A trading table handling dense arrays of cabling and connected data and voice communications hardware includes a main multi-function beam comprising the main structural connection between leg assemblies and support for the table top, the beam also providing support for vertical post assemblies to mount hardware and other equipment and a variety of support devices to support and organize wires and cabling for data and voice communications and power below the table top in a manner that readily facilitates access for installation, maintenance and repair. A pan assembly supplements the beam in providing support for the table top and also supports a tray arrangement positioned below the beam for supporting cabling.
MODULAR DESK SYSTEM

BACKGROUND OF THE INVENTION

[0001] The present invention relates to desking systems for use in business situations requiring high density data and voice communications and, in particular, such a desking system providing high functionality both in use and for maintenance and service, such as are required in stock, money and commodities exchange functions.

[0002] A class of tables or workstations has evolved that are particularly adapted for use as so-called "trading tables" where traders operating in the stock, currency, or commodities markets need rapid access to large volumes of computer data and voice transmissions. Such tables must typically hold, for rapid convenient access, keyboards, CRTs or flat panel screens, and telephones or other data and voice communications hardware. These tables also typically include a space beneath the table top for the computer hard drives and other data and communication hardware. The tables have typically developed to be specified in linear runs and modular table construction has facilitated the joining of multiple tables in many different arrangements. In addition to the active data and voice communications hardware, the tables also may be adapted to provide screen panel dividers when assembled in face-to-face relation.

[0003] In addition to the functional requirements for regular use, it is important that any trading table construction provide support and organization for data and voice cabling, connection terminals, power supply wires and cables and other peripheral hardware in a manner that keeps it out of sight for aesthetic purposes, yet allows ready access thereto for maintenance, repair, or replacement.

SUMMARY OF THE INVENTION

[0004] The invention is directed to a table for use in data and voice communications to and from communication hardware supported on the table. The support for the hardware is provided by the table top and a main beam, the main beam and a pan and tray assembly beneath the table top define a technology trough for supporting and routing cabling and connecting hardware for cable-supported communication hardware.

[0005] In accordance with the present invention, a trading table for use by a number of persons to receive, manipulate and send data and voice communications includes a base supporting structure having pairs of supporting legs on opposite base ends, and a table top supported by and extending between the base ends, the unique feature of the table comprising a multi-function technology trough that extends between the base ends, and between and along at least one longitudinal edge of the table top and a beam providing interconnection of the base ends. The beam also provides support for one longitudinal edge of the table top and support for data and voice communications hardware and cabling. The beam comprises a substantially closed box-like structure that includes horizontal top and bottom walls and vertical opposite side walls. There are openings spaced longitudinally along the horizontal top wall which are sized to receive and provide lateral support for vertical post assemblies that are adapted to support flat panel displays and privacy screens between stations, and post connection locations spaced longitudinally along the horizontal bottom wall and in vertical alignment with the openings in the top wall to provide connection for a lower end of a post assembly. A horizontal tray member rests below the beam to provide support for data, voice communication and power cabling. A channel member, having a center web and opposite edge flanges is attached by the center web to one side wall of the beam, and the edge flanges of the channel member have openings therein for receipt of cabling fasteners and other support hardware. A horizontal support lip is also attached to the beam side wall to support one longitudinal edge of the table top. The edge of the table top supported on the support lip adjacent the beam includes a continuous brush grommet to close the space between the table top edge and the beam side wall.

[0006] Each of the opposite base ends of the table includes a truss that provides attachment for one pair of supporting legs and for one end of the beam. In a preferred embodiment, the table includes a pan assembly attached at opposite ends to and extending between the trusses and parallel to the beam. The pan assembly includes a lower flange for supporting the other edge of a cable-supporting tray and an upper flange for supporting an intermediate portion of the table top. The assembly of the beam channel member, the pan and the tray defines the technology trough for the support and routing of cabling and connecting hardware. The table top preferably comprises a fixed outer section that is attached to the trusses and to the upper flange of the pan assembly, and a removable inner section that includes the brush grommet, the inner section being removably supported on the lip, the upper flange of the pan assembly, and on a support face that is coplanar with the upper flange of and is attached to the pan assembly. Laterally adjacent tables can be fastened together to provide side-by-side stations in which the technology trough is continued station-to-station.

[0007] Each of the openings in the top wall of the beam is lined with a bushing to provide protective support for the post assemblies. Each post assembly includes a sleeve that includes a pair of threaded studs that extend from the lower end and each post location includes a pair of bolt holes for receipt of the studs. A post then is inserted to the sleeve and fixed in position by a clamping device. The posts are provided with friction fit supports for adjustable vertical positioning of accessory hardware.

[0008] In the presently preferred embodiment, the table includes a second table top which is supported on one longitudinal edge by a second support lip attached to the other side wall of the beam. A second pan assembly is also provided and has an upper flange for supporting an intermediate portion of the second table top. The second table top is preferably identical to the first and includes a fixed outer section attached to the trusses and the upper flange of the second pan assembly, and a removable inner section that is supported on the second lip and on a support face coplanar with the upper flange of and attached to said second pan assembly. Similarly, the inner section of the second table top includes a second brush grommet to close the space between the longitudinal edge of the second table top inner section and the other side wall of the beam.

[0009] The tray for supporting the cabling comprises a plurality of tray sections each of which tray section has two vertically offset lips adapted to rest on the lower flange of the pan assemblies.
[0010] The channel member preferably comprises a plurality of channel sections each having parallel upper and lower edge flanges, each flange having a plurality of openings positioned to provide vertically aligned opening pairs in said flanges. A patch panel bracket is provided for demountable attachment to each channel section. The patch panel bracket comprises a frame member adapted to receive a terminal face plate, an upper leg and a lower leg extending respectively from an upper edge and a lower edge of the frame member, and pairs of vertically aligned connector tabs extending from said upper and lower legs for receipt in the opening pairs in the upper and lower edge flanges of the channel section.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a top perspective view of the table of the present invention with certain elements removed to show details of the interior construction.

[0012] FIG. 2 is an exploded perspective view of FIG. 1 with the table top removed.

[0013] FIG. 3 is an enlarged perspective view of a portion of the main supporting beam and pan assemblies showing various attachment and support devices for table top components, cabling, and related hardware.

[0014] FIG. 4 is an enlarged cross section through the main beam taken on line 4-4 of FIG. 1 and also including portions of the pan assembly.

[0015] FIG. 5 is a view similar to FIG. 3 showing a modified construction.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] The table 10 of the present invention is shown in FIG. 1 in which all of the basic components of the table may be seen. The table top 11 is supported on opposite base ends 12, each of which includes a horizontal truss 13 and a pair of legs 14. A main beam 15 extends between the trusses 13 and also provide support for part of the table top 11. The beam 15 forms the structural backbone of the table and also provides support below the surface of the table top for data, voice and power cabling and various hardware connections, and above the table top for CRTs or flat panel displays as well as other hardware accessories.

[0017] In the preferred embodiment shown in the drawings, the table 10 includes back-to-back table tops 11, each of which is preferably sized to accommodate one user. Each table top 11 includes a main outer section 16 which is attached at opposite longitudinal edges to the trusses 13, and an inner section 17 which, in the preferred construction, includes a pair of removable panels 18. The table top may be finished with an edge trim piece 20 if that edge of the table is exposed, or the edge trim piece 20 is eliminated if an identical modular table 10 is attached.

[0018] Referring also to FIGS. 2-4, the main beam 15 is a substantially closed box-like sheet metal structure that includes horizontal top and bottom walls 21 and 22 and interconnecting side walls 23. A connection plate 24 is welded to each end of the beam to provide attachment to the trusses 13. A plurality of circular openings 25 are provided in spaced locations longitudinally along the length of the top wall 21 of the beam 15. The openings 25 are adapted to receive, with a snug slip fit, post assemblies 26 which are used to support various items of hardware and accessories above the table top for convenient access by the user. Each post assembly 26 includes a mounting sleeve 19 and a post 39. Each sleeve 19 is secured in position by a pair of threaded studs 27 attached to and extending downwardly from the lower end of the sleeve. The studs are received in a pair of holes 28 in the bottom wall 22, aligned vertically with an opening 25 and providing a post connection location for each of the openings 25. Each sleeve 19 is secured in position by threading a nut and lock washer to the studs 27 from beneath the bottom wall 22. A bushing 30 of suitable rubber or plastic material is attached in each opening 25 to provide lateral support and prevent metal-to-metal contact between the sleeve 19 and the top wall 21 of the beam. Posts 29 are inserted into the sleeve 19 and are fixed in place by a threaded clamping bushing 34 at the top of the sleeve assembly. Friction fit supports 31 are attached to each post assembly for adjustable vertical positioning of the various hardware elements, such as flat panel displays 29.

[0019] A generally horizontal tray 32 is positioned below the main beam 15. The tray 32 provides support for power, data and voice communication cabling. Preferably, the tray 32 comprises a plurality of tray sections 33 each of which has stepped opposite edges 37 that terminate in horizontal flanges 38. Each horizontal flange rests on and is supported by the lower flange 40 of a pan assembly 41 that is attached to and extends between the trusses 13 parallel to the main beam 15. The stepped edge construction of the tray sections 33 allows them to be easily installed and permitted to rest on the lower flange 40 of the pan assemblies where they are free to be positioned in any location specified by the user. The pan assembly 41 also includes an integral vertical face and oppositely extending upper flange 43, the function of which will be described below. Cables, wires and the like supported by the pan assembly and the beam can be arranged to pass laterally between side-by-side stations by utilizing the continuous technology trough concept disclosed herein.

[0020] A channel member 44 is attached to the side wall 23 of the beam just above the tray sections 33. The channel member preferably comprises a number of channel sections 45 equal in number to the tray sections 33. Each channel section includes parallel upper and lower edge flanges 46 and 47, respectively, and an integral interconnecting center web 48 by which the channel section 45 is attached to the face of the side wall 23 with suitable fasteners 50, such as sheet metal screws, rivets, machine screws or spot welds. Each of the upper and lower flanges 46 and 47 of the channel section 45 is provided with elongated openings 51 which can be used to attach cabling ties to secure bundles of cable in place. An accessory patch panel bracket 52 may be utilized to secure industry standard voice or data terminals (not shown). The patch panel bracket 52 includes a frame member 53 in which may be mounted a conventional wire or cable connection terminal. The patch panel bracket also includes an upper leg 54 provided with a number of stepped tabs 55 that are received in the elongated openings 51 in the upper edge flange 46 of a channel section 45. The patch panel bracket includes a lower leg 56 provided with a number of angled tabs 57 aligned vertically with the upper stepped tabs 55 and adapted to snap into the elongated openings 51 in the lower edge flange 47 when the lower leg
is released from deflection, as shown in FIG. 4. This provides a secure yet demountable connection for the patch panel 52.

[0021] In the longitudinal center of the beam 15, a horizontal lip 58 is attached by an integral vertical flange 60 to the outside face of the beam side wall 23 immediately above the center channel section 45. The horizontal supporting surface of the lip 58 is positioned vertically below the horizontal top wall 21 of the beam by a distance equal to the thickness of the inner table section 17 and provides support for the inner edge of that table section 17. The opposite outer edge of the inner table section 17 is supported by a portion of the upper flange 43 of the pan assembly 41, but is supplementally supported on a support face 61 attached to the vertical face 42 of the pan assembly so that it is coplanar with the upper flange 43 of the pan assembly and the lip 58 supporting the opposite edge of the table section. Conveniently, the support face 61 may be made identically to the opposite supporting lip 58, including an integral vertical flange 62 by which it is attached to vertical face 42 of the pan assembly 41. As shown in the drawings, each of the panels 18 forming the inner table section 17 rests on an upper surface of the truss 13, the lip 58, the support face 61 and a portion of the upper flange 43 of the pan assembly. Each of the table panels 18 is provided with a continuous brush grommet 63 along its inner edge, through which wiring, cabling and the like from the secured position on the beam 15 below the table top may be brought through the brush grommets to flat panel displays mounted on posts 26 above the table top or to monitors, keyboards, telephone equipment or other hardware supported on the table top 11 itself. Each of the table top panels 18 is separately and easily removable for access to the cabling and wires below and the terminals carried by the patch panels 52.

[0022] The main outer section 16 of the table top 11 is supported on and attached to the trusses 13 and is also supported on and attached to a portion of the upper flange 43 of the pan assembly 41, such that adjacent edges of the outer and inner table sections 16 and 17 abut one another and are commonly supported on the upper flange 43 of the pan assembly.

[0023] The completely open construction of the table 10 beneath the beam and tray assemblies defining the technology trough permits the convenient placement of computer hard drives and related hardware or bulky voice communications equipment on the floor beneath the table, while still permitting ample leg room for face-by-face users. The back-to-back construction of the table 10 of the preferred embodiment is designed for two users seated face-to-face and sharing mounting posts 26 which may be used, for example, to mount back-to-back flat panel displays, or common privacy partitions. The disclosed table construction also permits easy modification to a two-person side-by-side table by simply substituting shortened truss members 13 and eliminating the table top 11 and pan assembly 41 from one side of the preferred construction.

[0024] The construction of a modified table 59 is shown in FIG. 5. This construction utilizes modified tray sections 64 which are narrower than the tray sections 33 of the preferred embodiment. Each modified tray section 64 includes a stepped inner edge 65 provided with a number of horizontally extending tabs 66 adapted to be received in horizontal slots 67 in the side wall 23 of the beam 15 near the bottom edge thereof. The opposite outer edge of each modified tray section 64 is identical to that of the preferred embodiment and includes a stepped construction that terminates in a horizontal flange 68 that rests on and is supported by the lower flange 40 of the pan assembly 41.

[0025] The exposed end of a table or a line of such tables can be closed off with any of a variety of decorative end panels which may be easily attached to end trusses 13 and/or legs 14. When multiple tables 10 are joined together in a row, the edge trim piece 20 is eliminated and the table top 11 of an adjacent table rests upon and is attached to the truss 13 (and shares the legs 14) of the table to which it is attached.

We claim:

1. A table for use by one or more persons to receive, manipulate and send data and voice communications, the table including a base having pairs of supporting legs on opposite base ends, and a table top supported by and extending between the base ends, said table comprising:

- a beam extending between the base ends and along one longitudinal edge of the table top, said beam providing interconnection of the base ends, support for said one longitudinal edge of the table top, and support for data and voice communication hardware and cabling;

- a pan assembly attached to and extending between the base ends, the pan assembly including an upper support for the table top and a lower support for one edge of a horizontal tray extending between the pan assembly and the beam, said tray providing additional support for said cabling.

2. The table as set forth in claim 1 wherein said beam comprises a substantially closed box-like structure including horizontal top and bottom walls and vertical opposite side walls, openings spaced longitudinally along the horizontal top wall and sized to receive and provide lateral support for a vertical post assembly, and post connection locations spaced longitudinally along the horizontal bottom wall in vertical alignment with said openings to provide connection for a lower end of a post assembly.

3. The table as set forth in claim 2 wherein each post assembly includes a sleeve with a pair of threaded studs extending from the lower end, and each post connection location includes a pair of bolt holes for receipt of the studs.

4. The table as set forth in claim 3 wherein each post assembly includes a hardware support post received and supported in said sleeve.

5. The table as set forth in claim 4 including a clamping bushing for securing the support post within the sleeve.

6. The table as set forth in claim 4 including friction fit supports attached to said posts for adjustable vertical positioning.

7. The table as set forth in claim 2 including a channel member having a center web and opposite edge flanges, said channel member attached by the center web to one side walls, and said edge flanges having openings therein for receipt of cabling fasteners.

8. The table as set forth in claim 2 including a horizontal support lip attached to said one side wall of the beam to support said one longitudinal edge of the table top.
9. The table as set forth in claim 8 including a brush grommet attached to said one longitudinal edge and closing a space between said edge and said one side wall.

10. The table as set forth in claim 1 wherein the base includes a truss on each base end providing attachment for one pair of supporting legs and for one end of the beam.

11. The table as set forth in claim 1 wherein the pan assembly includes an upper flange providing the support for the table top and a lower flange providing the support for said one edge of the tray.

12. The table as set forth in claim 11 wherein the table top comprises a fixed outer section attached to the base ends and to the upper flange of the pan assembly, and a removable inner section, said inner section removably supported on said lip and on a support face coplanar with the upper flange of and attached to said pan assembly.

13. The table as set forth in claim 11 including a second table top, a second support lip attached to the other side wall of the beam to provide support for one longitudinal edge of said second table top, and a second pan assembly having an upper flange for supporting an intermediate portion of said second table top.

14. The table as set forth in claim 13 wherein said second pan assembly includes a lower flange, and said tray rests along an opposite tray edge to the lower flange of said second pan assembly.

15. The table as set forth in claim 14 wherein said tray comprises a plurality of tray sections with each edge of said tray section having a vertically offset lip adapted to rest on the lower flange of one of said pan assemblies.

16. The table as set forth in claim 13 wherein said second table top comprises a fixed outer section attached to the base ends and to the upper flange of the second pan assembly, and a removable inner section supported on said second lip and on a support face coplanar with the upper flange of and attached to said second pan assembly.

17. The table as set forth in claim 16 wherein the inner section of each of said table tops includes a brush grommet for closing a space between a longitudinal edge of said table top inner section and said other side wall.

18. The table as set forth in claim 7 wherein said channel member comprises a plurality of channel sections each having parallel upper and lower edge flanges, each flange having a plurality of openings positioned to provide vertically aligned opening pairs in said flanges.

19. The table as set forth in claim 18 including a patch panel bracket demountably attached to said channel section.

20. The table as set forth in claim 19 wherein said patch panel bracket comprises a frame member for receiving a cable connection terminal, an upper leg and a lower leg extending respectively from an upper edge and a lower edge of the frame member, and pairs of vertically aligned connector tabs extending from said upper and lower legs for receipt in the opening pairs in said upper and lower edge flanges.

21. A multi-use table to facilitate the receipt, manipulation and transmission of data and voice communications, the table including a base and supporting legs on opposite base ends, and a table top supported by and extending between the base ends, said table comprising:

- a main beam extending between the base ends and along one longitudinal edge of the table top and providing interconnection of the base ends and support for one longitudinal edge of the table top;
- a pan assembly attached to and extending between the base ends, the pan assembly providing support for one edge of a horizontal tray extending between the pan assembly and the beam; and,

the beam, the pan assembly and the tray defining a technology trough for the support and routing of data and voice communication cabling and connecting hardware.

* * * * *