is then positively retained on the framework 1 without any play. The lugs 5 on the framework 1 are not thereby needed and have no bearing on the retention of the loudspeaker. An attachment of a loudspeaker on the front framework of a housing of a television receiver by an interlocking joint without screws, a so-called snap-in, is described in DE-U-8 402 128.

For the attachment of a loudspeaker having a metal basket, the loudspeaker is likewise set down in a direction perpendicular to the plane of the framework 1. The flange of the loudspeaker thereby initially meets the tongues 7 and causes a deflection of the resilient lugs 5 radially to the opening 2. In the final position, the flange of the loudspeaker engages in the slits 6 and the loudspeaker is now retained on the framework 1 by the lugs 5. This retention is not a final attachment but only serves for a positional fixing, also called pre-fixation, in a position in which the holes of the flange of the loudspeaker coincide with the tapped holes 8. The loudspeaker does not then have to

be held for the screw-in process so that the operator has both hands free for the screw-in process, or, the screw-in process can be effected by robots. After this pre-attachment or positional fixing of the loudspeaker, two or four screws are screwed through the borings in the flange of the loudspeaker, manually with a screw driver, or by robots, into the tapped holes 8 whereby the final attachment of the loudspeaker to the framework 1 occurs. The lugs 5 serving for the temporary positional fixing and retention then have no further significance for the attachment of the loudspeaker. For this type of attachment, the lugs 3 have no significance. They could, if necessary, additionally serve for the guidance and as stop members for the flange of the loudspeaker.

The lugs 3, 5 are offset by an angle of approximately 15° relative to the long axis of the oval shaped opening 2. This has the following advantage: If the lugs were located exactly along the direction of the long axis, the amount of space required in the direction of this long axis would be greater. This is particularly disadvantageous in a television receiver in which the space for the mounting of the loudspeaker is very limited. Due to the offset positioning relative to the long axis, a space saving can be achieved. This means that the spacing of the two lugs 3 or 5 from one another in the direction of the long axis A can be made smaller.

Claims

1. Loudspeaker unit having a framework (1) and a loudspeaker detachably attached thereto, characterised in that, the framework (1) has interlocking arresting means (3, 4) for a loudspeaker without screw attachment as well as clamping elements (5 - 7) for the retention of a loudspeaker in a predetermined position for screwing onto the framework (1).
2. Unit in accordance with Claim 1, characterised in that, the clamping elements (5 - 7) effect a frictional retention of the loudspeaker on the framework (1).
3. Unit in accordance with Claim 1, characterised in that, two clamping elements (5 - 7) are provided at diametrically opposed positions of the loudspeaker.
4. Unit in accordance with Claim 3, characterised in that, for an oval shaped loudspeaker, the clamping elements (5 - 7) and/or the arresting means (3, 4) are offset around the periphery of the loudspeaker by an angle of circa 15° relative to the long oval axis.
5. Unit in accordance with Claim 1, characterised in that, the clamping elements (5 - 7) are formed by resilient lugs (5) projecting out of the plane of the framework (1) and which are radial to the loudspeaker in the direction of the plane of the framework (1).
6. Unit in accordance with Claim 5, characterised in that, the lugs (5), at their resilient ends, have barb-like tongues (7) behind which the flange of the loudspeaker engages.

