

Claims:

1. An assembly for generating sound, the assembly comprising:

a first surface coupled with an electrostatic field generating structure;

a second surface coupled with an electrostatic field sensitive structure;

wherein the first surface and the second surface are interspaced from each other, such that responsive to generation of an electromagnetic/electrostatic field by the electromagnetic/electrostatic field generating structure, at least one of the first surface and the second surface is impelled to move relative to the other of the first surface and the second surface.

2. The assembly as claimed in claim 1, wherein the first surface and the second surface are coaxially disposed annular surfaces.

3. The assembly as claimed in claim 2, wherein one of the first surface and the second surface comprises a diaphragm.

4. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm having an extensible structure.

5. The assembly as claimed in claim 1, wherein the first surface and the second surface are interconnected by a plurality of resilient tethers.

6. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, said diaphragm comprising a plurality of flexibly interconnected diaphragm segments.

7. The assembly as claimed in claim 1, wherein each of the first surface and the second surface are mounted on opposite sides of a spacer, such that said first surface and second surface are interspaced relative to each other.

8. The assembly as claimed in claim 1, wherein one or both of the first surface and the second surface comprises a spiral surface.
9. The assembly as claimed in claim 1, wherein at least one of the first surface and second surface is provided with one or more surface rigidity adjusters.
10. The assembly as claimed in claim 1, wherein one of the first surface and the second surface is a diaphragm, and said diaphragm having charged particles or charged layer or magnetically sensitive particles or magnetically sensitive layer disposed thereon.
11. The assembly as claimed in claim 10, wherein the diaphragm comprises of one or more layers of charged particles or magnetically sensitive particles with each such layer of charged particles or magnetically sensitive particles disposed between two diaphragm substrate layers.
12. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm having one or more electrically conductive structures additively or subtractively formed thereon.
13. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm having one or more electrically conductive structures with each conductive structure disposed between two diaphragm substrate layers.
14. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, said diaphragm comprising an electrically conductive mesh structure having non-electrically conductive filler material interspaced between conductive elements of said mesh structure, wherein an external periphery of filler material within each interspace is separated from an external periphery of filler material within at least one adjacent interspace.
15. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, said diaphragm comprising an electrically conductive mesh structure, and having air gap interspaces between conductive elements of said mesh structure.
16. The assembly as claimed in claim 1, wherein one of the first surface and the second surface has an electrically conductive structure disposed thereon, while the other of the first surface and

the second surface has an electromagnetic field sensitive structure disposed thereon, wherein the electrically conductive structure and the electromagnetic field sensitive structure have substantially identically structures.

17. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, said diaphragm having a plurality of electrically conductive structures disposed thereon, wherein each of the plurality of electrically conductive structures is electrically isolated from the others.

18. The assembly as claimed in claim 17, wherein one of the plurality of electrically conductive structures is configured to carry a current, and at least one of the plurality of electrically conductive structures is isolated from any externally applied current.

19. The assembly as claimed in claim 17, wherein one of the plurality of electrically conductive structures is configured to carry a first current, and another of the plurality of electrically conductive structures is configured to carry a second current, wherein the first current and the second current are electrically isolated from each other.

20. The assembly as claimed in claim 17, wherein one of the plurality of electrically conductive structures has different structural characteristics in comparison with at least one other of the plurality of electrically conductive structures.

21. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, said diaphragm comprising having a first cross-sectional thickness, and at least one additional diaphragm region having a cross-sectional thickness not equal to first cross-sectional width.

22. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, and wherein said diaphragm is configured as an input diaphragm.

23. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, and wherein said diaphragm is configured as a microphone diaphragm.

24. The assembly as claimed in claim 17, wherein one of the plurality of independent conductive structures is connected to a first input signal stream corresponding to a first audio channel, and another of the plurality of independent conductive structures is connected to a second input signal stream corresponding to a second audio channel.

25. The assembly as claimed in claim 1, wherein one of the first surface and the second surface comprises a diaphragm, and wherein said diaphragm comprises a plurality of non-porous membranes sealed together to form a fluid tight compartment, wherein said fluid tight compartment is expanded using gas at above atmospheric pressure.

26. The assembly as claimed in claim 25, wherein the boundaries of said fluid tight compartment are defined by one or more of:

a rigid spacer over which the plurality of non-porous membranes are mounted; and

one or more fasteners that define a periphery of said fluid tight compartment.

27. An assembly for generating sound, comprising:

one or more wave generating surfaces configured such that movement of said wave generating surfaces generates a sound wave, wherein said one or more wave generating surfaces are configured for any one reciprocating motion, cyclical motion, rotational motion or elliptical motion;

a driver configured for driving one or more of the wave generating surfaces from a first position to a second position motion for generating sound; and

one or more actuators configured to modify any of (i) an airflow characteristic of one or more of the wave generating surfaces or (ii) direction or rate of motion of one or more of the wave generating surfaces.