Oct. 22, 1968 J. E. MONROE 3,406,645

PREFABRICATED FURNITURE

Filed Sept. 15, 1965 8 Sheets-Sheet 1

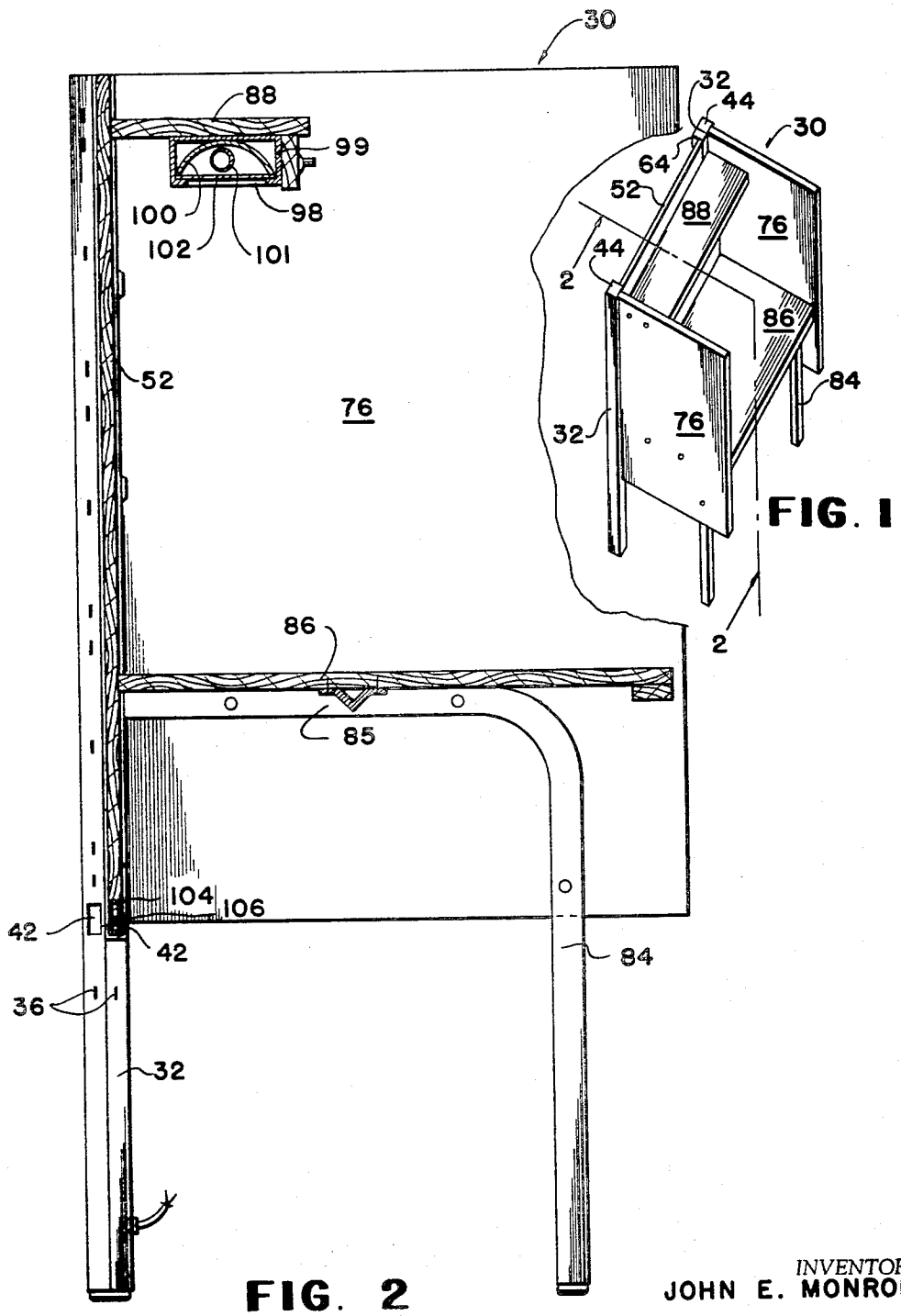

FIG. 1

FIG. 2

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Oct. 22, 1968 J. E. MONROE 3,406,645

PREFABRICATED FURNITURE

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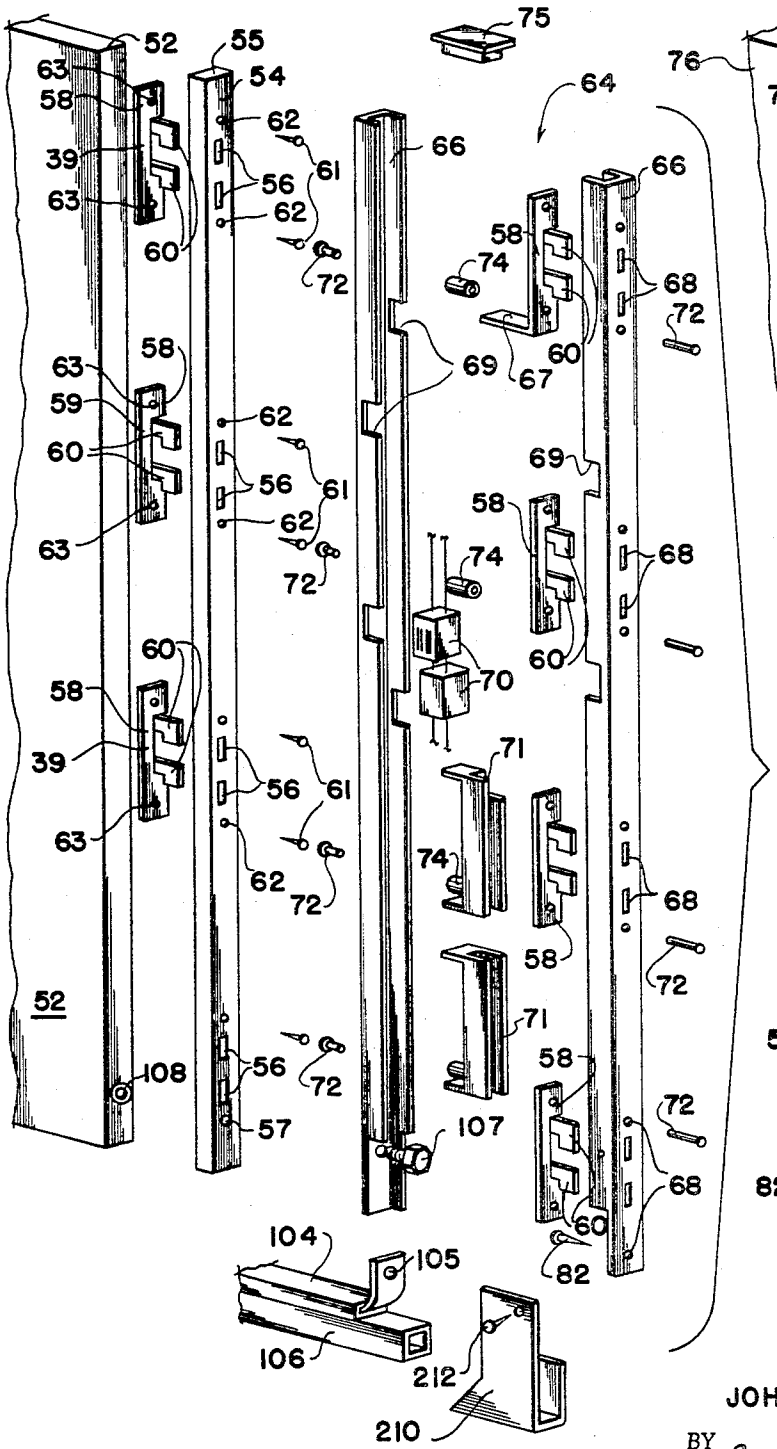

FIG. 3

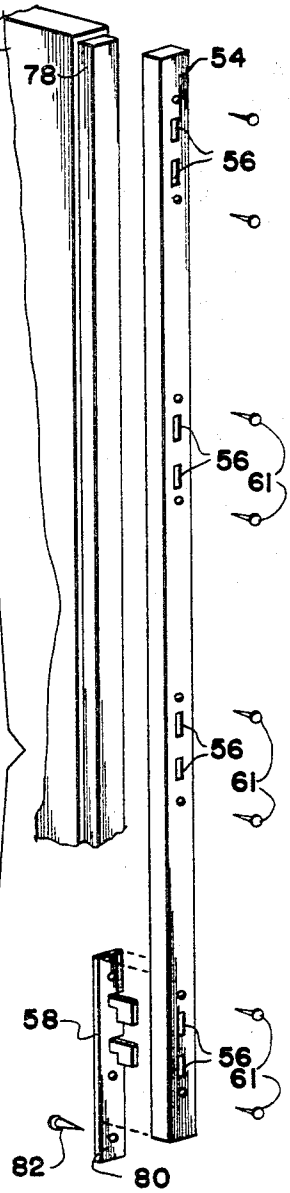

FIG. 4

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Oct. 22, 1968 J. E. MONROE 3,406,645

PREFABRICATED FURNITURE

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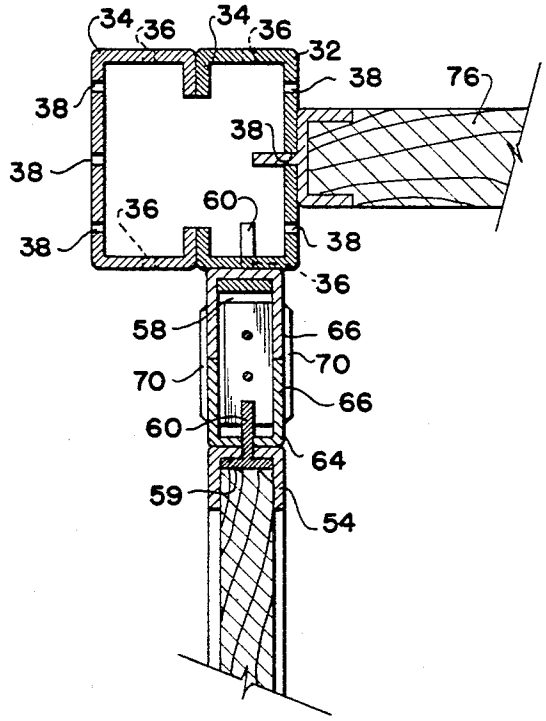

FIG. 5

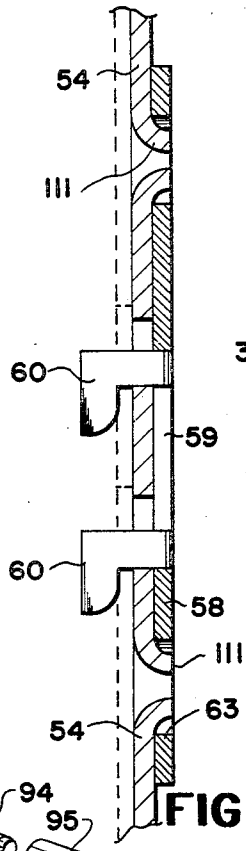

FIG. 6

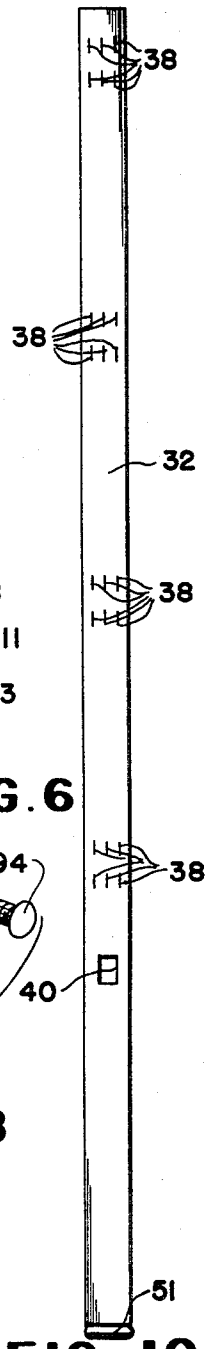

FIG. 10

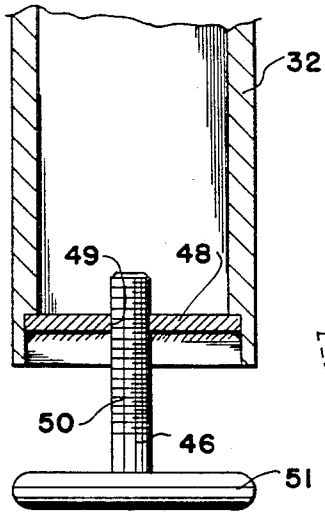

FIG. 7

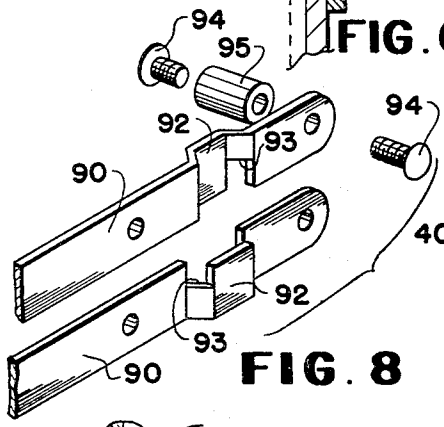

FIG. 8

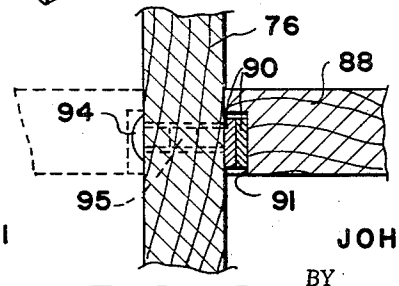

FIG. 9

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Oct. 22, 1968 J. E. MONROE 3,406,645

PREFABRICATED FURNITURE

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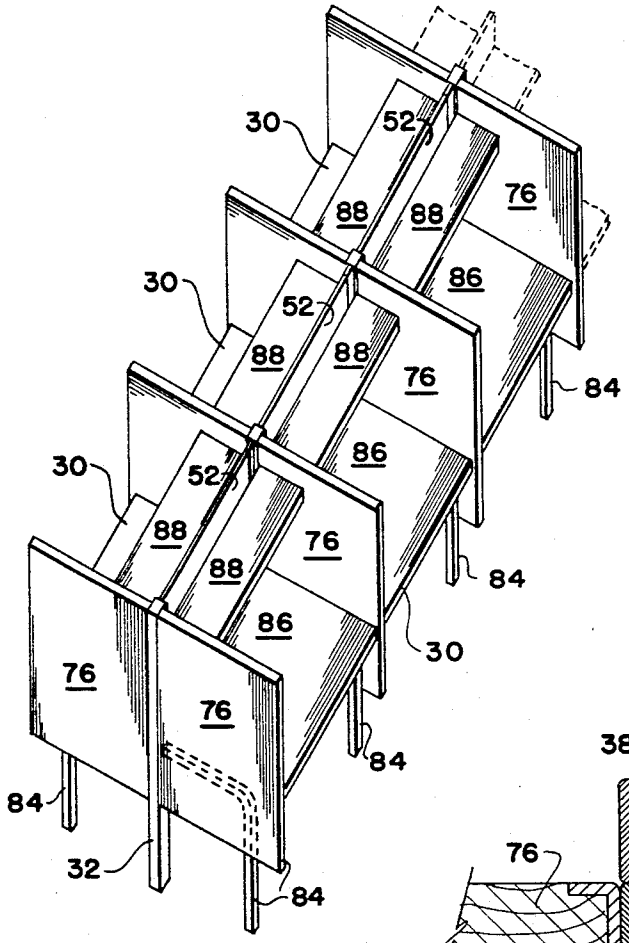


FIG. 11

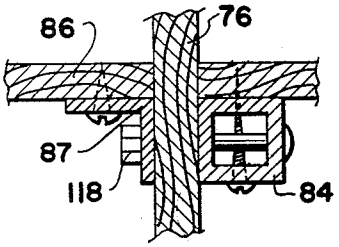


FIG. 12

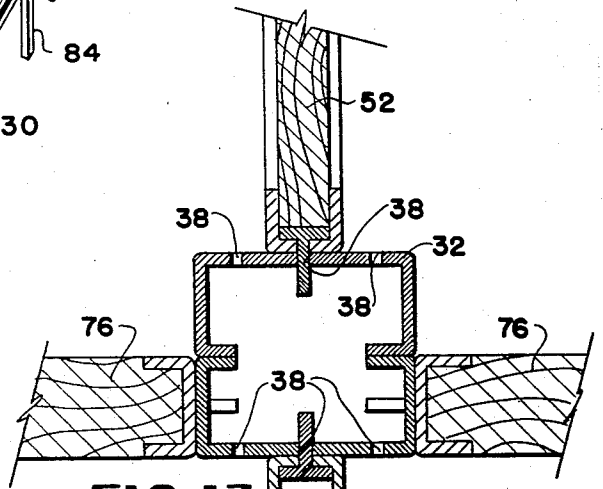


FIG. 13

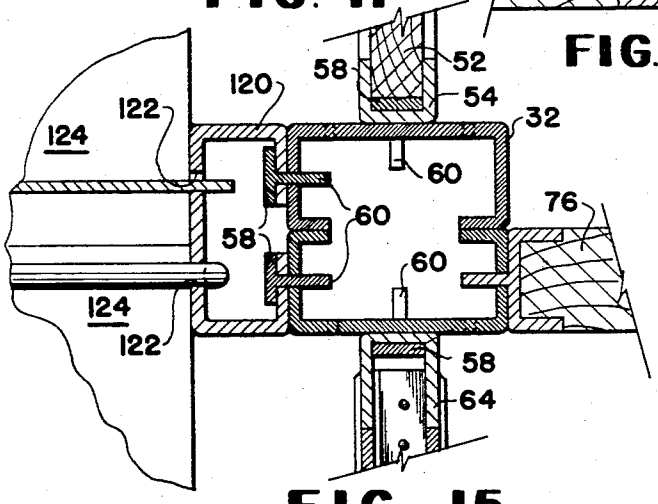
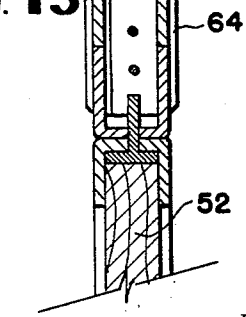


FIG. 15



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Oct. 22, 1968 J. E. MONROE 3,406,645

PREFABRICATED FURNITURE

Filed Sept. 15, 1965 8 Sheets-Sheet 5

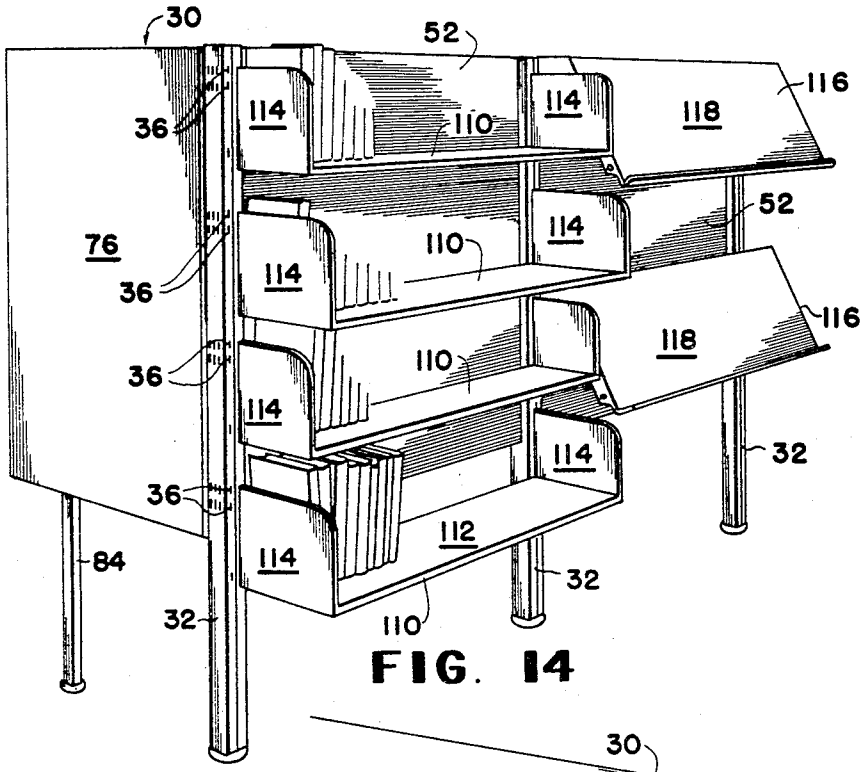

FIG. 14

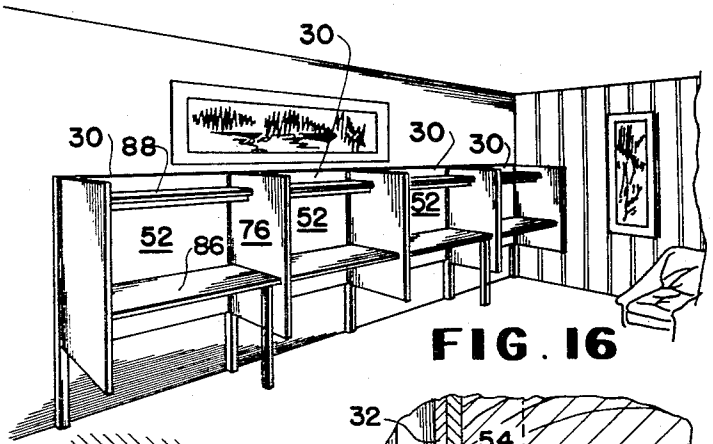

FIG. 16

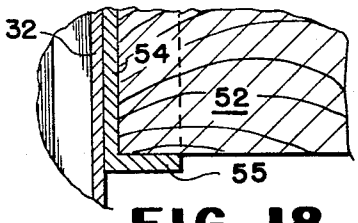

FIG. 18

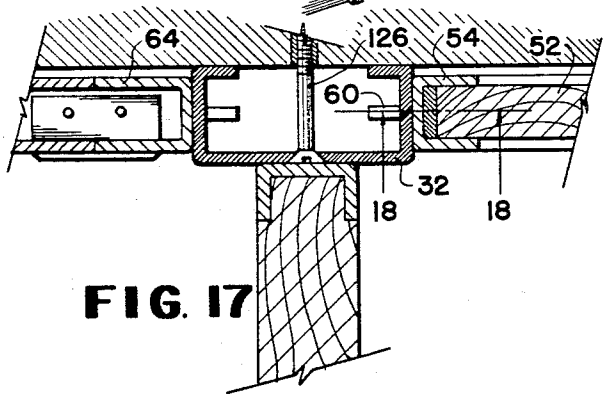

FIG. 17

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Oct. 22, 1968 J. E. MONROE 3,406,645

PREFABRICATED FURNITURE

Filed Sept. 15, 1965 8 Sheets-Sheet 6

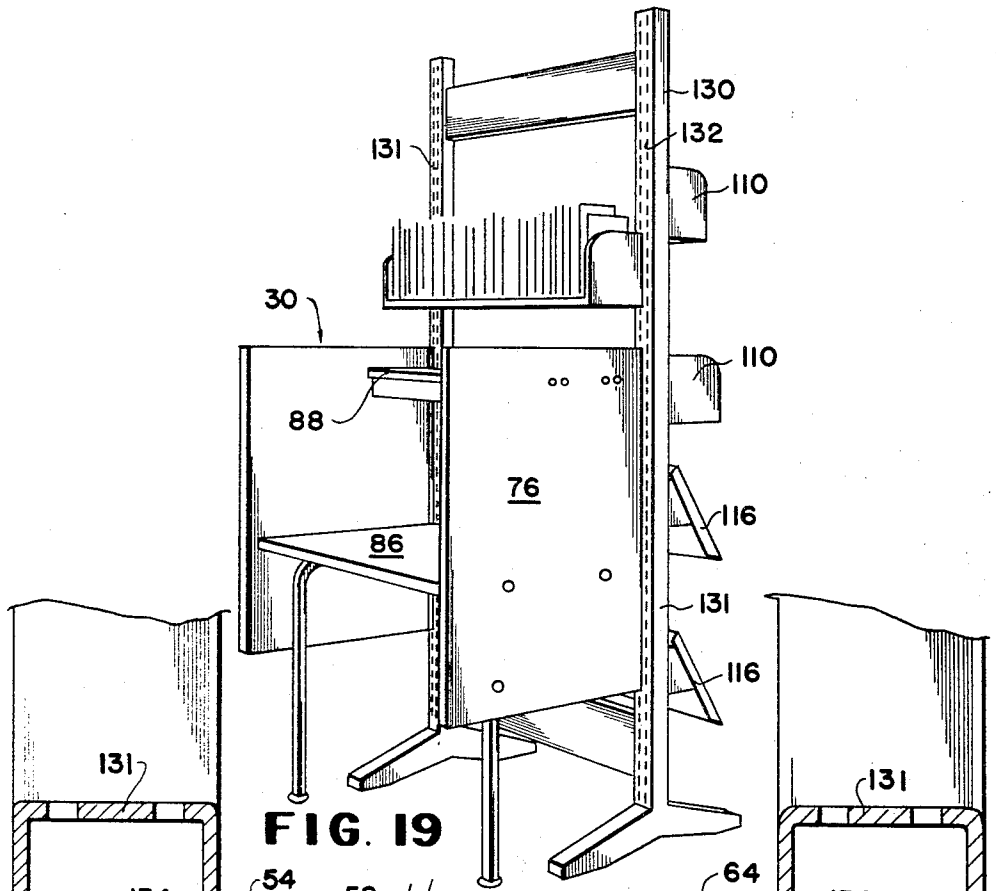

FIG. 19

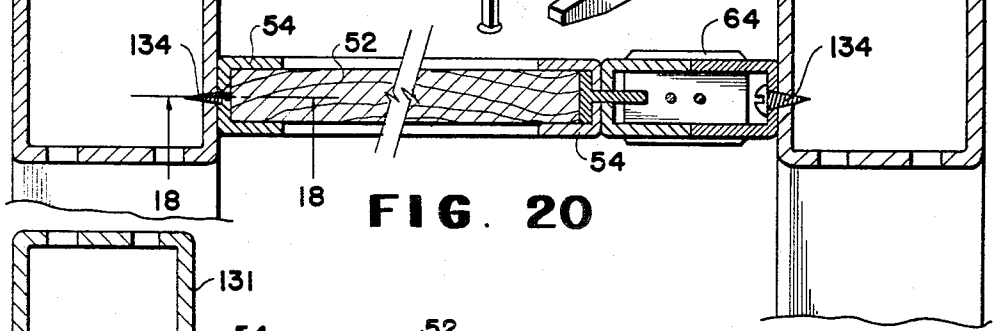

FIG. 20

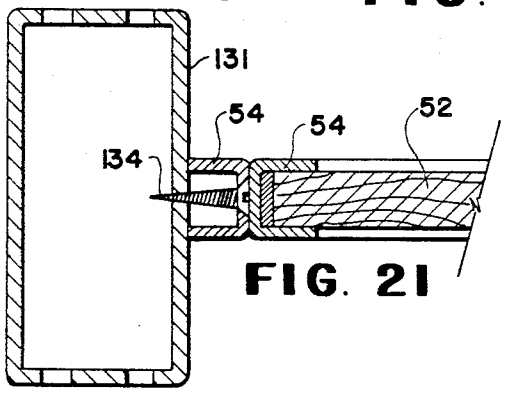

FIG. 21

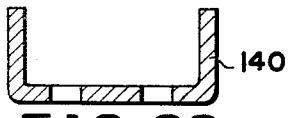

FIG. 22

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Oct. 22, 1968 J. E. MONROE 3,406,645

PREFABRICATED FURNITURE

Filed Sept. 15, 1965 8 Sheets-Sheet 7

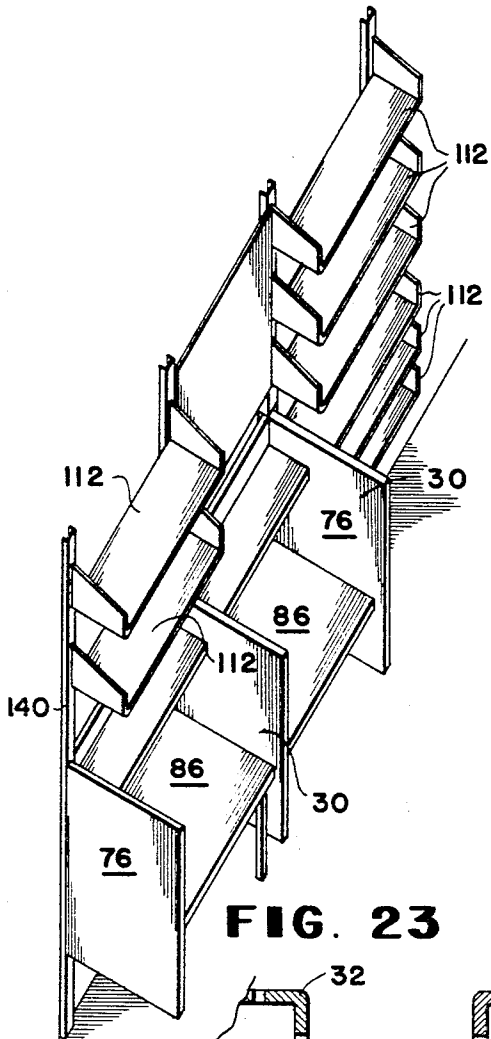

FIG. 23

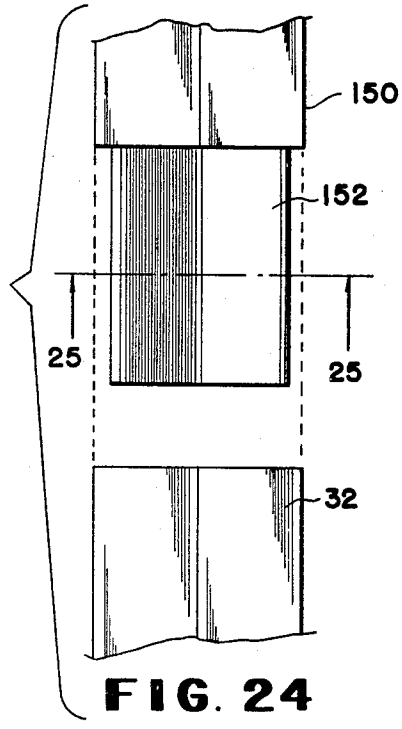

FIG. 24

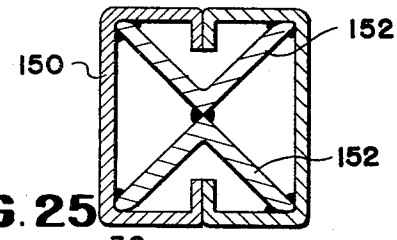

FIG. 25

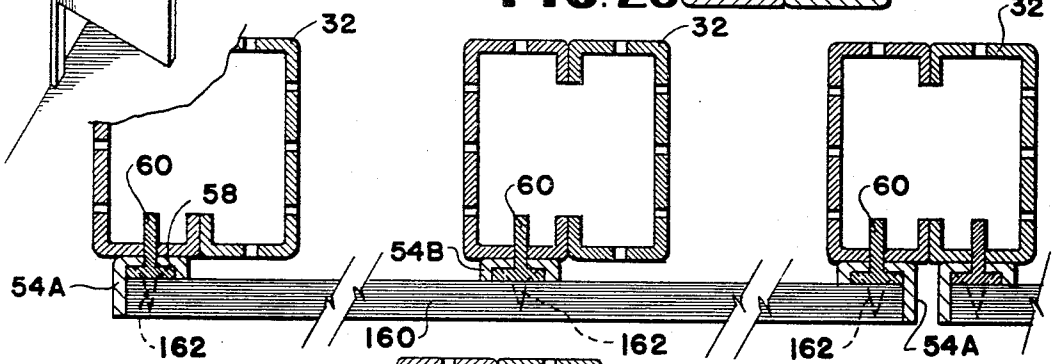

FIG. 26

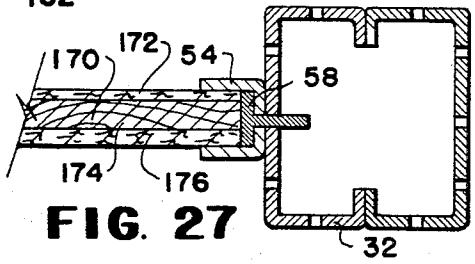

FIG. 27

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PREFABRICATED FURNITURE

Filed Sept. 15, 1965 8 Sheets-Sheet 8

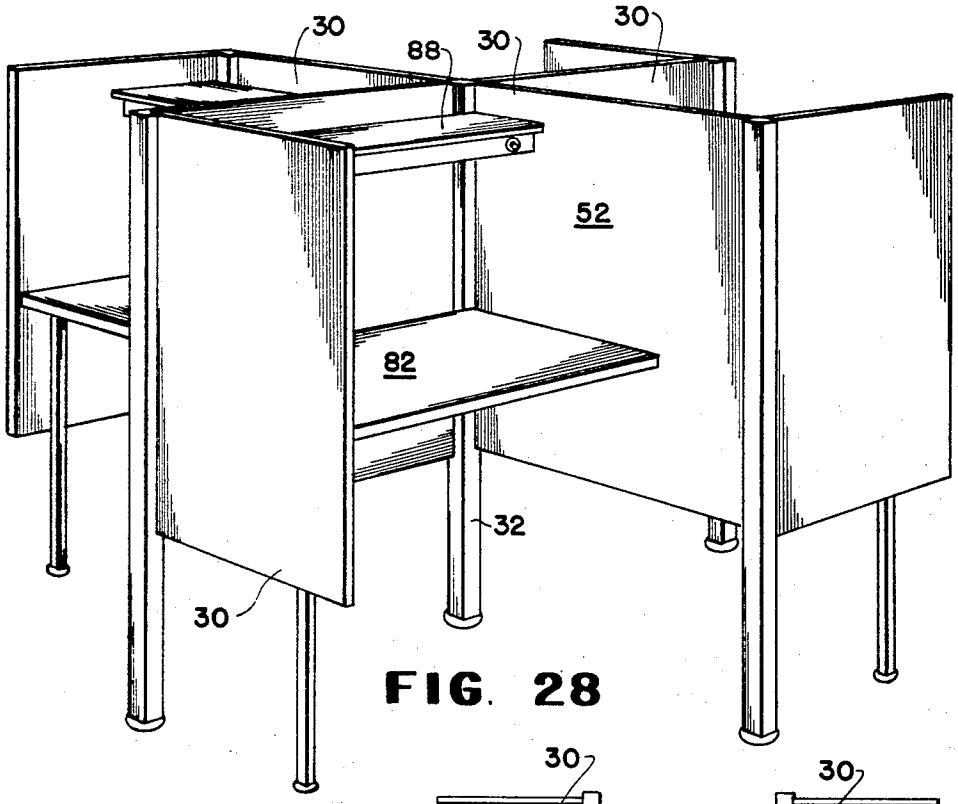

FIG. 28

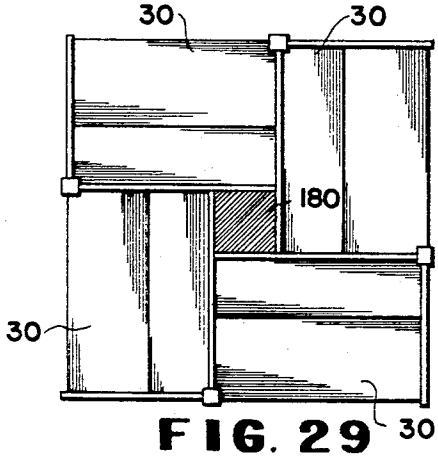

FIG. 29

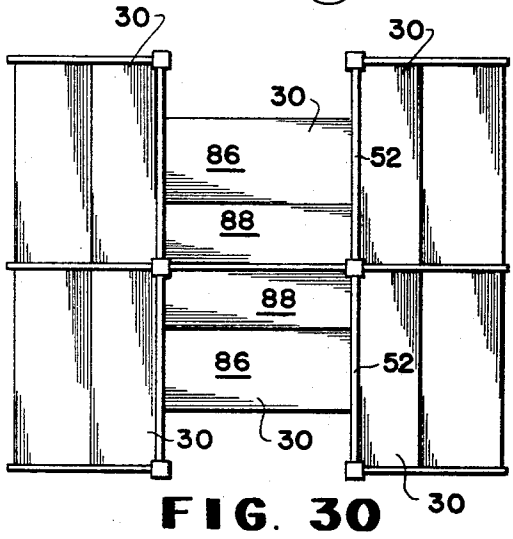

FIG. 30

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United States Patent Office 3,406,645 Patented Oct. 22, 1968

3,406,645

PREFABRICATED FURNITURE

John E. Monroe, 132 N. Bleckley, Wichita, Kans. 67208

Filed Sept. 15, 1965, Ser. No. 487,457
8 Claims. (Cl. 108—23)

ABSTRACT OF THE DISCLOSURE

This invention relates to prefabricated furniture, more particularly to prefabricated desks and the like, still more specifically to prefabricated carrel units adapted to be easily assembled and disassembled, and particularly adapted to be assembled in a great variety of arrangements capable of meeting the needs of a great diversity of applications. Additionally, this invention relates to carrel unit kits including upright interconnected back panels and wing panels; a desk panel interconnected between the wing panels and the back panel; a shelf member positioned above the desk panel and extended between the wing panels; electrical adapter means connected between one of the wing panels and the back panel; and lighting means mounted beneath the shelf in a concealed manner providing the required lighting to the carrel unit.

There is a pressing need for prefabricated library furniture that can be easily assembled and disassembled when the need for altering the arrangement of a library occurs. In a library, books, magazines, and the like are continually being added necessitating increasing the storage facilities. Very frequently libraries make substantial acquisitions of new books and the like that require additional storage space. In some instances, the acquisition takes place over long periods of time and the need for additional storage is a gradual one. In other instances the acquisition is very rapid. However, in both instances it is desirable to utilize the space ultimately intended for additional book stacks as study area until the actual acquisition takes place. In order to utilize it as a study area to the best possible advantage, it is usually most desirable to provide study carrels. Study carrels provide individual study area, which reduce distractions both to the users and to other persons to a minimum.

Individual study desks are known in the art. However the known type of study desks, particularly the type used in libraries, are not generally adapted to accommodate for revision and remodeling alterations encountered in an expanding library. The known desk unit cannot be readily disassembled ad assembled quickly and easily. Further, the known desk units now in use are not sufficiently adaptable in that they cannot be assembled in different arrangements to most efficiently utilize the available space. The known desk units cannot be conveniently attached to columns, or mounted on walls which are intended to ultimately have mounted thereon bookshelves when the storage space is needed at a later date. The disassembly of known study units is in general a major operation. Moreover, the disassembled elements cannot be used interchangeably to provide different arrangements than the original. Thus, with desk and carrel units known to the prior art, no prefabricated unit is known or available to meet the problems encountered in library expansion.

In one preferred embodiment of my invention, a prefabricated carrel unit is provided including spaced upright posts having spaced apertures; a back panel having fastening means connected to the apertures in the posts; wing panels having engagement means connected to the posts; and a desk panel connected to the wing panels by securing members. The desk panel is surrounded by the back panel and the wing panels extended above and below the same to present a private enclosed area. Additionally, a shelf panel is connectable in a concealed manner to the wing panels above the desk panel adapted to support a fluorescent light fixture thereunder to illuminate the desk panel and enclosed working area. The carrel unit of my invention is adapted in use to be assembled and disassembled quickly and easily and is capable of being assembled to form single or multiple units in a large variety of arrangements.

The new carrel unit of my invention solves all of the problems associated with desk-type furniture known to the prior art. The carrels can be easily assembled and disassembled with only a minimum of tools by ordinary unskilled workmen. The various components are designed to be used interchangeably, and to enable the carrel unit or units to be assembled in a multitude of different arrangements to make the most efficient use of any available space, irrespective of the shape. A further advantage to my carrel unit is that it is designed to utilize upright channel posts, frequently provided to secure bookshelves to a wall, as mounting support. This ability to utilize channel posts makes the changeover from a study area to a book storage area, or vice versa, a very inexpensive and rapid transition. The various components of my carrel unit are designed so that many convenient and attractive arrangements are possible, utilizing bookshelves, covering panels, blackboards, and the like which can be attached to the units. This can normally be done without materially altering the components themselves which would otherwise destroy the capability to use same in a different later arrangement. The carrel units of my invention are also provided with electrical raceways etc. which provide outlets for both audio and light fixtures. The outlets can also be used for any other suitable purpose, as for example microfilm viewing apparatus and the like. Since the carrel unit can be assembled and disassembled very easily, very significant savings are realized whenever the need for remodeling or changing the library or study area occurs. Further, since the carrel units can be assembled to form many different arrangements and utilize bookshelf fixtures etc., there is no waste if irregular or unusual areas need to be utilized. The carrel units of my invention are both practical and attractive and materially lower the initial cost, and also the cost of redecorating a library or study area at a later date.

An object of this invention is to provide new prefabricated furniture.

Another object of this invention is to provide new prefabricated carrel units.

Still another object of this invention is to provide new prefabricated carrel units which can be easily and quickly assembled and disassembled with a minimum of tools by relatively unskilled workmen.

Still another object of this invention is to provide a new carrel unit which can be assembled to form a great variety of different and attractive arrangements.

Another object of this invention is to provide a new carrel unit consisting of uniform interchangeable parts which permit same to be assembled in a great variety of different arrangements making possible a better utilization of space etc.

Still another object of this invention is to provide a new carrel unit which is adapted to utilize existing bookshelf mounting fixtures as a mounting support thereof.

Yet another object of this invention is to provide a new carrel unit which materially reduces the cost of a transition between storage area and study area.

Another object of this invention is to provide a new carrel unit which is provided with outlets for both audio and electric current.

Still another object of this invention is to provide

structural units adapted to mount panels, such as blackboards, screening panels, etc.

Another object of this invention is to provide a prefabricated kit adapted to be assembled to form a carrel.

These and other objects will become more apparent to those skilled in the art from the following discussion and claims.

Drawings accompany and are a part of this disclosure. These drawings are not to be construed to unduly limit the scope of the invention. These drawings illustrate preferred specific embodiments of the carrel unit of my invention. In the drawings,

FIG. 1 is a pictorial view of a preferred specific embodiment of the carrel of my invention.

FIG. 2 is a cross sectional view taken on line **2—2** of FIG. 1.

FIG. 3 is a perspective view, in exploded relation, illustrating the various components of the electrical adapter and means for affixing the back panel to same.

FIG. 4 is a perspective view, in exploded relation, showing the specific construction of the channel element that is mounted on the edges of the wing panel which secures same to the upright post.

FIG. 5 is a top plan view in broken section of the electrical adapter, upright post, and panels secured thereto.

FIG. 6 is a detailed view in enlarged scale illustrating the attaching brackets and their relation to the mounting channels and posts.

FIG. 7 is a detailed view in broken section illustrating the structure of the leveling means of the post.

FIG. 8 is a detailed view in enlarged scale illustrating the structure of the means provided for removably mounting the shelf on the wing panels.

FIG. 9 is a cross sectional view in broken section illustrating the relationship of the shelf panel and mounting brackets therefor.

FIG. 10 is a front elevational view of the upright post of the carrel of my invention.

FIG. 11 is a pictorial view illustrating one of the arrangements which can be formed from six carrel units of my invention.

FIG. 12 is a detailed view in broken section illustrating the joining arrangement of the desk panel and wing panel.

FIG. 13 is a top plan view in cross section illustrating the arrangement of a post and the associated panel elements as assembled in the structure shown in FIG. 11.

FIG. 14 is a pictorial view illustrating conventional bookshelves removably secured to the upright posts of a carrel unit of my invention.

FIG. 15 is a top elevational view in broken section illustrating an alternate preferred arrangement of mounting bookshelves to the carrel unit.

FIG. 16 is a pictorial view of a preferred specific embodiment of a carrel assembly combination of my invention shown affixed to an upright wall.

FIG. 17 is a detailed view in enlarged scale illustrating an arrangement of components of the carrel unit of my invention for mounting same on a flat upright wall.

FIG. 18 is a detailed view illustrating the relationship between the lower edge of the panel mounting channel and the panel.

FIG. 19 is a pictorial view further illustrating how the components of the carrel unit of my invention can be affixed to fixtures provided for mounting bookshelves.

FIG. 20 is a top elevational view illustrating a specific arrangement adapted to utilize the structure shown in FIG. 19.

FIG. 21 is a top elevational view in broken section illustrating still another mode of attaching the back panels to an upright support.

FIG. 22 is a cross sectional view of a mounting channel provided to mount bookshelves and the like.

FIG. 23 is a pictorial view further illustrating how preferred specific embodiments of carrel units of my invention can be combined with bookshelves and the like.

FIG. 24 is a detail view in enlarged section illustrating extension elements which can be used in combination with my carrel unit to provide additional mounting structure.

FIG. 25 is a top elevational view in cross section taken on line **25—25** of FIG. 24.

FIG. 26 is a top elevational view in broken section illustrating structure adapted to removably mount flap panels and the like to upright posts.

FIG. 27 is a top elevational view in cross section illustrating structure adapted to support panels for use as blackboards, bulletin boards etc.

FIG. 28 is a perspective view illustrating a plurality of carrel units of my invention assembled to form a rosette design.

FIG. 29 is a top elevational view illustrating an arrangement of carrel units of my invention mounted about an upright post.

FIG. 30 is a top elevational view illustrating a carrel unit combination of my invention arranged in an H pattern.

The following is a discussion and description of the invention made with reference to the drawings, whereon the same reference numerals are used to indicate the same or similar parts and/or structure. The discussion and description is of preferred specific embodiments of the new carrel and combinations thereof of the invention, and it is to be understood that the discussion and description is not to unduly limit the scope of the invention.

Referring now the drawings FIGS. 1–28, there is illustrated in FIG. 1 a preferred specific embodiment of the prefabricated free standing carrel unit **30** of my invention. The carrel **30** has two spaced upright posts **32** on the rear side. As indicated more clearly in FIG. 5 of the drawings, each of the posts **32** is preferably formed from a pair of channels **34** which are welded or otherwise secured together. Each of posts **32** is provided on opposite sides with two spaced sets of slots **36**. On the remaining opposite sides of posts **32** are provided three spaced sets of aligned slots **38**. As more clearly indicated in FIG. 10 each of the sets of slots **36** and **38** are preferably made up of four pairs of vertically spaced and aligned slots. The paired arrangement of slots **36** and **38** will become apparent from the description that follows. A square-shaped knock-out plug **40** is provided in each of the sides of the posts provided with three pairs of sets of slots **38** as shown most clearly in FIG. 10. Preferably the remaining adjacent sides of the posts **32** are provided with two knock-out plugs **42** on the sides provided with two sets of slots **36**. This arrangement is most clearly shown in FIG. 2 of the drawings. On the tops of upright posts **32** are provided suitable covers **44** having a portion insertable in the ends thereof. A leveling means **46** is provided on the bottoms of each of posts **32**, as shown most clearly in FIG. 7 of the drawings. The leveling means **46** has a flat transverse plate **48** secured to the lower end of each of the posts which is provided with a central threaded aperture **49**. A threaded rod **50** is threadedly engaged in aperture **49**, and has a circular transverse head **51** on the lower end thereof which in use engages the floor or other flat supporting surface.

Mounted between upright posts **32** is a flat rectangular shaped back panel **52**. Two elongated panel mounting channels **54** are mounted on the opposite upright edges of back panel **52**. Each of mounting channels **54** has a transverse portion **55** across the end thereof, and a set of aligned slots **56** in the base thereof. As most clearly indicated in FIG. 3 of the drawings, the set of slots **56** has four pair of vertically spaced and aligned slots. A hole **57** is provided in the lower end of channel **54**, the use of which will become more apparent as the description of the invention progresses. Attaching brackets **58** are disposed in and associated with each pair of the aligned slots **56** in mounting channels **54**. Each of the brackets **58** has a flat length of sheet metal **59** overlying a single pair of aligned slots **56**, and two flat L-shaped tabs **60** secured

thereto which extend through the slots in the mounting channel **54**. Woodscrews **61**, disposed through the apertures **62** in channel **54** and apertures **63** in the brackets **58**, secure the entire assembly to the upright edges of panels **52**. The structural relationship between the brackets **58** and channel **54** is illustrated in FIG. 6 of the drawings. The brackets **58** can be inserted into channel **54** with the transverse portions of the L-shaped tabs **60** in either an upwardly extending position or a downwardly extending position. The distance between the slots **56** in channel **54** is identical to the spacing of the slots **36** and **38** in upright posts **32**.

An upwardly extending hollow elongated tubular electrical adapter **64**, having a rectangular transverse cross sectional configuration, is mounted between one upright edge of back panel **52** and one of posts **32**, as most clearly shown in FIG. 1 of the drawings. The electrical adapter, shown in exploded relation in FIG. 3 has two mating channel shaped elements **66**, each provided with a set of four pairs of elongated slots **68** in the base thereof. The adapter has cut out portions **69** which receive spaced electrical outlets **70** which face both sides of the adapter. Suitable wiring is provided in the adapter **66** to connect electrical outlet **70** which wiring extends to the lower end of the adapter. Brackets **58** are disposed in the slots **68** in one of the channels **66**, as shown in FIG. 3. Preferably the top bracket **58** is provided with a protruding aligning projection **67** which maintains the channels **66** in alignment. Blocking elements **71** are positioned behind the brackets **58** to maintain same in outwardly extending relation, which elements are provided with a passage for receiving the electrical wires connected to electrical outlets **70**. The channels **66** of adapter **64** are secured together in assembled relation by threaded bolts **72** which are threadedly received in threaded plugs **74**. A cap **75** is inserted on the open top end of the adapter **64** to give same a finished appearance. When the back panel **52**, electrical adapter **64**, and upright post **32** are assembled, the tabs **60** secured to panel **52** by mounting channel **54** on one upright edge of the panel **52**, are inserted into a set of slots **38** in one side of post **32**. The protruding L-shaped tabs **60** on the opposite upright edge of panel **52** secured in place by mounting channel **54**, are inserted into the slots **68** in one side of adapter **64**, and the tabs **60** mounted on the opposite side of adapter **64** are locked in the slots **38** in the second post **32**.

Two upright rectangular wing panels **76** are mounted on upright post **32** in a position transverse to back panel **52**, as shown in FIG. 1 of the drawings. As shown most clearly in FIG. 4 of the drawings, each of wing panels **76** is preferably provided with a recessed edge portion **78**. A mounting channel **54** provided with four pair of aligned slots **56** is mounted on the upright recessed edge portion **78** of wing panel **76**. Mounting brackets **58** are disposed in channel **54** with the L-shaped tab **60** protruding through the slots in the same general arrangement as described in relation to back panel **52**. The lower attaching bracket **58** is provided with an elongated portion **80** which protrudes downwardly beyond the lower end of mounting channel **54**. The mounting channel **54** is secured to the wing panel **76** with woodscrews **61** which pass through the mounting channel **54**, brackets **58**, and into the edge portion **78** of channel **76**. The wing panel is affixed to the upright posts **32** by hooking the protruding L-shaped tabs **60** in a set of slots **36**. The wing panel is locked into position by inserting a metal screw **82** through the aperture in protruding portion **80** of the lower most bracket **58** and screwing same into the side of the post **32**. This prevents the wing panels from being moved upwardly and unhooking.

As shown in FIG. 2 an L-shaped leg **84** having horizontal portion **85** is mounted on one side of wing panel **76**. A length of angle iron **87** is mounted horizontally on the other of wing panels **76** opposite to and aligned with portion **85** of L-shaped leg **84**. A flat rectangular horizontal desk panel **86** is mounted between wing panels **76** in supported relation thereto resting on one side on horizontal portion **85** of leg **84** and on the other side on the length of angle iron **87**. The desk panel **86** can be secured to leg portion **85** and length of angle iron **87** by bolts or screws etc. A flat rectangular shelf panel **88** is mounted between wing panels **76** above desk panel **86**. Preferably shelf panel **88** is removably mounted to wing panels **76** by brackets **90** shown in detail in FIGS. 8 and 9. Shelf panel **88** has recessed portions **91** on the opposite edges for concealing the brackets **90**. The brackets **90** are each provided with two longitudinally spaced U-shaped hooks **92** having a cut out portion **93**. The U-shaped hooks **92** on each of the brackets **90** interlock to form a rigid concealed supporting engagement for the shelf **88**. Shelf **88** can be removed by merely pushing same upwardly to release the interlocking engagement between the U-shaped hooks **92**. One of brackets **90** is secured to the shelf **88** by woodscrews or suitable means. The other of brackets **90** is mounted on panel **76** preferably with bolts **94** which threadedly engage a threaded sleeve **95** mounted within the panel **76**. With this arrangement, shelf brackets **90** can be conveniently mounted on both sides of wing panels **76** when a plurality of adjacent carrels are utilized. A fluorescent type light fixture **98** is preferably mounted on the underside of shelf **88** as most clearly shown in FIG. 2 of the drawings. The fluorescent light consists of a housing **99**, a reflector **100**, a fluorescent bulb **101**, and a polarized glass panel **102**. The fluorescent light fixture can be provided with a separate switch, and can be plugged directly into the electrical adapter **64**.

An elongated tubular electrical raceway **104** is mounted beneath panel **52** as most clearly shown in FIG. 2. Electrical raceway **104** is provided with an upwardly extending apertured tab **105** as shown most clearly in FIG. 3 of the drawings, which tab can be used to secure the raceway to the edge of panel **52**. Suitable electrical wiring is disposed in electrical raceway **104** to supply electricity to electrical outlets **70**. The electrical wiring can be strung to adjacent booths through the knock-out plugs **40** or **42**. Positioned below electrical raceway **104** is an elongated audio raceway **106**, which is mounted below back panel **52** by inserting the ends into the knock-out plugs **42** in upright post **32**. As the unit is assembled, bolt **107** is positioned in an aperture in the electrical adapter **64** which extends through mounting channel **54** and into back panel **52** to prevent unhooking of the L-shaped tabs **60** from the slots in the electrical adapter. A machine bolt **107** is used to secure the upwardly projecting tab **105** of the electrical raceway **104** to the assembly by threading into T-nut **108** imbedded into panel **52**. A generally U-shaped cover element **210** provides a retaining and supporting means for both the electrical raceway **104** and the audio raceway **106**. The cover **210** is secured to the electrical adapter **64** with a metal screw **212**. Cover **210** produces a very pleasing appearance covering the opening in the electrical adapter **64** and past, and at the same time provides an effective support for the audio and electrical raceway.

As most clearly shown in FIG. 6, the brackets **58** are removably mounted relative to channels **54** by coined portions **111** which extend into apertures **63**. The spacing of the slots, the tab **60**, the apertures **63** in the bracket **58**, and in mounting the channels, are arranged so that the brackets **58** can be positioned in the mounting channels in either positions, that is with the transverse portions of the L-shaped tabs either in an upwardly extending position, or in a downwardly extending position.

It can be seen that the carrel unit of my invention is composed of standard parts which can be very readily assembled and disassembled by ordinary unskilled workers. The various elements of the carrel units of my invention can be assembled to either form single or multiple

units of carrel combinations which can be arranged in a large variety of arrangements as will be described hereinafter.

The carrels of my invention can conveniently be sold in kit form adapted to be assembled into single or multiple units. The carrel unit kit preferably includes at least one post having a plurality of sets of slots therein, a back panel, means to secure the opposite edges of the back panel to a post, a wing panel, a means securable to the edge of the wing panel for securing the wing panel to the post in engagement with the slots thereof, a leg means mountable on the wing panels, a desk panel adapted to be disposed transverse to the wing panel, and a means for securing the desk panel to the wing. The various elements of the kit and their association with the respective elements of the carrel has been described previously.

In FIG. 14 of the drawings there is depicted a convenient and useful bookshelf arrangement **110** that can be releasably secured to the backside of a carrel **30**. The bookshelf **110** has a flat lower shelf **112** provided with relatively thin upright end partitions **114**. The rear edges of end partitions **114** are provided with L-shaped tabs generally similar to tabs **60** provided on attaching bracket **58**. The tabs are releasably hooked into a set of aligned slots **36** provided in post **32**. The length of the shelf **110** can be made to extend across one or more carrel units. Preferably the shelves extend across a single carrel unit and engage the inside set of aligned slots **36**. This combination of a bookshelf and carrel unit is very convenient in that it provides an attractive arrangement for storing books, which can be assembled and disassembled very quickly. Moreover, since the shelves are of a uniform length they can be readily removed and assembled on different locations on the upright posts to quickly and conveniently provide for different arrangements and storage requirements.

Also, depicted in FIG. 14 is another shelf arrangement **116** adapted to hold and display magazines and the like. Shelf **116** has an inclined surface **118** with means on the end which releasably engage the slots **36** in upright posts **32** in generally the same manner as shelf **110**.

In FIG. 15 is depicted a cross section of another modification which adapts commercially available bookshelf structure to be mounted on the carrels of my invention. In this embodiment a channel **120** having slots **122** is releasably secured to posts **32** of the carrel unit of my invention. The channel **120** is provided with attaching brackets **58** having L-shaped tabs **60** which are inserted in releasable engagement with slots **36** or **38** in upright post **32**. The shelves **124** can then be attached to the upright channel **120**. The slots **122** in channel **120** can be formed to accommodate any desired type of bookshelf.

In FIGS. 11, 12, and 13 there is depicted an arrangement wherein a double row of carrels of my invention are assembled to form a multiple unit. The general arrangement of each carrel is similar to the carrel described previously except that a single back panel **52** serves two adjacent carrels. The arrangement of the respective wing panels and back panels is shown in FIG. 13 of the drawings. In this arrangement the back panel **52** is secured in the center set of aligned slots **38** in posts **32**. In like manner, electrical adapter **64** is secured on one side to the upright edge of a back panel and on the opposite side to post **32** in the center set of slots **38**. The wing panels **76** are secured in sets of slots on opposite sides of post **32** directly opposite each other. In this arrangement the wing panels **76** also serve to separate two adjacent carrels. In FIG. 12 is illustrated the arrangement for supporting the desk panel **86**. The leg **84** is mounted on the same respective side of all of the wing panels **76**, while the length of angle iron **87** is mounted directly opposite same at the same height. As indicated in FIG. 12, bolts **118** are used to secure both the length of angle iron **87** and the leg **84** to wing panel **76**.

In FIG. 16 there is depicted still another arrangement of a wall mounted unit made up of a plurality of carrels **30** of my invention. In this arrangement one-half of post **32** is secured to the wall with bolts **126** or the like. In assembling this arrangement, the channels **32** are first mounted on the wall in the appropriate spaced arrangement. The panel mounting channels **54** are then secured to the upright posts **32** in an inverted or upside down position, that is with the transverse portion **55** on the bottom end thereof. This arrangement is illustrated in FIG. 18 of the drawings. In affixing the mounting channel **54**, the attaching brackets are inserted through the slots **56** in mounting channel **54** in the opposite direction, that is with the protruding transverse portions of L-shaped tab **60** directed toward the end provided with transverse portion **55**. The tabs **60** are in effect pointed downwardly. In like manner, the electrical adapter **64** is attached to the post **32** and the mounting channel **54** affixed thereto with the transverse portion **55** on the lower end thereof. The back panel **52** is then slid downwardly into position in mounting channels **54** through the open top ends. The lower edges of the panel **52** abut transverse portion **55** of mounting channels **54** to support same. The wing panels **76**, desk panels **86**, and shelf panel **88** are then assembled in the conventional manner.

In FIGS. 19 and 20 of the drawings is illustrated still another arrangement of the carrel unit of my invention which further illustrates its versatility. In this arrangement the side and back panels, wing panels, and desk panel are shown mounted on a portable rack or stand **130** normally used to support bookshelves. This type stand is commercially available. The stand **130** is provided with a plurality of slots **132** in the outwardly facing sides thereof which normally are utilized to mount shelves **110** thereon. In this arrangement one of the mounting channels **54** is mounted on the upright posts **131** with a metal screw **134** or the like with the transverse portion **55** on the lower end thereof. The electrical adapter **64** is likewise mounted to post **131** with metal screws **134**, or the like. The other mounting channel **54** is then secured to the electrical adapter **64** with the transverse portion **55** on the lower end thereof. The back panel **52** can then be slid into position from the top in the same manner described in the arrangement shown in FIG. 16. The wing panels **76**, desk panel **86** and shelf panel **88** are then assembled in the conventional manner described previously. Any variations in the width between posts **131** can be easily accommodated by sawing or cutting the back panel **52** to the proper width if the panel is too wide, or conversely, by mounting the mounting channel **54** on an inverted mounting channel **54** secured to post **131** by metal screws **134** or the like if the panel is too narrow to span the distance. This latter arrangement is illustrated in FIG. 21 of the drawings. In FIG. 22 is illustrated still another form of a commercially available mounting channel **140** which can be used to support the carrel unit **30** of my invention.

In FIG. 23 is illustrated an arrangement whereby carrel units **30** of my invention can be mounted directly on bookshelf stack support structure which provides great versatility in arrangements. In this arrangement the mounting channels **140** extend well above the carrel units **30**. Shelving or the like can be mounted on, above, and immediately adjacent the carrel units to make the most efficient use of the available space.

In FIGS. 24 and 25 is illustrated a post extension **150** which can be used to extend the upright post **32** of the carrel units **30** of my invention. The extensions **150** can be used to mount additional bookshelves, blackboards, panels, or the like. The extensions **150** greatly increase the variety of arrangements that are possible. The post extension **150** is generally square in cross section and is preferably formed of two channels in the same manner that posts **32** are formed. The post **150** is normally provided with sets of aligned slots adapted to releasably mount bookshelves, etc. thereto. As indicated in FIG.

25, two lengths of angle iron **152** are welded in opposing relation to the inside of extension post **150**. The extension **152** can be inserted into the top of upright post **32** to form a strong sturdy and very useful support.

In FIG. 26 is illustrated structure for releasably mounting large panel sections **160** to the upright posts **32** of the carrels of my invention. The panels **160** can be used for blackboards, screens, bulletin boards, and the like. As indicated in FIG. 26, a mounting channel **54***a* having one leg removed is secured to one end of panel **160**. The mounting channel **54** having one of the outwardly extending legs thereof removed is secured to an upright edge of panel **160**. Attaching brackets **58** are secured in the slots in mounting channel **54***a*, and the mounting channel secured to panel **160** with woodscrews **162**, or the like. If the panel **160** is relatively large and extends across an intermediate upright post **32**, it can be secured to the post with a mounting channel **54***b* having both of the protruding flanges or legs removed. The intermediate channel **54***b* is likewise secured to panel **160** by woodscrews **162**. After the mounting channels have been secured to the panel **160** the panel is merely releasably secured to the post **32** by inserting the L-shaped tabs **60** into the appropriate slots in posts **32**.

In FIG. 27 is illustrated how various types of panels can be mounted by utilizing the mounting channels **54** of the carrel unit of my invention. As indicated in FIG. 27 the combination panel **170** can be composed of various thinner sheets **172**, **174** and **176**. Panel **176** can, for example, conveniently be a chalkboard, a soft board to serve as a bulletin board, etc. Sheet **174** serves as a backing element which lends rigidity to the panel assembly.

In FIG. 28 there is illustrated an arrangement whereby the carrel units **30** of my invention can be assembled to form a rosette design. In this arrangement four carrel units are assembled in a manner that each of the persons using same enjoys complete privacy. The back panels **52** can be provided with apertures adapted to mount the length of angle iron used for supporting one end of desk panel **86**, and also the brackets **90** supporting the ends of shelf panel **88**.

In FIG. 29 is illustrated a modified rosette arrangement in which the carrel units **30** are mounted on a post or column **180**, instead of an upright channel post **32** as in FIG. 28. In this arrangement the back panels can be secured to each other by screws, brackets or the like.

In FIG. 30 is illustrated an H arrangement of carrels **30** of my invention. In this arrangement six carrel units **30** are conveniently arranged to give each of the users thereof a great degree of privacy, the H arrangement provides a very desirable environment for study. In this arrangement the back panels **52** are utilized to support the desk panel **86** and shelf panel **88** of the center carrel units.

The foregoing discussion and description has been made in connection with preferred specific embodiments of carrels of the invention. However, it is to be understood that the discussion and description is only intended to illustrate and teach those skilled in the art how to practice the invention, and such is not to unduly limit the scope of the invention, which is defined in the claims set forth hereinafter.

I claim:

1. A prefabricated free standing carrel unit comprising, two spaced upright posts, each of said posts being hollow and having a square transverse cross sectional configuration and formed from a pair of channels secured together, each of said posts provided on opposite sides with two spaced sets of four pairs of vertically spaced and aligned slots, and on the remaining adjacent opposite sides with three spaced sets of four pairs of vertically spaced and aligned slots, a square shaped knock-out plug in each of the sides of said posts spaced upwardly from the bottom and below the lowermost pairs of aligned slots in each set, top covers for said posts, leveling means on the bottoms of each of said posts, each of said leveling means having a flat transverse plate secured to the lower end of said post and provided with a central threaded aperture, a threaded rod, and a circular transverse head on the lower end of said threaded rod for in use engaging the floor or other flat supporting surface, a flat rectangular shaped back panel mounted between said spaced upright posts, two elongated panel mounting channels on the opposite upright edges of said back panel, each of said mounting channels having a transverse portion across the end thereof, and a set of four pair of vertically spaced and aligned slots in the base of said channel, an attaching bracket disposed in each pair of aligned slots in said mounting channels, each of said attaching brackets having a flat length of metal overlying a pair of aligned slots, and two transverse flat L-shaped tabs secured to said flat lengths and extending through said slots of said mounting channels, an upwardly extending hollow elongated tubular electrical adapter having a rectangular transverse cross sectional configuration mounted between said back panel and one of said posts, said adapter having a plurality of longitudinally spaced electrical outlets arranged on opposite sides, two sets of four pair of aligned slots in the adjacent opposite sides, one of said last-mentioned sets of slots in one side receiving said tabs of said attaching brackets in said mounting channel on one upright edge of said back panel, a set of four attaching brackets having aligned L-shaped tabs disposed in the other of said sets of slots, said last-mentioned tabs of said brackets received in said aligned slots in one of said posts, two upright rectangular wing panels, recessed portions on one upright edge of each of said wing panels, a panel mounting channel provided with a set of four pair of aligned slots and secured to an upright edge of each of said wing panels receiving said recessed portion, four attaching brackets mounted in each of said mounting channels and seated in said set of aligned slots in said post, an L-shaped leg secured to one of said wing panels, a length of angle iron mounted horizontally on the other of said wing panels opposite said L-shaped leg, a flat rectangular horizontal desk panel mounted between said wing panels in supported relation on said length of angle iron and the horizontal portion of said L-shaped leg, a flat rectangular shelf panel mounted between said wing panels above said desk panel, recessed portions on the opposite edges of said shelf panel, means for removably mounting said shelf panel on said wing panels comprising, four lengths of strap iron, each of said lengths having two longitudinally spaced U-shaped hooks, two of said lengths secured to opposite ends of said shelf panel and seated in said recessed portions, two of said lengths secured to said wing panels in spaced and parallel relation to said desk panel, a fluorescent-type fixture mounted on the underside of said shelf panel, an elongated tubular electrical raceway positioned below said back panel, an upwardly projecting apertured tab on one end of said electrical raceway, means securing said tab to the lower end of said electrical adapter and thereby providing a ground for the carrel unit electrical system, an elongated audio raceway positioned below said electrical raceway having end portions positioned in said knock-out in said posts, a generally U-shaped cover and retaining means for supporting said electrical and audio raceways, means for securing said cover and retainer means to the lower end of said electrical adapter, said carrel unit adapted in use to be assembled and disassembled easily and quickly, and being capable of being assembled to form single or multiple units in a large variety of arrangements.

2. A prefabricated carrel unit comprising, two spaced upright posts having a square transverse cross sectional configuration, each of said posts provided with spaced sets of four pair of vertically spaced and aligned slots on the sides thereof, a knock-out plug in each of the sides of said posts spaced upwardly from the bottom, leveling means on the bottom of each of said posts, a

flat rectangular shaped back panel mounted between said spaced upright posts, two elongated panel mounting channels on the upright edges of said back panel, each of said mounting channels having a transverse portion across the end thereof, and a set of four pair of vertically spaced and aligned slots in the base thereof, attaching brackets disposed in said pairs of aligned slots in said mounting channels, each of said attaching brackets having a length of sheet metal overlying a pair of aligned slots, and two L-shaped tabs secured to said flat length and extending through said slots of said mounting channels, an upwardly extending hollow elongated electrical adapter having a rectangular transverse cross sectional configuration mounted between said back panel and one of said posts, said adapter having a plurality of longitudinally spaced electrical outlets arranged thereon, a set of four pair of aligned slots in an adjacent side receiving said tabs of said attaching brackets on one upright edge of said back panel, a set of four pair of aligned L-shaped tabs on the opposite side received in said aligned set of slots in one of said posts, two upright rectangular wing panels, recessed portions on one upright edge of each of said wing panels, a panel mounting channel secured to the upright edge of each of said wing panels receiving said recessed portion therein, four attaching brackets mounted on each of said mounting channels and seated in a set of aligned slots in said post, a leg secured to one of said wing panels, a length of angle iron mounted horizontally on one of said wing panels opposite said leg, a flat rectangular horizontal desk panel mounted between said wing panels in abutting relation to said length of angle iron and said leg, a flat rectangular shelf panel mounted between said wing panels above said desk panel, means releasably securing said shelf panel to said wing panels in spaced parallel relation to said desk panel, a light fixture mounted on the underside of said shelf panel, an electrical raceway positioned below said back panel and communicating with said electrical adapter, said carrel unit adapted in use to be assembled and disassembled easily and quicky, and being capable of being assembled to form single or multiple units in a large variety of arrangements.

3. A prefabricated carrel unit comprising, two spaced upright posts, each of said posts having a square transverse cross sectional configuration, each of said posts provided with at least one set of a plurality of vertically spaced and aligned slots on each side, a flat rectangular shaped back panel mounted between said spaced upright posts, two elongated panel mounting channels on the upright edges of said back panel, means securing said mounting channel to the edges of said back panel, a set of a plurality of vertically spaced and aligned slots in the base of each of said channels, attaching brackets disposed in said aligned slots in said mounting channels, each of said attaching brackets having a length of metal and at least one L-shaped tab secured to said length and extending through one of said slots of said mounting channels, an upwardly extending hollow elongated tubular electrical adapter having a rectangular transverse cross sectional configuration mounted between said back panel and one of said posts, said adapter having at least one electrical outlet, a set of aligned slots in one side of said adapter receiving said tabs of said attaching brackets on the upright edge of said back panel, a set of aligned L-shaped tabs on the opposite side received in said aligned slots in one of said posts, two upright wing panels, a mounting channel secured to one upright edge of each of said wing panels, a set of aligned slots in the base of said mounting channel, attaching brackets mounted in the slots of said mounting channels seated in a set of slots in said posts, a leg secured to one of said wing panels, abutment means secured to the opposite wing panel, a flat horizontal desk panel mounted between said wing panels in supported relation to said abutment means and a portion of said leg, a shelf panel mounted between said wing panels in spaced parallel relation to said desk panel, said carrel unit adapted in use to be assembled and disassembled easily and quickly, and being capable of assembly to form single or multiple units in a large variety of arrangements.

4. A carrel unit comprising, two spaced upright posts, each of said posts having a generally square cross sectional configuration, each of said posts provided with at least two sets of spaced slots in the sides thereof, a flat rectangular shaped back panel mounted between said spaced upright posts, mounting channels secured to the upright edges of said back panel, each of said mounting channels having a plurality of spaced hooks mounted on the base portion thereof and projecting outwardly, an upwardly extending elongated electrical adapter having a generally rectangular cross sectional configuration mounted between an edge of said back panel and one of said posts, said adapter having at least one electrical outlet therein, a set of spaced slots in one side adapted to receive said hooks on said mounting channel, and a set of projecting spaced hooks on the opposite side thereof adapted to be secured within said slots in said upright post, two wing panels, a mounting channel secured to an upright edge of each of said wing panels, a plurality of spaced projecting hooks on said mounting channels adapted to be received in said sets of slots in said upright posts, at least one leg secured to one of said wing panels, a desk panel mounted between said wing panels extended above the lower edges of said wing panels and said back panel a substantial distance for privacy, means securing said desk panel to said wing panels, said carrel unit adapted in use to be assembled and disassembled easily and quickly and being capable of being assembled to form single or multiple units in a large variety of arrangements.

5. A prefabricated free standing carrel combination comprising, an upright post having a square transverse cross sectional configuration and provided on opposite sides with two spaced sets of four pair of vertically spaced and aligned slots, and on the remaining opposite sides with three spaced sets of four pair of vertically spaced and aligned slots, a square shaped knockout plug on each side in the lower portion of said post spaced upwardly from the bottom and below the lowermost pair of said aligned slots, leveling means on the bottom of said post, a flat rectangular shaped back panel, two elongated panel mounting channels mountable on the upright edges of said back panel, each of said mounting panels having a transverse portion across the end thereof, and a set of four pair of vertically spaced and aligned slots in the base of said channel, attaching brackets disposable in each pair of aligned slots in said mounting channels, each of said attaching brackets having a flat length of sheet metal adapted to overlie a pair of aligned slots, and two flat L-shaped tabs secured to said flat length and extending through said slots of said mounting channels, and upwardly extending hollow elongated tubular electrical adapter having a rectangular transverse configuration mountable adjacent one upright edge of said back panel, said adapter having a plurality of longitudinally spaced electrical outlets arranged on opposite sides thereof, two sets of four pair of aligned slots in the adjacent opposite sides, one of said sets of slots in one side adapted to receive said tabs of said attaching brackets on one upright edge of said back panel, a set of four pair of aligned L-shaped tabs disposed in the other of said set of slots adapted to be received in the set of slots provided on an upright post, an upright rectangular wing panel having recessed portions on the upright edge thereof, a panel mounting channel provided with a set of four pair of aligned slots and securable to one upright edge of said wing panel, four attaching brackets mountable in the base of said panel mounting channel adapted to be seated in a set of aligned slots in said post, an L-shaped leg securable to said wing panel, a length of angle iron mount-

able on the side of said wing panel opposite said L-shaped leg, a flat rectangular horizontal desk panel mountable transverse to said wing panel, a flat rectangular shelf mountable on said wing panel above said desk panel, means for removably mounting said shelf panel on said wing panel, an elongated tubular electrical raceway adapted to be positioned below said back panel, an elongated audio raceway positionable below said electrical raceway having an end portion adapted to be disposed in said knock-out in said post, means for supporting said electrical raceway and audio raceway on the bottom of said back panel, said carrel unit adapted in use to be assembled and disassembled easily and quickly and be capable of being assembled to form single or multiple units in a large variety of arrangements.

6. A carrel unit kit comprising, a pair of post members having a plurality of spaced sets of connecting slots therein, a back panel, means securable to opposite edges of said back panel releasably connecting said back panel to said posts, a wing panel, hook means securable on the edge of said wing panel securing the same to one of said posts in engagement with said slots thereon, leg means connected to said wing panel, a desk panel connected to said wing panel and said back panel, said desk panel extended the proper height for working thereon and having said wing panel and said back panels extended a substantial distance therebelow for privacy, said carrel unit adapted in use to be assembled and disassembled easily and quickly and being capable of assembly to form multiple units in a large variety of arrangements.

7. A carrel unit kit as described in claim 6, including a pair of said wing panels connected to said posts, a shelf panel extended between said back panel and said wing panels above said desk panel, and means releasably connecting said shelf panel to said wing panels in a concealed manner so as to present an attractive structure.

8. A carrel unit kit as described in claim 7, including a light fixture means connected to the underside of said shelf panel to provide substantial illumination to the top area of said desk panel.

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