

Feb. 28, 1967

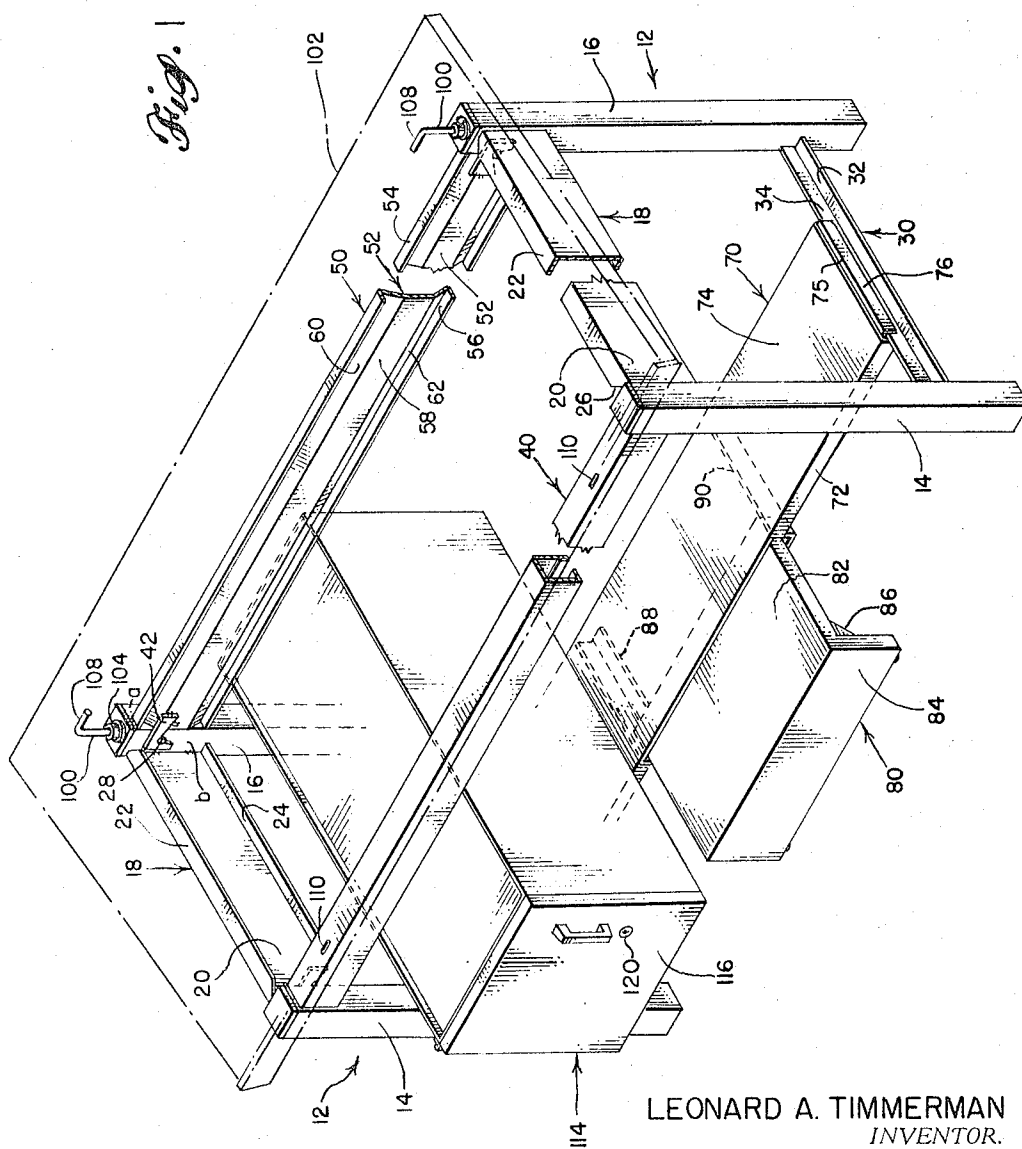
L. A. TIMMERMAN

3,306,692

KNOCK-DOWN TABLE AND DESK CONSTRUCTION

Filed Feb. 24, 1966

6 Sheets-Sheet 1



BY
Graybeal, Cole & Bernard
ATTORNEYS

Feb. 28, 1967

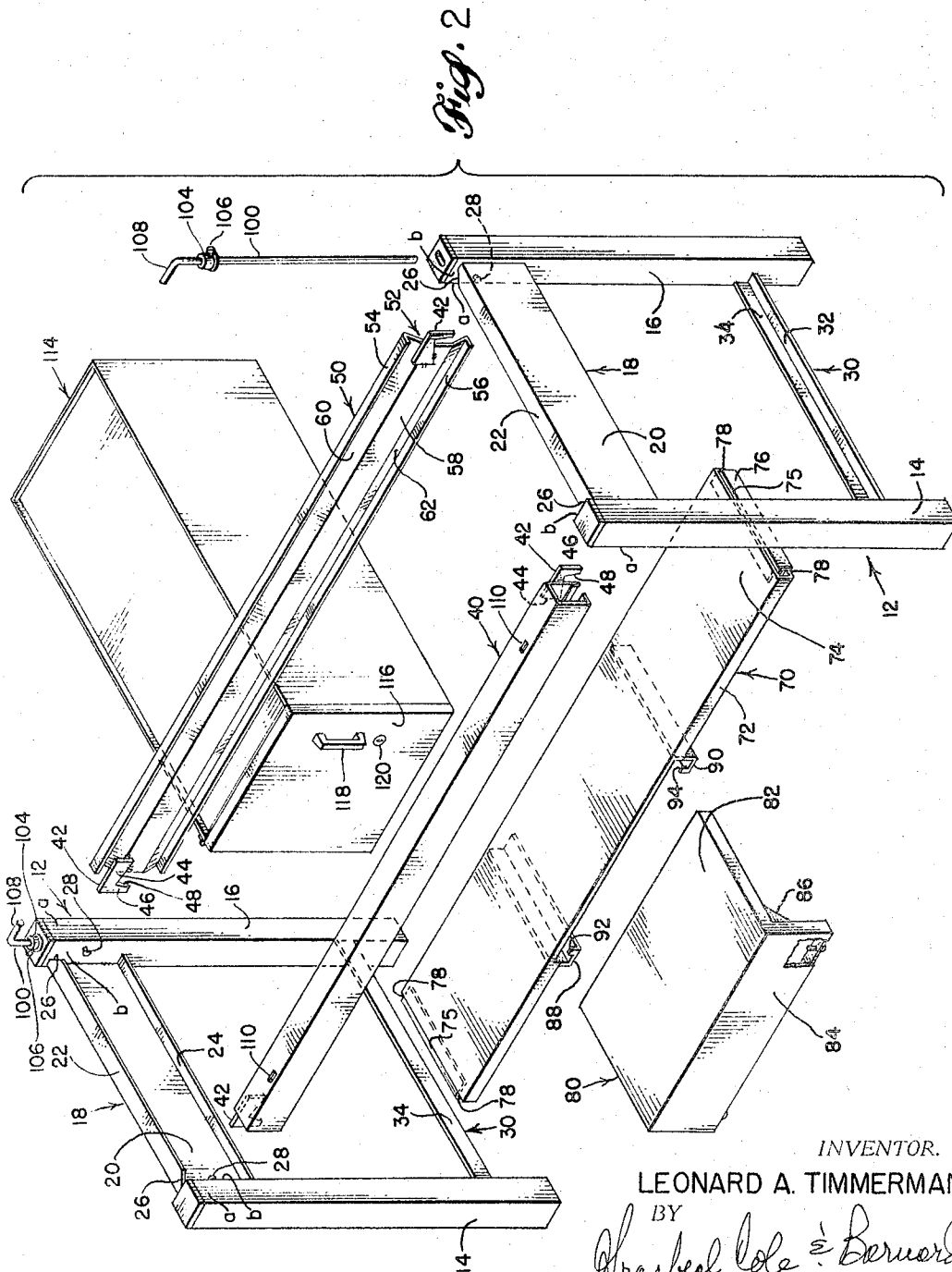
L. A. TIMMERMAN

3,306,692

KNOCK-DOWN TABLE AND DESK CONSTRUCTION

Filed Feb. 24, 1966

6 Sheets-Sheet 2



INVENTOR.

LEONARD A. TIMMERMAN

BY

Graybeal, Cole & Bernard

ATTORNEYS

Feb. 28, 1967

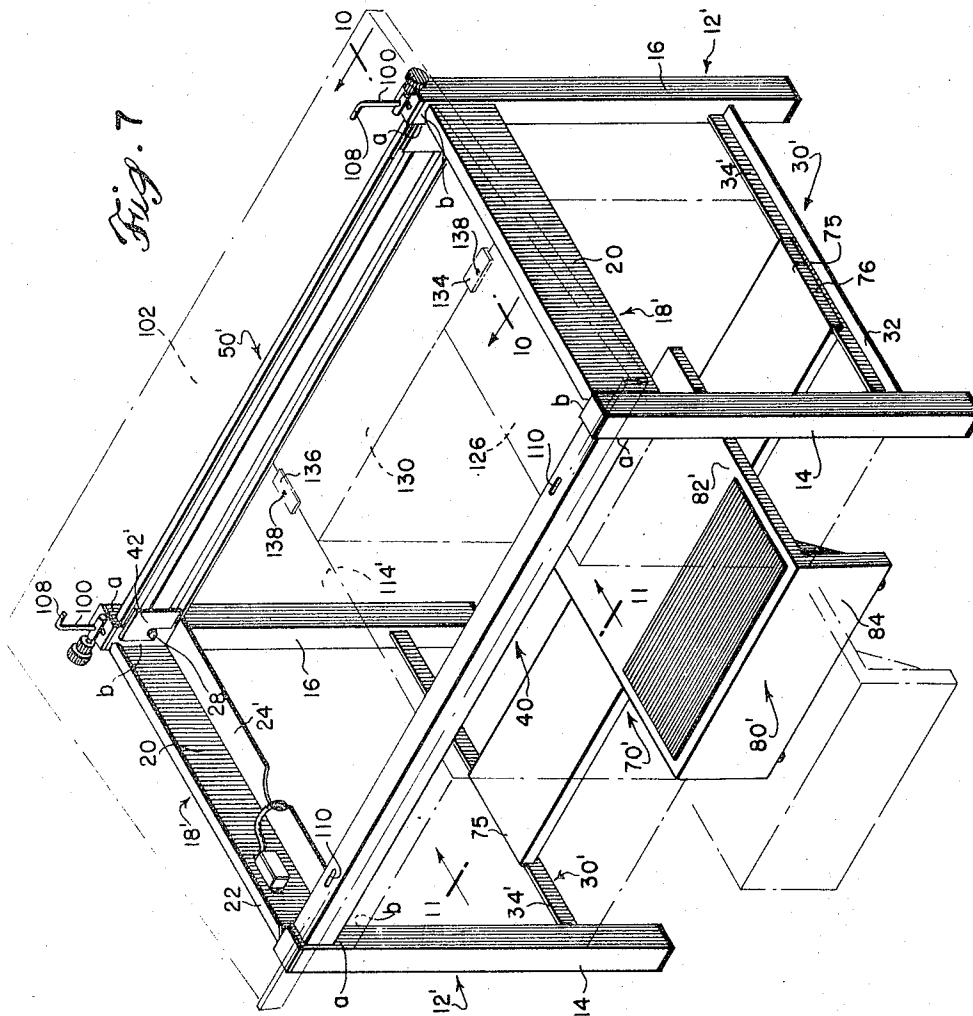
L. A. TIMMERMAN

3,306,692

KNOCK-DOWN TABLE AND DESK CONSTRUCTION

Filed Feb. 24, 1966

6 Sheets-Sheet 4



LEONARD A. TIMMERMAN
INVENTOR.

BY *Graybeal, Cole, & Barnard*

ATTORNEYS

Feb. 28, 1967

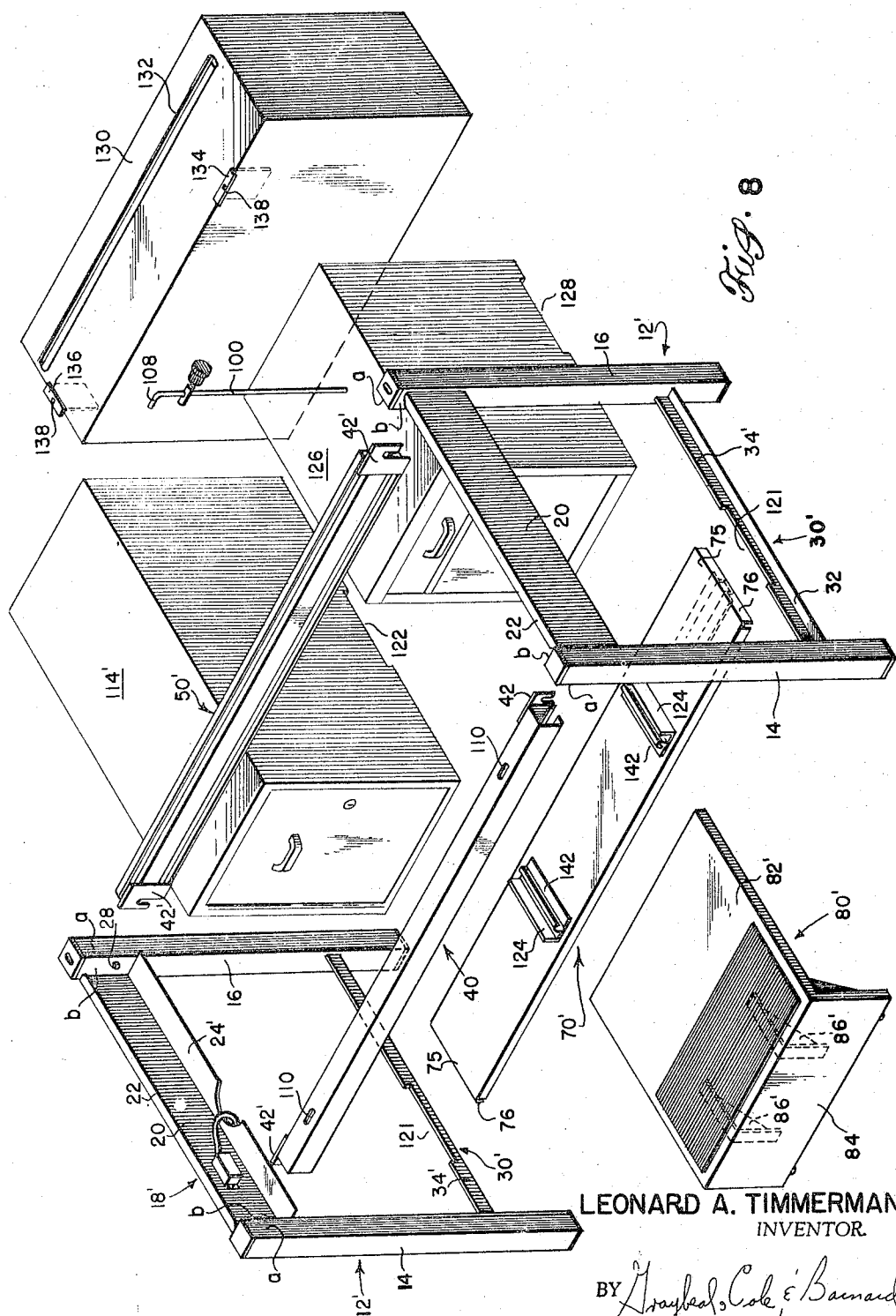
L. A. TIMMERMAN

3,306,692

KNOCK-DOWN TABLE AND DESK CONSTRUCTION

Filed Feb. 24, 1966

6 Sheets-Sheet 5



Feb. 28, 1967

L. A. TIMMERMAN

3,306,692

KNOCK-DOWN TABLE AND DESK CONSTRUCTION

Filed Feb. 24, 1966

6 Sheets-Sheet 6

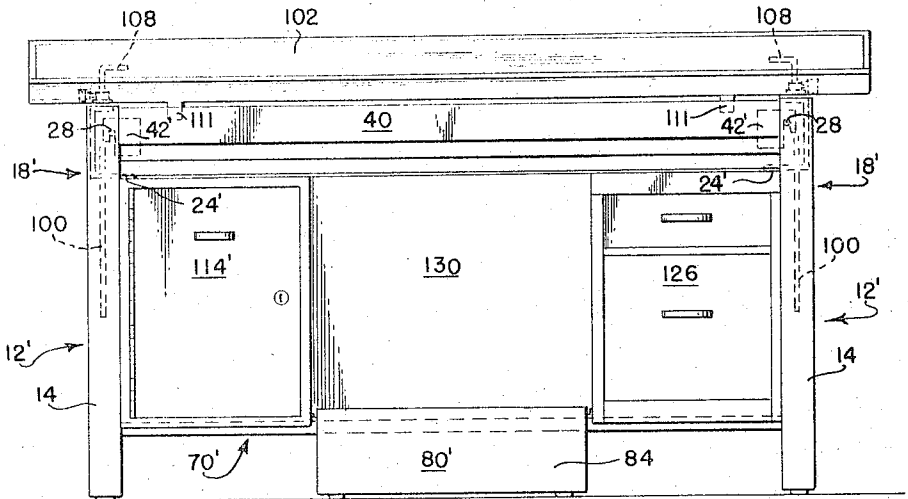


Fig. 9

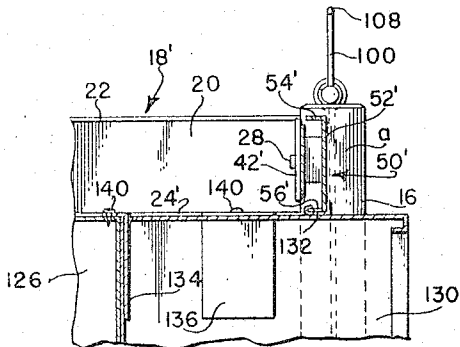
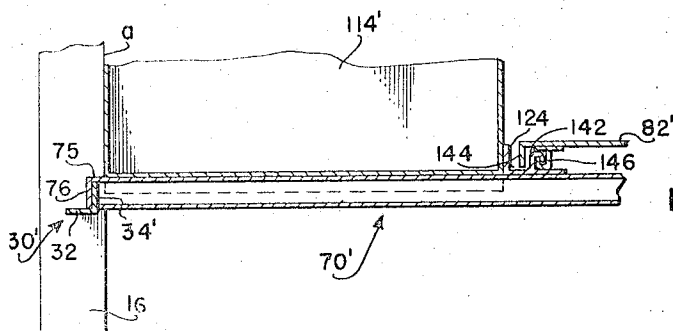


Fig. 10

Fig. 11



LEONARD A. TIMMERMAN
INVENTOR

BY *Graybeal, Cole & Barnard*

ATTORNEYS

1

3,306,692 KNOCK-DOWN TABLE AND DESK CONSTRUCTION

Leonard A. Timmerman, 8723 Talbot Road,
Edmonds, Wash. 98020
Filed Feb. 24, 1966, Ser. No. 540,120
19 Claims. (Cl. 312-231)

This application is a continuation-in-part of my copending application Serial No. 451,800, filed Apr. 29, 1965, now abandoned and entitled Desk and Drafting Table.

This invention relates to tables and desks of knock-down construction, and more particularly to tables and desks of this type which are characterized essentially by interlocking stacked components, and in assembly require the manipulation of but a very few, if any, screw fasteners.

As will be recognized by those skilled in the furniture art, a knock-down desk or table is a desk or table composed of a plurality of separate sections or units. The sections or units are handled and stored in an unassembled condition in route from the manufacturer to the user, and are then assembled at the location of use.

Known conventional desks and tables of knock-down construction involve a plurality of screw type fasteners (i.e. sheet metal screws or bolt and nut assemblies) at each joint and at other locations between components. It is not uncommon to find in a single desk or table of this type up to about one hundred fasteners, which are all necessary in order to achieve the desired amount of stability and rigidity. In assembly, these fasteners must be set in place and tightened, and this takes time to do. Such assembly would take one or two men as much as one to one and one-half hours to perform. Typical examples of desks and tables of such conventional knock-down construction are disclosed by Diehm U.S. Patent No. 2,714,540 and Abrahamson U.S. Patent No. 3,125,387.

A principal object of the present invention is to provide a knock-down construction for both tables and desks which makes possible extremely rapid assembly and disassembly. Tables and desks of the present invention are composed of interlocking components which in assembly are merely stacked together one on another, or between two others, and are interlocked in position. The interlocking of the various components gives the assembled desk or table acceptable stability and rigidity, and when it is desired to disassemble the desk or table the components are merely pulled apart or unstacked.

Briefly, tables and desks constructed according to the present invention comprise a frame composed of a pair of rigid end units, each having upper front, upper rear, and lower joint stations. Each joint station includes lock surface means, which is preferably a flat or planar inner surface, positionable opposite the lock surface means of the corresponding joint station on the other end unit. Each joint station also includes a hook support adjacent the lock surface means. The other frame members are an upper front cross member, an upper rear cross member, and a lower cross member. The ends of each cross member are shaped to abuttingly contact the lock surface means between which the cross member extends. An end hook is provided at each cross member. To assemble, the end units are set apart in opposed parallelism. The cross members are interconnectable between the end units merely by hooking the end hooks over the hook supports at the proper joint stations. When the cross members are in place the ends thereof are in substantially tight abutting contact with the lock surface means. The hook connections prevent endwise and downward movement of the cross members, and the abutting contact of the cross member ends with the lock surface means substantially prevents both vertical and horizontal angular give of the cross members relative to the joint stations. This con-

2

struction and manner of component interlock give the joint so formed the characteristic of being substantially fixed, resulting in the assembled desk or table being a substantially rigid structure.

Another object of the present invention is to provide a desk or table of the character described in which the assembled frame is provided with at least one set of horizontal and vertical restraint plate means, and such desk or table also includes a storage unit snugly fittable within boundaries established by such restraining means, and by parts of the frame.

A further object of the present invention is to provide a desk or table of the type described, which comprises a plurality of storage units, each adapted to snugly fit in and among, and interlock with, the frame components and/or another storage unit or units.

A still further object of the present invention is to provide a desk or table of knock-down construction which is acceptably stable and rigid and does not require a plurality of screw type fasteners or other semi-permanent fastening means at each joint and between adjacent units or components.

Yet another object is to provide a desk or table of the above-described character which involves a relatively few parts and is simple in construction, and thus is economical to manufacture; is light weight and of little bulk when disassembled, and therefore involves a minimum of packing, storage and shipping costs; and which requires no particular skill to assemble and disassemble.

Other objects and advantages will be apparent from the following description, appended claims and annexed drawing.

Referring to the drawing wherein like reference characters designate like parts throughout the several views:

FIG. 1 is a perspective view, taken from above and towards the front and one side, of a drafting table typifying the present invention, such view showing the table assembled and ready for use, with the top thereof depicted by broken or phantom lines for clarity of illustration of the frame parts and joint details immediately below it;

FIG. 2 is a perspective view taken from the same aspect as FIG. 1, but in which the top of the drafting table is omitted and the remaining parts are exploded, for the purpose of separately and clearly showing the component features and joint details which together render the table easily and rapidly assemblable and disassemblable;

FIG. 3 is a side elevational view of the assembled drafting table;

FIG. 4 is a front elevational view of the drafting table;

FIG. 5 is a fragmentary sectional view taken substantially along line 5-5 of FIG. 3, and specifically illustrating the joint details rendering the upper cross members readily interconnectable and removable from between the rigid end units;

FIG. 6 is a top plan view of the assembled drafting table, with the top depicted again by broken or phantom lines for the purpose of exposing the table components situated beneath it;

FIG. 7 is a perspective view of a modified form of drafting table constructed according to the present invention, taken from the same aspect as FIG. 1, such view presenting a solid line showing of the frame components and the foot rest, and a broken or phantom line showing of the top and three storage units, and also presenting a broken line showing of the foot rest in an extended position;

FIG. 8 is another perspective view of the modified form of drafting table, taken from the same aspect as FIG. 7, with the top thereof omitted and all other parts depicted by solid lines and separated from each other;

FIG. 9 is a front elevational view of the modified form of drafting table;

3

FIG. 10 is a fragmentary sectional view of the modified table, taken substantially along line 10—10 of FIG. 7, and showing the manner of support or suspension of the rear storage unit; and

FIG. 11 is a fragmentary sectional view of the modified table, taken substantially along line 11—11 of FIG. 7, and showing the manner in which the side storage units are locked in place between components of the frame, and are firmly secured without the use of screw fasteners or the like.

Referring more specifically to the several figures of the drawing, the drafting table is shown to include a composite frame comprising a pair of rigid end units 12, and upper and lower cross members interconnectable therebetween. Each end unit 12 is a preconstructed rigid assembly of legs and cross ties. The legs 14, 16 may be made from tubular steel, or a structural alloy, and are preferably rectangular in cross-section. By way of typical and therefore non-limitive example, the legs may measure approximately two and one-half inches square by approximately thirty-six inches in height. The front and rear legs 14, 16 of each end unit are interconnected near their upper ends by a cross tie 18, which may be of inwardly opening channel form, possessing a relatively deep web 20, an upper flange 22 and a lower flange 24. The upper cross ties 18 are welded or otherwise permanently secured at their ends to the upper portions of the legs 14, 16. A lower cross tie 30 is similarly welded or otherwise permanently secured in place between lower portions of the legs 14, 16. The lower cross tie 30 preferably consist of a length of angle iron having one leg or flange 32 thereof directed horizontally and the other leg or flange 34 thereof directed vertically upwardly.

Each pair of legs 14, 16, and thus each end unit 12, possesses a pair of inwardly facing planar surfaces *a* in co-planar parallelism with each other, and a second pair of planar surfaces *b* in opposed parallelism with each other, and disposed at right angles to the surfaces *a*. A headed pin 28, hereinafter sometimes referred to as a hook support, extends perpendicularly outwardly from the upper portion of each surface *b*, at a location between the flanges 22, 24 and inwardly of the web 20.

The upper portions of the surfaces *a*, *b*, and the headed pin member 28, on each front leg 14 constitute an upper front joint station. Similarly, the upper portions of the surfaces *a*, *b*, and the headed pin member 28, on each rear leg 16 constitute an upper rear joint station. The central portion, or another intermediate portion, of each lower cross member 30 constitutes a lower joint station.

At the lower joint station the upper edge and outer side of the vertical flange 34 constitutes a hook support, and the inner surface of the leg 34, which is planar and is in opposed parallelism with a corresponding surface portion of the vertical flange 34 of the lower cross member 30 of the opposite end unit 12, constitutes a planar joint surface.

An upper front cross member 40 and an upper rear cross member 50 are readily and separately interconnectable between the upper front and upper rear joint stations, respectively, of the end units 12. A lower cross member 70 is readily and independently interconnectable between the lower joint stations of the end units 12. All of the cross members 30, 40, 50, 70 possess squared ends, and downwardly opening hooks adjacent such ends.

All it takes to assemble the frame is to set the two end units 12 apart, in opposed parallelism, and then to individually drop the cross members 40, 50, 70 in place, in the following manner. The ends of the upper flange portions 22 of the cross ties 18 are cut away to provide avenues of ingress and egress for the hooks carried by the upper cross members 40, 50. With the hooks above the hook supports, the squared ends of the cross members 40, 50, 70 are placed against the planar joint surfaces, and then the cross members are moved downwardly so

4

that the hooks engage the hook supports. In preferred form, these constitute the only steps necessary to assemble the frame. The hook connections and the abutting contact of the squared ends of the cross members with the planar joint surfaces form the joints. Such joints are acceptably fixed and the assembled frame is a relatively rigid and sturdy structure, despite the absence of a plurality of screw fasteners or the like at the joints.

Preferred embodiments of the individual cross members, and of the hook-and-abutting-surface joints, will now be specifically described.

The upper front cross member 40 may be of rectangular tubular form, or may be of downwardly opening lipped channel form, with rectangular proportions in cross-section, as is illustrated. The hooks attached to the ends of the upper front cross member 40 are designated 42. They are shown to comprise a mounting portion or shank 44 that side laps and is welded or otherwise firmly secured to the inner surface of the upper front frame member 40, and a downwardly turning hook arm 46. The portion of the hook 42 which projects outwardly beyond the squared end of the cross member 40 is planar and together with the squared end forms a right angled nook.

When the hook is set in place on its hook support 28, the portion of the hook support 28 between the head of such support 28 and the surface *b* is engaged in the recess formed on the underneath side of the hook 42 where the shank 44 joins the point 46. When the hook 42 is in place, the squared end of the cross member 40 is in substantially tight abutting contact with the joint surface *a*, and the leg facing side of the hook 42 is in substantially tight contact with the surface *b*. The hook connection prevents the cross member 40 from being displaced endwise (in either direction) or downwardly relative to the vertical leg 14. The surface-to-surface contact of the right angularly related lock surfaces of the cross member 40 (i.e. the squared end and hook surfaces) with the right angularly related lock surfaces *a*, *b* of the leg 14, substantially prevent the cross member 40 from moving angularly either horizontally or vertically about the joint station *a*, *b*, 28. To further aid in assuring a tight joint, the inner edge 48 of the hook arm 46 is sloped so that when the cross member 40 is forced downwardly the hook arm 46 acts as a wedge; the end units 12 are drawn together; and the cross member 40 is put in compression. In FIG. 5 the hook support is illustrated in the form of a rivet. However, in some installations it may be desirable to use a threaded pin or machine screw or bolt, so that it may be tightened once the cross members are in place.

The upper rear cross member 50 is preferably of inwardly opening channel-like form. It is shown to comprise a relatively deep web 52, an upper flange 54, and a lower flange 56. Web 52 may be formed so as to present a vertical central area or panel 58 which extends generally flush with the free edges of the flanges 54, 56, and oblique panels 60, 62 interconnected between the central panel 58 and the flanges 54, 56. As clearly shown by FIGS. 1 and 2, the end hooks 42 are secured to the inner surface of the vertical panel 58. The hooks 42 for the upper rear cross member 50 are identical in construction to the previously described hooks 42 on the upper front member 40, and they are related to the squared ends of cross member 60 in the same manner, and in use they function in the same manner as the front hooks 42.

The lower cross member 70 serves as both a frame member, for adding rigidity to the table, and as a mounting support for other components of the table, as will hereinafter be specifically described.

The lower cross member 70 is shown to have the proportions of a rectangular plank, but is preferably formed from sheet metal. It is shown to comprise parallel front and rear edge surfaces 72, and a flat horizontal top sur-

5

face 74. Both ends of member 70 are squared, and a hook extends outwardly beyond each squared end. Each such hook comprises a horizontal top panel 75 that is restable on the upper edge of the vertical panel 34 of a cross tie 30, and a vertical hook panel 78 extending downwardly from the outer end of the top panel 75. When the hook is in place, the vertical hook panel 76 is positioned outwardly contiguous the vertical panel 34 of the cross tie 30.

The top panel 75 and the hook panel 76 may be made from the same piece of sheet material as cross member 70, or they may be of separate construction and then secured to the ends of the member 70, as shown.

Preferably, a foot rest 80 is supported at a generally central location on the lower cross member 70. Such foot rest 80 may be of inverted L form, and include a horizontal step section 82 and a vertical riser 84. Rigidizing members or gussets 86 may be provided between the riser 84 and the step section 82 for strengthening the assembly. Track members 88, 90 are provided above or below the cross member 70, to receive the opposite edge portions of the step section 82. The track members 88, 90 preferably have upstanding stop members 92, 94 positioned to prevent the foot rest 80 from disengaging and sliding endwise out of engagement by the tracks 88, 90. As clearly shown by FIGS. 3 and 4, for example, the riser 84 extends downward nearly to the floor, and gliders which actually contact the floor are provided along its lower edge. This arrangement renders the foot rest 80 floor supported at the front.

A top supporting rod 80 is telescopically received in each of the rear legs 16. The rods 100 extend through a collar 104 at the upper end of each rear leg 16. A lock screw or other clamp means 106 is associated with the collar 104, and constitutes means for adjustably affixing the vertical position of the support rods 100. Preferably the upper end portion of each rod 100 is bent into a horizontal disposition, and such horizontal portion 108 contacts, and constitutes the immediate support for, the top 102.

The upper surface of the upper front cross member 40 is formed to include a plurality of sockets 110 which may be in the form of elongated slots, as illustrated. A like number of tongues are attached to the top 102, and depend downwardly therefrom and are engageable in the sockets 110. When the tongues 102 are engaged in the sockets 110, the top is restrained against movement in all directions except up, and its weight keeps it down.

In the embodiment of FIGS. 1-6, a storage unit 114, which may be a rectangular cabinet with drawers or shelves therein, a door or front closure 116, handle 118, and key lock 120, is shown supported on the lower cross member 70, to one side of the foot rest 80.

FIGS. 7-11 show a modified form of drafting table embodying features of the present invention. With respect to the manner of interconnection of its cross members 40, 50' and 70', between its end units 12', such drafting table is the same as the table shown by FIGS. 1-6. There are two basic changes in the construction of the end units 12'. The lower flange 24 of the upper cross tie 18' is relatively wide and projects inwardly of the table beyond the plane in which the leg surfaces *a* are situated, which plane may be termed the interface of the end unit 12'. The second difference is that the vertical leg 34' of the lower cross tie 30' is recessed at the joint station, the recess being designated 121. When the lower cross member 70' is in place, the end boundaries of the recesses 121 restrain the cross member 70' against front or rear movement relatively along the cross ties 30'.

The side storage unit 114' is preferably provided with a similar downwardly opening recess 122 intermediate its ends, which recess 122 is sized to snugly receive the portion of lower cross member 70' on which the storage unit 114' rests. The storage unit 114' is of a height to snugly fit between the upper surface of lower cross member 70'

6

and the lower surface of the lower flange 24' of the upper cross tie 18', which flange 24' may also be termed a retaining plate. An upstanding side retaining member or plate 124 may be provided atop the lower cross member 70', and spaced inwardly along member 70' a distance from the interface of the end unit 12' substantially equal to the width of the storage unit 114'. Thus, when the storage unit 114' is in place, it also snugly fits between the interface of the end unit 12' and the vertical retaining member 124.

As will be evident, the front-to-rear horizontal interlock provided where the recess 122 engages the end portion of lower cross member 70', the vertical interlock of the storage unit 114' between the upper surface of cross member 70' and the lower surface of retaining plate 24', and the sideways horizontal interlock of the storage unit 114' between the end unit 12' and the vertical retaining member 124, together affix the storage unit 114' in place, with the use of screw tie fasteners or the like being unnecessary.

According to the present invention, a second storage unit 126 may be provided at the opposite side of the table. Such storage unit 126 is of the same height, and may be of the same width, but is preferably shorter than the storage unit 114'. It includes a bottom recess 128 for engaging the portion of lower cross member 70' on which it rests. The cross member 70' includes a second vertical retaining member 124 positioned to be contiguous the end inner side of storage unit 126 when the outer side thereof is against the interface of the adjoining end unit 12'.

Preferably, when the shorter side storage unit 126 is in place, its front face is substantially situated in a common vertical plane with the front face of the longer side storage unit 114'. This arrangement of the longer and shorter side storage units 114', 126 makes it possible to position a rear storage unit, which may be a rearwardly opening book case, in the generally square nook formed behind the shorter side storage unit 126' and to the inside of the rear portion of the longer side storage unit 114'.

As clearly shown by FIGS. 8 and 10, a channel means 132 forming an elongated mortise is secured along the top of the rear storage unit 130, and opens upwardly. The lower flange 56' of the upper rear cross member 50' constitutes a tenon engageable by such mortise. The tenon is slid relatively endwise into the mortise before the upper rear cross member 50' is interconnected between the end units 12'. When in place, the outer rear portion of the rear storage unit 130 is contiguous the back of the shorter side storage unit 126, and the inner end of the rear storage unit 130 is contiguous the rear portion of the inner side of the longer side storage unit 114'.

Preferably, hooks 134 and 136 are provided at the rear and the end of the rear storage unit 130, and are positioned to rest on the shorter side storage unit 126 and the longer side storage unit 114', respectively, to provide additional support for the rear storage unit 130. An aperture 138 may be provided in the horizontal portion of each hook 134, 136 for the reception of a single metal screw 140 (FIG. 10).

In the embodiment shown by FIGS. 7-11, the upper rear cross member 50' is shown in the form of a right angled channel having upper and lower flanges 54', 56', and a relatively deep planar web 52', the end hooks for such cross member 50' are formed from a metal plate that is at least as deep as the web 52', so that such plate can be welded along its upper and lower edges to the end portions of the three edges of the flanges 54', 56'.

In the embodiment of FIGS. 7-11, the vertical retaining members 124 are integral parts of extruded elements which also include the track means 142 for the foot rest 80. As best shown by FIG. 11, the top panel 82' of the foot rest 80' is preferably of bent sheet metal construction and includes a vertical flange 144 at each side edge. An upwardly opening hook channel 146 is secured to the

7

underside of the panel 82' slightly inwardly of the edge flange 144. The hooked channels 146 mate with the track forming means 142, which in form is a similar, but downwardly opening hook channel.

Another alternate construction for the upper rear cross member would be a straight web-type channel having shallower channel members of the same type positioned to open toward the inner surface of the web of the upper rear cross member. Such smaller channel members would be secured along the free edges of their flanges 2, such as by welding. The smaller channel members would be sized and positioned so that the outer surface of the web of the smaller channel would be situated in approximately the same plane as the free edges of the upper and lower flanges of the upper rear cross member. Such alternate structure for the upper rear cross member may be referred to as a double U or double channel construction.

From the foregoing, further variations, modifications, adaptations and usages of desks or tables (drafting and other types) according to the present invention will be apparent, within the scope of the following claims.

What is claimed is:

1. A desk or table capable of rapid assembly and disassembly, and comprising: a pair of rigid end units, each having inwardly facing upper front, upper rear, and lower joint stations, each joint station including a planar joint surface positionable opposite the planar joint surface of the corresponding joint station on the other end unit, and a hook support adjacent such planar joint surface; and separate upper front, upper rear and lower cross members, each cross member having two squared ends and a hook at each end, with the upper front cross member being independently interconnectable between the upper front joint stations of the end units merely by hooking the end hooks of such cross member over the hook supports at such stations, with the upper rear cross member being interconnectable between the upper rear joint stations of the end units merely by hooking the end hooks of such cross member over the hook supports at such stations, with the lower cross member being independently interconnectable between the lower joint stations of the end supports merely by hooking the end hooks of such cross member over the hook supports at such stations, and with the squared ends of the cross members making substantially tight abutting contact with the planar joint surfaces at the joint stations when the hooks are in place, resulting in the joints so formed being substantially fixed and the assembled desk or table being a substantially rigid structure.

2. The combination of claim 1, wherein each end unit comprises rectangular tubular front and rear legs, with an upper portion of each leg constituting a said joint station, with a side surface of each said upper leg portion constituting a said planar joint surface, and with each upper hook support being a headed pin member projecting perpendicularly outwardly from the side of said upper leg portion that is inwardly adjacent, and is perpendicularly to, the planar joint surface of its joint station; wherein the end hooks for the upper cross members are elements which side lap and are rigidly secured to, the inner sides of the end portions of such cross members, and project outwardly beyond, and at right angles to, the squared ends of said cross members, and include downwardly facing notches for engaging the hook support between their heads and the hooks support carrying sides of the leg upper portions, and wherein the leg facing sides of the hooks make substantially tight contact with the hooks support carrying sides of the leg upper portions when the hooks are in place and the squared ends of the upper cross members make substantially tight abutting contact with the said planar joint surfaces.

3. The combination of claim 2, wherein each end unit includes an inwardly opening channel member rigidly interconnected between the upper portions of the front

8

and rear legs, and including a vertically disposed web connected to the upper portions of the legs outwardly of the hook supports, and upper and lower flanges, with the ends of the upper flanges being cut away to provide avenues for the hooks into and out from their positions of engagement with the hook supports.

4. The combination of claim 1, wherein each end unit comprises vertical front and rear legs and a horizontal member rigidly interconnected between lower portions of said legs, and said horizontal member includes a vertical panel, a portion of the upper edge and outer side of which constitutes a said hook support, and a portion of the inner side of which constitutes a said planar joint surface, and wherein the lower cross member has rectangular proportions in plan and each end hook thereon comprises a horizontal top panel, restable on the hook support, and a vertical hook panel positionable outwardly contiguous the hook support.

5. The combination of claim 4, wherein at the joint station of each horizontal member a top recess is formed in the vertical panel portion of such horizontal member, and the top panels of the hooks are snugly receivable in said recesses, to be restrained by the end boundaries thereof against front or rear movement relatively along the horizontal members.

6. The combination of claim 1, further including a top, and wherein the upper front cross member includes a plurality of spaced apart, upwardly oriented sockets, and wherein said top includes a like number of downwardly oriented tongues insertable into said sockets, and said combination also further includes means carried by the upper rear portion of the desk or table for supporting the rear part of the table in a position above the front part thereof, when the tongues are received in said sockets.

7. The combination of claim 6, wherein the end units each include tubular rear legs and the said means for supporting the rear part of the table comprises vertically adjustable rod means telescopically received in said rear legs, and having upper end portions on which the rear portion of the top rests.

8. The combination of claim 1, further including a storage unit, and wherein the lowest portion of the upper rear cross member forms an elongated tenon, and the storage unit includes means at its top forming a mortise for receiving said tenon, said tenon being slidable endwise into the mortise prior to assembly of the upper rear cross member in place between said end units.

9. The combination of claim 8, wherein the upper rear cross member includes upper and lower flanges, and an interconnecting web which angles inwardly in at least its initial extent upwardly from its line of juncture with the lower flange, said lower flange and the immediately bordering portion of said web together constituting the said tenon.

10. A desk or table comprising: a pair of rigid end units, each having upper front, upper rear and lower joint stations, each of which joint stations is paired across the desk or table with the corresponding joint station on the other end unit, when the end units are set apart in opposed parallelism, and at least one of said end units having a uniplanar interface, and a horizontal retaining plate projecting from an upper portion of the end unit inwardly beyond said interface; a lower cross member independently interconnectable between the frame units, at the lower joint stations; a rectangular storage unit supportable on said lower cross member, substantially against said interface, and being of a height to snugly fit between the retainer plate and the lower cross member; an upper front cross member independently interconnectable between the end units at the upper front joint stations, above both the horizontal retaining plate and the storage unit; an upper rear cross member independently interconnectable between the end units at the upper rear joint stations, above both the horizontal retaining plate and the storage unit; and a top retain-

able on the end unit and cross member assembly, above said front and rear upper members.

11. The combination of claim 10, wherein said lower cross member further includes an upwardly projecting retainer member spaced inwardly of the end unit interface, and said storage unit is of a width at its base to be snugly receivable between the retaining member and the interface.

12. The combination of claim 10, wherein a downwardly facing recess is formed in an intermediate bottom portion of the storage unit, which recess is sized to snugly fit over and engage the portion of said lower cross member on which the storage unit is supported, so that the storage unit is restrained against front or rear movement relative to the lower cross member.

13. The combination of claim 10, wherein both end units have an uniplanar interface and a retaining plate, and the combination includes two side storage units, one of which is shorter than the other, and said units are positionable on the lower cross member with their front faces situated in substantially the same plane, and said combination further includes a rear storage unit, having a rear wall positionable substantially against the rear end of the shorter side storage unit, and an end wall positionable substantially against the inner side of that portion of the longer side storage unit which projects rearwardly beyond the rear end of said shorter side storage unit, and independent support means for supporting said rear storage unit in place.

14. The combination of claim 13, wherein the independent support means for the rear storage unit comprises an elongated mortise either at the lower edge of the rear cross member or atop the rear storage unit, and an elongated tenon on the other of such elements, insertable endwise into said mortise.

15. The combination of claim 14, wherein the independent support means for the rear storage unit further comprises a hook plate extending from the rear storage unit over, and restable on, a rear portion of the shorter side storage unit, and another hook plate extending from the rear storage unit over, and restable on a rear side portion of the longer side storage unit.

16. A desk or table comprising: a pair of rigid end units, each comprising front and rear legs, and independent means rigidly interconnected between the upper and lower portions of said legs, and at least one of said end units having a retainer plate projecting from a relatively upper position inwardly and beyond the innermost surfaces of the legs; separate upper and lower cross members independently interconnectable between the end units, with the lower cross member being restable at its ends on the lower means interconnected between the legs of a said end unit; a rectangular storage unit supportable on said lower cross member substantially against the inner surfaces of the legs of one of said end units, and being of a height to be snugly receivable between the retainer plate and the lower cross member; and a foot

rest on said lower cross member, adjacent the storage unit, and including a portion extending forwardly of the lower cross member, with the presence of the storage unit between the lower cross member and the retaining plate lending stability to the lower cross member, including when forces are applied to the foot rest.

17. The combination of claim 16, wherein the lower cross member includes opposed side guide means for the foot rest, and the foot rest includes parallel side portions insertable endwise into said guide means, rendering said foot rest adjustable in position, front to rear of the desk or table.

18. The combination of claim 17, wherein the foot rest includes a foot support panel and a vertical leg depending from said foot support panel and resting on the floor.

19. A desk or table capable of rapid assembly and disassembly, and comprising: a pair of rigid end units, each having upper front and upper rear joint stations, each including lock surface means positionable opposite the lock surface means of the corresponding joint station on the other end unit, and a hook support adjacent the joint surface means; and separate upper front and upper rear cross members, said cross members having ends formed to abuttingly contact the lock surface means, and end hooks, with the upper front cross member being independently interconnectable between the upper front joint stations of the end units merely by hooking the end hooks of such cross member over the hook supports at such stations, with the upper rear cross member being independently interconnectable between the upper rear joint stations of the end units merely by hooking the end hooks of such cross member over the hook supports at such stations, with the ends of the cross members making substantially tight abutting contact with the lock surface means at the joint stations when the hooks are in place, with the hook connections preventing endwise and downward movement of the cross members, and with the abutting contact of the cross member ends with the lock surface means substantially preventing both vertical and horizontal angular give of the cross members relative to the joint stations, resulting in the joints so formed being substantially fixed and the assembled desk or table being a substantially rigid structure.

References Cited by the Examiner

UNITED STATES PATENTS

1,735,375	11/1929	Card et al.	312—257
2,263,050	11/1941	Rein	5—296
2,696,415	12/1954	Himelson	108—158
2,915,351	12/1959	Shinn	312—195
3,004,814	10/1961	Schulze	312—140.1
3,244,465	4/1966	Ulrich	312—231

55 CLAUDE A. LE ROY, *Primary Examiner*.

CHANCELLOR E. HARRIS, *Examiner*.