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(54) **TWEETER SOUND SOURCE ANGLE ADJUSTMENT ARRANGEMENT**

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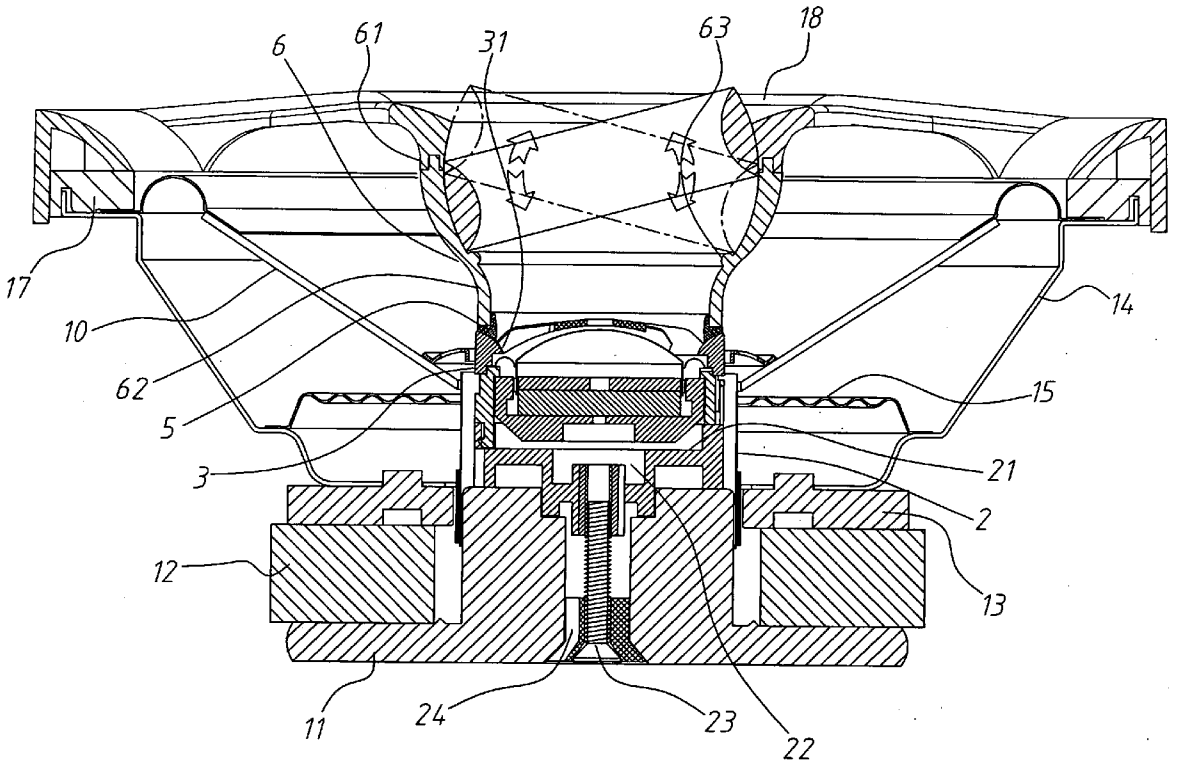
(57) **ABSTRACT**

A tweeter sound source angle adjustment arrangement is disclosed to include a holder member fastened to a T-iron of a speaker assembly and having a top recess and a through hole cut through the top recess, a face panel fastened to the holder member to secure a tweeter to the top recess of the holder member, a hub, which has a top round cup portion and a tubular bottom shank downwardly extending from the top round cup portion, a cushion ring set between the face panel and the hollow hub, and a sliding ring set in the top round cup portion of the hub and freely rotatable in the top round cup portion of the hub.



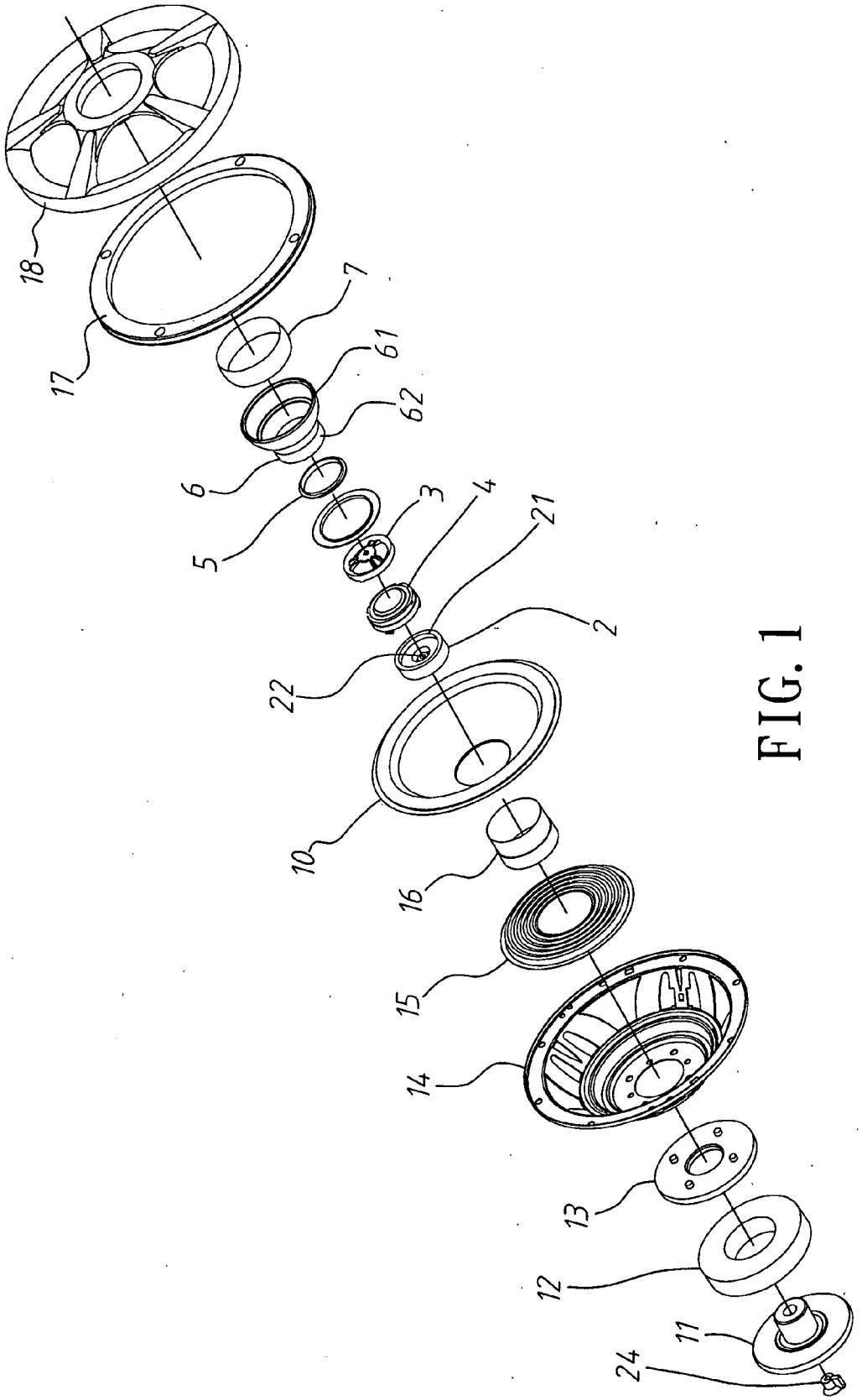


FIG. 1

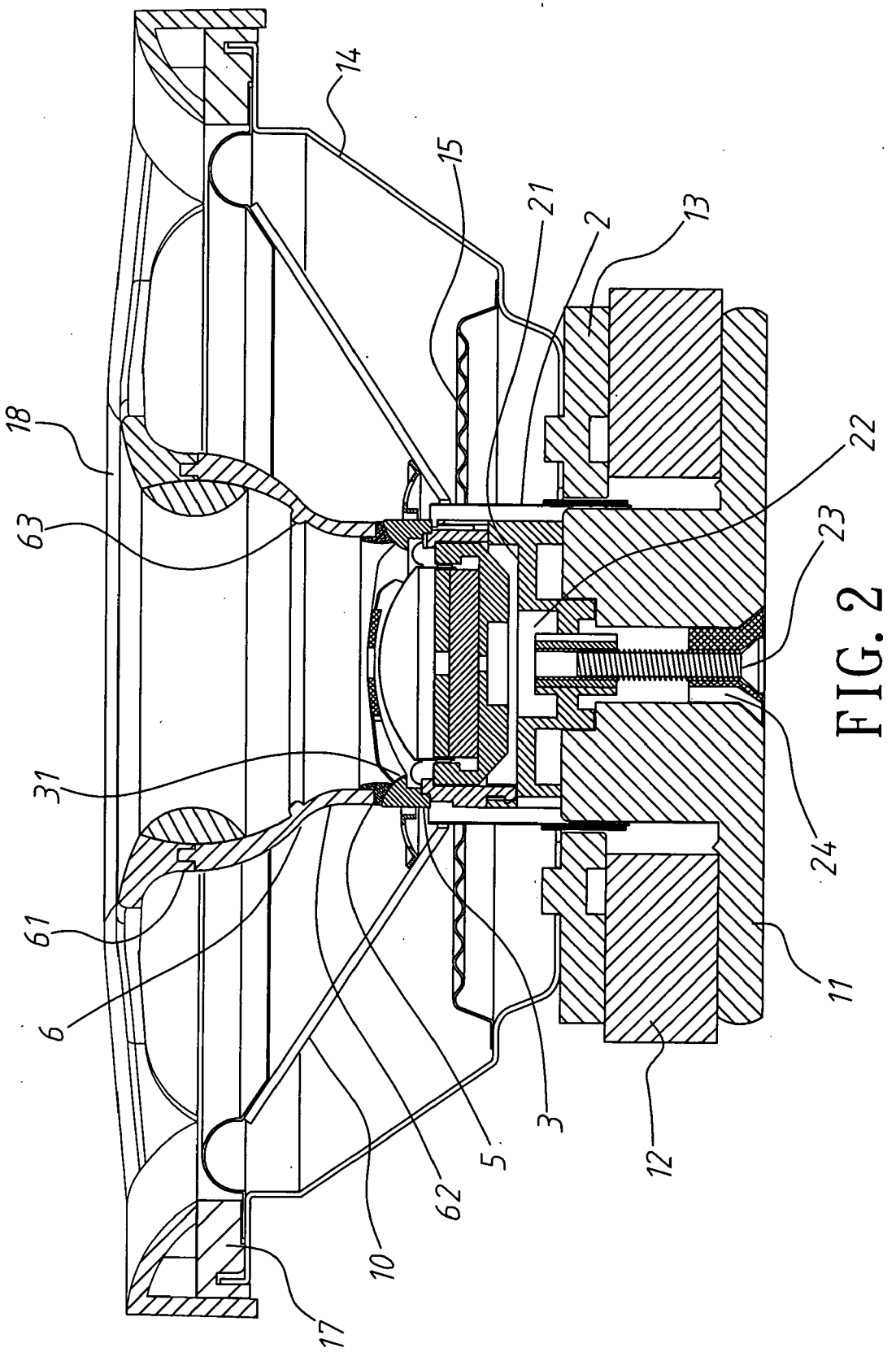


FIG. 2

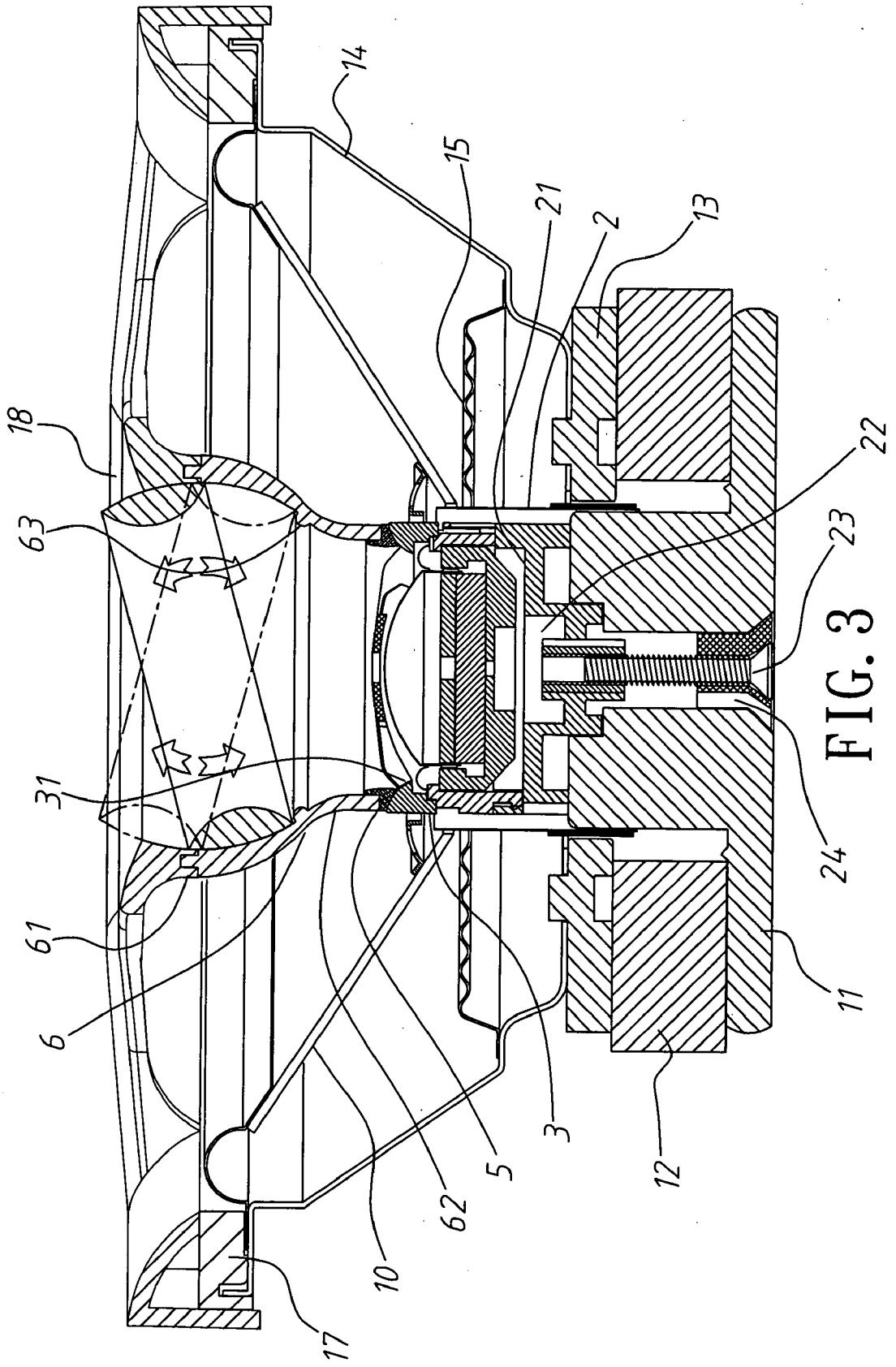


FIG. 3

TWEETER SOUND SOURCE ANGLE ADJUSTMENT ARRANGEMENT

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to speakers and more particularly, to a tweeter sound source angle adjustment arrangement that allows easy adjustment of the sound source direction of the tweeter.

[0003] 2. Description of the Related Art

[0004] A speaker assembly may be equipped with a tweeter to produce high frequencies, enhancing the sound quality. A conventional speaker assembly with tweeter is known comprising an adjustment carrier carrying the tweeter. The adjustment carrier can be turned forwards, backwards, leftwards, and rightwards to adjust the angle of the tweeter. When adjusting the adjustment carrier, the tweeter is diverted from the axial alignment, affecting the tone quality.

[0005] Therefore, it is desirable to provide a speaker assembly that allows the user to adjust the direction of the sound source of the tweeter conveniently without biasing the center of the tweeter, thereby maintaining the quality.

SUMMARY OF THE INVENTION

[0006] The present invention has been accomplished under the circumstances in view. It is therefore the main object of the present invention to provide a tweeter sound source angle adjustment arrangement, which is easy and convenient to install and, allows easy adjustment of the sound source direction of the tweeter to maintain the sound quality of the speaker assembly.

[0007] According to one aspect of the present invention, the tweeter sound source angle adjustment arrangement comprises a holder member fastened to a T-iron of a speaker assembly and having a top recess and a through hole cut through the top recess, a face panel fastened to the holder member to secure a tweeter to the top recess of the holder member, a hub, which has a top round cup portion and a tubular bottom shank downwardly extending from the top round cup portion, a cushion ring set between the face panel and the hollow hub, and a sliding ring set in the top round cup portion of the hub and freely rotatable in the top round cup portion of the hub.

[0008] According to another aspect of the present invention, the tweeter sound source angle adjustment arrangement further comprises a locating block mounted in the bottom side of the T-iron of the speaker assembly, and a screw bolt inserted through the through hole of the holder member and a magnet and a washer and fastened to the locating block to secure the holder member to the T-iron.

[0009] According to still another aspect of the present invention, the face panel comprises a plurality of hooks hooked on the tweeter to secure the tweeter to the top recess of the holder member.

[0010] According to still another aspect of the present invention, the hub further comprises an inside annular flange extending around the inside wall corresponding to the connection area between the top round cup portion and the tubular bottom shank for stopping the sliding ring from escaping out of the round top cup portion of the hub.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. **1** is an exploded view of the preferred embodiment of the present invention.

[0012] FIG. **2** is a sectional view of the preferred embodiment of the present invention.

[0013] FIG. **3** is a schematic view of the preferred embodiment of the present invention, showing the speaker in operation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] Referring to FIGS. **1** and **2**, similar to a regular speaker assembly, the present invention comprises a T-iron **11**, a magnet **12**, a washer **13**, a bracket **14**, a damper **15** at the bracket **14**, a voice coil **16**, at the center of the damper **15**, a cone paper **10**, and a cushion **17** at the top, and an grille **18**. Setting between the voice coil **16** and the grille **18**, the invention further comprises:

[0015] a holder member **2**, which has a top recess **21** and a through hole **22** cut through the top recess **21**;

[0016] a locating block **24** mounted in the bottom side of the T-iron **11**;

[0017] a screw bolt **23** inserted through the through hole **22** of the holder member **2** and the magnet **12** and the washer **13** and fastened to the locating block **24** to secure the holder member **2** to the T-iron **11**;

[0018] a face panel **3**, which has hooks **31** for hooking on a tweeter **4** to secure the tweeter **4** to the top recess **21** of the holder member **2**;

[0019] a hub **6** comprises a top round cup portion **61**, a tubular bottom shank **62** downwardly extending from the bottom side of the top round cup portion **61** around the center through hole (not shown) of the top round cup portion **61**, and an inside annular flange **63** extending around the inside wall corresponding to the connection area between the top round cup portion **61** and the tubular bottom shank **62**;

[0020] a cushion ring **5** set between the face panel **3** and the hollow hub **6**;

[0021] and

[0022] a sliding ring **7** set in the top round cup portion **61** of the hub **6** and freely rotatable in the top round cup portion **61**.

[0023] After mounting of the sliding ring **7** in the top round cup portion **61** of the hub **6**, the sliding ring **7** is freely rotatable in the top round cup portion **61**, and the inside annular flange **63** prohibits escaping of the sliding ring **7** out of the top round cup portion **61** of the hub **6** during its rotary motion, thereby keeping the tweeter **4** in accurate alignment and maintaining the tone quality of the speaker assembly.

[0024] Referring to FIG. **3**, when adjustment of the angle of the tweeter **4** is necessary during the use of the speaker assembly, rotate the sliding ring **7** (press the finger on one side of the sliding ring **7** to move the sliding ring **7**) to change the direction of the hub **6**. During position adjustment of the sliding ring **7**, the inside annular flange **63** prohibits the sliding ring **7** from escaping out of the top round cup portion **61** of the hub **6**.

[0025] After adjustment of the direction of the hub **6**, the sound source direction of the tweeter **4** is relatively changed. Therefore, the adjustment of the sound source direction of the

tweeter **4** is quite simple and convenient, and the tweeter **4** is constantly kept in accurate alignment without causing distortion.

[0026] A prototype of tweeter sound source angle adjustment arrangement has been constructed with the features of FIGS. **1~3**. The tweeter sound source angle adjustment arrangement functions smoothly to provide all of the features discussed earlier.

[0027] Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.

What the invention claimed is:

1. A tweeter sound source angle adjustment arrangement, comprising:

a holder member fastened to a T-iron of a speaker assembly, said holder member having a top recess and a through hole cut through said top recess;

a face panel fastened to said holder member to secure a tweeter to the top recess of said holder member;

a hub, said hub comprising a top round cup portion, a tubular bottom shank downwardly extending from a bottom side of said top round cup portion;

a cushion ring set between said face panel and said hollow hub;

and

a sliding ring set in the top round cup portion of said hub and freely rotatable in the top round cup portion of said hub.

2. The tweeter sound source angle adjustment arrangement as claimed in claim **1**, further comprising a locating block mounted in a bottom side of said T-iron of said speaker assembly, and a screw bolt inserted through the through hole of said holder member and a magnet and a washer and fastened to said locating block to secure said holder member to said T-iron.

3. The tweeter sound source angle adjustment arrangement as claimed in claim **1**, wherein said face panel comprises a plurality of hooks hooked on said tweeter to secure said tweeter to the top recess of said holder member.

4. The tweeter sound source angle adjustment arrangement as claimed in claim **1**, wherein said hub further comprises an inside annular flange extending around an inside wall thereof corresponding to the connection area between said top round cup portion and said tubular bottom shank for stopping said sliding ring from escaping out of the round top cup portion of said hub.

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