United States Patent [19]

Mohr et al.

[11] **3,890,023**

[45] **June 17, 1975**

[54] **END PANEL SUPPORT SYSTEM**

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[73] Assignee: **Steelcase Inc.**, Grand Rapids, Mich.

[22] Filed: **Oct. 11, 1974**

[21] Appl. No.: **514,137**

Related U.S. Application Data

[62] Division of Ser. No. 366,218, June 1, 1973.

[52] **U.S. Cl.** **312/198**; 312/263

[51] **Int. Cl.** **A47b 47/04**

[58] **Field of Search** 108/91; 312/195, 198, 204, 312/214, 223, 263

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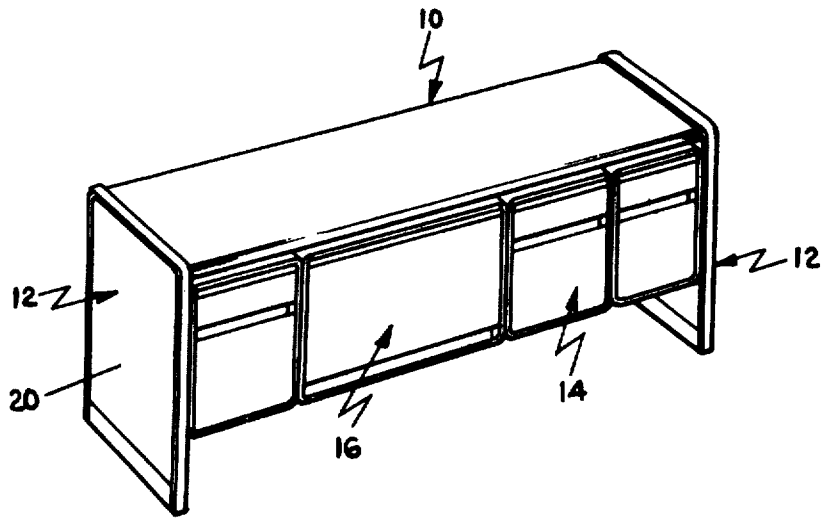
Primary Examiner—Casmir A. Nunberg

Attorney, Agent, or Firm—Price, Heneveld, Huizenga & Cooper

[57] **ABSTRACT**

A furniture construction system wherein standardized 5 inch modular components are supported between special end panels. Cover members positioned over the end panels are provided with special releasable fastening means whereby the covers may be readily removed to provide access to the fastening mechanisms utilized to fix the panels and supported components, as desks, tables, and the like, together.

10 Claims, 22 Drawing Figures



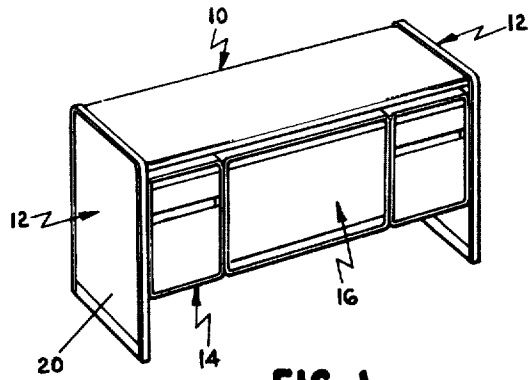


FIG. 1

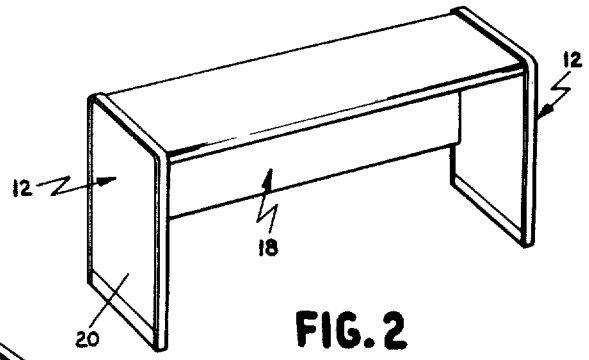


FIG. 2

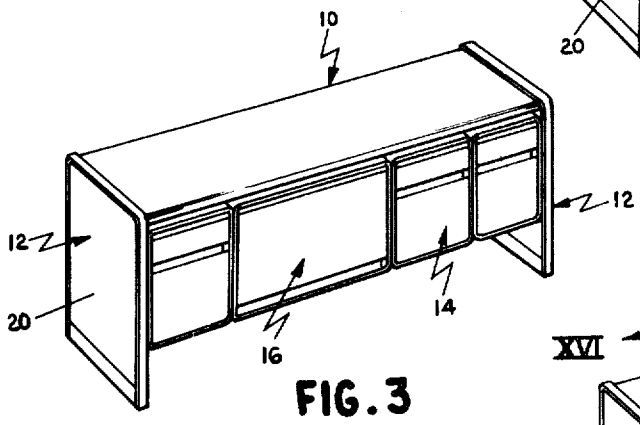


FIG. 3

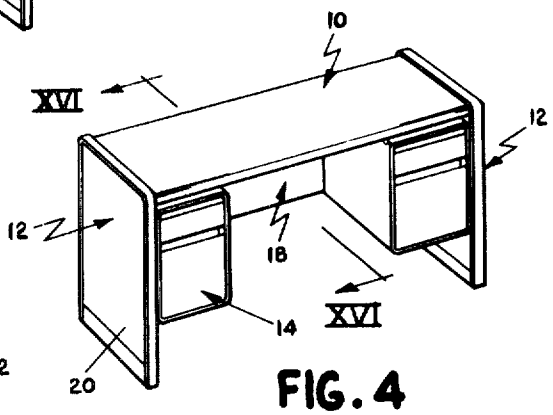


FIG. 4

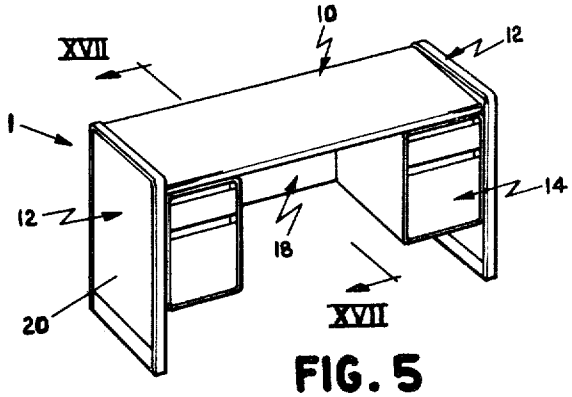


FIG. 5

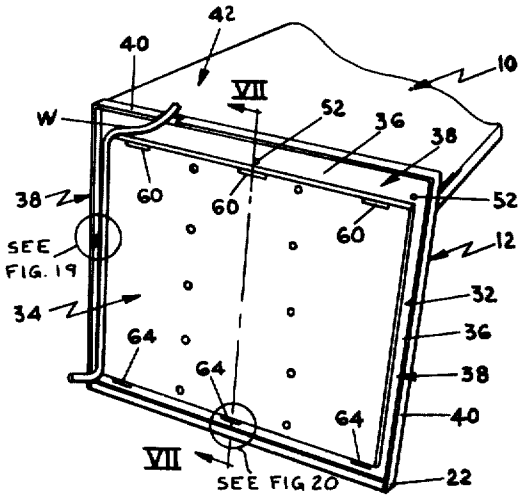


FIG. 6

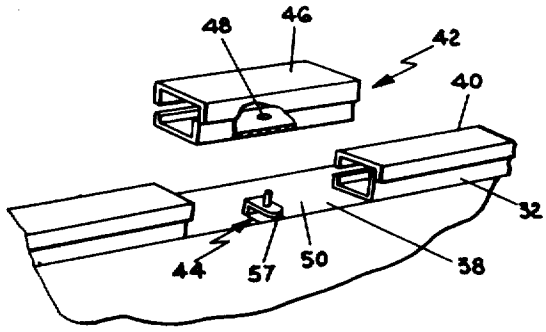


FIG. 11

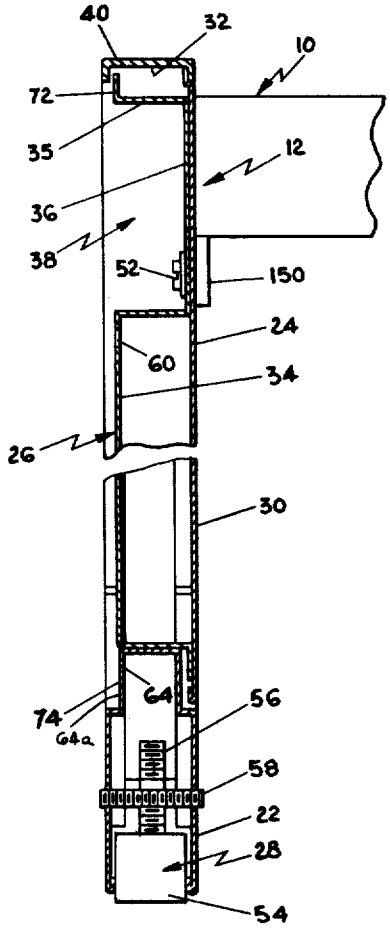


FIG. 7

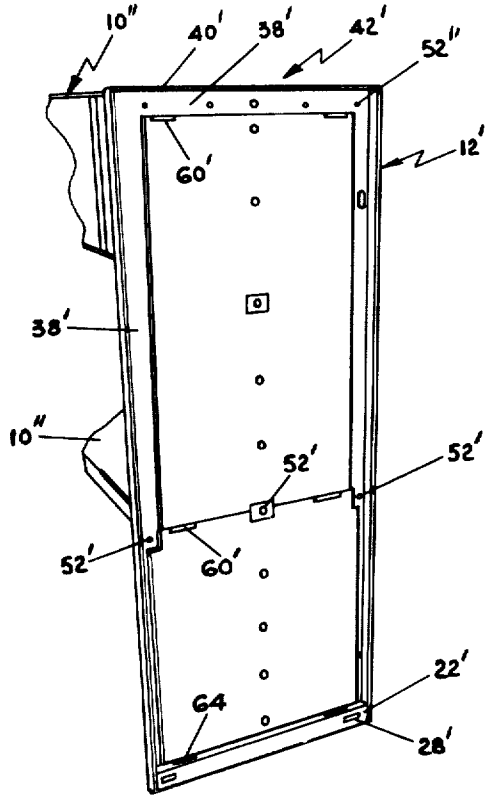


FIG. 13

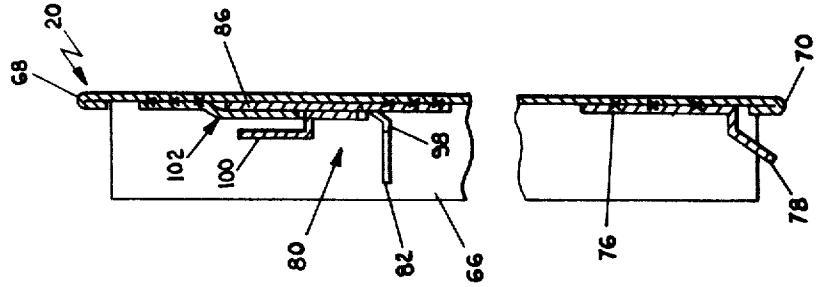

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68
70
102
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82
66
76
78

FIG. 9

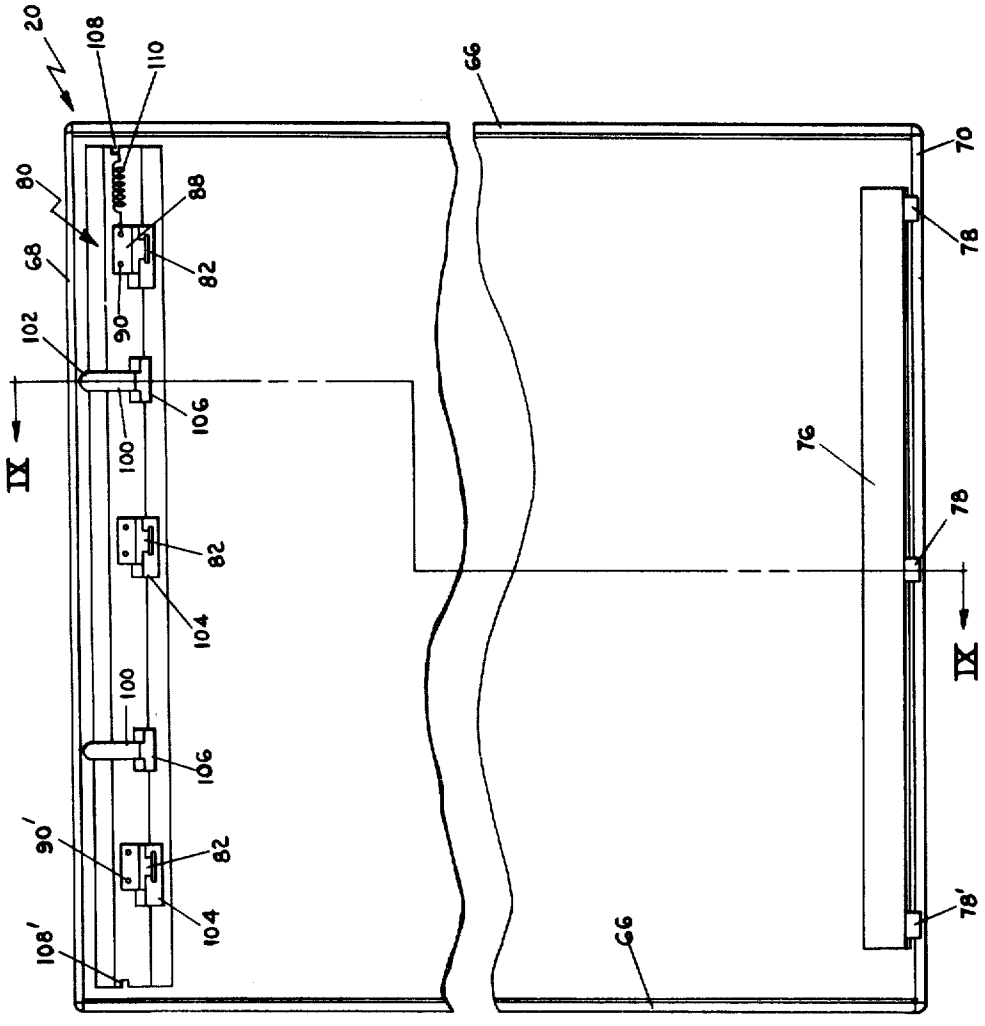

20
108
110
66
70
80
88
78
68
82
102
90
106
IX
100
76
82
78
104
IX
100
106
90'
82
104
78'
108'
66

FIG. 8

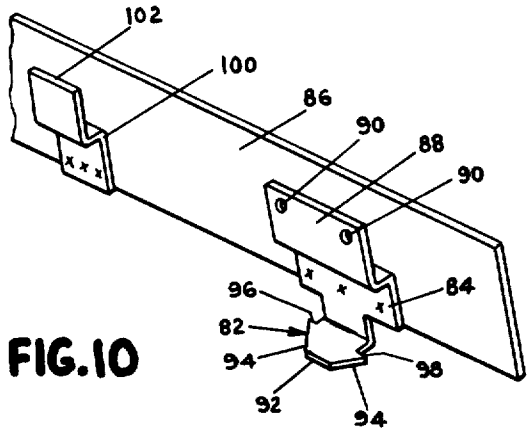


FIG. 10

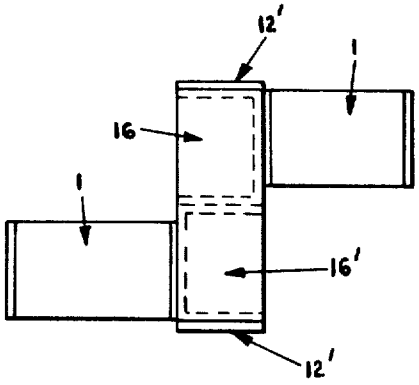


FIG. 14

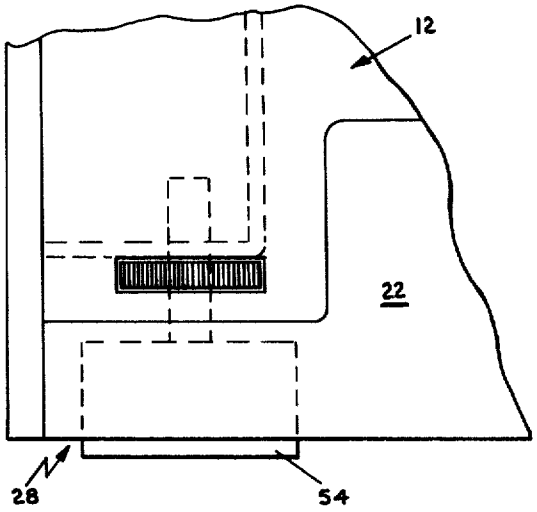


FIG. 12

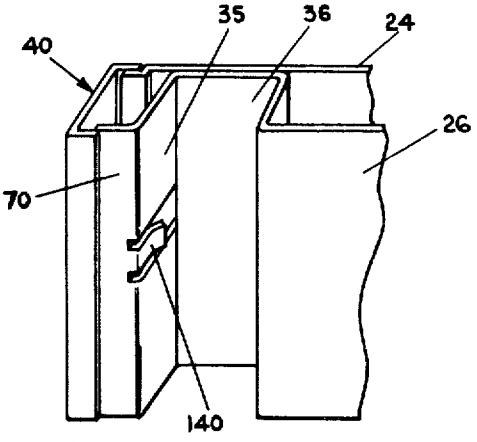


FIG. 19

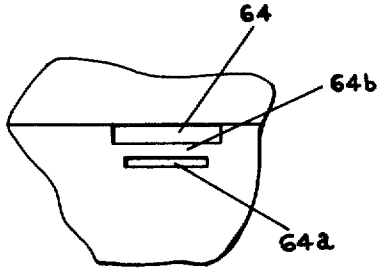


FIG. 20

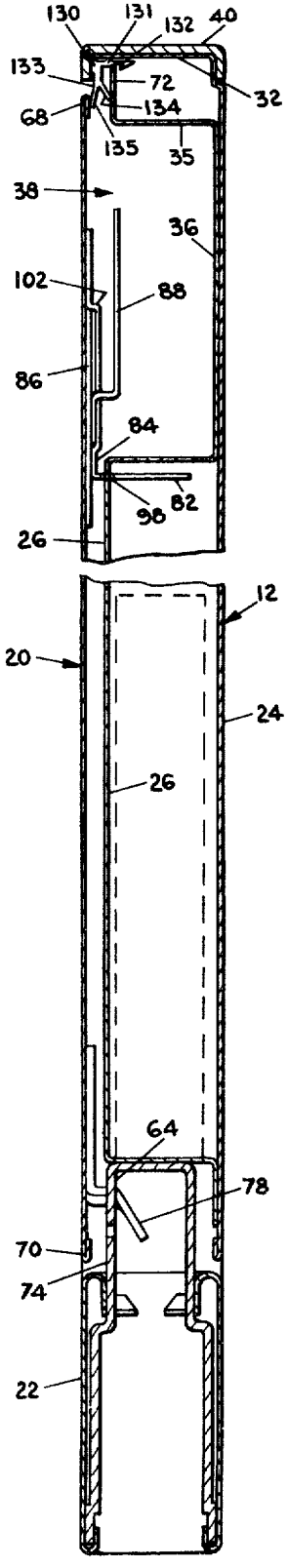


FIG. 15A

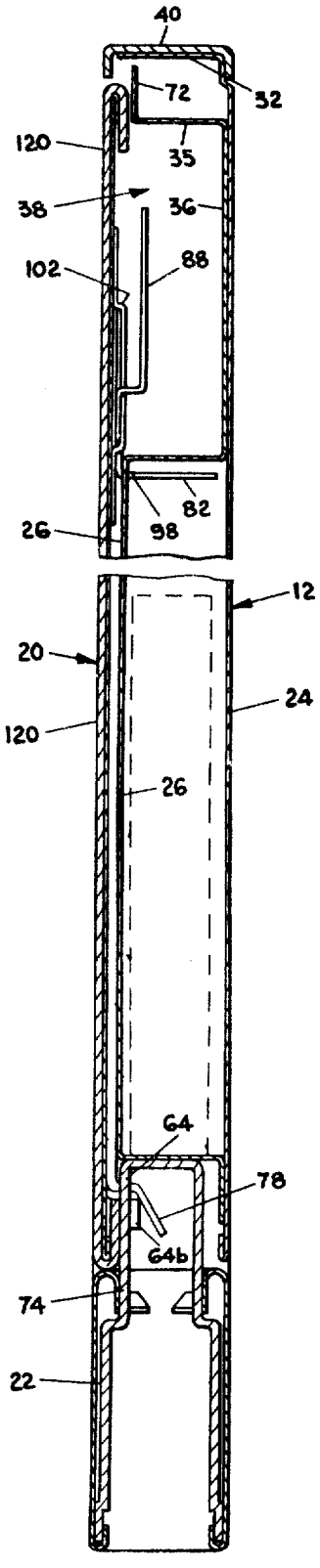


FIG. 15B

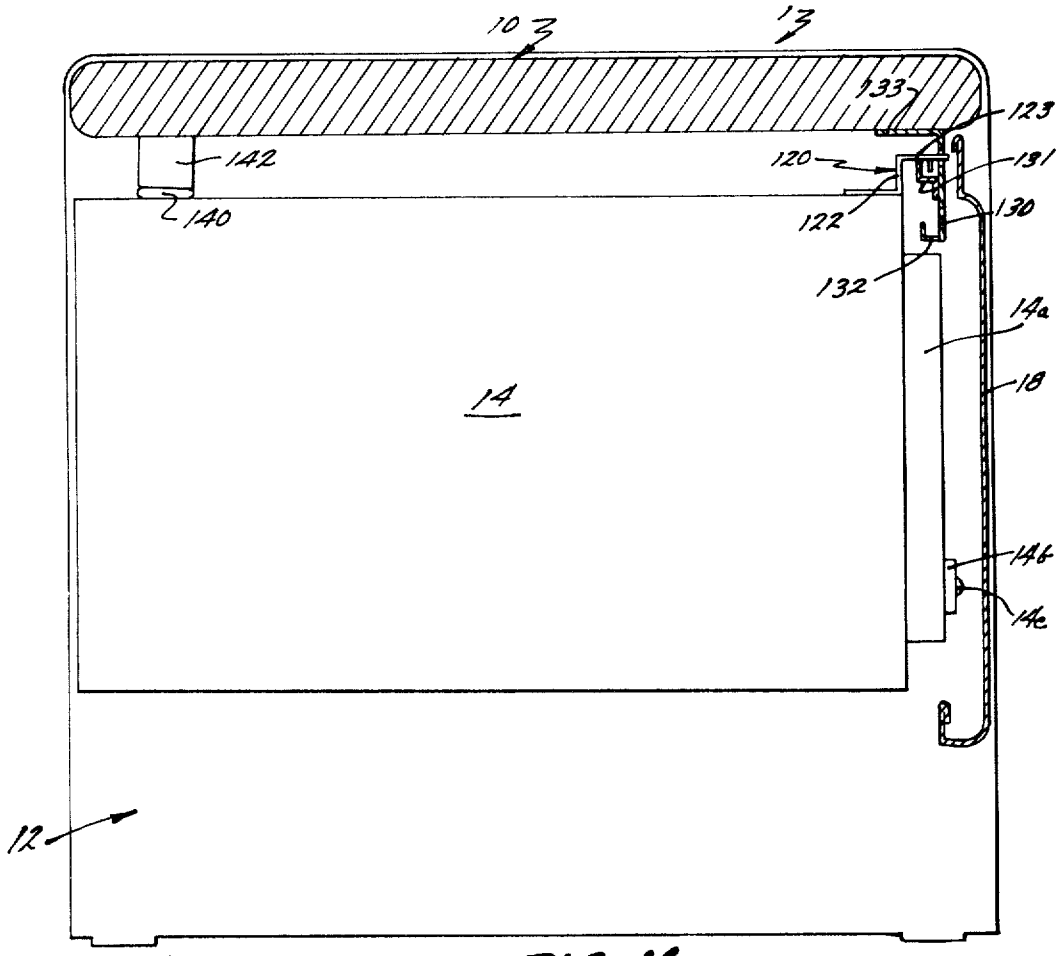

10
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133
123
142
120
131
140
122
130
132
14a
14
18
14b
14c
12

FIG. 16.

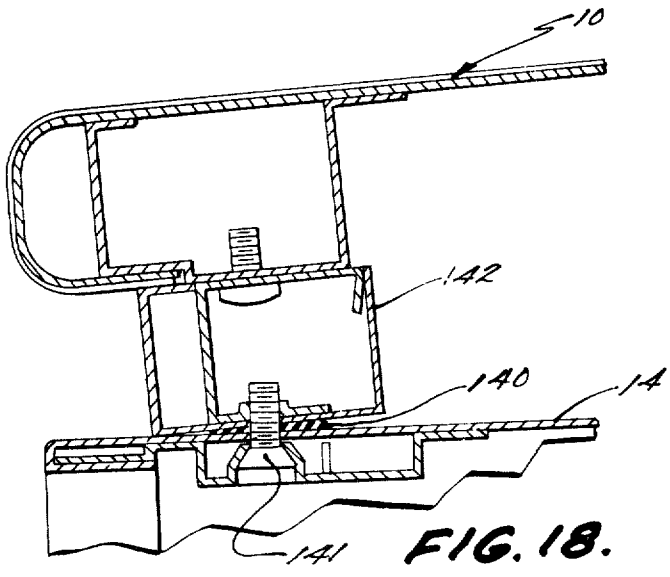
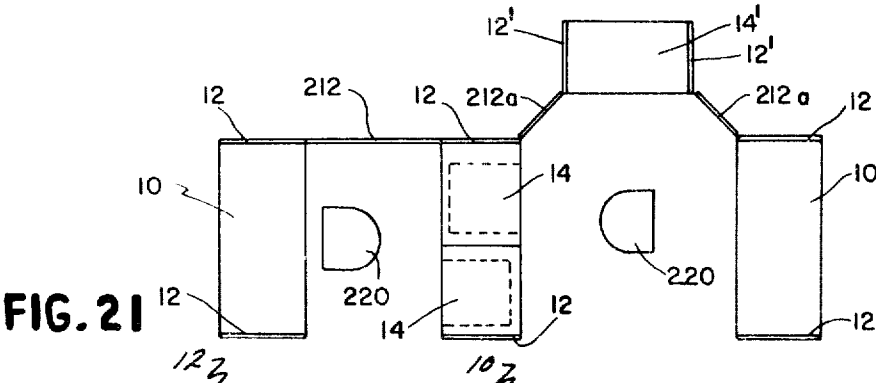

10
142
140
14
141

FIG. 18.

FIG. 21


12'
14'
12'
12
212
12
212a
212a
12
14
10
10'
220
220
12
14
12
12

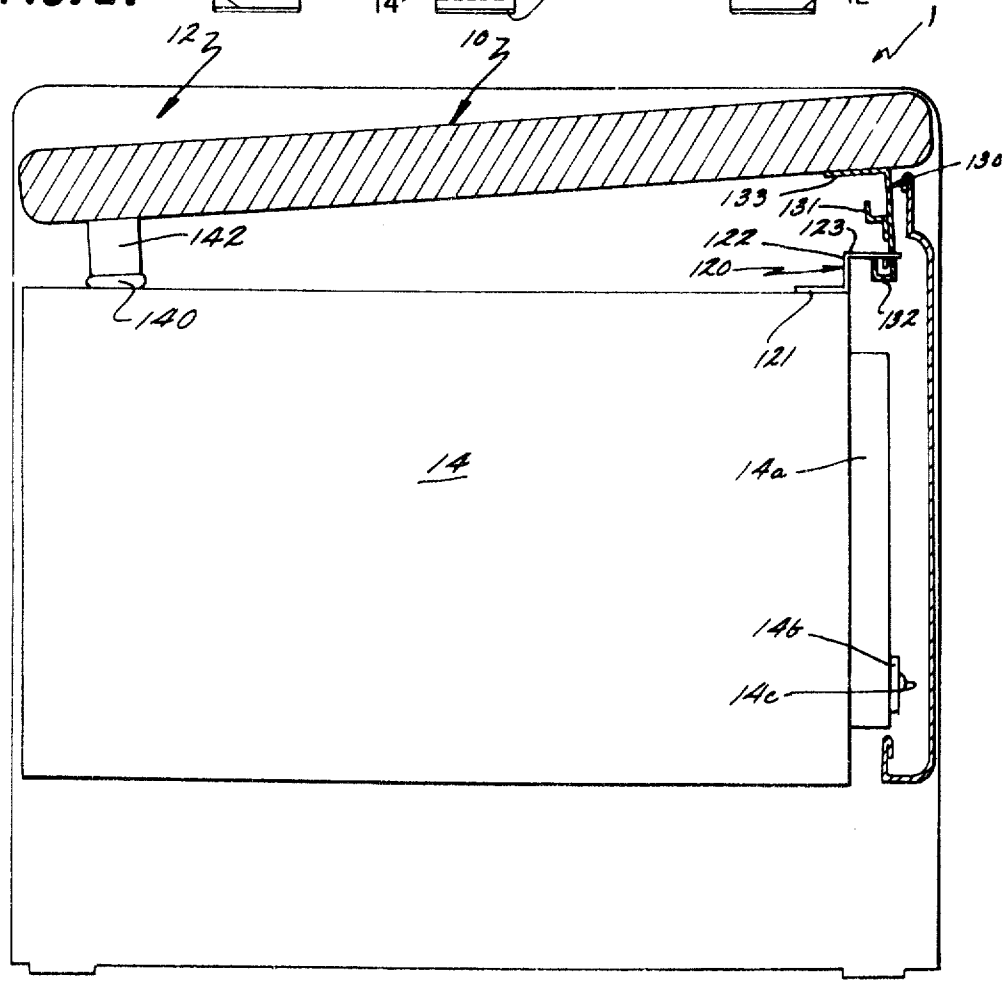

12
10
1
130
133
131
123
122
120
142
140
121
132
14
14a
14b
14c

FIG. 17.

END PANEL SUPPORT SYSTEM

CROSS REFERENCE TO RELATED APPLICATION

This is a division of application Ser. No. 366,218, filed June 1, 1973.

BACKGROUND OF THE INVENTION

This invention relates to furniture construction, particularly to office furniture as desks, tables, bookshelves, credenzas and the like. It is particularly concerned with complete systems of such furniture, designed to divide substantial areas of work space and provide individual work stations.

Extensive steps have been taken to modularize such systems and a large number of such modular systems are now available on the market. These systems include wall panels which may be erected at any point in a large area and which include means for hanging various components such as shelves, filing cabinets, writing surfaces or the like from the wall panels. Desks and side units for use in conjunction with such wall panels are furnished separately and are not typically mounted to the wall panels. Thus, these systems are modular only with respect to units which are to be hung on the wall panels. Typically, such systems are somewhat expensive in that the wall panels utilized are an additional expense over and above the cost of the units to be hung thereon. Further, such systems suffer the drawback that not every user wants the closed in effect which is achieved by using such wall panels.

Yet another drawback to such systems is that none of them are dimensionally modular. While the desks for the system may be dimensionally modular, for example 30 inches by 60 inches, or 30 inches by 72 inches, the side units may have widths of 20 inches. The drawback to such irregular dimensioning is that it becomes difficult to plan the arrangement of the furniture in advance. One must carefully scale the dimensions of each component.

Some systems do approach dimensional modularity based on a 6 inch module. In such a system, each of the length and width dimensions of the components are multiples of 6 inches. The reason for this reliance on the 6 inch module is that for years, buildings have been constructed based upon the 12 inch unit. Office furniture manufacturers have followed suit and have based their desks, constructions and the like on 6 inch units. This has been traditional for years and years. One drawback is that it is difficult to provide an overall system based on this 6 inch unit. A filing cabinet, for example, must be thoroughly shallow so that it doesn't take up any more floor space than necessary, but must be sufficiently deep that it does not readily tip over forwardly or rearwardly. To be made on a 6 inch module unit, such a storage cabinet must be either 18 inches or 24 inches. Unfortunately, 18 inches is to shallow and 24 inches is too deep. Thus, the high storage unit is typically a unit in a system in which a departure is made from the basic 6 inch module. Thus, no one heretofore has been able to offer a complete office furniture system based on a single basic dimensional unit.

SUMMARY OF THE INVENTION

The present invention provides an office furniture system wherein one or a number of standardized furniture components as desk tops, table tops, cabinets, bookshelves or the like are supported between a pair of parallel end panels. The need to purchase separate wall panels to achieve a modular system is eliminated. Since cabinets, desks and the like require end panels anyway, the present furniture system achieves modularity without requiring a user to purchase a special "extra", i.e. the wall panel. Further, desks, credenzas, tables and other floor supported units are tied into the system automatically, since all are supported on end panels. Finally, one can achieve an open look, if desired, by mounting cabinets above a work surface and providing no back between the work surface and the cabinet.

A supported member, such as a desk top or the like is arranged between a pair of structurally supporting panel members. Means are provided to secure the panels and supported member together in a variety of desirable configurations. Special cover members having locking means therein are also provided and adapted to be releasably secured to the panels to thereby cover the wiring and the mounting mechanisms contained in the end panels. The covers are readily removable, however, so that the fastening means is accessible so that the furniture construction may be conveniently changed to satisfy changing office requirements.

Further modularity is achieved by providing means on a supported top for suspending various pedestals and like units below the top. This allows one to use the same end panels to make a table, a one pedestal desk, a two pedestal desk or a credenza unit.

Standardized component construction allows maximum flexibility to satisfy the requirements of the various consumers. The unique panel supporting structure allows ease of assembly and modification of the structure when required. The panels additionally provide a convenient arrangement for containing the wires associated with office machines and the like associated with modern-day offices.

It is yet another important aspect of the invention to provide a novel locking mechanism for the covers and end panels, which locking mechanism is readily accessible through a special access closure positioned on the upper surface of the end panels. No special tools are required to release the locking mechanism and remove the end panels and additionally, the closure member may be also utilized to provide a wire access opening at the top of the furniture structure.

The panels are constructed in a manner to provide rigidity and simultaneously to provide channel means through which wiring for telephones, dictating equipment, office machines, and the like may be positioned and hidden from view. The end support panels are of a two-piece construction having one portion thereof which is a generally flat planar section while the other is formed with a dished-out central portion to give the panel rigidity. The peripheral portions of the panel having the dished-out central portion are planar and are secured to the first-mentioned panel sections to thereby provide convenient wiring channels around the dished-out portions.

In yet another aspect of the invention, the end panels, tops and various cabinets are constructed so as to have length and width dimensions based on multiples of 5 inches. Cabinets, including the thickness of end panels, are available in 30 inch, 35 inch and 45 inch dimensions, for example. The first houses two letter files side by side, the second two legal files side by side and the third three letter files side by side—all with a minimum of wasted space. Significantly, the 45 inch cabinet

makes an excellent side credenza since it spaces one's desk 45 inches from a wall or rear storage unit. A 45 inch spacing is the ideal spacing required for a desk chair. Less leaves one somewhat crowded and more results in wasted space.

Similarly, this 5 inch module concept results in work surfaces which are either 20 inches, 25 inches, 30 inches or 35 inches wide, from front to back. This means that the smallest filing cabinets are at least 20 inches deep. This provides ample surface on which to place typewriters or the like and give sound fore and aft stability to taller filing units. Units having an 18 inch width would be too narrow for proper stability while units having a 24 inch width would result in wasted space.

Consequently, a wide range of combinations is achieved merely by providing several different panels having fore to aft widths of 20, 25, 30 and 35 inches. Work surfaces and cabinets have similar fore to aft dimensions and have lengths which, when combined with a pair of end panels, result in units having lengths of 30, 35, 40, 45, 50, 55, 60, 65, 70 and 75 inches. Because of this modular interrelationship, a planner can plan his entire work space using a five-inch scale grid. The chance of error is minimized since all dimensions and combinations of dimensions will either end in 0 or 5.

Thus, the present invention provides a furniture system in which one or a number of standardized furniture components as desks, tables, bookcases, credenzas and the like are supported by special end panel members. The sturcture can be utilized singly, in abutting relationship, stacked back to back, and in virtually limitless numbers of arrangements which can be constructed utilizing the basic modular construction.

These and the many other important advantages of the invention will be further understood and appreciated by those skilled in the art by reference to the following written specification, claims and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. **1–5** are perspective views illustrating representative furniture constructions provided in accordance with the invention;

FIG. **6** is a perspective view of the end panel support member with the cover panel removed;

FIG. **7** is a cross-sectional view of the end panel support member taken along the plane VII—VII of FIG. **6**;

FIG. **8** is an elevational view of the inside of the cover panel removed from the end panels;

FIG. **9** is an enlarged cross-sectional view taken along the plane IX—IX of FIG. **8** illustrating the fastening mechanisms for the cover member;

FIG. **10** is an enlarged partial perspective view illustrating the construction of the lock slide mechanism of FIGS. **8–9** in greater detail;

FIG. **11** is a fragmentary exploded view showing the upper access opening in the trim strip surrounding the end panel support member;

FIG. **12** is a fragmentary plan view illustrating the structure of the leveling mechanisms shown in FIG. **7** and the lower wiring access opening in the trim strip surrounding the end panel support member;

FIG. **13** is a partial perspective view of an alternate structural panel construction;

FIG. **14** is a schematic plan illustrating an arrangement of furniture utilizing a combination storage unit, positional with a desk or either side, has two storage modules opening on opposite sides of the unit;

FIG. **15***a* is a fragmentary cross section illustrating the assembled relationship of the cover member on the end panel;

FIG. **15***b* is the same view as FIG. **15***a*, except that the cover member is upholstered;

FIG. **16** is a cross-sectional view taken along the plane XVI—XVI of FIG. **4** illustrating the pedestal mounting in a level top desk construction;

FIG. **17** is a cross-sectional view similar to FIG. **16** taken along the plane XVII—XVII of FIG. **5** illustrating the pedestal mounting on a desk with a tilted top;

FIG. **18** is an enlarged fragmentary view of the mounting structure for maintaining the pedestal in a level position;

FIG. **19** is a perspective view of that fragmentary portion of an end panel indicated by reference in FIG. **6**;

FIG. **20** is an elevational view of that fragmentary portion of an end panel indicated by reference in FIG. **6**; and

FIG. **21** is a schematic plan view of a furniture arrangement in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIGS. **1–5**, a representative sampling of various unit assemblies constructed in accordance with this invention is illustrated. FIGS. **1** and **3**, for example, illustrate credenza unit assemblies incorporationg a center case portion with drawer sections positioned on either side thereof. A work table unit is shown in FIG. **2**. FIG. **4** illustrates a desk unit assembly having a flat top portion supported by end panels and a pair of drawer sections on either side thereof. FIG. **5** illustrates a desk similar in construction to FIG. **4** wherein the top surface thereof is tilted at an angle. Each of these constructions utilizes the same basic components including a supported member as the top surface generally designated by the numeral **10** in each of FIGS. **1–5**; a pair of end panel members **12** adapted to support a supported member; drawer units **14** as shown in FIGS. **1, 3, 4** and **5**; credenza center cases **16** shown in FIGS. **1** and **3**; and back panels or stretchers **18** as illustrated in FIGS. **2, 4** and **5**. A virtually limitless number of arrangements can be constructed from a basic set of components as will become readily understood by those skilled in the art as a detailed description progresses.

The end panel members **12** are in normal use provided with a cover member **20** (see also FIG. **8**) which may be readily removed providing access to the interior of the end panels where the means for securing the end panels and the supporting members together are located.

Referring to FIGS. **6** and **7**, end panel **12** is shown with cover **20** removed. End panel **12** is of a double-walled construction and includes a base **22**, a sheet metal inner wall **24**, and an outer wall **26**. The base is an elongated metal channel-like member in which levelers **28** are adjustably mounted as will be more fully described hereinafter. Inner wall **24** has a flat planar back surface **30** bounded at its top and side edges by a peripheral flange **32**. Outer wall **26** has an outwardly formed central portion **34**, a flat planar surface **36**, and an outer flange **35** bounding the central portion adjacent the top and side edges. Outer flange **35** is bent upwardly at the top of end panel **12** and laterally at the

sides of end panel **12** to define abutment flanges **72** against which cover panel **20** abuts. The flat surface **36** is welded to inner wall **24** and the lower edge of projecting central portion **34** is welded to base **22** to provide a strong, rigid, double wall end panel structure.

The recessed area formed by flat planar surface **36**, outer wall flange **35** and the raised central portion **34** forms a wiring channel **38** about the front, top and back edges of the interior of the end panel. Wiring (W, FIG. **6**) utilized for telephone hookups, dictating equipment, and similar office machines is conveniently placed in channel **38** and may be brought out to the top of the work surface.

A decorative trim strip **40** extends about the front, top and back peripheral surfaces of the end panels to provide an attractive appearance (FIG. **6**). Access means **42** is provided on the top surface of the trim strip **40** to allow passage of the wiring from channels **36** to the upper surface of the work surface **10.** Trim strip **40** and flange **32** are provided with an access opening **44** (FIG. **11**). A plug or cap member **46** constructed to blend with trim **40** is provided to close the access opening. Plug **46** is fixed in position in opening **44** by means of an opening **48** in its lower surface which is releasably engageable with an upstanding pin member **50** fixed in channel **38.** Pin member **50** is centrally supported in opening **44** and channel **38** by means of tab **51** secured to and extending outwardly from flat planar surface **36.** Alternative plugs **46** are provided. Slots or openings at the top surface of one plug **46** are provided to allow passage of wires or the like to the top of the work surface from the channel **38.** For situations where wiring access is not necessary, another plug is provided which has a planar flat top surface blending perfectly with the trim strip to provide a flat flush and continuous appearance. An alternative cover for access opening **44** is disclosed in copending patent application Ser. No. P445, entitled ACCESS COVER, filed on even date herewith by Dirk Van Kuik and Gale Wilcox, assigned to the assignee of this application and specifically incorporated herein by reference.

The supported member or work surface **10** is secured to the end panels by means of screws **52** passing through openings provided in outer wall **26** and inner wall **24** into a bracket **54** or other suitable threaded fastener located on the ends of the supported member. Top **10** can be tiltably mounted in the manner set forth in copending application Ser. No. 366,161, the specification of which is incorporated herein by reference, entitled TILTABLE DESK TOP, filed on even date herewith by Donald Dean Korell and assigned to the assignee of this invention.

The pedestals or drawer units **14** are suspended at the rear from the top **10** of desk **1** by the interengagement of a hanger **120** and a rail assembly **130** (FIGS. **16, 17** and **18**). At its front, pedestal **14** is suspended by a pair of bolts **141,** each passing through a resiliently compressible spacer **140** and into a beam **142** of top **10.** The interconnection between the end panels **12** of desk **1** and top **10** can be adjusted so that top **10** can be oriented either in a horizontal position (FIG. **16**) or in a tilted position (FIG. **17**). Rail assembly **130** includes a top rail **131** and a bottom rail **132,** and hanger **120** engages top rail **131** when top **10** is horizontal and bottom rail **132** when top **10** is tilted. In this manner, pedestal **14** is generally horizontal regardless of the orientation of top **10.** This suspension is more fully described in copending application Ser. No. 366,155, entitled SUSPENDED PEDESTAL DESK, the specification of which is incorporated herein by reference, filed on even date herewith by Donald Dean Korell and assigned to the assignee of this invention.

The leveling means **28** located at the bottom of the end panels in base **22** are provided to make leveling adjustments of the assembled unit if required. As shown in FIGS. **7** and **12,** levelers **28** include a glide member **54** extendible and retractable from the base **22.** A stud **56** is fixed to the glide member and extends upwardly therefrom into the panel between side walls of base **22.** A nut is threaded on the stud and is captively held in the base by its abutment with a slot formed therein so that as the nut is turned, the stud and glide member will move with respect thereto to thereby extend or retract glide member **54.**

Referring again to FIG. **6,** a plurality of slots **60** are formed in the upper edge of the outwardly formed central portion **30** of outer wall **24.** At the lower portion of the outer wall, a plurality of slots **64** are also provided to engage the lower portion of cover **20.**

The cover assembly and the locking mechanisms therefor are illustrated in FIGS. **8–10** and illustrated in assembled relationship with the end panels in FIG. **15.** Cover **20** is formed of sheet metal having height and width dimensions corresponding to the opening in end panels **12.** Cover **20** is formed with a pair of extending side flanges **66** adapted to fit inside the peripheral flanges **32** forming wire channels **38** at the front and back surfaces of the end panels. The upper and lower edges of the cover are rolled over as illustrated at **68** and **70** providing a double wall thickness at the top and bottom respectively of the cover. As will be more fully described, the double wall thickness is provided for abutting relationship with corresponding steps **72** and **74** (FIGS. **7** and **15**) provided in the end panel structure.

A retainer rail **76** welded to the interior of the cover at the lower portion thereof includes a plurality of retainer tabs **78** extending outwardly from the inside of the cover near the lower edge portion **70.** Retainer tabs **78** are spaced along the length of the retainer rails and are provided for engagement with slots **64** (FIGS. **6** and **15**) in the end panels.

Means for releasably securing the cover to the end panels indicated generally by the numeral **80** is located near the upper edge of the cover. The releasable securing means includes a plurality of lock tabs **82** adapted for locking engagement with tab-receiving slots **60** formed in the central portion of the end panel. As shown in FIG. **10,** tabs **82** are formed with a back wall **84** which is secured as by welding to a slidably mounted lock slide member **86.** The back wall extends upwardly and outwardly forming an upwardly directed front flange **88** in which a pair of bias spring retainer openings **90** are provided. Each lock tab **82** extends downwardly from the back wall **84** and outwardly perpendicular to the back wall to form the mechanism for engagement with slots **60** in the end panels. Engaging mechanism of lock tab **82** is generally barbed or triangular in shape having a leading edge portion **92,** outwardly tapered side walls **94** terminating in shoulders **96** and **98** adjacent its intersection with back wall **84.** It will be noted that shoulder **98** extends outwardly from the back wall in greater distance, about 1/16 of an

inch, than shoulder **96** for reasons as will be more fully described hereinafter.

A pair of lock release actuators **100** are also secured to lock slide **86** between lock tabs **82** and each include an outwardly formed upwardly extending upper portion **101** which when assembled in the cover, one or the other of the tab members will be accessible through access opening **42** in the upper portion of the end panels. As shown in FIG. **9**, lock slide **86** including lock tabs **82** and lock release actuators **100** are mounted for sliding movement in a lock slide retainer **102**. The slide retainer is a generally flat elongated strip having a channel formed in its central portion along its length which receives lock slide **86**. Retainer **102** is secured to the inner facing surface of cover **20** as by welding. Openings **104** (FIG. **8**) are provided along the length of retainer **102** through which lock tabs **82** extend when assembled. Similar openings **106** are also provided for lock release actuators **100**. Notches **108** are provided in the raised center section of the slide retainer at each end thereof and a bias spring **110** is connected at one end in notch **108** and its opposite end is connected through the opening **90** in flange **88** on lock tab **82**.

It will be noted that openings **104** in slide retainer **102** are wider than the width of the back wall **84** of lock tab **82**. Openings **106** are similarly slightly wider than the width of lock release actuator **100**. This allows limited movement of the lock slide **86** and tabs across the width of the cover. Bias spring **110** constantly urges the lock mechanism into its locked position by shifting lock slide **86** to the right as shown in FIG. **8**.

The cover panels **20** may be finished by painting, plating, covering with upholstery material **120** or any variety of methods. The upholstery is placed over the outer surface of the cover panel **20** and is folded over the ends **68** and **70** (FIG. **15***b*). The releasable securing means is adapted to compensate for different thicknesses of upholstery material or the lack thereof by means of two shoulders **96** and **98** (FIG. **10**) provided in the lock tab so that both painted and upholstered surfaces are flush with the edge of trim **40**. As mentioned previously, shoulder **98** is positioned a greater distance away from the back wall than shoulder **96**. Accordingly, when the cover **20** is upholstered, shoulder **96** is utilized to position cover panel **20** closer to wall **26** of end panel **12** so that outer surface of upholstery is flush with the edge of trim **40** (compare FIGS. **15***a* and *b*). When the cover panel **20** is painted or used with a thin fabric, it is desirable to utilize shoulders **98** to serve the locking function so as to allow cover panel **20** to be spaced farther from wall **26** and thereby allow its painted surface to still be flush with the edge of trim **40**. In order to insure a snug, rattle free fit when cover panel **20** is not upholstered, a plastic extrusion **130** is employed around the top and side peripheries of end panel **12** (FIG. **15***a*). Extrusion **130** includes a top barbed leg **131** having a barb **132** on the end thereof. Barbed leg **131** fits inbetween the top edge of flange **72** and peripheral flange **32** of wall **24**, and barb **132** holds it there. Leg **133** extends vertically downwardly or inwardly from barbed leg **133** and divides into two diverging spreader legs **134** and **135**. These diverging legs hold the edges of cover panel **20** away from the surface of abutment flange **72** to thereby insure a rattle free fit. Of course, when upholstery **120** is used, extrusion **130** is not (See FIG. **15***b*).

A further snug fit of cover panel **20** to end panel **12** is facilitated by manipulating various adjustment slots and tabs (FIGS. **6**, **15***a* and **15***b*, **19**, and **20**). Referring to FIG. **20**, it will be noted that in addition to slot **64** at the bottom of end panel **12**, there is another smaller slot **64***a* positioned immediately therebelow. This leaves a small bridge or metal **64***b* between the two slots. When cover panel **20** is upholstered with upholstery **120**, this bridge of metal **64***b* is bent inwardly by inserting a screwdriver in slot **64***a* and twisting it. As a result, cover panel **20** is held in closer not only at the top by bridge **96** on tab **82**, but also at the bottom by tab **78** (compare FIGS. **15***a* and **15***b*). Referring particularly to FIG. **15***b*, it can be seen that the bridge of metal **64***b* has been bent inwardly in order to hold tab **78** further inwardly.

Vertical adjustment can also be achieved in a similar manner. Thus, by slipping a screwdriver in slot **64***a*, holding it horizontally and twisting it, one can force bridge **64***b* upwardly slightly, either in addition to or rather than inwardly as heretofore described. By doing this at each of the slots **64***a*, cover panel **20** is moved upwardly higher than would otherwise be the case. To effect downward adjustment, one can slip the screwdriver into slot **64** and force bridge **64***b* downwardly slightly.

Side-to-side adjustment is achieved by means of a small tab flange **140** cut into peripheral flange **35** of wall **26** at each side of end panel **12** (FIG. **19**). These tabs **140** bear against the side flanges **66** of cover panel **20** shown in FIGS. **8** and **9**. By bending the tabs **140** inwardly or outwardly, one can shift cover panel **20** from side to side in either direction. In this way, proper lateral adjustment of cover panel **20** is achieved.

Finally, it should be noted that to some extent, in and out adjustment can be achieved at the top of cover panel **20** by prying the edges of slots **60** inwardly or outwardly slightly (FIG. **6**). Slots **60** are the slots into which the tabs **82** on slide lock **80** fit.

As shown in FIG. **8**, shoulders **98** are adapted for engaging slot **60** because of the presence of bias spring **110** urging the lock slide tabs to the right. To convert for engagement of shoulder **96**, bias spring **110** is simply removed from the position as shown in FIG. **8** and placed in the opposite end of the slide retainer in notch **108'** and in opening **95** provided in the lock tab at the extreme left of the lock mechanism. When thus positioned, the lock slide and the components mounted thereon will be biased in the opposite direction causing engagement of shoulder **96** with tab-receiving slot **60**. Once assembled, the cover may be released by simply removing plug **46** (FIG. **11**) and reaching through access means **42** to shift the lock slide by moving lock release actuator **100** against the bias of spring **110**. This, of course, causes shifting of the lock tab out of engagement with the slot **60** in the panel to thereby ease in removal of the cover.

The alternate embodiment end panel **12'** shown in FIG. **13** is similar to that previously described and is constructed in basically the same manner. Like reference numerals bearing the prime (') designation are therefore utilized to identify similar components. The lower section is identical to that previously described including base **22'**, levelers **28'**, the double wall construction providing wiring channel **38'**, and the work surface **10'** which is secured by fastening means **52'**. The upper section is similarly constructed and supports

a storage unit **10''** in a similar fashion by fastening means **52''**. The wiring channels extend upwardly and across the top as the embodiment shown in FIG. **6.** Access means **42'** is provided at the top thereof in trim strip **40'**.

In FIG. **14,** the diagram of a shared work station is illustrated wherein end panels **12'** of the type shown in FIGS. **6** and **13** are combined to provide the shared storage unit. End panels **12'** support a pair of storage units **16** and **16'** therebetween. Instead of being suspended from a work surface **10,** as for example as shown in FIG. **13,** each of the storage units **16** and **16'** is adapted for mounting through its end walls to the adjacent unit and to end panel **12'** through fastening screws **52''**. A desk **1,** of the type shown in FIG. **5,** for example, is positioned on each side of storage units **16,** one generally adjacent one unit and one generally adjacent the other. In order that each desk **1** has adjacent storage, storage unit **16** opens to the left to provide access to the desk on the left (as viewed in FIG. **14**) and unit **16'** opens to the right to provide access to the desk on the right.

It will be realized that virtually any number of furniture constructions can be assembled utilizing the novel support panels of the present invention. In a preferred embodiment, the various component parts are based on modular dimensions of five inch modules. It has been found that the 5 inch modular dimension provides a most efficient storage of standard information documents and permits the most efficient arrangement of work stations within good human factors dimensions such as chair space required, desk surface area required and etc, while maintaining modular dimensions which facilitate ease of planning and avoid the necessity of using fractional numbers. It additionally provides better stability for high storage units by using, for example, a 20 inch depth verses the standard 18 inch depth utilized in conventional office furniture constructions. In addition, a deeper usable reference work area is provided on which office calculators, computer terminals, typewriters, and the like can be placed without inconvenient overhang. Finally, the 5 inch modular dimension is a rational unit for assisting space planners. As long as feet and inches are used, any module will have to be reduced to inches for calculation. The 5 inch module reduces the chance of error because all dimensions will end in 0 or 5 which numbers are easy to work with and are convertible to feet and inches as a final calculation.

Thus, the end panels for the present system are provided with depth (the distance from one side edge of the end panel to the other side edge) which are whole number multiples of 5 inches. Specifically, end panels **12** are provided with depths of 20, 25, 30 and 35 inches. On the other hand, storage units, such as units **14,** and tops, such as tops **10,** are provided with lengths which, when combined with the thicknesses of two end panels **12,** yield a total length which is a whole number multiple of 5 inches. Specifically, lengths of 30, 35, 40, 45, 50, 55, 60, 65, 70 and 75 inches are provided for. This means that where the desk length is to be 70 inches, for example, and where the thickness of each end panel is approximately one inch, the length of the top **10** must be 68 inches. The 68 inch top plus the two 1-inch end panels yields a total length of 70 inches.

The five inch modularity concept has been extended to space divider panels which are used in conjunction with the system. These space divider panels are designed to have an appearance identical to or compatible with the appearance of panels **12,** but they are constructed with a means for connecting them to end panels **12** and to each other, and they need not include any means for mounting desk tops or the like.

FIG. **21** discloses a furniture arrangement in which one such space divider **212** and two smaller space dividers **212(*a*)** are employed. Space divider panel **212** is 45 inches in depth, i.e. from one side edge to the other side edge. Space divider **212** joins a desk unit **10** to a storage unit having two storage compartments **14** mounted between a pair of end panels **12.** The 45 inch dimension provides for comfortable space in which the occupant of this area can move his chair **220.** Also, it provides desired privacy.

The smaller partitions **212(*a*)** are only 20 inches in depth. Here, a 45 inch storage unit **14'** is used as the primary spacer between the desk **10'** and the storage units **14.** The small divider partitions **212(*a*)** provide somewhat more space for the occupant of this work area and also provide a nice decorative effect. By providing space divider partitions having depths which are whole number multiples of 5 inches, specifically which are 20, 25, 30, 35, 40 and 45 inches, one continues the 5-inch modularity concept conveniently from the dimensions of the furniture to the dimensions utilized in space division.

In the foregoing description, it will be readily appreciated by those skilled in the art that many modifications may be made to the invention without departing from the concepts disclosed herein. Such modifications are to be considered as included in the following claims unless these claims by their language expressly state otherwise.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A system for supporting one or a number of standardized furniture components as desks, tops, cabinets or the like comprising: a supported member; end panel members adapted to support said supported member; first securing means in said end panels and said supported members for releasably securing same together; cover members for said end panels; second securing means in said cover members and said end panels for releasably securing said cover to said panel; said panel having peripheral edge; an access opening through said panel peripheral edge; a removable access closure in said peripheral edge for covering said access opening; and actuator means on said second securing means for releasing said cover member from said end panel, said actuator means being accessible through said access opening when said access closure is removed from said peripheral edge whereby said cover member may readily be removed for access to said first securing means.

2. The system as defined in claim **1** and further including channels formed in said panel members, said channels being adapted to receive wiring therein between said cover and said panel; and wire access means formed in said decorative trim.

3. The system of claim **2** in which said wire access means comprises said access opening.

4. The system as defined in claim **1** and further including leveling means on said panels, said leveling

means extending from the bottom surface thereof adjacent said front and back surfaces.

5. The system as defined in claim **4** wherein said leveling means include glide members extendible and retractable from said panel at said bottom surface; a stud member fixed to said glide member extending into said panel; and a nut threaded on said stud, said nut being captively held in said panel and rotatable therein to thereby extend and retract said stud and said glide.

6. A system as defined in claim **1** wherein said second releasable securing means comprises a lock member slideably mounted on said cover and lock-engaging means on said panel adapted to engage with said lock member; said lock member comprising a bar slideably mounted in said cover, a plurality of tab members having engaging means thereon extending outwardly from said bar, and said lock engaging means comprising a plurality of tab-receiving slots formed in said panel adapted to lockingly engage with said engaging means on said tab members; said engaging means on each said tab member comprises a barb on said tab defining first and second shoulders on either side thereof, respectively, said first shoulder being positioned farther from said bar than said second shoulder; means on said tab for securing said bias means thereto; means on said cover for securing said bias means to said cover on either side of said tab whereby said tab will be locked in said slot either by said first shoulder or said second shoulder and said bar can be used with either a panel having no upholstery wrapped around its edges or a panel having upholstery simply by connecting said bias means to said cover on an appropriate side of said tab.

7. The system as defined in claim **1** comprising: decorative trim positioned about at least the top and side edge portions of said panel peripheral edge; said access closure comprising a portion of said decorative trim.

8. A system for supporting one or a number of standardized furniture components as desks, tops, cabinets or the like comprising: a supported member; end panel members adapted to support said supported member; first securing means in said end panels and said supported member for releasably securing same together; cover members for said end panels; second securing means in said cover members and said end panels for releasably securing said cover to said panel; and said end panel including an inner wall and an outer wall section, said inner wall having a generally flat, planar surface, said outer wall having flat planar peripheral edge portions and an outwardly formed central portion, said outer peripheral portions being secured to said inner wall and said central portions extending outwardly from said inner wall to thereby provide a rigid panel structure.

9. The system as defined in claim **8** and further including an outer peripheral edge extending outwardly from said inner wall section parallel to said central portion of said outer wall section, said central portion, said outer peripheral edge and said flat planar peripheral portions of said outer wall forming a wire-receiving channel in said end panel.

10. The system as defined in claim **9** wherein said second securing means comprises a lock member slideably mounted in said cover and lock-engaging means on said outer wall adapted to engage with said lock member; said lock member comprises a bar slideably mounted in said cover, a plurality of tab members having engaging means formed thereon extending outwardly from said bar, and wherein said lock-engaging means includes a plurality of tab receiving slots formed in said outwardly extending central portion of said outer wall; biasing means for said lock member, said biasing means urging said tab members toward locked position with respect to said tab-receiving slots in said panel; said engaging means on each said tab member comprises a barb on said tab defining first and second shoulders on either side thereof respectively, said first shoulder being positioned farther from said barb than said second shoulder; means on said tab for securing said bias means thereto; means on said cover for securing said bias means to said cover on either side of said tab whereby said tab will be locked in said slot either by said first shoulder or said second shoulder and said barb can be used with either a panel having no fabric wrapped around its edges or a panel having fabric simply by connecting said bias means to said cover on an appropriate side of said tab.

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