

ELECTRONIC FURNITURE SYSTEMS WITH INTEGRATED INTERNAL SPEAKERS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to and the benefit of United States Patent Application Serial Number 15/348,068, filed on November 10, 2016, entitled ELECTRONIC FURNITURE SYSTEMS WITH INTEGRATED INTERNAL SPEAKERS, which claims priority to and the benefit of United States Patent Application Serial Number 15/270,339, filed on September 20, 2016, entitled ELECTRICAL HUB FOR FURNITURE ASSEMBLIES, which claims priority to and the benefit of United States Provisional Patent Application Serial Number 62/257,623, filed on November 19, 2015, entitled FURNITURE WITH ELECTRONIC ASSEMBLIES, each of which are incorporated herein in their entirety by reference.

This application also claims priority to and the benefit of United States Provisional Patent Application Serial Number 62/417,091, filed on November 3, 2016, entitled ELECTRONIC FURNITURE SYSTEMS WITH INTEGRATED INTERNAL SPEAKERS, which is incorporated herein in its entirety by reference.

The Field of the Invention

This Invention is in the field of furniture with built-in electronic assembly (e.g., speaker) systems.

The Relevant Technology

Speaker systems are widely used for home, business, social activities, entertainment and for practical, commercial, and household uses. Unfortunately, speaker systems take up a great deal of space in a home, office, or business environment, and even if small, they are often unsightly. Moreover, wiring and cabling associated with such systems is also unsightly and cumbersome.

Furniture also tends to take up a great deal of space in a home, office or business environment. When sitting on furniture, it is often desirable to listen to music, watch TV, or watch a movie in a home theater environment, or employ one or more electronic components. Improved furniture is needed with improved electronic assembly systems that can be used in association with modern furniture assemblies or devices. .

BRIEF SUMMARY

Embodiments relates to space-saving furniture systems with associated electrical assembly systems, including integrated, embedded internal speaker systems, internal electrical

power sources, electrical devices, and other electrical components associated with furniture that can be conveniently used by individuals while sitting on the furniture.

According to an aspect, there is an audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a first speaker mounted within the base and a second speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and
- (iii) a coupler for selectively coupling the base to the transverse member, wherein the transverse member comprises:
 - a frame; and
 - cushioning material covering one or more exterior surfaces of the frame;
 wherein a hole is formed through the frame, the second speaker positioned adjacent the hole,
 - wherein an inner fabric cover extends over the cushioning material and the frame of the transverse member and connects to the frame, such that the second speaker is hidden from view, and
 - wherein the cushioning material has a hole therein, the inner fabric cover extending over the holes in the frame and in the cushioning material, protecting the speaker; wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.

According to an aspect, there is an audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a first speaker mounted within the base and a second speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and

(iii) a coupler for selectively coupling the base to the transverse member,

wherein the speaker system further comprises one or more arms configured to couple the first speaker to a frame of the base, each of the one or more arms comprised of a shaft body having an angled L-shaped cross section, the shaft body having terminating extensions extending from the shaft body, the terminating extensions being angled to extend laterally outward from the shaft body, the terminating extensions extending in the same plane as one of the legs of the L-shaped shaft body; and

wherein the frame of the base has four corners and a foot selectively mounted to each corner, wherein the feet are selectively received into the frame of the base through the terminating extensions of the speaker system so that the terminating extensions of the speaker system are sandwiched between the feet and the frame, the feet thus selectively securing the speaker system to the frame.

According to an aspect, there is an audio-enhanced furniture system, comprising:

(i) an assemble-able modular furniture assembly comprising:

(A) a base; and

(B) a transverse member;

(ii) a speaker system positioned within the furniture assembly, the speaker system

comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system;

(iii) a coupler for selectively coupling the base to the transverse member,

wherein the transverse member comprises: a frame having a hole; and cushioning material covering one or more exterior surfaces of the frame, the cushioning material having a hole;

wherein the speaker is positioned at least partially inside the transverse member and adjacent the hole of the frame of the transverse member; and

(iv) an inner fabric frame cover covering the frame and extending over the cushioning

material, the inner fabric frame cover extending over the holes in the frame and in the cushioning material, protecting the speaker, such that the speaker is hidden from view;

wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.

According to an aspect, there is an audio-enhanced furniture system, comprising:

(i) an assemble-able modular furniture assembly comprising:

- (A) a base; and
- (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system;
- (iii) a coupler for selectively coupling the base to the transverse member, wherein the transverse member comprises:
 - a frame having a hole; and
 - cushioning material covering one or more exterior surfaces of the frame;
 - wherein the speaker is positioned at least partially inside the transverse member and adjacent the hole of the frame of the transverse member; and
- (iv) an inner fabric frame cover covering the frame and extending over the cushioning material, the inner fabric cover extending into the hole in the frame, the inner fabric frame cover extending about the speaker, or being tucked into the hole in the frame; wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.

According to an aspect, there is an audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly, comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the base, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and
- (iii) a coupler for selectively coupling the base to the transverse member,
 - wherein the speaker system further comprises one or more arms configured to couple the speaker to a frame of the base, each of the one or more arms comprised of a shaft body having an angled cross section, the shaft body having terminating extensions extending from the shaft body, the terminating extensions extending laterally outward from the shaft body; and
 - further comprising a plurality of feet selectively mounted to the frame of the base, wherein the feet are selectively received into the frame of the base through the terminating extensions of the speaker system so that the terminating extensions of the speaker system are

sandwiched between the feet and the frame, the feet thus selectively securing the speaker system to the frame.

According to an aspect, there is an audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and
- (iii) a coupler for selectively coupling the base to the transverse member, wherein the transverse member comprises:
 - a frame; and
 - cushioning material covering one or more exterior surfaces of the frame;
 wherein a hole is formed through the frame, through which sound from the speaker is emitted, and
 - wherein an inner fabric cover extends over the cushioning material and the frame of the transverse member such that the speaker is hidden from view;
 - wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.

According to an embodiment, there is an audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a first speaker mounted within the base and a second speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and
- (iii) a coupler for selectively coupling the base to the transverse member, wherein the at least one transverse member comprises:
 - a frame; and
 - cushioning material covering one or more exterior surfaces of the frame;

wherein a hole is formed through the frame, the second speaker positioned adjacent the hole,

wherein a fabric cover extends over the cushioning material and the frame of the transverse member and connects to the frame, such that the second speaker is hidden from view, and

wherein the cushioning material has a hole therein, the fabric cover extending over the holes in the frame and in the cushioning material, protecting the speaker.

According to an embodiment, there is an audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly, comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the base, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and
- (iii) a coupler for selectively coupling the base to the transverse member,
 - wherein the speaker system further comprises one or more arms configured to couple the speaker to a frame of the base, each of the one or more arms comprised of a shaft body having an angled cross section, the shaft body having terminating extensions extending from the shaft body, the terminating extensions extending laterally outward from the shaft body; and
 - further comprising a plurality of feet selectively mounted to the frame of the base, wherein the feet are selectively received into the frame of the base through the terminating extensions of the speaker system so that the terminating extensions of the speaker system are sandwiched between the feet and the frame, the feet thus selectively securing the speaker system to the frame.

According to an embodiment, there is an audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system;

(iii) a coupler for selectively coupling the base to the transverse member, wherein the at least one transverse member comprises:

a frame having a hole; and

cushioning material covering one or more exterior surfaces of the frame, the cushioning material having a hole;

wherein the speaker is positioned at least partially inside the transverse member and adjacent the hole of the frame of the transverse member; and

(iv) a fabric frame cover covering the frame and extending over the cushioning material, the fabric frame cover extending over the holes in the frame and in the cushioning material, protecting the speaker, such that the speaker is hidden from view.

According to an embodiment, there is an audio-enhanced furniture system, comprising:

(i) an assemble-able modular furniture assembly comprising:

(A) a base; and

(B) a transverse member;

(ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system;

(iii) a coupler for selectively coupling the base to the transverse member, wherein the transverse member comprises:

a frame having a hole; and

cushioning material covering one or more exterior surfaces of the frame;

wherein the speaker is positioned at least partially inside the transverse member and adjacent the hole of the frame of the transverse member; and

(iv) a fabric frame cover covering the frame and extending over the cushioning material, the fabric frame cover extending into the hole in the frame, the fabric frame cover extending about the speaker, or being tucked into the hole in the frame.

According to an aspect, there is an audio-enhanced furniture system, comprising:

(i) an assemble-able modular furniture assembly comprising:

(A) a base; and

(B) a transverse member;

(ii) a speaker system positioned within the furniture assembly, the speaker system comprising a first speaker mounted within the base and a second speaker mounted within the

transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and

(iii) a coupler for selectively coupling the base to the transverse member,

wherein the at least one transverse member comprises:

a frame; and

cushioning material covering one or more exterior surfaces of the frame;

wherein a hole is formed through the frame, through which sound from the second speaker is emitted, and

wherein a fabric cover extends over the cushioning material and the frame of the transverse member such that the second speaker is hidden from view.

The audio-enhanced furniture system conveniently provides furniture for comfortably sitting, as well as integrated internal speakers for convenient, space saving high-fidelity listening, and a power source for providing electrical power to the speakers and other electrically powered objects, e.g., phones, computers, lighting systems, and recharging systems for recharging such devices as a user is comfortably sitting on the furniture.

One electronic furniture system of an embodiment comprises: (i) a furniture assembly comprising: (A) a base (e.g., a seat portion), (B) at least one transverse member (e.g., an armrest or backrest), and (C) a coupler for coupling the base to the transverse member; (ii) an electrical hub configured to selectively reside within the furniture assembly; and (iii) a speaker system mounted within one or more portions of the furniture assembly. The electrical hub acts as a source of electrical power for the speaker system and may be selectively positioned, for example, within a cavity in a transverse member of the furniture assembly.

In one embodiment, the speaker system includes one or more speakers mounted to a frame of the transverse member and one or more speakers mounted to a frame of the base member. Embedding the speakers within the base and transverse members saves vast amounts of space within a room while also hiding the speakers, using the same footprint of space for the combined furniture and speaker systems.

A subwoofer speaker can be mounted within the base of a furniture assembly, while transverse members coupled to the base on opposing sides of the base acting as armrests include one or more speakers each (e.g., two speakers each) embedded therein. The combined base, transverse members, and associated internal speakers form a high-fidelity surround sound experience for a user. This enables a user to use furniture and speakers in the same footprint,

saving valuable space for other objects in a room while simultaneously providing a high fidelity listening experience.

The subwoofer may include an amplifier assembly comprising one or more amplifiers, an audio receiver and/or a controller for amplifying and controlling the outputs of the speakers in the transverse members and/or base.

In one embodiment, the electrical hub, which provides electrical power to the speakers, comprises: (a) an electrical outlet assembly having a housing; (b) a securement panel linked to and offset from the electrical outlet assembly such that at least one outlet of the electrical outlet assembly is spaced away from the securement panel; and (c) an installation clip mounted to the

electrical outlet assembly. The offset securement panel of the electrical hub forms a protective area within which to connect one more electrical cords (e.g. electrical cords of the speakers, amplifiers, audio receiver, controller or other objects, e.g., phones, etc.) to the outlet assembly. The installation clip can be selectively moved to mount the electrical hub within a cavity of a transverse member of the furniture assembly.

An example of a furniture system of the present disclosure comprises: (A) a base; (B) a transverse member; and (C) a speaker system comprising at least one speaker positioned within one of the base and the transverse member. A coupler selectively couples the base to the transverse member. The speaker system comprises one or more speakers mounted within at least one of: (i) the base; or (ii) the transverse member of the furniture assembly, the speaker system comprising at least one speaker mounted within the furniture assembly. Embedding the speakers in the modular or assemble-able furniture assembly serves to hide the speakers and associated wiring and cabling from view, and provides high quality sound without using any additional space beyond that already occupied by the footprint of the furniture assembly.

In order to provide power to the speaker system, the electrical hub is configured to be coupled to at least one of: (i) the transverse member; or (ii) the base. The hub may be selectively mounted within a cavity of the transverse member, for example. The hub may be selectively mounted adjacent the coupler within the transverse member. Other components may be connected to the hub in order to receive electrical power, such as cell phone, computers, lamps and/or an induction charger mounted within the furniture assembly for recharging other electrical devices, for example.

The audio enhanced furniture system of various embodiments thus conveniently provide furniture for comfortably sitting, as well as speakers for convenient listening and a power source for providing electrical power to the speakers and other electrically powered objects, e.g., phones, computers, lighting systems, and recharging systems for recharging such devices.

A major advantage of the present disclosure is that the speaker systems and electronic assembly systems employed in the present invention are concealed from the view of the typical user and potential consumer, avoiding some of the unsightly and cluttered images of speakers and electronics that fill many of the spaces in modern homes and businesses.

Furniture cavities, provided within the base member and the transverse member, may enhance the sound of the speakers mounted therein. Thus, the user may experience a quality

sound and musical experience using the base and transverse members of the present disclosure.

5 The speakers are tuned in order to compensate for the sound being emitted through the fabric which covers the speakers embedded within the bases and/or transverse members.

One major benefit of the present invention is the concealment of the speakers within the bases and transverse members of the present invention. This enables significant space saving and aesthetics within a home, business, office or other location by using the space that speakers
10 would normally take up for furniture. The sofa of the present invention thus provides extensive space efficiencies. Speakers can be concealed behind home decorative fabric. Such fabrics may not be acoustically transparent. Given frequencies emitted by the speakers are tuned in order to compensate for the fact that the emitted sound extends through the interface of the fabric, optimizing the sound as it extends through the fabric layer.

15 The speaker system of the present invention can be used in a couch, in a chair, in sectional systems, and in sectional systems having a variety of different components, such as recliners, seats, foot rests and a vast variety of configurations.

These and other objects and features of the present invention will become more fully apparent from the following description and appended claims, or may be learned by the practice
20 of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify the above and other advantages and features of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. It is appreciated that these
25 drawings depict only illustrated embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

Figure 1A is a perspective view of a modular furniture assembly in the form of a surround sound chair of the present invention having audio speakers in the transverse members thereof to form a surround sound speaker system, the position and orientation of the speakers
30 reflected in phantom lines in the transverse members.

Figure 1B is a perspective view of the modular furniture assembly of Figure 1A in the form of the chair, wherein the surround sound chair also has a subwoofer speaker in the base thereof, the subwoofer speaker shown in phantom lines in the base.

35 Figure 2 shows an embodiment of the surround sound chair of Figures 1A-B with an adjacent lamp that is electrically coupled to the hub of the chair.

5 Figure 3 is a chair having a surround sound speaker system as in Figures 1A-B, the cushions exploded therefrom and a cutaway view of the base shown.

Figures 4A-4B illustrate a modular furniture assembly of the present invention.

Figure 5 illustrate the modular furniture assembly of Figures 2A-2B in an exploded view with the addition of certain electronic assemblies which connect to an electrical hub configured
10 to be mounted within the modular furniture assembly.

Figure 6 is a perspective view of a transverse member of the present invention, including phantom views of certain electronic components internally mounted and connected to a hub of the present invention. An adjacent transverse member is also depicted.

Figure 7 is a perspective view of a transverse member and a hub mounted within the
15 transverse member, including a lamp electrically coupled to the hub.

Figures 8A-8H demonstrate the speaker-containing base of the chair of Figures 1A-1B of the present invention with the subwoofer speaker system mounted within the frame of the base. An outer and inner cover and feet members associated with components of the base are depicted in Figure 8F.

Figures 9A-9D demonstrate the transverse member of Figures 1A through Figure 3 of the present invention and the speaker system mounted within the frame of the transverse member. The electrical hub 100, which is selectively mounted within the transverse member, is shown mounted within the transverse member.
20

Figure 10 shows a cutaway view of an alternative speaker-containing transverse member, wherein the speaker is in a different location from the transverse member of Figures 9A-9D.
25

Figures 11-12 show alternate transverse members with alternate speaker locations.

Figures 13A-B are perspective views of a sofa similar to that of Figure 1a with audio speakers in the transverse members (armrests) thereof and subwoofer speakers in the bases thereof to form a surround sound speaker system, the speakers reflected in phantom lines.

Figure 14 shows a sofa similar to that of Figures 13A-13B. The sofa has night light motion sensors.
30

Figure 15 shows an example of a wiring diagram for the sofa of Figure 14.

Figure 15A is another version of the wiring diagram of Figure 15 with text descriptions for certain elements identified in the wiring diagram.

Figure 16 is a perspective view of a controller or transmitter of the present invention.
35

Figure 17 is an example of a wall-mountable controller or transmitter of the present invention having a speaker (e.g., a center channel speaker).

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

**Figures 1-3: Modular Furniture System
w/Surround-Sound Speakers**

Figure 1A is a perspective view of a modular furniture assembly in the form of a chair of the present invention having audio speakers embedded in the transverse members thereof to form a surround sound speaker system, the speakers reflected in phantom lines in the transverse members.

Figure 1B is a perspective view of the modular furniture assembly of Figure 1A in the form of the chair, wherein the chair also has a subwoofer speaker in the base thereof, the subwoofer speaker shown in phantom lines in the base.

As shown in Figures 1A and 1B, the present invention relates to an audio-enhanced, modular furniture system 200 comprising a speaker-containing base member 12a selectively coupled to speaker-containing transverse members 14a and a non-speaker containing transverse member 14. The speaker-containing base member 12a and speaker-containing transverse members 14a and transverse member 14 are connected to each other as shown in Figures 1A and 1B.

Audio-enhanced, modular furniture system 200 advantageously includes one or more speakers positioned therein and as shown in Figures 1A-B, has a set of speakers in each armrest transverse member 14a and a subwoofer 210 in base 12a.

In the embodiment of Figures 1A-1B, furniture system 200 comprises an integrated internal subwoofer 210a and four integrated, internal non-subwoofer speakers 212a-b, 214a-b. The non-subwoofer speakers 212a-b, 214a-b, as shown in Figure 1A, include two front speakers 212a-b and two surround, rear speakers 214a-b which are oriented upwardly in the embodiment of Figure 1A. The subwoofer 210a may handle low frequency sounds (e.g., from about 20 Hz up to about 120 Hz, up to about 100 Hz, or up to about 80 Hz), while the front and rear speakers 212a-b, 214a-b may handle higher frequencies (e.g., from a cut-off frequency of the subwoofer up to about 20 kHz). Any of the speakers may include cone drivers, dome drivers, ribbon drivers, horn drivers, any other driver configuration, or a combination of drivers.

As illustrated in Figures 1A and 1B, the footprint of system 200 having speakers 210a-214b therein, has the same mathematical specifications as the footprint of a modular furniture assembly not having speakers therein. Thus, the addition of speakers within system 200 does not add any additional space requirements to a home or office. In addition, wiring and/or cabling typically associated with speakers is also hidden within the furniture assembly itself,

5 presenting a very clean, aesthetically desirable appearance, while at the same time providing high quality stereo, surround, or other sound playback.

Instead, the use of the speakers mounted within the furniture system 200 efficiently uses furniture and provides a high-quality, high-fidelity listening experience to the user. The speakers are hidden within certain discrete portions of the transverse members 14a and within
10 the base 12a, thereby enabling efficient use of space.

In the illustrated embodiment of Figures 1A-1B, speakers 212a and 212b are shown mounted in a front facing surface of transverse members 14a. As discussed in further detail herein, in one embodiment, such front-facing placement of speakers 212a and 212b works in conjunction with a front wall, flat screen television or other surface which aids in reflection of
15 the front directed sound from front-facing speakers 212a and 212b, the sound being reflected back to the user seated on furniture assembly 200, the reflected sound potentially having the advantages of reflected sound, which may, in some embodiments, include improved sound quality. For example, sound reflected back to the seated user may mimic sound coming from front speakers actually positioned in front of the seated user.

20 The subwoofer assembly within base 12a is hidden inside the frame of base 12a and is therefore underneath the seat cushion 18.

Figure 2 shows an embodiment of the surround sound chair of the furniture system 200 of Figures 1A-B with an adjacent lamp that is electrically coupled to an integral electrical hub mounted internally within the chair. Details of the internal electrical hub 100 will be discussed
25 further with respect to Figures 5-7.

Figure 3 is a furniture system 200 in the form of a chair having a surround sound speaker system as in Figures 1A-B, the cushions exploded therefrom and a cutaway view of the base 12a shown.

Figure 3 shows an exploded view of the surround sound chair of the furniture system 200 of Figures 1A-B and Figure 2, showing use of: (1) selectively mounting couplers 15 which
30 couple transverse members 14, 14a to base 12a; (2) integral electrical hubs 100 mounted internally within the furniture system 200 to provide a source of electrical power; as well as (3) details of base 12a, including cushioning assemblies and integral, internal speaker assemblies of base 12a.

35 Audio-enhanced modular furniture system 200 has bases 12a and transverse members 14a that are similar to base 12 and transverse member 13 of Figures 4A-B. Base 12a connects to

5 transverse member 14a and 14 in the same or similar manner to that of base 12 and transverse member 14 shown in Figures 4A-B, which will now be discussed.

Figures 4-7: Coupling and Electrical Power

Additional details of each of the components reflected in Figure 3 will be discussed in additional detail with reference to Figures 4A-4B, 5-7, and 8A-8H. For example, Figures 4A-4B
10 shows additional details relating to the use of couplers 15 and the coupling of a base 12 to a transverse member 14. Figure 5 shows further details relating to couplers 15, as well as details relating to electrical hub 100, which acts as a source of electrical power for the speakers and other electrically powered devices, such as phones, computers, lamps, recharging systems, and other electrical devices that can be conveniently used by a user sitting on the modular furniture assembly depicted in Figure 5. Figure 6 shows the coupling of electrical hub 100 within a
15 transverse member 14, as well as the advantageous use of electrical hub 100 to power a speaker 170 and an induction charger 172 that can be used to wirelessly charge electrical devices, e.g., phones, etc., placed on or within a transverse member 14, e.g., when transverse member 14 is being used as an armrest. Figure 7 shows the use of hub 100 to power a lamp. Figures 8A-8H
20 demonstrate an embodiment of a speaker system coupled within base 12a. Figures 9A-12 demonstrate embodiments of speaker systems within transverse members 14a.

The coupling together of components of the modular furniture assembly of the present invention and the electrical power system within the modular furniture assembly will now be discussed with detailed reference to Figures 4A-7. The principles of coupling using coupler 15
25 and the use of hub 100 to provide electrical power can be employed in conjunction with speaker-containing bases 12a and transverse members 14a and/or in conjunction with non-speaker containing bases and transverse members.

Figures 4A-4B: Modular Furniture Configuration and Coupling

Figures 4A-4B illustrate a modular furniture assembly 10 of the present invention.
30 Modular furniture assembly 10 of Figures 4A-B illustrates the configuration of base 12 and transverse member 14 and the coupling of base 12 and transverse member 14 to each other. Once base 12 is placed adjacent transverse member 14, coupler 15 selectively couples base 12 to transverse member 14. Coupler 15 can also be used to couple speaker-containing base 12a to speaker-containing transverse member 14.

35 In one embodiment, neither base 12 nor transverse member 14 of Figures 4A-4B have a speaker, electrical hub, or other electrical component therein, whereas, in another embodiment, base 12 and transverse member 14 of Figures 4A-4B each may have one or more speakers, an

5 electrical hub, or other electrical component therein. Figures 4A-4B are shown in order to illustrate the use of coupler 15 to couple a non-speaker-containing base/transverse member combination or a speaker-containing base/transverse member combination.

As shown in Figures 4A-4B, each of the modular furniture assemblies 10 have a seat cushion 18 on base 12 thereon for sitting on by a user. In addition, foot couplers 34 are shown
10 for coupling the bottom portions of transverse members 14 and bases 12 to each other.

Further discussion and disclosure relating to the modular furniture assemblies 10 and their connection to each other and to the transverse members 14 are shown and discussed in the following patents and patent applications, each of which are incorporated herein by reference: (i) U.S. Patent Application Serial No. 14/332,705, filed July 16, 2014, entitled MOUNTING
15 PLATFORM FOR MODULAR FURNITURE ASSEMBLY, (ii) U.S. Patent No. 8,783,778, entitled MOUNTING PLATFORM FOR MODULAR FURNITURE ASSEMBLY, (iii) U.S. Patent No. 7,963,612 entitled MODULAR FURNITURE ASSEMBLY, (iv) U.S. Patent Application Serial No. 11/449,074, filed June 8, 2006, entitled MODULAR FURNITURE ASSEMBLY, now U.S. Patent No. 7,547,073, (v) U.S. Patent No. 7,213,885 entitled
20 MODULAR FURNITURE ASSEMBLY, (vi) U.S. Provisional Application No. 62/354,426 filed June 24, 2016 entitled MODULAR FURNITURE ASSEMBLY CORNER SEATING SYSTEM; (vii) U.S. Provisional Patent Application Serial Number 62/257,623, filed on November 19, 2015, entitled FURNITURE WITH ELECTRONIC ASSEMBLIES; (viii) United States Patent Application No. 15/270,339, filed on September 20, 2016, entitled ELECTRICAL
25 HUB FOR FURNITURE ASSEMBLIES; (ix) United States Patent Application No. 15/276,524, filed 9/26/16, entitled Modular Furniture Assembly Corner Seating System; and (x) United States Patent Application No. 15/342,800, filed November 3, 2016, entitled Furniture System with Recliner Assembly, each of which are incorporated herein by reference.

The bases and transverse members of the present invention can include one or more
30 covers (e.g., an inner cover and an outer cover). Such covers have various advantageous, such as that the outer covers are conveniently removable so that the user can remove the covers, wash them, and swap them with other covers as desired. In one embodiment, the speakers used in the present invention are frequency tuned so that there is a high quality sound emitted through the inner and/or the outer removable covers.

35 **Figure 5: Electrical Power Hub
For Modular Furniture**

5 Figure 5 illustrates the modular furniture assembly of Figures 4A-4B in an exploded view with the addition of certain electronic assemblies which connect to an electrical hub configured to be mounted within the modular furniture assembly.

 Hub 100 of Figure 5 is used to provide electrical power to the speakers of furniture system 200 and other electrical components. Base 12 of furniture assembly 10 is selectively
10 coupled to first and second transverse members 14 of furniture assembly 10, a second transverse member being shown in a partial view in Fig. 5.

 Each transverse member 14 has a cavity 26 in a middle, lower portion thereof. A U-shaped coupler 15, selectively couples an upper portion of a base 12 to a middle, lower portion of a transverse member 14. Foot couplers 34 selectively couple respective feet of base 12 to
15 respective feet of the transverse members 14. Foot couplers 34 have apertures therein that receive the feet of respective adjacent bases and transverse members, coupling them to each other.

 In one embodiment, a foot coupler such as coupler 34 can be placed under a foot of a base that is not adjacent a transverse member or other base, for aesthetic continuity and/or to
20 provide a level surface of all four corners of the base. Furniture assembly 10 is a modular furniture assembly that can be assembled as illustrated in Figure 5, for example.

 As illustrated in Figure 5, a U-shaped coupler 15 selectively connects a portion of base 12 to a portion of a transverse member 14 by placing one plate of the U-shaped coupler 15 within an aperture 32 in the frame of base 12 and another plate of the U-shaped coupler 15
25 within an aperture 33 (see Figure 7) in the frame of transverse member 14 that is in the cavity 26 of transverse member 14, thereby selectively coupling base 12 to transverse member 14. The second transverse member 14, shown in partial view in Fig. 5, and/or additional transverse members 14, can be selectively coupled similarly or in exactly the same manner to base 12.

 Base 12 is used as a seat member and/or for receiving a cushion 18 to be used as a seat
30 member while transverse member 14 can be used as a backrest and/or arm rest. Various combinations of bases, transverse members, and U-shaped couplers and foot couplers can be used in varying numbers to create a variety of different furniture assemblies of the present invention, as discussed and illustrated in the patents and patent applications that are incorporated herein by reference.

35 Electrical hub 100 is also shown in an exploded view in Figure 5, electrical hub 100 being selectively mounted within the cavity 26 of transverse member 14 and a portion of an electrical hub 100 being selectively sandwiched between a portion of base 12 and a portion of

transverse member 14, thereby maintaining hub 100 in a convenient, stable position within furniture assembly 10. Hub 100 acts as a convenient power source for electrical devices 20, 22, and 24. As described in further detail herein, hub 100 may also provide power for speakers and/or other audio components (e.g., an audio receiver).

When cushion 18 of Figure 4B is placed onto base 12 and adjacent transverse member 14 of Figure 5, hub 100 is not visible to the user, with the exception of the portion of the electrical cord 110 that extends from behind furniture assembly 10 and into the electrical wall outlet 19. For example, when cushion 18 of Figure 3 is placed on the base 12a and adjacent transverse member 14a, hub 100 is not visible to the user, as shown in Figure 2.

An electronic furniture assembly of Figure 5 thus comprises: (i) a furniture assembly 10 comprising: (A) a base 12, (B) a transverse member 14, and (C) a coupler 15 for coupling the base 12 to the transverse member 14; and (ii) an electrical hub 100 as shown in Figure 5 configured to selectively reside within the furniture assembly 10. As shown in Figures 1A, 1B and 2, electrical hub 100 enables the resulting electronic furniture assembly of Figures 1A, 1B and 2 to conveniently receive and act as a source of electrical power for personal objects, such as all phones, computers and other accessories used while sitting on the furniture assembly 10. Power available through hub 100 may also be used to power speakers and other audio components embedded within the furniture assembly in a manner that during normal use (e.g., with cushion 18 is in place), the speakers, hub 100, and even any wiring/cabling associated therewith is hidden from view.

The electrical hub 100 comprises one or more electrical outlets. Hub 100 is configured to be selectively integrated into furniture assembly 10. One or more electrical hubs 100 is configured to be selectively integrated into a variety of other furniture assemblies, having one or multiple transverse members 14, such as the furniture assemblies disclosed in U.S. Patent No. 8,783,778, entitled MOUNTING PLATFORM FOR MODULAR FURNITURE ASSEMBLY and (vii) Provisional Patent Application Serial Number 62/257,623, filed on November 19, 2015, entitled "Furniture with Electronic Assemblies," each of which are incorporated herein by reference. The electrical hubs 100 described herein are compatible to communicate with the transverse member cavities disclosed in the aforementioned patents and applications.

Hub 100 can be conveniently used within the transverse members of the furniture assemblies disclosed in U.S. Patent No. 7,213,885 entitled MODULAR FURNITURE ASSEMBLY, wherein the furniture assemblies have a configuration such that the length X of the base and the length X' of the transverse member are equal to each other and wherein the

5 length X of the base is equal to the width of the base and the width of the transverse member, such that $X=Y+Z$ and $X=X'$ as disclosed in U.S. Patent No. 7,213,885 entitled MODULAR FURNITURE ASSEMBLY, which is incorporated herein by reference.

The drawings provided herein show hub 100 in use in connection with modular furniture. However, hub 100 is conveniently used in connection with various types of furniture,
10 including: (i) fixed, non-configurable furniture; (ii) furniture that is assembled by a consumer (known as “assemble-able furniture”); and furniture that can be configured into a variety of different configurations (known as “modular furniture”). Assemble-able furniture includes (i) modular furniture that can be configured into a variety of different configurations and (ii) furniture that can only be assembled into a single configuration. Hub 100 is conveniently used
15 in connection with various types of furniture, including (i) fixed-nonconfigurable, (ii) assembleable-modular and (iii) assembleable-non-modular furniture.

Although Figure 5 illustrates a furniture assembly 10 that includes two transverse members 14, and a base member 12, in other embodiments, the hub 100 or hubs 100 may be used in other combinations of transverse members 14 and base members 12, such as those
20 disclosed in the aforementioned patents and applications, hub 100 being configured to be disposed partially within at least one of the transverse members 14 of such assemblies. When positioned thereon, cushion 18 hides the hub 100 from view. A number of mobile, computing and/or other electronic devices 20, 22, 24 are plugged in to the hub 100 that resides at least partially within the transverse member 14 behind the cushion 18.

25 Figure 5 illustrates a mobile phone 20, a speaker 22, and a laptop computer 24 electrically connected to the hub 100. Other electrical devices that may be plugged into the hub 100 may include, but are not limited to, table lamps, induction chargers, couch and/or chair lamps, reading and/or floor lamps, mobile computing devices, speakers, stereo systems, vacuums, heaters, fans, electric blankets, and the like for use by a user using furniture assembly
30 10.

Figure 5 also illustrates a hub electrical cord 110 plugged into a wall outlet 19. The hub electrical cord 110 provides electrical power to the hub 100, which in turn provides electrical power to the one or more electronic devices 20, 22, 24 that are plugged or otherwise connected into the hub 100. In this way, electronic devices 20, 22, 24 are powered via the hub 100 in a
35 visually pleasing and convenient way. For example, the electrical outlets of hub 100 and connections of the electrical devices to the hub 100 are typically not seen by the user when the user is seated on the couch or by others in the room when the cushion(s) is on the base 12. The

5 hub electrical cord 110 thus provides power to multiple electronic devices 20, 22, 24 from a single a power source. A person sitting on or otherwise using the illustrated furniture assembly 10 has access to his or her electronic devices 20, 22, 24 while they are being powered through the hub 100 without the need for multiple electrical cords or other power strips separate from the furniture assembly 10.

10 As shown in Figure 5, in one embodiment, the electrical hub 100 comprises: (a) an electrical outlet assembly 102; (b) a securement panel 104 wherein a rear face of the securement panel 104 is linked to the electrical outlet assembly 102, such that at least one outlet of the electrical outlet assembly 102 is spaced away and offset from the securement panel 104; and (c)
15 being moveable with respect to the electrical outlet assembly 102, the installation clip 106 having an extended position and being capable of being moved to a compressed position when it is desired to move the hub into cavity 26. Electrical outlet assembly 102 includes electrical cord 110 and at least one electrical outlet in electrical communication with cord 110.

The free end of the installation clip 106 is movable with respect to the assembly and is
20 configured to be normally in the extended position absent any other force, and is selectively moved by a user from the extended position to the compressed position in order to mount the electrical hub 100 within the furniture assembly 10. Clip 106 is further configured to be selectively moved by a user from the extended position to the compressed position in order to remove the electrical hub 100 from the furniture assembly. Hub 100 is configured to be
25 selectively mounted within a furniture assembly 100 in order to provide a source of electrical power for one or more electrical devices 20, 22, 24 adjacent the furniture assembly, as illustrated in Figure 5.

Additional information regarding hub 100 is disclosed in United States Patent Application Serial Number 15/270,339, filed on September 20, 2016, entitled "Electrical Hub
30 for Furniture Assemblies," which is incorporated herein by reference.

Figures 6-7: Electrical Components coupled to Electrical Hub 100

Figure 6 is a perspective view of a transverse member of the present invention, including
35 phantom views of certain electronic components connected to a hub of the present invention. An optional adjacent transverse member is also depicted.

5 Figure 6 illustrates a transverse member 14 of the present invention having an electrical hub 100 mounted therein, wherein a speaker 170 and an induction charger 172 are fed electrical power through the electrical hub, the speaker and induction charger being mounted within the transverse member.

10 Various electronic devices can be electrically coupled to the outlets of the electrical outlet assembly 102 or to the interior outlet 140' shown in Figures 5-6, such as speakers, induction chargers (e.g., under the fabric of a transverse member serving as an arm rest), refrigerators, amplifiers for a surround sound system, and a vast number of other electrical devices that are convenient to have in a furniture assembly. In various embodiments, outlet 140' has one, two, or more than two electrical outlets.

15 In addition, one or more additional transverse members with a hub 100, a speaker 170, and a charger 172 can also be provided in order to provide stereo and surround sound and in order to provide a conveniently wired electrical furniture assembly.

Using induction charger 172 mounted within a transverse member 14, a user seated on a furniture assembly 10 can conveniently recharge an electrical device, such as a cellular phone, while seated on the modular furniture assembly.

20 Wireless qi charging, e.g., via induction charger 172 embedded within the transverse member or other devices is used to charge mobile devices, such as cellular phones, computers, lighting systems, lamps, or other electronic devices. As shown in Figure 6, the qi charger, also known as an induction charger, may be hidden under furniture covers and/or embedded within the wooden frame of an embodiment of transverse member 14. In one embodiment, the induction charger is mounted on an upper surface of one or more transverse members under a thin cover in order to provide easy access for mobile devices, such as cellular phones, etc.

The induction charger charges through layers of fabric when desired. The induction charger may be placed in a variety of locations such as within the transverse member or the base.

30 Other embedded devices that may be employed in transverse member 14 or in a base 12, including ambience lights, heating systems, cooling systems and motion sensors, for example.

Figure 7 is a cutaway perspective view of a transverse member 14 and a hub 100 mounted within the transverse member 14, including a lamp 150 electrically coupled to the hub 100. As shown in Figure 7, the hub electrical cord 110 extends from the hub 100, through the transverse member 14, out of a hole in the bottom portion of the frame of the transverse member 14 and below transverse member 14, so that the hub electrical cord 110 can be plugged in to an

5 external power source. The illustrated hub electrical cord 110 is flexible and in some of the embodiments shown, e.g., in Figure 7 is comprised of a plurality of extension cords.

An electrical device such as lamp 150 has a cord 160 thereof conveniently connected to floor resting cord outlet 140a as shown in Figure 7. Electrical cord 110 is thus advantageous because cord outlets such as floor resting cord outlet 140a can power an electrical device such as
10 lamp 150 and hide at least a portion of the corresponding electrical cord 160 from view, providing a more functional furniture assembly and a more pleasing aesthetic appearance.

Cord elbow 120 extending about electrical cord 110 is also illustrated. The cord elbow 120 is a rigid or semi-rigid component (comprised, e.g., of a hard plastic) positioned about cord 110 in a bending, elbow shape along the length of the hub electrical cord 110. The cord elbow
15 120 is positioned about the hub electrical cord 110 so as to facilitate a convenient permanent bending of the hub electrical cord 110 while simultaneously protecting the bent portion of cord 110. In one embodiment, the cord elbow 120 bends the hub electrical cord 110 at a position where the hub electrical cord 110 reaches the floor or other surface when extending between the electrical outlet assembly 102 and a power source, such as a wall outlet 19.

20 Elbows such as cord elbow 120 provide a protected, smooth transition from a vertical orientation to a horizontal orientation, and may be comprised of a variety of different materials, such as a hard plastic, or a rubber, neoprene, silicone or other material that can be wrapped around and electrical cord and form a rigid or semi-rigid tubular member wrapped around the cord.

25 Elbows such as cord elbow 120 extending about cord thus protect the electrical cord from breaking or fraying while bending, minimize the amount of electrical cord seen, and in some instances hides the electrical cord from view.

Also as shown in Figure 7, one coupler plate 15a of coupler 15 is configured to fit within a corresponding aperture 32 of base 12 while another plate of coupler 15 fits within a
30 corresponding aperture 33 of transverse member 14 to thereby selectively connect base 12 to member 14. As shown, in one embodiment, U-shaped coupler 15 has a ribbon handle attached thereto for removing coupler 15 from respective apertures 32, 33 and may have a hole in a top portion thereof, which assists in reducing the weight of the coupler 15. In other embodiments, the hole and ribbon are not employed.

35 Figure 7 further shows the convenience and utility of internal cord outlet 140a or 140' mounted within the body of transverse member 14, which accepts the cord 160 of a lamp 150,

5 and/or the respective cords 170a, 172a (Figure 6) of one or more speakers 170 and one or more wireless electrical induction chargers 172 mounted within transverse member 14.

Induction charger 172 can be mounted under the fabric within a transverse member 14, for example for conveniently, wirelessly charging electronic devices wireless, e.g. a phone and/or computer placed by a user on a transverse member 14.

10 One or more tabs 120a-b extend from the panel 104 of the hub 100 and are configured to reside between the transverse member 14 and the base member 12 when transverse member 14 and base member 12 are coupled together. In this way, the tabs 120a-b are press fitted between the transverse member 14 and base member 12 so as to help secure the hub 100 at least partially within the cavity 26 in transverse member 14.

15 Coupler 15 and similar couplers and hub 100 and similar hubs can be employed to provide coupling and electrical power in conjunction with speaker-containing bases 12a and transverse members 14a and/or in conjunction with non-speaker containing bases and transverse members.

Figures 8A-8H: Base 12a With Speaker System

20 Figures 8A-8H demonstrate an example of the base 12a of the furniture system 200 in the form of the chair of Figures 1A-Figure 3 of the present invention and the subwoofer speaker system mounted within the frame of the base 12a.

Figures 8A-8H illustrate how subwoofer 210a is mounted and positioned within base 12a. As shown in Figures 8A-8H, base member 12a includes a frame assembly 216 into which
25 subwoofer 210a is mounted. Subwoofer 210a can receive its audio signal wirelessly (e.g., from transmitter 224, or from receiver/amplifier 217), or through a wired connection (e.g., from audio receiver 217). Power for a powered subwoofer may be provided from hub 100. If the subwoofer is passive (e.g., no internal amplifier), the amplified signal may be provided from receiver/amplifier 217.

30 Figures 8A-H illustrate how subwoofer 210a is embedded into the frame assembly 216 of base 12. Frame assembly 216 of base 12a has a cavity 226 within frame assembly 216, within which subwoofer 210a is positioned.

Subwoofer speaker 210a is comprised of a subwoofer speaker driver 211a, including electronics and other structure typically associated with such a speaker driver, such as its
35 magnet. Speaker driver 211a is coupled to a speaker housing 228 on which driver 211a is mounted. Speaker housing 228 provides a given, desired internal volume associated with

5 subwoofer speaker 210a. In the illustrated embodiment, housing 228 is separately defined from the cavity 226 within frame assembly 216.

The configuration of speaker housing 228 enables speaker 210a to be removed from the cavity 226 of base member 12a so as to allow a user to remove subwoofer assembly 210a from a given base member 12a and install it into another base member 12, for example, which may not
10 have previously included a subwoofer speaker 210a therein. Subwoofer assembly 210a is thus entirely self-contained. Enclosure 228 may be sealed or ported, as desired.

Subwoofer speaker 210a further includes elongate attachment arms 230a and 230b mounted on opposing sides of speaker housing 228. Arms 230a and 230b are attached to the enclosure 228 and couple enclosure 228 to frame assembly 216 of base 12a.

15 In the illustrated embodiment, arms 230a and 230b each include an angled terminal extension 232 at each end thereof and a mounting hole 232a associated therewith. The positioning and orientation of holes 232a are configured to allow subwoofer speaker 210a to be received within cavity 226 of frame assembly 216 in a manner that holes 232a align with the holes for mounting feet 20a of base member 12a.

20 Each of the arms 230a-b are comprised of an L-shaped shaft body having an approximately 90 degree angled L-shaped cross section, each shaft body having terminating extensions 232 extending from the shaft body. The terminating extensions 232 are angled to extend laterally outward from the shaft body as shown in Figure 8H. As shown in Figure 8H, the terminating extensions 232 extend in the same plane as one of the legs of the L-shaped shaft
25 body. Using the arms 230a-b, the associated speakers can be quickly and efficiently coupled to the frame assembly of the base and can be readily removed therefrom in order to selectively replace the speakers.

Thus, in one embodiment of the present invention, the speaker system comprises one or more arms configured to couple one or more speakers to a frame of a portion of the furniture
30 assembly, the one or more arms comprised of an L-shaped shaft body having an angled L-shaped cross section, the shaft body having terminating extensions extending from the shaft body, the terminating extensions being are angled to extend laterally outward from the shaft body, the terminating extensions extending in the same plane as one of the legs of the L-shaped shaft body.

35 This relationship is further shown in Figures 8A-8H in which the positioning of feet 20a is depicted. Feet 20a of base member 12a are shown as being configured to be mounted to the respective four corners of frame assembly 216 with arms 230a and 230b being sandwiched

5 between the respective feet 20a and a hole in frame assembly 216 into which feet 20a are threadedly received, for example. Figure 8B illustrates the positioning of upper and lower internally threaded hubs 233 that sandwich corner portions of frame assembly 216. Feet 20a can be selectively threaded into hubs 233 within the corner portions of frame assembly 216.

As further shown in Figures 8A-H, the subwoofer speaker 210a is shown positioned
10 within frame assembly 216 of base 12 in an orientation so that the driver 211a of subwoofer speaker 210a is oriented downwards, for example, in the same direction as feet 20a (towards the floor).

In other words, the cone of driver 211a associated with subwoofer 210a is shown as directing sound downward towards the floor or other support surface when assembled within
15 base 12a.

Other configurations are possible. For example, the driver 211a can alternatively be flipped over so that the cone of driver 211a associated with subwoofer speaker 210a is oriented upwardly within base 12a, in other words, toward the seated user.

Each of these different configurations provides a different sound-enhanced experience
20 for the user. For example, when driver 211a is pointed downward towards the floor, sound is reflected off the floor, the reflected sound potentially having the advantages of reflected sound, which may, in some embodiments, include improving the sound quality.

When driver 211a is pointed upwardly toward the user sitting on the base 12a, it may be possible for the user to feel and experience an increased amount of reverberation, improving the
25 fourth dimensional experience for the user who can, in some embodiments, feel the sound of the speaker more intensely.

The illustrated configuration provides a high degree of protection for the driver 211a of subwoofer speaker 210a, while also providing excellent sound quality. In some embodiments, as frequencies of 120 Hz or less, or 80 Hz or less are largely omni-directional, a user seated on
30 couch 200 cannot readily tell from which direction such sounds are coming.

Providing a full enclosure housing 228 for subwoofer speaker 210a, in addition to using an enclosure associated with frame assembly 216 of base 12a, provides additional protection to the driver 211a of subwoofer speaker 210a.

For example, the top side of enclosure 228 is spaced apart from the springs 263 coupled
35 to the top of frame assembly 216 on which the cushion is positioned. The space thus provided between the top of enclosure 228 and the springs 263 coupled to the top of frame assembly 216, so that when a user sits on a cushion 18 positioned on the springs 263 coupled to the top of

5 frame assembly 216 (or on fabric cover 266 or other cover over the springs 263), there is little risk of damage to driver 211a of subwoofer speaker 210a.

For example, such a space or clearance between the springs 263 and the housing 228 may be at least about 2 inches to about 5 inches, for example.

As shown in Figures 8A and 8B, one or more internally threaded hubs 233 are coupled to
10 each of the corners of base frame 226. In one embodiment, corresponding upper and lower hubs 233 are mounted within a corner such that each corner has an upper hub and a lower hub in an aperture thereof. Feet 20a are threadedly coupled to corresponding corners by being threaded within corresponding upper and/or lower hubs 233.

In the embodiment of Figure 8D, foot couplers 234 are shown. Foot couplers 234 are
15 further shown in Figures 8F and 8H. In one embodiment, the diameter of each of the holes of foot couplers 234 are larger than the outer diameter of the feet 20a, such that the rim and body portions of the foot couplers 234 contact the corners 232 of the arms 230a-230b, such that weight of the arm's base frame 216 and an individual sitting on the base 12a are received by the foot couplers 234 and not by the feet 20.

Figure 8F shows an example of an inner and outer cover 268, 269 mounted on base
20 frame 216 and having ends that extend slightly onto the underside of base frame 216, as shown in Figure 8F. Covers 268, 269 may be comprised of a variety of different fabrics. Additional covers or shielding members can be used to protect base frame 216 and/or speaker system 210a, such as a metal or plastic mesh or caging material to cover driver 211a on the bottom of frame
25 assembly 216. A removable outer cover 269 is selectively, removably mounted on the undersurface of frame 216 and/or on inner cover 268 in order to protect inner cover 268 and frame 216 and in order to provide a selectively changeable aesthetic appearance. Covers 268, 269 may be secured over frame assembly 216 with attachment members, such as with one or more two-part attachment members, such as VELCRO, snaps, or with a variety of different
30 attachment members. Staples or other attachment members may be used to connect inner cover 268 to frame 216.

As shown in Figures 8A-8H, at the top end of frame assembly 216, serpentine springs 63
and/or Italian webbing 65 are mounted on frame assembly 216. Such resilient cushioning
structures provide support to a cushion 18 placed over frame assembly 216 and may also help to
35 ensure that even if a user were to step or jump on the top of frame assembly 216 or a cushion placed thereon, the springs and webbing 263 and 265 will not be pressed against enclosure housing 228.

5 Even in the unlikely event that a user were able to depress springs 263 and/or webbing 265 to a top surface of housing 228, the rigid enclosure housing 228 will still protect subwoofer driver 211a from any damage. Thus, the configuration of housing 228 and the space between housing 228 and springs 263 provides dual layers of protection for subwoofer driver 211a.

As further illustrated in Figures 8F and 8H, the foot couplers 34, used to couple adjacent
10 base members 12a and/or transverse member 14a to one another have apertures 35 that are large enough to surround feet 20a without contacting feet 20a, such that the upper surfaces of foot couplers 34 contact the surface of arms 230a and 230b on the respective corners of base 12a, along with other surfaces of the corners, so that more of the force and strain associated with base members 12a is carried by arm members 230a and 230b, and frame assembly 216 and foot
15 couplers 34, rather than all of the force being concentrated within foot members 20.

Figures 9A-12 Transverse Member with Speakers

Figures 9A-9D demonstrate an example of the transverse member 14a of Figures 1A through Figure 3 of the present invention, with the speakers mounted within the frame of the transverse member 14a. The electrical hub 100, which is selectively mounted within the
20 transverse member 14a, is shown mounted within the transverse member 14a. Depictions of inner and outer covers 241, 243 of the transverse member 14a are shown in Figures 9B-9C. Covers 241, 243 are not depicted in Figures 9A and 9D.

Figures 9A-9D illustrate transverse member 14a having two speakers embedded therein. Figures 9A-D illustrates the mounting of front speaker 212a on and within the frame 270 of
25 transverse member 14a and the rear, upwardly facing surround speaker 214a mounted on and within the frame 270 of transverse member 14a. Figure 9A shows how front speakers and rear speakers 212a-b, 214a-b of Figure 1 may be mounted to the framing 270 within transverse member 14a.

As shown in Figure 9A, an exemplary mounting configuration for mounting surround
30 sound speakers 214a and front speaker 212a to frame 270, is shown. For example, speaker 212a is screwed onto, bolted or otherwise secured to plywood, other wood, or other material of the frame 270 of the transverse member 14a, as shown. The frame 270 of the transverse member 14a is comprised of vertical and horizontally oriented members that define and create an internal speaker cavity within frame 270. Frame is covered on one or more exterior surfaces thereof by a
35 cushioning material 272, e.g., a polyurethane foam material for providing cushioning to frame 270.

5 Holes 274, 276 are formed through the frame 270 and cushioning material 272 through which the sound of respective speakers 212a, 214a is emitted. A layer of polyurethane or other foam is typically present around the top, sides and front and back faces of frame 270 of transverse member 14a. Holes 274, 276 extend through such foam and frame 270 through which respective speakers 212a, 214a adjacent the respective holes 274, 276 emit sound.

10 An inner fabric cover 241 extends over the foam 272 and frame 270 of transverse member 14 and connects on the bottom of frame 270, as illustrated in Figures 9B-9C. In one embodiment, such fabric extends over the holes 274, 276, protecting the respective speakers 212a, 214a. An outer removable upholstery fabric cover 243 is selectively placed over the inner cover 243. The frequencies generated by the speakers are tuned such that the sound emitted
15 from the speakers 212a-b is tuned to compensate for the sound passing through the inner and outer covers 241, 243, which covers are typically not acoustically transparent materials.

 In another embodiment, a fabric inner cover may be mounted within the holes of the polyurethane or other foam material and/or the plywood frame member, after which the speakers are secured to the frame member. The outer upholstery fabric cover then extends over the
20 transverse member, including the speakers 212a, 214a, hiding the speakers from view.

 Rear surround speaker 214a can be mounted in the same or similar manner as speaker 212a, or in a different manner. For example, speaker 214a can be secured to a plywood or other frame member of transverse member 14a and mounted adjacent a hole in the frame member. A hole is also provided through the polyurethane or other foam around the top surface of
25 transverse member 14a through which surround speaker 214a is mounted. Inner and outer fabric covers similarly extend over and/or about rear surround speaker 214a.

 In one embodiment, the transverse member frame 270 is surrounded entirely by cushioning material 272, except possibly on the bottom surface of frame 270 and possibly within the cavity 26 where the coupler 15 and hub 100 are mounted.

30 The front speaker 212a and rear surround speaker 214a of Figures 9A-9D are mounted within compartments within the frame 270 of transverse member 14a and are coupled to the frame 270, e.g., with screws or bolts. Holes 274, 276 in the frame 270 and foam 272 correspond to the inner diameter of the respective speaker cone. As indicated, the interior cover 241 can either be covering the outer portion of the holes 274 to thereby cover the speakers, or can tucked
35 into the holes created in the frame and foam that house the speakers.

 The speakers 212a, 214a of Figures 9A-9D of the speaker-containing transverse members 14a are thus each positioned within the frame 270 thereof with the drivers of the

5 speakers screwed or bolted to the frame 270 and with the inner diameter of the cones of the speakers 212a, 214a placed adjacent respective circular holes through the frame and adjacent foam.

The holes in the outer foam covering may be covered by an inner cover 241 (Fig. 9B) which covers the transverse member frame and/or by an outer cover 243 (e.g., washable) that is
10 selectively purchased by a user according to color, fabric, etc. and which selectively is placed over the inner cover 241. The speakers 212a-214a are tuned in order to emit sound in a high quality manner through the upholstery fabrics of the covers 241, 243. For example, frequencies that are preferentially absorbed by the fabric covers (altering the loudness of a given frequency as it passes through the fabric cover) may be boosted to compensate for loss as such frequency
15 passes through the cover(s). Relatively higher frequencies are typically more drastically attenuated by such fabric passage than relatively lower frequencies, such that the tuning may comprise preferentially boosting higher frequencies (as compared to little or no boosting of lower frequencies), in order to provide a “flat” frequency response across the frequency spectrum as heard on the other side of the fabric (i.e., at the listener’s ears).

20 The drivers of transverse members 14a may optionally be covered by a metal or plastic mesh or caging material mounted within the holes within the cushioning material and/or frame, for additional protection beyond that provided by the fabric covers.

The front-facing speaker 212a of Figures 9A-9D is shown positioned adjacent the front face 234 of transverse member 14a. Front speaker 212a is shown as being positioned near the top of
25 the front face 234. Upwardly facing rear surround speaker 214a is shown as being embedded adjacent a top surface 236 of transverse member 14a. Surround speaker 214a is shown as being positioned within transverse member 14 near a rear end of upper surface 236 of member 14a.

The structure and positioning and tuning of speakers 212a, 214a is strategically useful to
30 the sound and fidelity of the speakers as the speakers are covered by one or more covers 241, 243.

Such placement is advantageous as it positions speaker 212a, 214a well above the floor on which the couch assembly 200 is placed, while also positioning rear surround speaker 214a near to, and perhaps behind the ears of a user seated on couch 200. Such positioning is also
35 advantageous as it helps to protect speakers 212a and 214a from damage that might otherwise occur if the speakers were near the floor.

5 For example, positioning speakers 212a, 214a closer to the floor surface might result in a user inadvertently kicking the speaker, thereby damaging it. Positioning of surround speaker 214a at or near a rear end of the upper surface 236 of transverse member 14 is also advantageous as a user is less likely to spill a drink at this location or even position an arm or hand over the speaker, damaging the speaker and/or muffling sound generated thereby.

10 The interior furniture cavities of the base and transverse members of the present invention are utilized to potentially enhance the audio quality by resonance and positioning. The volume of the transverse member itself (or an enclosure within such space) may be used as the speaker enclosure, creating the desired resonance. Speakers are tuned for speaker output through the fabric covers covering the frames of the speakers, which is highly useful.

15 Removable, outer cover 243 may selectively be mounted on transverse member frame 270 (and the at least partially surrounding foam 272) and/or on interior cover 241 through the use of a two part attachment assembly, such as VELCRO, or other two part attachment assembly.

The inner and outer covers 241, 243 may be comprised of a variety of different upholstery
20 fabrics, such fabrics comprising fibers, such as polyester fibers, or other fibers. The fabric of covers 241, 243 may be woven or non-woven. Typically, such fabrics are not acoustically transparent, e.g., they affect sound waves at one or more frequencies from 20 Hz to 20 kHz by attenuating (or boosting) any such frequency more than 3 dB (i.e., $\pm$ more than 3 dB). For example, such upholstery fabrics are relatively heavy fabrics, which may typically attenuate
25 particularly the higher sound frequencies at more than 3 dB. As a result of such attenuation by the fabric, the sound generated at any such speaker hidden behind the upholstery fabric may be tuned to increase the volume of the attenuated frequencies to compensate for the attenuation that occurs as the sound passes through the fabric. For example, if the fabric attenuates sounds at 2 kHz by 6 dB, the tuning may increase the volume of sounds at 2 kHz by 6 dB to compensate.
30 There may typically be several frequencies which may be boosted to compensate for such fabric induced attenuation.

Examples of the upholstery materials for the inner and/or outer cover 243 include polyester, chenille, tweed, linen, velvet, leather, polyester linen, cotton, cotton blend, denim, twill, faux fur, leather, and the like, for example. Such materials can also be used for outer
35 covers for base member 12a, and all of which are examples of upholstery fabrics, although a variety of different fabrics may be employed.

5 Examples of weights of upholstery fabrics that can be used as interior covers and/or outer covers for the bases and/or transverse members of the present invention include, for example: fabrics having weights in a range of approximately 50 grams per square meter (GSM) to approximately 1500 grams per square meter (GSM), for example, such as approximately 100 GSM to approximately 1000 GSM, or such as approximately 190 GSM to approximately 800
10 GSM, although a variety of different interior and exterior fabrics may be employed. The speakers of the present invention are adjusted and tuned in order to emit sound through such fabrics in a manner that attenuation due to such fabric is compensated for.

In one embodiment, the inner cover of base 12a and/or the inner cover of transverse member 14a are comprised of a thin cover comprising an approximately 90 percent polyester
15 and approximately 10 percent cotton blend, for example.

In one embodiment, with respect to tuning the speakers through the upholstery fabric of covers 241, 243 through which the sound is emitted, the upholstery fabric used in transverse member 14a is in one embodiment not an acoustically transparent fabric, but rather is upholstery fabric configured to be employed in upholstery, chairs, couches and other furniture.

20 For this reason, the front speakers and the surround speakers can be tuned to accommodate for the dynamic that the sound generated from such speakers is required to pass through the upholstery fabric.

For example, relatively higher frequencies (e.g., 200 Hz or more, 400 Hz or more, 800 Hz or more, 2 kHz or more, 4 kHz or more, etc.) generated from such speakers are often affected
25 by passage through such fabric, and may have some degree of attenuation associated therewith, which attenuation may increase with increasing frequency. As a result of this, the speaker can be tuned by boosting such higher frequencies before they pass through the fabric so that once the speaker sound passes through the fabric, it is approximately at a volume as it is intended to be heard and received by a listener (e.g., so that the overall tuned output is within ± 3 dB of the un-
30 attenuated "target" value).

As mentioned, examples of the upholstery materials for the inner and/or outer cover 243 include chenille, tweed, linen, velvets, leather, polyester linen, cotton, cotton blend, denim and others used in furniture upholstery, for example. Tuning of the frequencies of the speakers to provide the sound through such upholstery fabrics is a unique and novel aspect of the present
35 invention.

Such positioning hides speakers 212a and 214a within transverse member 14 so as to not be readily seen by a user or other person, but also allows a high quality sound from the speakers.

5 Such hiding of the speakers is particularly advantageous in at least some embodiments. For example, many users dislike the appearance of speakers within a room in locations such as a bookshelf, or on stands located some distance from a couch, which is often typical.

 The present configurations are advantageous in that they allow complete hiding of the speakers, sometimes even all of the speakers associated with a surround sound system.

10 Each of speakers 212a and/or 214a may be mounted within transverse member 14 in any manner desired. For example, they may each include a dedicated housing enclosure similar to that described above, with respect to the subwoofer assembly. Such a housing enclosure could be attached to the frame assembly within transverse member 14a. In another embodiment, the speaker driver associated with speakers 212a and/or 214a can simply be mounted to frame
15 members internally disposed within transverse member 14a, employing the cavity associated with transverse member 14a for one or both of speakers 212a and/or 214a.

 With regard to Figure 9D, a hole cover 245 may be employed as a plug to cover electronics of the interior systems within the transverse member 14a as shown in Figure 9D. For example, Figure 9C illustrates hole or opening 247 in a bottom face of transverse member 14a,
20 through which cord 110 passes. As shown in Figure 9D, hole 247 is shown covered by hole covering 245. A relatively small slot 249 may be provided through covering 245, to permit cord 110 to extend therethrough.

 As shown in Figure 9A, wiring 218a, 218b provides power and/or signal to embedded speakers 212a and/or 214b as appropriate. Wire 218a provides at least part of an electrical
25 connection between an amplifier 217 (see Fig. 15), which may be mounted in base 12a on, near, or within housing 228 for example, and front speaker 212a. It will be appreciated that cable or wiring 218a-b may be provided in a plurality of sections to preserve the modular nature of furniture assembly 200. For example, coupling between such wiring sections could be provided at or near the hub 100 disposed within transverse member 14.

30 For example, it will be appreciated that a first section of such wiring or cabling may extend from a base member 12a and amplifier 217 to a location of the base member 12a that is near or adjacent to the coupler 15 and/or hub 100.

 This first section of wiring or cabling could be terminated at this location with an appropriate RCA or other type coupling jack. The transverse member 14a may similarly include
35 another section of wiring 218a which extends from speaker 212a through transverse member 14 to another jack coupling at or near hub 100. Once the modular furniture assembly 200 has been assembled with transverse member 14a positioned adjacent to and coupled to base member 12a,

5 a coupling or cabling can be extended between two such jacks (bridging wiring within transverse member 14a and base 12a), providing an effective, wired connection from amplifier 217 to speaker 212a.

A similar multi-section wiring or cabling configuration can similarly be provided between rear, surround speaker 214a and a jack at or near the hub 100 and from the amplifier
10 217 to a location at or near the hub 100, with a bridging coupling or wiring between wiring in base 12a with wiring in the transverse member 14a.

In another configuration, such internal wiring spanning the base members and the transverse members may not necessarily be required. For example, signals could be transmitted to the speakers from receiver 217 (e.g., an audio or home theater receiver) and/or transmitter 224
15 through wireless transmission.

In such embodiments, the signal may be transmitted wirelessly to speaker 212a and/or speaker 214a. In such embodiments, it may still be necessary to provide power to speaker 212a and/or 214a, e.g., through use of hub 100. Such wireless transmission of signals may eliminate the need for any wiring or electrical coupling for power or signals from base 12a to transverse
20 member 14a, at least for speakers 212a and 214a.

Where jumper connections are desired for power and/or signal transmission, such may be achieved through any suitable configuration. For example, quick connect ports (e.g., RCA, banana plugs, or other) for such speaker wire or cable may be located on a bottom side of transverse member 14a (Fig. 9C) for connecting a jumper cable, for example, from the
25 transverse member 14a to the base member 12a.

In one embodiment, an induction charger 172 (such as that in Figure 6) is mounted on an upper surface of the frame 270 of the transverse member 14a, embedded within the foam 272 on top of the frame 270, for example, and located below the inner cover 241 (and possibly below a portion of foam) mounted on the frame 270. Induction charger 172 is electrically coupled to
30 an interior outlet of the electrical hub 100.

Induction charger 172 can be mounted in an upper middle portion 278 of transverse member frame 270, for example, between the speakers 212a-214a and above the electrical hub 100. Charger 172 may be in the same top surface 236 as surround speaker 214a, positioned forwardly relative to speaker 214a, e.g., behind speaker 212a positioned in the front surface 234
35 of transverse member 14a.

5 Figures 10-12 show alternate transverse members with speaker assemblies of the present invention. Figures 10, 11 and 12 illustrate differently configured transverse members 14b-14d in which the speakers embedded therein are differently positioned.

Figure 10 shows a cutaway view of an alternative speaker-containing transverse member 14b, wherein the speaker 280 is pointing horizontally and away from the hub 100. Speaker 280
10 is coupled to the frame 282 (e.g., wood, plywood, fiberboard) of transverse member 14a, such that the speaker cone is adjacent a hole in the frame 282 and a corresponding hole in the foam cushioning material 284 adjacent the frame 282.

An induction charger 172 shown in Figure 10 is mounted on an upper panel 286 of the frame 282 of the transverse member 14b, embedded within (or, optionally, adjacent) the
15 cushioning material 288 on top of the upper panel 286 of the frame 284 of transverse member 14b, for example.

Figures 11-12 also show different speaker orientations for the transverse member speakers. It will thus be appreciated that numerous positioning possibilities are possible for positioning and orienting the speakers within transverse members 14c-d.

Figure 11 shows another alternative which may include perhaps only a single speaker 290 within transverse member 14c which may be oriented and positioned in any desired orientation and position. Speaker 290 is electrically coupled to an amplifier 291 within the frame of the transverse member 14c. Thus, in some embodiments each speaker in each transverse member has its own associated amplifier mounted within the respective transverse
25 member. In another embodiment, a single amplifier 217 for each speaker of the speaker system (all transverse members and base(s)) is mounted within or on the housing 228 within base 12a. Where a dedicated amplifier 291 is provided for each speaker or speaker channel, the signal is transmitted through wiring as shown in Figure 11 to amplifier 291 (and eventually speaker 290), or alternatively the signal is transmitted wirelessly, and power for amplifier 291 can be provided
30 from hub 100 through appropriate wiring. Amplifier 291 sends an amplified signal to speaker 290.

An induction charger 172 is mounted on the upper portion of the frame of transverse member 14c in Figure 11.

The speakers of Figure 12 may be wireless speakers so as to receive signals through
35 wireless transmission as described herein from audio receiver 217 and/or transmitter 224. Power for the speakers of Figure 12 may be provided through a connection with hub 100.

5 It will thus be appreciated from Figures 9A-12 that numerous speaker placement and a number of speaker options are possible. For example, a stereo set up could be provided in which only left and right speakers are provided or a system including left and right speakers and a subwoofer, for example, a 2.1 system. While a single speaker for each channel (front left, front right, surround left, surround right) is principally shown and described, it will be appreciated
10 that more than one speaker can be provided for any given channel (e.g., for front left, front right, left surround, right surround, subwoofer, center, etc.).

Figures 13A-14: Modular Sofas with Speakers

Figures 13A-13B are perspective views of a modular furniture system 300 of the present invention using the disclosure herein to form a sofa with audio speakers in the transverse
15 members 14a (armrests) thereof and subwoofer speakers in the bases 12a thereof to form a surround sound speaker furniture system 300, the speakers reflected in phantom lines.

Front speakers 212a-b and rear, upwardly facing surround speakers 214a-b are each mounted in a respective transverse members 14a. As shown in Figure 1B, surround speakers 214a and 214b are shown as being oriented upwards so that the sound directed therefrom may be
20 directed towards the ceiling and reflected off the ceiling, the reflected sound potentially having the advantages of reflected sound, which may, in some embodiments, include improving the sound quality (e.g., creating a diffuse, surround sound).

Each of transverse member speakers 212a, 212b, 214a, 214b are positioned underneath the upholstery fabric of the covers 241, 243 (Figs. 9A-9C) of the respective transverse member
25 14a in which the speaker is positioned. Each of these speakers may be tuned so that output from a given speaker accounts for transmission of the sound waves through the upholstery fabric associated with transverse member 14a before reaching the user seated on sofa 300.

Positioning of speakers 212a, 212b, 214a, and 214b is also advantageous as the speakers are positioned in transverse members 14a in a manner such that a user seated on sofa 300
30 typically will not obstruct sound emanating from any of these speakers.

The particular positioning and orientation of the speakers shown in Figures 13A-13B may advantageously create a realistic surround sound environment in which sound from front speakers 212a and 212b is intentionally reflected off a front surface, such as a front wall, television or similar structure, disposed in front of a seated viewer. Sound from rear surround
35 speakers 214a and 214b is similarly directed upwardly toward the ceiling so as to be reflected back down toward a seated viewer sitting on sofa 300, the front and/or ceiling reflected sound

5 potentially having the advantages of reflected sound, which may, in some embodiments, include improving the sound quality, creating a surround sound experience.

The speakers embedded in base member 12a and/or transverse member 14a can be switched or swapped as a user wishes to reconfigure the modular furniture assembly of sofa 300. For example, if a user wished to reconfigure sofa 300 so as to include more or less base
10 members and/or more or less transverse members 14a, the user can simply disassemble that part of sofa 300 and include additional base members 12a and/or transverse members 14a (or remove such), as desired.

Because the speakers are positioned within such modular furniture assembly components, this provides great flexibility to a user in where the speakers can be positioned
15 within a built furniture assembly. For example, any of the furniture assemblies shown in any of the applications already incorporated by reference can be modified to swap out any of the bases or transverse members with bases 12a including a subwoofer, or transverse members 14a including speakers, or any combination thereof. Such modularity of the furniture system thus allows the user extreme flexibility in where the speakers are provided, hidden within the
20 furniture assembly. The modularity of the subwoofer assembly in base 12a can also allow a user to remove the assembly from one base, and install it in another base, if desired.

For example, the modularity of the system allows a user to place base members 12a and transverse members 14a in any place desired. Some base members 12 and some transverse members 14 may be provided which do not include any speakers positioned therein, allowing
25 the user to use these component pieces in configuring any desired modular furniture assembly configuration they desire.

In order for an end user to set up sofa 300 (or system 200 or system 350), no tools are required because the speakers are already mounted within respective base members and transverse members, and wiring can be connected without the use of complicated tools.
30 Therefore, the sofa 300 with its electronic assembly members is highly advantageous, efficient and useful.

Figure 14 shows a furniture system 350 that is similar to sofa 300 of Figures 13A-13B. The sofa 350 has night light motion sensors (i.e., lighting which is motion activated) mounted on the underside of the base 12a and/or transverse members 14a thereof.

35 Figure 14 thus illustrates another embodiment of a modular audio enhanced furniture system in the form of sofa 350 which includes motion activated night lights. For example, LEDs or other lights may be embedded or otherwise provided on or within the bottoms surfaces

5 of the frames of base members 12a and/or transverse members 14a so as to illuminate all or a portion of a perimeter of sofa 350 when desired by a user. For example, such lighting may be motion activated so as to illuminate when a user approaches the sofa within any given distance.

Power for such lights may be provided through any of the hubs 100 associated with transverse members 14a as described herein. Such a configuration may provide a night light
10 system which may illuminate an area around sofa 350 in an otherwise dark room, aiding a user in navigating through the room at night or otherwise.

Such lighting may also be desired in other environments where a user is using sofa 350, for example, while watching a movie or other program on a television or other display in a dimly lit room.

15 Modular furniture assembly 350 is highly useful in a variety of different settings and includes electronic devices embedded in leisure seating such as in upholstery couches, modular seating, sectionals and the furniture known as Sactionals. While illustrated with audio components in the furniture assembly in addition to the motion activated night light system, it will be appreciated that a furniture system without audio components could include the motion
20 activated night light system.

Figure 14 illustrates an embodiment that might be considered as a 4.1 or 4.2 speaker system, including a front left, a front right, a left surround, and a right surround speaker with a subwoofer speaker 210a embedded in at least one of the bases 12a. Where one subwoofer speaker 210a is included (thus one base 12a, and one regular base 12), a 4.1 system results. If
25 both bases are bases 12a including subwoofer speakers 210a, a 4.2 system can result (e.g., particularly where the subwoofers produce independent sounds). The two subwoofer speakers may produce the same, or different sounds (e.g., 1 or 2 channels).

While no dedicated center channel speaker is illustrated in Figure 14, it will be appreciated that a virtual center speaker can be provided through sound signals sent to front
30 speakers 212a and 212b (i.e., a virtual center channel can be mimicked by the stereo of speakers 212a and 212b). In another embodiment, a dedicated center channel speaker can be positioned under or above the television, behind a perforated screen, or incorporated into a television, or other display device. A center rear channel can be similarly imitated using right and left surround speakers 214a and 214b, or mounted on a rear wall, as desired, to create 5.1 or 6.1
35 systems. 7.1 systems or other configurations (e.g., Dolby Atmos) could similarly be provided for.

As shown, sofa 350 includes speakers or other audio components embedded in leisure seating which includes upholstery couches, modular seating, etc. Sofa 350 provides excellent stereo or surround quality sound and provides a high fidelity surround sound experience.

The speakers are hidden from the view of the user and customers within the wooden framing portions of the base 12a and/or transverse member 14a and can be hidden under covers surrounding the wooden framing.

Wiring Diagram

Figure 15 shows an example of a wiring diagram to be used in conjunction with the furniture system 300 or 350 in the form of the sofa of Figures 13A-13B or Figure 14. A table identifying certain elements of the wiring diagram of Figure 15 is shown below.

Figure 15 Reference Numbers and Components

<u>Component</u>	<u>Reference Number</u>
Base with subwoofer	12a
Regular base or recliner seat	12
Transverse member with front and surround speaker	14a
Regular transverse member	14
Electrical Hub	100
Hub power cord (e.g., 120 volt)	110
Power cord for amplifier/receiver 217	144a
Power cord tether for electrical Hub	144b
Floor lamp	150
Power cord for floor lamp, connected to hub	160
Qi induction charger	172
Subwoofer driver	211a
Front right speaker	212a
Front left speaker	212b
Right surround speaker	214a
Left surround speaker	214b
Multi-channel amplifier and/or audio receiver	217
Front right speaker wire/cable	218a
Front Left speaker wire/cable	218b

Right surround speaker wire/cable	220a
Left surround speaker wire/cable	220b
TV or other display	222
Wireless transmitter (e.g., 5.1)	224
Power cord into wall	225
Subwoofer enclosure	228
Mounting brackets	230a-b
Tethered Remote	250
Volume up function on remote	252
Mute function on remote	254
Volume down function on remote	256
Bass volume up function on remote	258
Bass mute function on remote	260
Bass volume down function on remote	262
Low power LED nightlight from Hub	264

5

Figure 15 illustrates an exemplary wiring diagram for a modular furniture assembly, including a surround sound system positioned therein, such as that shown in Figures 1A-1B, 13A-13B, and 14. As shown in Figure 15, wiring may be provided within the modular furniture assembly to provide signals and/or power to each of speakers 212a, 212b, 214a and 214b.

10 In the illustrated configuration, amplifier 217 is disposed within base member 12a. Amplifier 217 may be a multi-channel amplifier and/or an audio receiver including such an amplifier and is illustrated as being disposed within base member 12a, for example, adjacent to subwoofer 210a, e.g., mounted on or within housing 228.

15 As further shown in Figure 15, wiring 218a and 218b may provide audio signals from amplifier 217 to front right speaker 212a and front left speaker 212b. In the illustrated configuration, the signal sent through wiring 218a and 218b is already amplified as shown.

In an alternative configuration, a signal may be sent from an audio receiver 217 to front right and front left speakers 212a in an 212b in an unamplified configuration where amplification occurs at the speaker 212a or 212b. Unamplified signals can be sent through a
20 wired or wireless connection, as desired.

Figure 15 further shows wiring 220a and 220b extending from amplifier 217 to right surround speaker 214a and wiring 220b extending from amplifier 217 to left surround speaker

5 214b. Power for amplifier 217 is provided through electrical connections shown in Figure 15, for example. For example, power from plug 110 (Fig. 5) may connect to hub 100 and amplifier 217 is in turn plugged into an outlet associated with hub 100, providing power thereto.

In one embodiment, amplifier 217 amplifies at least the subwoofer speaker. In another embodiment, amplifier 217 amplifies the subwoofer speaker and the other speakers, e.g., the
10 transverse member speakers. In another embodiment, the subwoofer may include its own internal amplifier, and amplifier 217 may amplify the other speakers (e.g., speakers 212a, 212b, 214a, 214b) in the furniture assembly. In yet another embodiment, amplifier 217 amplifies the subwoofer speaker and each of transverse member speakers has its own amplifier associated with that speaker.

15 Figure 15 shows how additional components may also be powered by hub 100 and/or additional hubs that are present within any of transverse members 14/14a. For example, Figure 15 shows power being provided from a hub in the right transverse member 14a to the qi (induction) charger 172.

Figure 15 further shows power from a second hub in left transverse member 14a to
20 another qi charger, as well as to a floor lamp 150. Additional components can be plugged into or otherwise powered by either of such hubs. For example, Figures 15-15A show a tethered remote 250 that may be used to provide control over volume (252, 256), the ability to mute (254), the ability to adjust specific frequencies, for example, base up (258) or base down (262), or bass mute (260).

25 As shown in Figure 15, one or more of base members 12 may further include a recliner seat whereby power for such recliner could be provided by any of the shown hubs.

Figure 15 further shows a television 222 or other display. Such a display is positioned or mounted on a front wall in front of sofa 300, 350, allowing a user seated on the sofa to watch television while listening to surround sound provided through the speakers associated with sofa
30 300 or 350.

In one embodiment, a transmitter 224 is provided at the TV 222, such as a wireless controller transmitting signals for audio through a wireless transmitter to the speaker system of sofa 300 or 350.

For example, as further shown in Figure 15, it is possible to provide the signals to
35 amplifier or receiver 217 (or wireless speakers 212a, 212b, 214a, 214b themselves) of sofa 300 or 350 through a wireless transmitter 224, for example, shown associated with television 222. Such a wireless transmitter 224 is plugged into the wall at 225 so as to be powered therefrom.

5 Signals from wireless transmitter 224 are wirelessly transmitted to amplifier and/or audio receiver 217 in sofa 300 or 350. Wireless transmission of such audio signals and/or control signals can be through Blue-tooth, WiFi, IR, Wireless Speaker and Audio Technology (WISA) or other mechanisms. Receiver 217 can be used to receive communication from wireless controller/transmitter 224, or a smart phone or tablet app, or the like.

10 In one embodiment, a wired connection can be provided between a transmitter component 224, and amplifier or audio receiver 217, although wireless transmission as illustrated may be advantageous as no wire or cord is thus required between the location of transmitter 224 and amplifier or audio receiver 217 disposed within sofa 300 or 350.

15 The hubs 100 provide power to the electronic furniture assembly system of sofa 300 or 350, as well as all of the speakers, components and electronic devices associated with sofa 300 or 350.

As a result of the configuration of sofa 300 or 350, the various transverse members, bases and their associated speakers and electronic components can be removed and upgraded as other speaker systems or electronic components are available.

20 In one embodiment, the furniture system of the present invention also includes an audio receiver/sound bar and a bridge electrically coupled to the television in order to communicate sound to the speakers of the sofa 300 or 350.

25 The speakers mounted within the base and transverse member, in addition to providing invisibility from a user/customer, also provides an opportunity for high quality sound. The base and transverse member each provide a large enclosure volume within which the speaker sound can resonate to provide high quality sound while using no additional footprint other than that of the sofa itself.

30 As shown in Figure 15, base 12a may further comprise support beams within subwoofer enclosure housing 228, the support beams being reflected at reference numbers 270 in Figure 15. Support beams are mounted between the upper and lower portions of the enclosure housing 228 so as to provide support within a cavity 226 to prevent any damage to speaker 210a. In one embodiment, a receiver or amplifier 217 is mounted on or within the subwoofer housing 228 of base 12a, which has power in and amplified signal outputs.

35 Figure 15A is another example of the wiring diagram of Figure 15 with text descriptions for certain elements identified it in the wiring diagram.

**Figure 16: Controllers for Controlling Speakers
and Other Components**

5 Figure 16 is a perspective view of a controller 240 of the present invention. Any of various control mechanisms and components can be provided with the surround sound systems described herein. Figure 16 shows an exemplary control component 240. Such a component may include one or more knobs, dials, or other controls that a user may use to control various aspects of the sound or other environment.

10 For example, a user may control overall sound volume, sound volume of one or more of the speakers, frequency boosting (or attenuation) of one of more frequency bands associated with any of the speakers, or other controls that a user may desire to manipulate. Such a control component 240 may transmit signals or instructions through an electrical wired connection or wirelessly from a location that is remote from sofa 300 or 350, for example, adjacent television
15 222 or elsewhere.

 A user may be able to pick up and move such a control component 240 anywhere desired. For example, they may pick it up and take it over to the couch where it may left, if desired, so as to allow control at that point.

 In other embodiments, control of any of the desired parameters may be provided through
20 a cellular phone app (smart phone app) or other software application that can be provided in any desired interface. For example, in the smartphone portable device, tablet, or other device accessible to the user which may wirelessly transmit control signals to the receiver 217 or other component, then implement any desired changes to parameters as instructed by a user. Receiver 217 may be capable of receiving and/or transmitting through WiFi, Blue-tooth, or other wireless
25 system, so as to communicate with such an app, to communicate with transmitter 222, etc.

 In some embodiments, the audio receiver and/or amplifier 217, which may be positioned within the base member 212a, may include some knobs and/or buttons for controlling any desired parameters thereon. For example, volume controls for each of the speakers could be provided thereon.

30 Such controls may allow a user to manipulate levels of the different speakers within the surround sound speaker system. For example, where a user wants to calibrate speaker levels of a given surround sound speaker or a given front speaker, or a given subwoofer, controls for increasing or decreasing the sound volume associated with any given individual speaker may thus be provided, allowing a user to make such calibrations or changes.

35 For example, depending upon the furniture configuration built by the user, a user may wish to boost or attenuate a right front speaker, a left front speaker, a right surround speaker, or

5 a left surround speaker, as numerous furniture assembly possibilities are possible with the modular furniture assemblies.

For example, where a surround speaker or a front speaker may be further away from a given seating position as compared to another surround speaker or another front speaker, a user may wish to boost or decrease volume output from one or more such speakers to even out or
10 calibrate sound volumes from the pair of front, the pair of surround speakers, or across all speakers at a given seating location. Controls as described herein may allow the user to do such.

The speakers and other electronic components of the present invention can be controlled through a variety of different control mechanisms, such as control mechanisms embedded within the sofa, e.g. within the base and/or transverse members or through a controller connected by an
15 electrical cord to the base and/or transverse members or through a remote or wireless setting, such as through the use of a personal cellular phone (e.g., smart phone or tablet). The speakers and other electronics can thus be controlled wirelessly, e.g. through Blue-tooth, WiFi, through internet connections or other wireless connection means. In one embodiment of the present invention, there is no delay through the WISA. For example, sound and video may be correlated
20 to ensure no lip synch problems between produced sound and images (e.g., sound and/or video may be intentionally delayed to ensure proper synchronization).

In one embodiment, a central transmitter such as controller 240 is employed, having a volume knob, wireless communication, ability to select and employ stereo, 4.1, 5.1 etc. with various input capabilities, including an auxiliary port in the jack.

25 Remote control for the speakers or other audio components or electronic components may be embedded within the furniture system 300 or 350, e.g. within the transverse member 14a or base 12a. Examples of control include wireless control and tethered control. Parameters that can be controlled include volume for the 2.0 system, 2.1 system, the 4.1 system, volume for the 5.1 system, etc., mute, volume level and intensity control.

30 As mentioned, in one embodiment, a software application is employed to control the electronic devices such as the speakers and other electronic components within sofa 300 or 350 or other devices in the present invention. The software application may be designed to control within the speakers and other electronic components (e.g., television, lamps, etc.) the volume, power, mute, balance, bass/treble, or other features of the system. The software application can
35 also be used for the lights within the sofa, e.g. the tract lighting or LEDs or other lighting features, e.g., lighting power off and on, and can provide sound performance tracking, recliner

5 settings, temperature settings, dimming/controlling lighting fixtures, television channels, and other user preferences.

In another embodiment, a software application may be used to control the speakers and other electrical components. Such software application may have a variety of different features and settings. In one embodiment, the software application controls speaker volume, TV volume,
10 powers the speakers, power for the TV, mute, balance, bass/treble, lights on/off, sound performance tracking, recliner settings, temperature, dimming/controlling of lamps and other lighting, TV channels, etc.

Figure 17: Transmitter with Speaker

Figure 17 shows another example of a transmitter 224 of the present invention, which
15 includes a speaker, for example a center channel speaker, incorporated therein. Transmitter 224 may serve similar functions as controller 240 of Figure 16 and could be mounted below, or above or behind television or other display 222. In one embodiment, incorporating the center channel speaker 224a into the same housing 224b which houses the transmitter assembly of transmitter 224 simplifies the overall speaker system. Thus, in one embodiment of transmitter
20 224, the center channel is in the same housing 224b as the controller mechanism.

In another embodiment, transmitter 224, including a built-in channel speaker, can be configured to be wall mounted. For example, it may include mounting structure for such wall mounting.

In one embodiment of the present invention, the furniture assembly can be used as a bed
25 having speakers and other electrical components embedded therein. For example, in one embodiment, base 12a can be used as a bed having speakers integrally mounted therein. Base 12a can be sized large enough to serve as a bed. For example, base 12a can be a stand-alone bed and/or can serve a box spring on which a cushion, such as cushion 18 can be mounted, the combination of base 12a and cushion 18 serving as a bed, wherein the base 12a and cushion 18
30 are configured to be large enough to serve as bed. A bed of the present invention having one or more speakers therein can thus be comprised of base 12a and/or base 12a and cushion 18. In another embodiment, multiple speakers can be placed within the bed. The present invention thus relates to a variety of different types of furniture having electronic components such as speakers, rechargers, power systems and other electrical components embedded therein.

35 The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore,

- 5 indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. An audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a first speaker mounted within the base and a second speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and
- (iii) a coupler for selectively coupling the base to the transverse member, wherein the transverse member comprises:
 - a frame; and
 - cushioning material covering one or more exterior surfaces of the frame;
 wherein a hole is formed through the frame, the second speaker positioned adjacent the hole,

 wherein an inner fabric cover extends over the cushioning material and the frame of the transverse member and connects to the frame, such that the second speaker is hidden from view, and

 wherein the cushioning material has a hole therein, the inner fabric cover extending over the holes in the frame and in the cushioning material, protecting the speaker; wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.

2. The audio-enhanced furniture system as recited in claim 1, wherein:

the base is selectively coupled to the transverse member;

the base comprises a frame assembly having a top portion and a bottom portion, the frame assembly having a hollow cavity in a bottom portion thereof;

the first speaker has a speaker housing and a speaker driver coupled to the speaker housing, wherein the first speaker is configured to be conveniently, removably coupled to the frame assembly of the base, such that a portion of the first speaker housing is positioned within the cavity of the frame assembly of the base and is selectively removable from the cavity of the frame assembly of the base; and

the second speaker is embedded within the transverse member of the furniture assembly, the transverse member being selectively removable from and selectively couplable to the base.

3. The audio-enhanced furniture system as recited in claim 2, wherein the base frame assembly has, on an upper portion thereof, one or more resilient cushioning elements, and on a bottom portion thereof, a hollow cavity, the hollow cavity configured to selectively receive a portion of the speaker housing therein.

4. The audio-enhanced furniture system, as recited in claim 3, wherein a space exists between the one or more resilient cushioning members and the speaker.

5. The audio-enhanced furniture system as recited in claim 2, further comprising feet that couple to the base frame assembly of the base, wherein the feet couple the speaker to the base.

6. The audio-enhanced furniture system as recited in claim 2, further comprising feet that couple to the base frame assembly of the base, wherein the feet couple the speaker to the base, wherein portions of the feet sandwich attachment arms of the speaker between the portions of the feet and a lower surface of the frame assembly of the base.
7. The audio-enhanced furniture system as recited in claim 2, wherein the speaker is configured to be conveniently retrofit onto the base.
8. The audio-enhanced furniture system as recited in claim 2, wherein the speaker is configured to be conveniently interchangeable with another speaker that is conveniently retrofit onto the base.
9. The audio-enhanced furniture system as recited in claim 2, further comprising first and second attachment arms attached to the speaker housing, the first and second attachment arms being configured to be attached to the frame assembly of the base by feet that couple to the base.
10. An audio-enhanced furniture system as recited in claim 9, wherein first and second ends of respective first and second respective arms are mounted by the feet to corresponding corners of the frame assembly of the base.
11. The audio-enhanced furniture system as recited in claim 2, wherein the speaker is substantially in the shape of a rectangular prism and the base frame assembly is substan-

tially in the shape of a rectangular prism, a portion of the speaker selectively fitting inside the base frame assembly.

12. The audio-enhanced furniture system as recited in claim **11**, wherein the configuration of the speaker within the base is substantially that of a box within a box.

13. The audio-enhanced furniture system as recited in claim **2**, wherein the transverse member is an arm rest.

14. The audio enhanced furniture system as recited in claim **1**, comprising wherein:
the base comprises a base frame assembly and a plurality of feet coupled to the base frame assembly;
the speaker system comprises a self-contained speaker comprising a speaker housing and a speaker driver coupled to the speaker housing, a portion of the self-contained speaker being coupled to a lower surface of the base frame assembly;
a portion of the speaker housing is contained within a cavity of the base; and
wherein the feet of the base selectively, removably couple the speaker to the lower surface of the base frame assembly.

15. The audio-enhanced furniture system as recited in claim **1**, wherein:
the first speaker having has a speaker housing, a speaker driver coupling to the speaker housing, and an attachment arm coupled to the speaker housing;
the transverse member has a transverse member frame assembly and a plurality of feet coupled thereto; and a foot coupler for selectively coupling the base to the transverse member;

the base has a base frame assembly and a plurality of feet coupled thereto, wherein the foot coupler is configured to receive a foot of the transverse member and a foot of the base therein to thereby couple the transverse member to the base, and wherein the first speaker is coupled to the base with a portion of the speaker housing removably mounted within a cavity within the base, the first speaker coupled to the base by first and second ends of the attachment arm of the speaker being sandwiched between a lower surface of the base frame assembly and respective portions of the feet of the base.

16. The audio-enhanced furniture system of claim 1, wherein the removable outer cover comprises upholstery fabric, and wherein the speaker system is tuned to compensate for sound being emitted from the speaker and through the upholstery fabric, wherein the speaker system is tuned so that the overall frequency response tuned output is within ± 3 dB of the unattenuated target value as heard through the upholstery fabric.
17. The audio-enhanced furniture system of claim 1, further comprising an electrical hub mounted within the transverse member, the electrical hub acting as a source of power for the speaker system, an electrical cord extending from the hub, the electrical cord extending out of an opening in a bottom portion of a frame of the transverse member, so that the electrical hub can be plugged into an external power source.
18. The audio-enhanced furniture system of any of claim 1, wherein the first speaker is a subwoofer speaker mounted within the base, and wherein the furniture assembly comprises at least two transverse members that are each selectively coupled to the base, each transverse member having a speaker therein.

19. The audio-enhanced furniture system of claim 1, wherein the furniture system comprises a plurality of feet that are selectively coupled to the base to thereby maintain the base above a support surface, wherein the feet of the base selectively, removably couple the speaker to a lower surface of the base.
20. The audio-enhanced furniture system of claim 19, wherein the speaker system further comprises one or more arms configured to selectively couple the first speaker to the frame of the base; and wherein at least a portion of each foot extends through a respective arm to secure the speaker system to the frame.
21. The audio-enhanced furniture system as recited in claim 1, wherein the first speaker comprises a speaker housing and a speaker driver coupled to the speaker housing, wherein the speaker is configured to be conveniently, removably coupled to a frame of the base, such that a portion of the speaker housing is positioned within a cavity of the frame of the base and is selectively removable from the cavity of the frame of the base.
22. The audio-enhanced furniture system as recited in claim 1, wherein the furniture system comprises a plurality of feet that are selectively coupled to the base to thereby maintain the base above a support surface, wherein the feet of the base selectively, removably couple the speaker to a lower surface of the base.
23. The audio-enhanced furniture system as recited in claim 1, wherein the inner fabric cover extends into the hole in the frame, wherein the speaker is received in the hole in the frame and coupled to the frame of the transverse member, so that the inner fabric cover extends about the speaker, or is tucked into the hole in the frame.
24. An audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;
- (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a first speaker mounted within the base and a second speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and
- (iii) a coupler for selectively coupling the base to the transverse member,

wherein the speaker system further comprises one or more arms configured to couple the first speaker to a frame of the base, each of the one or more arms comprised of a shaft body having an angled L-shaped cross section, the shaft body having terminating extensions extending from the shaft body, the terminating extensions being angled to extend laterally outward from the shaft body, the terminating extensions extending in the same plane as one of the legs of the L-shaped shaft body; and

wherein the frame of the base has four corners and a foot selectively mounted to each corner, wherein the feet are selectively received into the frame of the base through the terminating extensions of the speaker system so that the terminating extensions of the speaker system are sandwiched between the feet and the frame, the feet thus selectively securing the speaker system to the frame.

25. An audio-enhanced furniture system, comprising:

- (i) an assemble-able modular furniture assembly comprising:
 - (A) a base; and
 - (B) a transverse member;

(ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system;

(iii) a coupler for selectively coupling the base to the transverse member,

wherein the transverse member comprises: a frame having a hole; and

cushioning material covering one or more exterior surfaces of the frame, the cushioning material having a hole;

wherein the speaker is positioned at least partially inside the transverse member and adjacent the hole of the frame of the transverse member; and

(iv) an inner fabric frame cover covering the frame and extending over the cushioning material, the inner fabric frame cover extending over the holes in the frame and in the cushioning material, protecting the speaker, such that the speaker is hidden from view;

wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.

26. The audio-enhanced furniture system as recited in claim **25**, wherein the inner fabric cover extends into the hole in the frame, wherein the speaker is received in the hole in the frame and coupled to the frame of the transverse member, so that the inner fabric cover extends about the speaker, or is tucked into the hole in the frame.

27. An audio-enhanced furniture system, comprising:

(i) an assemble-able modular furniture assembly comprising:

(A) a base; and

- (B) a transverse member;
 - (ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system;
 - (iii) a coupler for selectively coupling the base to the transverse member, wherein the transverse member comprises:
 - a frame having a hole; and
 - cushioning material covering one or more exterior surfaces of the frame;
 wherein the speaker is positioned at least partially inside the transverse member and adjacent the hole of the frame of the transverse member; and
 - (iv) an inner fabric frame cover covering the frame and extending over the cushioning material, the inner fabric cover extending into the hole in the frame, the inner fabric frame cover extending about the speaker, or being tucked into the hole in the frame;
- wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.

28. The audio-enhanced furniture system as recited in claim 27, wherein an outer removable fabric cover extends over the hole in the frame, hiding the speaker from view.

29. An audio-enhanced furniture system, comprising: an assemble-able modular furniture assembly, comprising:

- (A) a base; and
- (B) a transverse member;

(i) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the base, wherein the base and transverse member can be selectively positioned in different locations with respect to each other, thereby selectively positioning the speaker system; and

(ii) a coupler for selectively coupling the base to the transverse member,

wherein the speaker system further comprises one or more arms configured to couple the speaker to a frame of the base, each of the one or more arms comprised of a shaft body having an angled cross section, the shaft body having terminating extensions extending from the shaft body, the terminating extensions extending laterally outward from the shaft body; and

further comprising a plurality of feet selectively mounted to the frame of the base, wherein the feet are selectively received into the frame of the base through the terminating extensions of the speaker system so that the terminating extensions of the speaker system are sandwiched between the feet and the frame, the feet thus selectively securing the speaker system to the frame.

30. An audio-enhanced furniture system, comprising:

(i) an assemble-able modular furniture assembly comprising:

(A) a base; and

(B) a transverse member;

(ii) a speaker system positioned within the furniture assembly, the speaker system comprising a speaker mounted within the transverse member, wherein the base and transverse member can be selectively positioned in different locations with

respect to each other, thereby selectively positioning the speaker system; and

(iii) a coupler for selectively coupling the base to the transverse member, wherein the transverse member comprises:

a frame; and

cushioning material covering one or more exterior surfaces of the frame;

wherein a hole is formed through the frame, through which sound from the speaker is emitted, and

wherein an inner fabric cover extends over the cushioning material and the frame of the transverse member such that the speaker is hidden from view;

wherein the furniture system is configured to be used with a removable outer cover that extends over the inner fabric cover during use.