An electrical fan includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track. A wireless receiver includes switching controls and an adaptor configured to mechanically couple the receiver to a voltage supply track of a track lighting system. A wireless transmitter and receiver are used control a fan mounted on a voltage supply track.
AIR CIRCULATION USING A FAN

BACKGROUND

[0001] This description relates to air circulation using a fan.

[0002] Conventional ceiling fans are typically not suitable for small rooms or rooms with low ceilings and often require special installation and wiring.

SUMMARY

[0003] In general, in one aspect, the invention features an apparatus comprising an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

[0004] Implementations of the invention may include one or more of the following features. The adaptor is configured to permit the direction in which the fan circulates air to be adjusted relative to the track. The adaptor is configured to permit the electrical fan to be slid along the length of the track. The adaptor includes conductors that are connected between power terminals of the fan and contacts configured to touch the voltage conductors of the track. The adaptor is configured to be coupled selectively to either one of at least two circuits formed by the voltage conductors of the voltage supply track. At least one of the conductors of the adaptor is split and the split ends of the conductor are made available for connection of an external switching control for controlling the connection and disconnection of the split ends. At least two of the conductors of the adaptor are split and the split ends of each of the conductors are made available for connection of an external switching control for controlling the connection and disconnection of the split ends. The split ends are made available at screw terminals on an exterior of the adaptor.

[0005] In general, in another aspect, the invention features an apparatus comprising an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track, the adaptor including conductors that are connected between power terminals of the fan and contacts configured to touch the voltage conductors of the track, the adaptor being configured to permit the direction in which the fan circulates air to be adjusted relative to the track, at least two of the conductors of the adaptor being split and the split ends of each of the conductors being made available for connection of an external switching control for controlling the connection and disconnection of the split ends.

[0006] In general, in another aspect, the invention features an apparatus comprising a section of a voltage supply track, and an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

[0007] Implementations of the invention may include one or more of the following features. A lighting fixture is included that has an adaptor configured to be coupled mechanically to the voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track. The voltage supply track includes two power circuits, and the adaptor of the lighting fixture and the adaptor of the electrical fan are connected respectively to the two power circuits.

[0008] In general, in another aspect, the invention features an apparatus comprising a wireless receiver comprising switching controls, and an adaptor configured to mechanically couple the receiver to a voltage supply track of a track lighting system.

[0009] Implementations of the invention may include one or more of the following features. Conductors connect to control terminals of lighting or fan devices mounted on the track. The switching controls are configured to independently control two different sets of devices. The apparatus also includes a section of the voltage supply track, a lighting fixture or a fan mounted on the track, and connections between the wireless receiver for controlling the lighting fixture or the fan. At least one lighting fixture and at least one fan are mounted on the track and are respectively controlled independently by the receiver. The connections wire at least two of the lighting fixtures or the fans in series with the receiver.

[0010] In general, in another aspect, the invention features an apparatus comprising a package configured for sale in consumer commerce and containing an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track, and a section of the voltage supply track.

[0011] In general, in another aspect, the invention features an apparatus comprising a space to be ventilated, a voltage supply track, and an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

[0012] In general, in another aspect, the invention features a method comprising incorporating an electrical fan with an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

[0013] In general, in another aspect, the invention features a method comprising inserting an adaptor of an electrical fan into a voltage supply track, the adaptor being configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

[0014] In general, in another aspect, the invention features a method comprising incorporating a wireless receiver with an adaptor configured to mechanically couple the receiver to a voltage supply track of a track lighting system.

[0015] In general, in another aspect, the invention features a method comprising using a wireless transmitter and receiver to control a fan mounted on a voltage supply track.
In implementations, the method may also include using the transmitter and receiver to control a lighting fixture mounted on the voltage supply track independently of the control of the fan.

Other advantages and features will become apparent from the following description and from the claims.

DESCRIPTION

FIG. 1 is a perspective view of a fan assembly and track connector.

FIG. 2 is an exploded view of the fan assembly.

FIG. 3 is a cross-sectional view of the fan assembly and track connector connected to a track.

FIG. 4 is a perspective view of an electrical supply track and an exploded view of a track connector.

FIG. 5 is a perspective view of a track fan and track light fixture connected to a track.

FIG. 6 is an exploded view of a dual circuit track adapter.

FIG. 7 is a cross-sectional view of a dual circuit electrical supply track.

FIG. 8 is a perspective view of a dual circuit electrical supply track.

FIG. 9 is a perspective view of a track fan.

FIG. 10 is a front-and-back perspective view of a wiring adapter.

FIG. 11 is an exploded view of a wiring adapter.

FIG. 12 is a cross-sectional view of a track adapter.

FIG. 13 is a perspective view of a remote control transmitter and receiver.

FIG. 14 is a wiring diagram of connections between a remote control receiver and track adapters.

FIG. 15 is a perspective view of a fan.

FIG. 16 is a perspective view of a room.

As shown in room 16, by mounting a fan 1 on (and connecting it electrically to) an electrical supply track, for example, a track 21 of a conventional track lighting system, air can be circulated in a room of any size or ceiling height. No additional special wiring is needed. Operation of the fan can be controlled remotely through a transmitter 78 held by a user and a receiver 79 associated with the track.

The track fan has a variety of benefits. When mounted on a track lighting system, the track fan provides similar functionality to that provided by a conventional ceiling fan, for example, room ventilation, air circulation, and lighting. The track fan provides significant advantages over a conventional ceiling fan. For example, the track fan can be installed in existing track systems without further wiring. The track fan can be attached to tracks on the ceiling or on a wall. The track fan does not have to be positioned in the center of the room. Multiple track fans can be attached to a track and pointed in different directions to maximize air circulation (or control air circulation in a particular pattern). The track fans can be removed when not needed by detaching the fans from the track. Track fans can be manufactured in a variety of styles and materials to match track light fixtures in order to provide a complete visually appealing fan and light combination. Track fans can be used on tracks without light fixtures where lighting is not required, for example, if a room already has a ceiling mounted overhead light fixture.

The following description and figures illustrate the details of several implementations of fans, fan and track combinations, and track adapters. A wide variety of other implementations of fans, adapters, remote control devices, tracks, and light fixtures and combinations of them are also possible.

FIG. 1 shows a perspective view of a track fan 1. The track fan in this example has a fan assembly similar to many standard electric fans, in particular the fan described in U.S. Pat. No. 6,324,340. Referring also to FIG. 2, the fan assembly 19 includes a fan motor 2 and a cylindrical housing 3 made from, e.g., metal or plastic. The fan motor 2 is inserted into the cylindrical housing 3 such that the face of the fan motor is flush with the front rim of the housing 3 and the spindle 4 of the fan motor extends to the left away from the housing 3. The fan motor 2 is attached to the housing using a bracket, not shown. The fan motor spindle 4 is inserted through a hole 5 in the center of a rear parabolic safety cage piece 6. The rear safety cage piece 6 is attached to the front of the fan motor using screws. A fan blade 7 is attached to the fan motor spindle 4. A parabolic front safety cage piece 8 is attached to the rear safety cage 6, enclosing the fan blade 7 within both safety cage pieces to prevent contact with the fan blade while the fan blade is in motion. The fan blade 7 spins freely within the safety cage and is rotated by the spindle 4 of the fan motor 2. Instead of being mounted to a base as is the fan in U.S. Pat. No. 6,324,340, the fan assembly 19 is connected to a bracket 9. The bracket 9 has two sides 10 with holes at the end of each side and a top 11 with a hole in its center. The bracket 9 is connected to the sides of the cylindrical housing 3 using pins 12 that are inserted through the holes in the sides 11 of the bracket 9 and through holes in the sides of the cylindrical housing 3. The bracket is attached with the pins such that the fan assembly 19 can be pivoted up and down with the pins as the pivot point. A peg 13 is inserted up through the hole in the top 11 of the bracket 9 and connects to a track adapter 14 (FIG. 1) using a nut 15. The peg 13 is hollow to allow wires to run from the track adapter 14, through the center of peg 13, and through a hole in the top of the cylindrical case 3 of the fan assembly as shown in FIG. 3. The peg 13 is connected to the bracket 9 such that the fan assembly can rotate 360 degrees with the peg as the pivot point. FIG. 3 shows a cross-sectional view of an assembled track fan and track adapter connected to an electrical supply track 21. This view also shows how the fan motor 2 is inserted inside the cylindrical housing 3 and how the fan blade 7 is attached to the fan motor spindle 4 and enclosed within the safety cage 16. The peg 13 is shown inserted through the top of the bracket and connected to a track adapter 14 with a nut 15. The fan assembly can swivel 360 degrees around the peg 13 and can pivot up and down at the pins 12.

Unlike a standard electric fan that is electrically wired to a plug and powered by a wall outlet, the track fan is electrically connected to a track adapter 14 as shown in FIG. 3. Track adapters can be found in a variety of styles and functional configurations that match the various styles of
electrical supply tracks that are available. Some common examples of track and adapter configurations include 2-wire, 3-wire, and 2-wire wide. Most track adapters have similar designs and the track fan can be connected to any of these adapters. The following example refers to a 2-wire track adapter and track as described in U.S. Pat. No. 6,056,651. FIG. 2 of U.S. Pat. No. 6,056,651 shows an exploded view of the track adapter and a perspective view of the track. A modified version of FIG. 2 from U.S. Pat. No. 6,056,651 is represented in FIG. 4 here to show the mechanical and electrical construction of the track adapter 14. As described in U.S. Pat. No. 6,056,651 and referring to FIG. 4, an adapter and track arrangement 20 comprises a track 21, and an adapter 14 hung on and moved along the track 21.

[0038] The track 21 comprises an elongated metal casing 23, an insulator strip 24, and two metal conducting strips 25, 26. The insulator strip 24 is inserted into the casing 23. The metal conducting strips 25, 26 are bilaterally inserted into the insulator strip 24 within the casing, and respectively retained between the flat top wall 27 and the inside flanges 28. The metal conductive strips 25, 26 run the length of the track 21, along opposite interior walls and parallel to each other. These conductive strips form the voltage bus and neutral bus that will supply power to the track adapter 14 and therefore to the fan motor 2. The conductive strips 25, 26 are often wired to a power source that is controlled by a wall switch. An adapter may also be used to control the conductive strips to a cord that has a standard plug to receive AC power from a standard wall outlet.

[0039] Track adapters are often made of plastic and are usually square in shape with a neck extending out of the top. As shown in FIG. 4 and described in U.S. Pat. No. 6,056,651, the adapter in the example we are discussing includes a first shell 29, a second shell 30, a third shell 31, two electric wires 32, 33, two electrically conductive metal contacts 34, 35, and a latch 36. The adapter has a hole 37 in the bottom of the shell to receive the peg 13 from the fan assembly 19. The peg 13 from the fan assembly 19 is fastened to the adapter 14 using a nut 15 as shown in FIG. 3. The first ends of the two electrically conductive metal contacts 34, 35 extend outward the top of the adapter shell through the neck. The contacts are bent at a 90-degree angle such that the end of one electrical contact points in the opposite direction from the end of the other. The second ends of the metal contacts 34, 35 extend down through the neck and terminate within the adapter shell. Referring to FIG. 3, the ends of the contacts 34, 35 that terminate within the adapter housing are each electrically connected to the first ends of the two electrical wires 32, 33 respectively. As shown in FIG. 4, the shells are assembled and fastened with a screw 38 such that the electrical connections 39, 40 between the electrical contacts 34, 35 and the electrical wires 32, 33 are enclosed within the shell. The wires run through the hollow opening in the peg 13 and through the hole in the top of the fan assembly 19 as shown in FIG. 3. The second end of one of the wires is connected to the voltage terminal 41 of the fan motor 2. Similarly, the second end of the other wire is connected to the neutral terminal 42 of the fan motor 2.

[0040] As described in U.S. Pat. No. 6,056,651, the track fan is connected to the electrical supply track 21 by inserting the adapter 14 through the gap 90 of the track. The adapter is retained to the inside of the positioning space in the track by flanges 43 on the neck of the track adapter 14. A 90-degree angle rotation of the adapter enables the electrical contacts 34, 35 to be maintained in electrical contact with the metal conducting strips 25, 26 respectively. A latch 36 locks into the gap 90 of the track 21 when the adapter 14 is connected to the track. Positive electrical contact is achieved between each metal conducting strip 25, 26 and the corresponding contact 34, 35. This contact allows power to be transferred from the conductive strips 25, 26 of the track to the electrical contacts 34, 35 of the adapter and in turn to the fan motor 2 as shown in FIG. 3.

[0041] FIG. 5 shows a perspective view of a track fan 1 and track light 44 fixture attached to the same track 21.

[0042] Other features of typical electric fans could also be incorporated into the track fan. The fan assembly may include a switch to allow on/off and speed control of the fan. The fan assembly may also include a mechanism to cause the fan to oscillate from side to side automatically. The fan may include a heating unit using the principles explained in U.S. Pat. No. 6,324,340.

[0043] When using the track fan with track lighting fixtures on the same track, it may be desirable to control the lights and fans separately. One way to accomplish this may be to fit the fan with a dual circuit track adapter to be used with a dual circuit track. A dual circuit track adapter and track are shown in detail in U.S. Pat. No. 6,203,339. FIGS. 1-3 from U.S. Pat. No. 6,203,339 are represented as FIGS. 6-8 here. The construction of the dual circuit track 61 and adapter 62 is similar to the construction of the single circuit track and adapter described above. One difference is that the track has two voltage buses and one of the adapter's electrically conductive contacts can be positioned at one of two different heights such that it makes contact with one of the two voltage buses of the track.

[0044] As described in U.S. Pat. No. 6,203,339, brackets 47 define a first pocket on the interior face of the first sidewall 52 of the track. An insulating element 48 resides within the pocket. A conductive metal strip forming a neutral bus 49 is carried by the insulating element 48. Brackets 50 define a second pocket on the interior face of the opposite sidewall 51. An insulating element 53 resides within the pocket. Two conductive metal strips forming first and second voltage buses 45, 46 are carried by the insulating element 53.

[0045] The adapter consists of three metal contacts. The ground contact 54 is inserted through a slot in the neck 57 and fixed in place such that the horizontal portion of the contact rests on top of the neck. The second end of the ground contact 54 is electrically grounded within the adapter housing 58. The neutral contact 55 is inserted through a slot in the neck 57 and fixed in place such that the horizontal portion of the contact rests on top of the neck. The second end of the neutral contact 55 terminates within the adapter housing and is connected to an electrical wire. The voltage contact 56 is inserted through a slot in the neck 21 and is fixed in one of two vertical positions and held in place by a holding pin in the neck that inserts into one of the two holes 59, 60 in the vertical leg of the contact. The second end of the voltage contact 56 terminates within the adapter housing and is connected to an electrical wire. The voltage contact 56 is not fixed in position and can be moved up and down and held in place at one of two different heights. The second ends
of the two electrical wires are connected to the voltage terminal 41 and neutral terminal 42 of the track fan motor 2 respectively as described above and shown in FIG. 3.

[0046] If the track fan is to be connected to the first electrical circuit, the voltage contact is depressed to its lower position. If the track fan is to be connected to the second electrical circuit, the voltage contact is raised to its upper position.

[0047] Since the two voltage busses of the track receive AC power from two independent sources, fixtures with adapters that have the voltage contact set to the low position will run on one power source while fixtures with adapters that have the voltage contact set to the high position will run on the other power source. By setting the voltage contact to one setting for all fans and setting the voltage contact for all lights at the other setting, the fans can be controlled separately from the light fixtures. Using a dimmer switch to control the circuit connected to the fans will also allow control of fan speed.

[0048] FIG. 9 shows a perspective view of a track fan with a dual circuit track adapter 62. This figure also shows an alternate design for the fan assembly. This design has the fan assembly 91 connected to an arm 64 that is connected to the track adapter 62.

[0049] It may also be desirable to control fans and lights separately on an existing single circuit track system so that installation and wiring of a dual circuit track is not required. Since the single circuit track provides uninterrupted power to all fixtures connected to the track, one could fit the track adapter of the track fan with a wiring adapter to allow the track fans to be wired in series to a remotely controlled switch that is part of the adaptor. To take advantage of this functionality, lighting fixtures on the same track could also include a similar wiring adapter built into the lighting fixture track adapter.

[0050] The switch would need to be incorporated within the track adapter and wired between the electrical contacts and the electrical wires so that the circuit is broken to the fan or light fixture when the switch is off and is engaged only when the switch is engaged.

[0051] FIG. 10 shows an example of a wiring adapter 65. In this example, the wiring adapter would allow a three-way electrical connection to each of four electrical contacts in the track adapter 14. These contacts will be referred to as voltage in 63, voltage out 66, neutral in 67, and neutral out 68. FIG. 12 shows these connections. FIG. 10 shows a front and back perspective view of a wiring adapter 65. FIG. 11 shows an exploded view of the wiring adapter 65. Each wiring adapter is constructed using two electrically conductive tubular screw clamps that allow wires to be inserted in either end of the tube 69 and fixed in place with a screw 70. In this manner, an electrical connection is achieved between the wires connected to either end of the tube 69. An electrically conductive metal post 71 is connected to the outside of the tube 69 as shown in FIG. 11. Any connection to this post is therefore electrically connected to the two wires that are connected to either end of the tube. This completes the 3-way connection. The electrically conductive metal tubes 69 are enclosed in an insulated housing 72 as shown in FIG. 11 such that the metal posts 71 extend through a hole in the back of the insulated housing 72. The wiring adapter is attached to the track adapter housing and the metal posts 71 extend into holes in the side of the adapter housing. Each wiring adapter has two connections and each track adapter is fitted with two wiring adapters, one on each side, to allow a connection to all four of the track adapter contacts; voltage in 63, voltage out 66, neutral in 67, and neutral out 68. FIG. 12 shows a cross-sectional view of a track adapter 14 that is connected to a track 21 and is fitted with two wiring adapters 65.

[0052] Many ceiling fans use a remote control unit for light on/off control, fan on/off control, and fan speed control. A typical example of a remote control unit for ceiling fans is manufactured by Hunter Fan Company (Memphis, Tenn., model #27185-000) and is available at popular home improvement stores. The remote control system includes a transmitter and receiver. FIG. 13 shows a sketch of the transmitter 78 and the receiver 79. The remote control transmitter has buttons for light on/off control 73, fan on/off control 74, and fan speed control 75, 76, 77. The remote control receiver 79 acts as a switch and has five outgoing wires; live in 80, neutral in 81, fan out 82, light out 83, and common 84. The remote control receiver has an antenna 85 to receive the signal from the transmitter 78. This example shows a modified version of the receiver 79 that includes a non-electrical adapter 88 to allow the receiver to be mounted to a track 21.

[0053] To complete the wiring of the track fan and light fixtures to the remote control system, the fixtures on the track are wired in series (by this, we do not mean that they are wired in series with the power but rather that they are wired in series for on/off switching purposes) with the remote control receiver switch 79. The live in wire 80 of the switch 79 is connected to one end of the tubular screw clamp that is connected to the voltage in 63 contact of the first track adapter 86. One end of a wire is connected to the other end of the screw clamp and the other end of this wire is connected to the first end of the voltage in screw clamp of the next track adapter 87. This process is repeated until all track adapters have been wired in series at the voltage in contact 63. This process is repeated for the connection of the switch’s neutral in 81 wire to the neutral in contacts 67 of all fixtures. In similar fashion, the switch’s common wire 84 is connected to the neutral out contacts 68 of all fixtures.

[0054] Using the connection method mentioned above, the fan out wire 82 of the switch 79 is connected to the voltage out contact 66 of only the adapters that are connected to a track fan assembly 1. The adapters for all track fan assemblies are then wired to each other in series at the voltage out contact 66. Similarly, the light out wire 83 from the switch 79 is wired to the voltage out contact 66 of the first light fixture adapter and all light fixture adapters are then wired in series at the voltage out contact 66.

[0055] This wiring scheme as shown in FIG. 14 allows the fans and lights to be wired on separate switch circuits within the remote control receiver. When the transmitter button for light on/off control 73 is pressed, the remote receiver switch completes the connection between the live in 80 and light out 83 connection. When the transmitter button for fan on/off control 74 is pressed, the switch completes the circuit between the live in 80 and fan out 82 connections.
fixtures. The fan speed buttons control the amount of current supplied to the fans through the switch and therefore control fan speed.

[0056] Using this wiring method allows fans and light fixtures that are equipped with the wiring adapter 65 to be controlled independently without the need to replace existing single circuit tracks with dual circuit tracks. After wiring, the wires would be enclosed in a plastic strip to protect the wires and to provide a uniform appearance with the track.

[0057] This example shows one possible method of connecting the fans in series (for control purposes) to one switch and connecting the lights in series (for control purposes) to a second switch by use of a wiring adapter built into the track adapter as opposed to having two circuits built into the track. This method is intended as one example to demonstrate the concept. Any suitable method of rewiring the track adapters to a switch could accomplish the same functionality.

[0058] FIG. 15 shows a perspective view of a track fan equipped with a track adapter 14 that is fitted with wiring adapters 65. FIG. 15 also demonstrates another alternate design for the track fan. In this design, the fan blade 7 is enclosed within the cylindrical housing 3 instead of being outside the housing and enclosed in the parabolic safety cage 16.

[0059] FIG. 16 shows a perspective view of a room equipped with track fans 1 and track lights 44 connected to and powered by an electrical supply track 21. This example shows a remote control receiver 79 attached to the track and a person holding a remote control transmitter 78 used to control the fans 1 and lights 44.

[0060] Although we have described some implementation examples above, a wide variety of other implementations are within the scope of the following claims.

1. Apparatus comprising
   an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

2. The apparatus of claim 1 in which the adaptor is configured to permit the direction in which the fan circulates air to be adjusted relative to the track.

3. The apparatus of claim 1 in which the adaptor is configured to permit the electrical fan to be slid along the length of the track.

4. The apparatus of claim 1 in which the adaptor includes conductors that are connected between power terminals of the fan and contacts configured to touch the voltage conductors of the track.

5. The apparatus of claim 1 in which the adaptor is configured to be coupled selectively to either one of at least two circuits formed by the voltage conductors of the voltage supply track.

6. The apparatus of claim 4 in which at least one of the conductors of the adaptor is split and the split ends of the conductor are made available for connection of an external switching control for controlling the connection and disconnection of the split ends.

7. The apparatus of claim 6 in which at least two of the conductors of the adaptor are split and the split ends of each of the conductors are made available for connection of an external switching control for controlling the connection and disconnection of the split ends.

8. The apparatus of claim 6 in which the split ends are made available at screw terminals on an exterior of the adaptor.

9. Apparatus comprising
   an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track,

   the adaptor including conductors that are connected between power terminals of the fan and contacts configured to touch the voltage conductors of the track, the adaptor being configured to permit the direction in which the fan circulates air to be adjusted relative to the track,

   at least two of the conductors of the adaptor being split and the split ends of each of the conductors being made available for connection of an external switching control for controlling the connection and disconnection of the split ends.

10. Apparatus comprising
    a section of a voltage supply track,

    an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

11. The apparatus of claim 10 also including a lighting fixture that includes an adaptor configured to be coupled mechanically to the voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.

12. The apparatus of claim 11 in which the voltage supply track includes two power circuits, and the adaptor of the lighting fixture and the adaptor of the electrical fan are connected respectively to the two power circuits.

13. Apparatus comprising
    a wireless receiver comprising

    switching controls, and

    an adaptor configured to mechanically couple the receiver to a voltage supply track of a track lighting system.

14. The apparatus of claim 13 including conductors to connect to control terminals of lighting or fan devices mounted on the track.

15. The apparatus of claim 13 in which the switching controls are configured to independently control two different sets of devices.

16. The apparatus of claim 13 also including
    a section of the voltage supply track,

    a lighting fixture or a fan mounted on the track, and

    connections between the wireless receiver for controlling the lighting fixture or the fan.

17. The apparatus of claim 16 in which at least one lighting fixture and at least one fan are mounted on the track and are respectively controlled independently by the receiver.
18. The apparatus of claim 16 in which the connections wire at least two of the lighting fixtures or the fans in series with the receiver.
19. Apparatus comprising

a package configured for sale in consumer commerce and containing

an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track, and

a section of the voltage supply track.
20. Apparatus comprising

a space to be ventilated,

a voltage supply track, and

an electrical fan that includes an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.
21. A method comprising

incorporating an electrical fan with an adaptor configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.
22. A method comprising

inserting an adaptor of an electrical fan into a voltage supply track, the adaptor being configured to be coupled mechanically to a voltage supply track mounted on a wall or ceiling of an enclosed space and to be coupled electrically to voltage conductors of the voltage supply track.
23. A method comprising

incorporating a wireless receiver with an adaptor configured to mechanically couple the receiver to a voltage supply track of a track lighting system.
24. A method comprising

using a wireless transmitter and receiver to control a fan mounted on a voltage supply track.
25. The method of claim 24 also including using the transmitter and receiver to control a lighting fixture mounted on the voltage supply track independently of the control of the fan.

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