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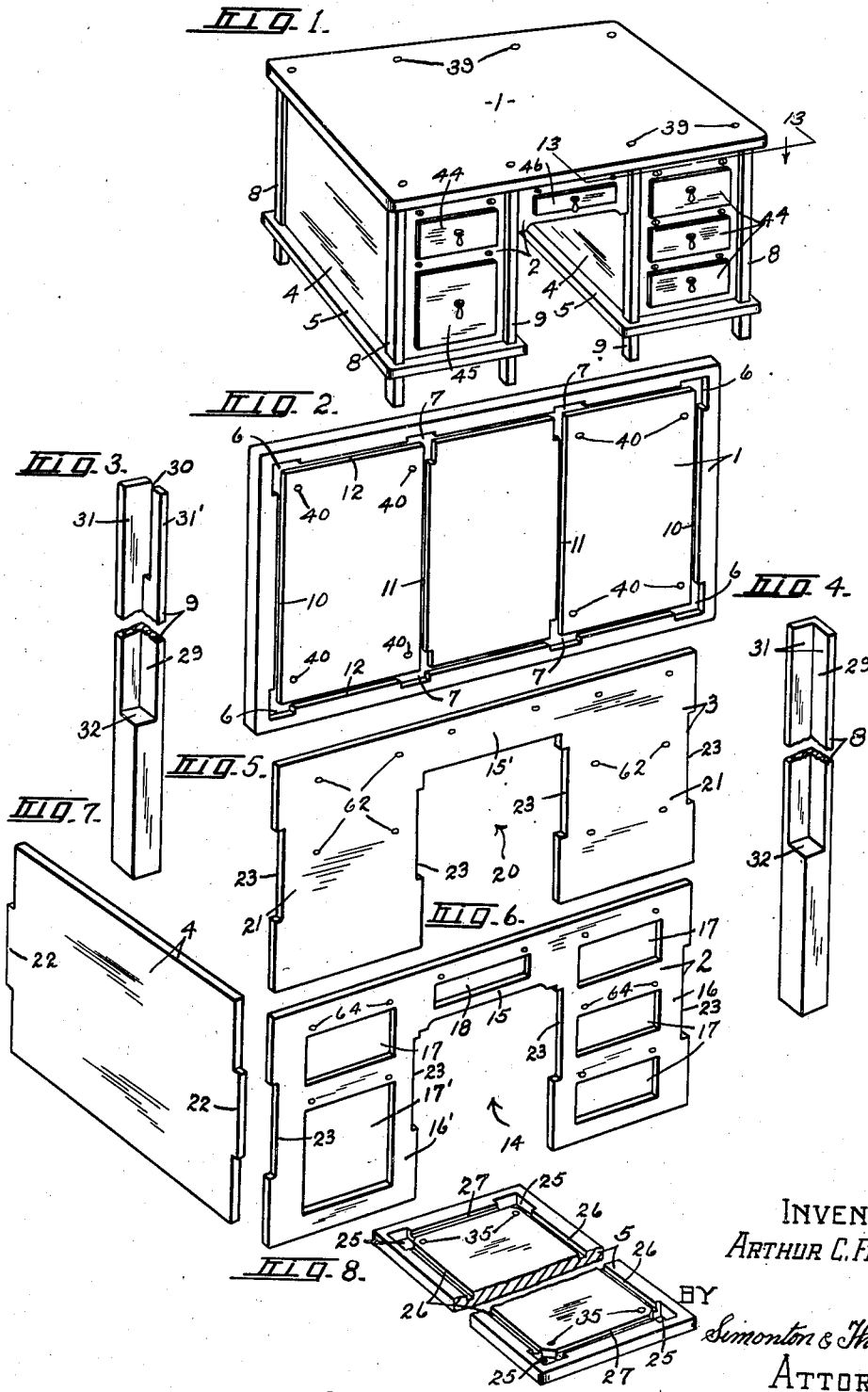
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DESK, TABLE, OR OTHER SIMILAR ARTICLE OF FURNITURE.

Filed Feb. 28, 1938

4 Sheets-Sheet 1



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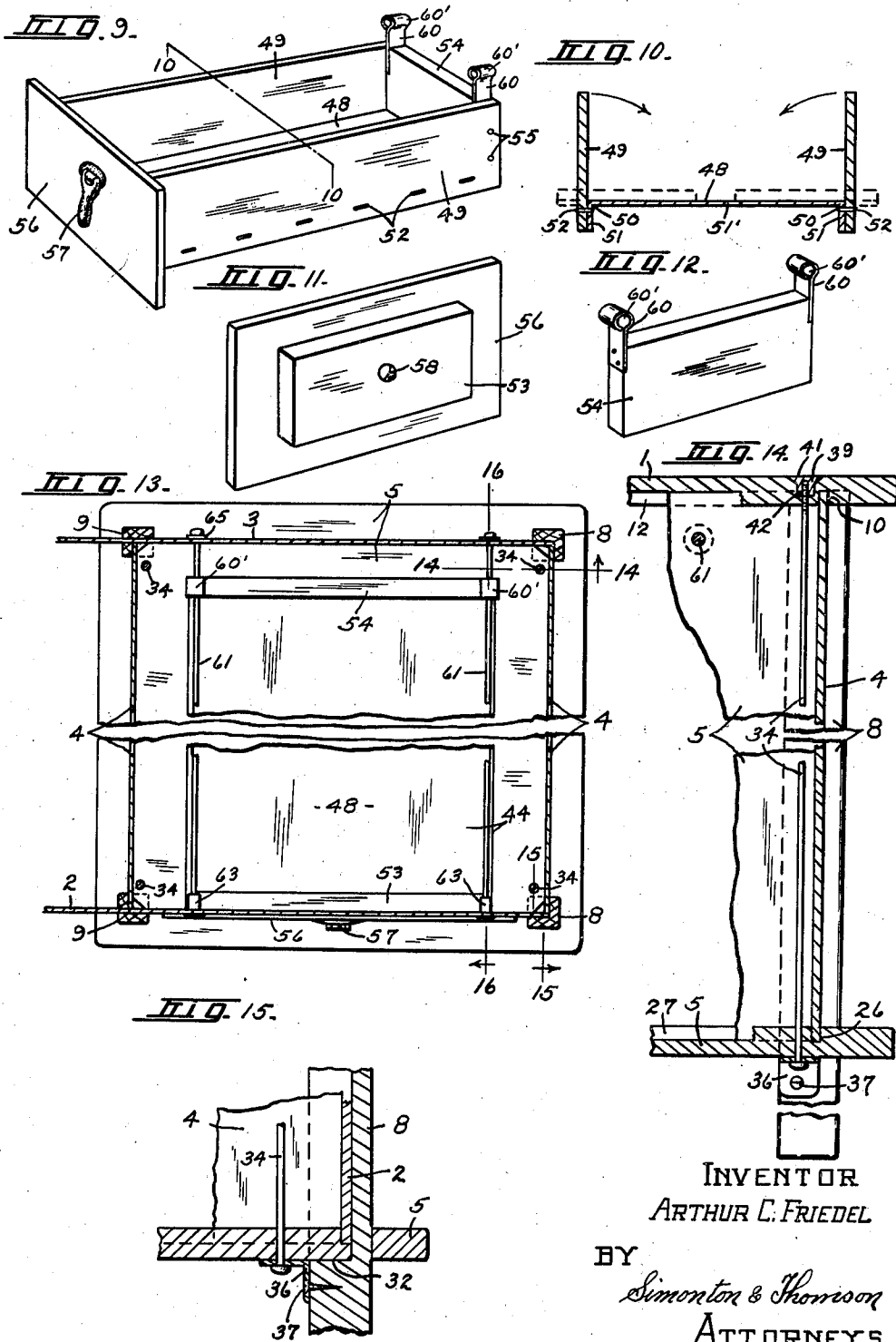
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4 Sheets-Sheet 2



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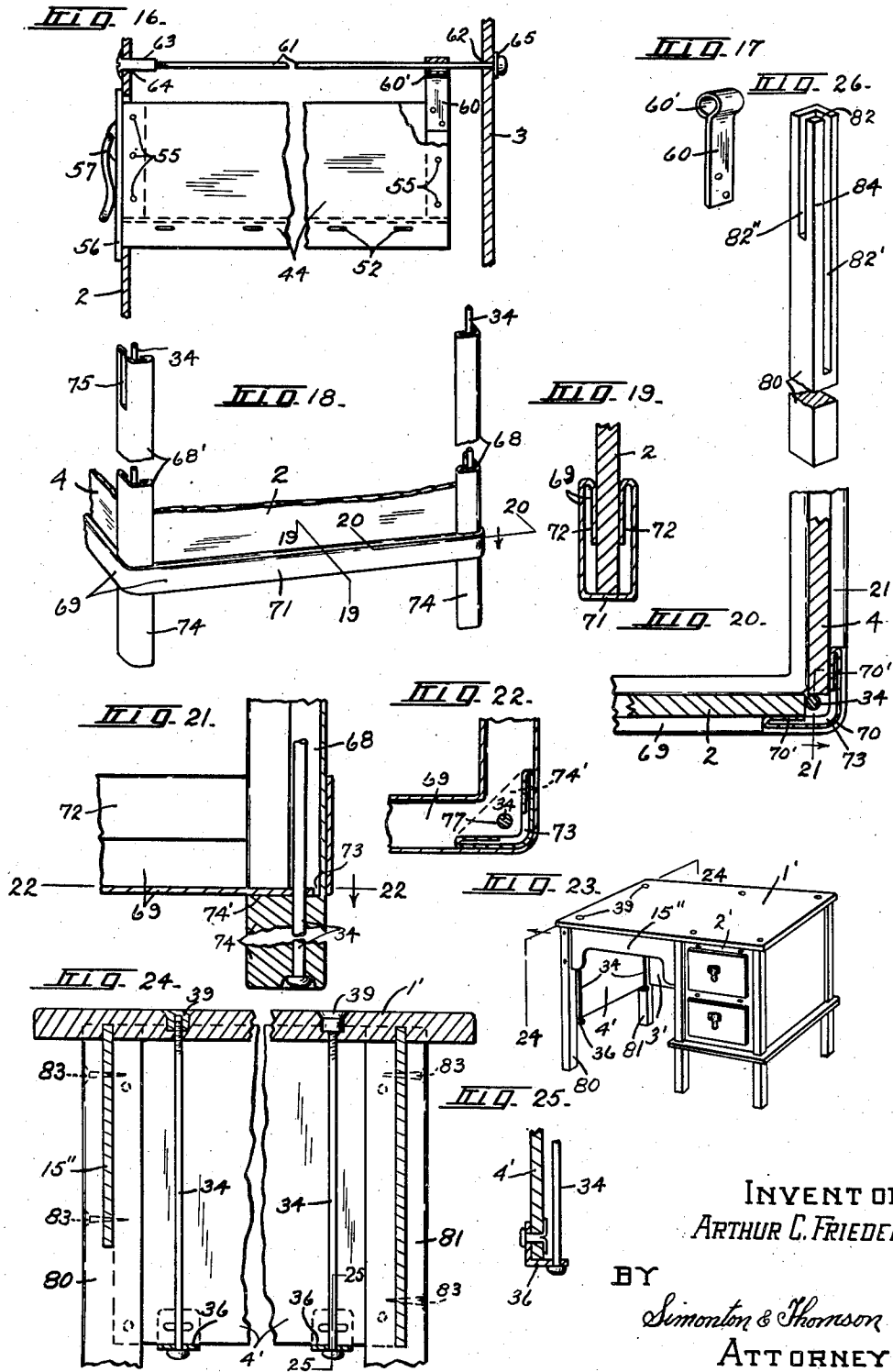
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4 Sheets-Sheet 3



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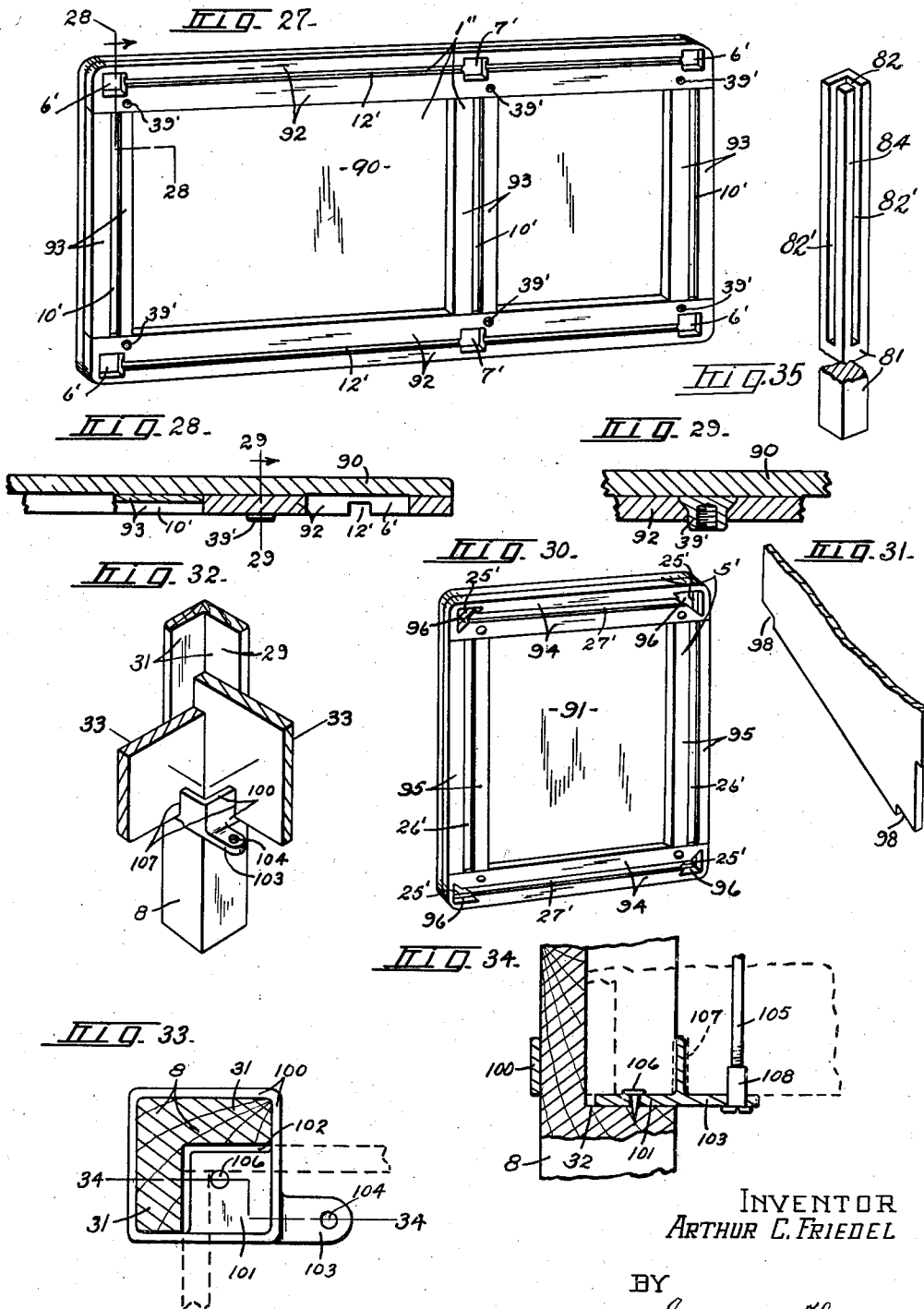
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4 Sheets-Sheet 4



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# UNITED STATES PATENT OFFICE

2,240,767

## DESK, TABLE, OR OTHER SIMILAR ARTICLE OF FURNITURE

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Application February 28, 1938, Serial No. 193,050

11 Claims. (Cl. 45—6)

This invention relates to improvements in desks, tables, portable clothes cabinets or wardrobes and other similar articles of furniture and the objects of my invention are, first, to provide an article of furniture of this type which is light, strong, and durable that may be manufactured and sold at a comparatively low cost and which may be stored or shipped in compact collapsed or knock-down form; second, to produce a knock-down desk, stand or the like wherein the parts thereof may be quickly and easily assembled or disassembled with the use of only a few simple tools; third, to make the various parts of articles of the above mentioned class of standard form and size whereby replacement of such parts may be readily and economically made if necessary; fourth, to provide such articles of furniture which are artistic in appearance and which are constructed of material that will not readily mar, warp, splinter, check, or crack whereby they may be used in the home, office, factory or other private or public places.

In carrying out the above mentioned objects, the articles of furniture are so designed that they comprise a horizontally disposed top member, one or more horizontally disposed bottom members or supports, a plurality of legs and a plurality of vertically disposed panels. The top and bottom members may be mortised and grooved to receive adjacent portions of the legs and panels therein and all of these members are securely and releasably tied together by suitable bolts or rods passing from the top to the bottom or panel members. Furthermore, the top, bottom and panels may each consist of a unitary piece of material stamped or cut to the desired shape and size so as to not only provide for a minimum number of pieces but also produce a structure of maximum strength and rigidity. In forming certain of the side panels, particularly the front panel, certain portions thereof may be cut or stamped out to provide drawer openings. The drawers mounted in these openings, like the remainder of the parts of the devices, are of knock-down structure and when assembled have the forward portions thereof supported by the panel having the drawer openings. The rear ends of the drawers are preferably slidably supported upon guide bolts or rods so that the drawers are not only easily moved toward and from the open position but are also prevented, by the particular mounting thereof, from being completely withdrawn from the drawer opening. This prevents the drawers being upset and the contents thereof being spilt.

Other objects and uses relating to specific parts of the device will be brought out in the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a perspective view of a desk, embodying the various features of my invention.

Figure 2 is a perspective view of the top of the desk shown in Figure 1 as viewed from the under side thereof.

Figures 3 and 4 are perspective views illustrating the two forms of legs used in the desk shown in Figure 1.

Figure 5 is a perspective view of the back panel.

Figure 6 is a perspective view of the front panel.

Figure 7 is a perspective view of one of the side panels.

Figure 8 is a perspective view of one of the bottom members.

Figure 9 is a perspective view of one of the drawers used in connection with the desk shown in Figure 1.

Figure 10 is a cross sectional view taken on line 10—10, Figure 9.

Figure 11 is a perspective view of the front end piece of the drawer shown in Figure 9.

Figure 12 is a perspective view of the rear end piece of the drawer shown in Figure 9.

Figure 13 is a detail horizontal sectional view through the upper portion of the desk at one side thereof taken substantially in the plane of the line 13—13, Figure 1, with the central portions of the drawer, side panels, and bottom member broken away.

Figure 14 is a detail vertical sectional view taken in the plane of line 14—14, Figure 13.

Figure 15 is a detail vertical sectional view taken on line 15—15, Figure 13.

Figure 16 is a detail vertical transverse sectional view taken on line 16—16, Figure 13.

Figure 17 is a perspective view of one of the straps for supportably connecting the rear end of a drawer with a guide rod.

Figure 18 is a detail perspective view of a corner and side portion of a desk or similar article of furniture illustrating a modified form of leg and bottom structure, certain portions of the legs and panels being broken away.

Figure 19 is a detail vertical sectional view taken on line 19—19, Figure 18.

Figure 20 is a detail horizontal sectional view taken on line 20—20, Figure 18.

Figure 21 is a detail vertical sectional view taken on line 21—21, Figure 20.

Figure 22 is a detail horizontal sectional view taken on line 22—22, Figure 21.

Figure 23 is a perspective view of modified form of desk.

Figure 24 is a detail vertical sectional view taken in the plane of the line 24—24, Figure 23.

Figure 25 is a detail vertical sectional view taken on line 25—25, Figure 24.

Figure 26 is a perspective view of one of the legs of the desk shown in Figure 23.

Figure 27 is a perspective view similar to Figure 2 illustrating a desk or table top of slightly modified construction.

Figure 28 is a detail transverse sectional view taken on line 28—28, Figure 27.

Figure 29 is a sectional view taken on line 29—29, Figure 28.

Figure 30 is a perspective view of a bottom member constructed similar to the top member illustrated in Figure 27.

Figure 31 is a fragmentary perspective view of a side panel slightly modified to adapt the same to the top and bottom members shown in Figures 27 and 30.

Figure 32 is a perspective view of the lower end portion of the leg shown in Figure 4 with the adjacent end portions of two side panels, and a still further modified form of bottom member or support associated therewith.

Figure 33 is a horizontal sectional view taken substantially on line 33—33, Figure 32, the side panels being illustrated by broken lines.

Figure 34 is a detail sectional view, partly in elevation taken on line 34—34, Figure 33, the lower end portion of a tie rod being shown connected with the bottom member or support.

Figure 35 is a perspective view illustrating a second leg of the desk shown in Figure 23.

In order to illustrate the novel features of this invention, I have shown in Figures 1 to 17 inclusive, a flat top, double pedestal desk having an open back. The desk comprises a top 1, a front panel 2, a back panel 3, a plurality of, in this instance four, side panels 4 and two bottom members 5. Each of the members 1, 2, 3, 4 and 5 is composed preferably of a pressed wood composition which is sold under the trade name of Masonite. It will be understood, however, that I may use other suitable light, strong sheet material such as aluminum, Bakelite, vulcanized rubber or the like from which to construct these members.

The top member 1, as shown in Figures 1 and 2, is provided with a smooth, flat upper surface while the lower surface thereof is mortised adjacent each corner thereof, as at 6, and intermediate the ends thereof adjacent the front and rear edges, as at 7. These openings or recesses 6 and 7, are for the reception of the upper ends of corresponding legs 8 and 9. The recesses 6 and 7 adjacent a corresponding edge of the top member are arranged in alignment with each other longitudinally of the top. These recesses extend only part way through the top and are of substantially L-shape in plan view to correspond to the upper ends of the legs 8 and 9 which are formed substantially L-shape in cross section for a reason hereinafter more fully explained. The recesses or openings 7 arranged at the same side intermediate the ends of the top member are spaced from each other longitudinally of the top a sufficient distance to provide ample knee space or compartment between the legs received in said openings.

The lower surface of the top member 1 is also provided with a plurality of grooves 10 and 11 extending across said surface from a recess 6 or 7 adjacent one side of the top to the corresponding opening adjacent the other side thereof. The grooves 10 are arranged in alignment with the inner edges of the legs of the outer recesses 6 extending parallel with the ends of the top, and the grooves 11 are arranged in alignment with the outer edges of the inwardly extending legs of recesses 7 and extend in substantially parallel relation with the grooves 10. The top 1 is further provided with grooves 12 extending longitudinally thereof between the recesses 6 and 7 arranged at the corresponding edge of the top, the grooves 12 being in alignment with the inner edges of the legs of the corresponding recesses 6 and 7 disposed parallel with the sides of the top. The grooves 10, 11, and 12 are of substantially the same depth as the recesses 6 and 7 and are adapted to receive therein the upper edges of the front, back and side panels 2, 3, and 4.

The front panel 2, as hereinbefore stated, is composed of one piece of sheet material and is provided with a central opening 14 formed by cutting or stamping out a corresponding portion of the sheet material. This opening 14 extends inwardly from the lower edge of the panel 2 to within a relatively short distance of the upper edge thereof and provides a cross or tie-piece 15 at the upper edge of the panel for connecting the end portions 16 and 16' thereof to each other. The width of the opening 14 is slightly greater than the desired width of the knee space for the desk. The end portion 16 of the front panel is provided with a plurality of, in this instance 3, openings 17 cut or stamped therein for the reception of a corresponding number of drawers. The end portion 16' is similarly provided with a pair of drawer openings, as 17 and 17', arranged in spaced relation to each other vertically of the panel. The cross or tie-portion 15 may, as shown, be provided with a drawer opening 18 formed therein for the reception of a slide drawer arranged over the knee space or opening 14.

The back panel 3 is of substantially the same size as the front panel 2 and in this case is provided with a central opening 20 extending inwardly from the lower edge thereof and which is similar in size and arrangement to the opening 14 provided in the front panel 2. The back panel 3 is provided with a cross or tie-piece 15' over the opening 20 which connects the end portions 21 of the panel to each other.

The side panels 4 are all constructed alike in this instance and are substantially rectangular members. Each of these side panels 4 is provided with a centrally disposed tongue or tenon 22 at either end thereof adapted to fit into corresponding mortise or recess 23 provided in the vertical outer edge portions and the inner edge portions adjacent the opening 14 or 20 of the front and rear panels 2 and 3. These tongue and recess connections between the side panels 4 and the front and rear panels 2 and 3 serve to lock them together when mounted in the legs of the desk and prevent vertical displacement of the panels with respect to each other.

The bottom members 5 are constructed alike and each is substantially rectangular in plan view and of slightly greater width than that of an end portion 16 or 16' of the front panel 2 and of an end portion 21 of the back panel 3. The length of each of these bottom members is substantially equal to the width of the top 1. Each

bottom member 5 is mortised adjacent each corner thereof to provide four substantially L-shape openings 25 adapted to align with corresponding end recesses 6 provided in the top 1 and the intermediate recesses 7. Each of the openings 25 extends through the bottom member 5 and receives a leg of the desk therethrough. Each of the bottom members 5 is provided with grooves 26 in the upper surface extending longitudinally thereof along each edge between the corresponding openings 25. Each of the bottoms 5 is also provided with a pair of grooves 27 extending transversely adjacent the ends thereof between corresponding openings 25. The grooves 26 and 27 are of substantially the same depth as the grooves 10, 11, and 12 provided in the top 1 and are in alignment with the inner edges of the corresponding openings 25 for the purpose of receiving the lower edges of the front, back and side panels therein.

The legs 8 and 9 are all of substantially the same length and, as illustrated in Figures 3 and 4, are substantially square in cross section. These legs are preferably composed of wood and, as shown in Figures 3 and 4, are provided with a recess 29 extending inwardly from adjacent sides thereof and from the upper end thereof downwardly a distance slightly greater than the vertical length of the panels 2, 3, and 4. In other words each recess 29 is substantially square in cross section and has a length substantially equal to the vertical length of a panel 2, 3, or 4 combined with the thickness of the bottom 5 at the inner ends of grooves 26 and 27. The legs 8 are adapted to be used at the outer corners of the desk while the legs 9 are arranged adjacent the knee space. Each leg 9 is provided with a slot 30 which extends downwardly from the upper end thereof adjacent the inner corner of the recess 29. This slot 30 is of substantially the same width as the thickness of the front and back panels 2 and 3 for receiving the tie-piece 15 of the front panel 2 or the corresponding tie-piece 15' of the back panel 3 therein.

In one method of assembling the top and bottom members 1 and 5, the front, back and side panels, 2, 3, and 4 and the legs 8 and 9 together; the top member 1 is first placed on the floor or other suitable support with the lower face thereof uppermost. The front, back and side panels are next assembled with the top 1 by inserting the upper edge of the front panel 2 in the grooves 12 extending longitudinally of the top adjacent one edge thereof. The back panel 3 is mounted with the upper longitudinal edge thereof inserted in the grooves 12 adjacent the opposite edge of the top 1, and the side panels 4 are arranged with a longitudinal edge thereof positioned in cross grooves 10 or 11. The bottom members 5 are next assembled with panels 2, 3, and 4. This is accomplished by inserting the exposed longitudinal edges of the end portions 16 and 21 of the front and back panels in the cross grooves 27 of a corresponding bottom member and similar edges of the side panels adjacent said end portions in the corresponding longitudinal grooves 26 of respective bottom members 5. It will now be understood that the top and bottom members and the panels will be bound together in proper relation with each other due to the edges of the front, back and side panels being received in the grooves provided in the top and bottom members, and also to the interlocking relation between the side panels and the front and back panels afforded by tongues 22 and recesses 23.

It will now be apparent that the legs 8 and 9 may be readily assembled with the top, bottom and side panel members of the desk by inserting the upper ends of said legs through a respective opening 25 provided in the bottom members 5. As hereinbefore stated the legs 8 are arranged in the outer-most corners of the desk and are therefore inserted through the outer-most positioned openings 25 of the bottom members and into the corresponding recesses 6 in the top 1. As the legs 8 are thus brought into proper position with respect to the top and bottom members the adjacent vertical edges of the front, back and side panels will register in the corresponding recesses 29 of the legs. These panels are thus maintained by the co-action of the side walls, as 31, of the legs adjacent the recesses 29 and the tongues and grooves 22 and 23 against lateral displacement with respect to each other, as shown in Figures 13, 14 and 15. The legs 9 are next assembled with the top, bottom and panel members by inserting the upper ends thereof through the openings 25 provided in the bottom members 5 at the inner adjacent side edges thereof and into the corresponding recesses 7 provided in the top 1. As the upper ends of the legs 9 approach the top 1 the tie-portions 15 or 15' of the front and back panels will enter the slots 30 of the legs so that when the upper ends of the legs are registered in the recesses 7 said tie-pieces will be maintained by the side walls 31 and 31' of the legs against lateral movement.

It will be understood that the inner vertical edges of the end portions 16 and 16' of the front panels 2 and of the end portions 21 of the back panel 3 will be received in the recesses 29 of the corresponding legs 9. These end portions are thus maintained by the co-action of the walls 31 and 31' of the legs and the tongue and groove connection between the side panels and the front and back panels against lateral displacement with respect to each other. It will now be observed that inasmuch as the openings 25 in the bottom members 5 are nearly L-shape in cross section, as illustrated in Figures 8 and 13, the portion of these members adjacent the inner sides of the openings will extend across the outer corners or shoulders 32 provided at the lower or inner ends of recesses 29 of the corresponding legs 8 or 9. It is thus seen that the bottom members will rest upon these end portions or shoulders 32 and be supported thereby against downward movement when the desk is in the upright position.

The top and bottom members, panels and legs are next rigidly tied together by means of a plurality of tie-rods 34 which are inserted through corresponding openings 35 provided in the bottom members 5 adjacent the inner portions of the openings 25 and between the corresponding ends of the grooves 26 and 27. The rods are connected with an adjacent leg 8 or 9 by an angle bracket 36 which, as shown more clearly in Figure 15, has one side thereof secured by a screw 37 to the adjacent leg and the other side extended along the bottom member 5 in close proximity thereto. This latter side portion of each angle bracket is provided with an opening there-through for the reception of a tie-rod and is adapted to align with an opening 35 in the bottom member. It will thus be seen that each angle bracket not only serves to connect a tie-rod to a leg of the desk but also provides an additional support for the bottom member as the rod is secured to the top 1.

In order that these rods 34 may be quickly and easily connected with the top 1 the upper ends thereof are provided with screw-threads which engage nuts 39 mounted in suitable openings 40 provided in the top 1 in vertical alignment with the openings 35. These nuts 39 as shown in Figure 14 are of such size and shape as to most advantageously prevent them from being drawn into or through the top as the tie-rod is screw-threaded therein. For this purpose each nut 39 is provided with a relatively large flat head 41 and a cylindrical shank portion 42 of less diameter than the head. The lower or outer end of the shank portions 42 of the nuts are formed flat and substantially parallel to the head of the nut while the overall length of each nut is less than the thickness of the top 1.

The openings 40 and 35 in the top and bottom members for the tie-rods 34, like grooves 10, 11, 12, 26 and 27 and openings 6, 7 and 25, are formed at the factory so that the tie-rods may be quickly and easily assembled with these members and the nuts 39 by merely inserting the rods through the openings 35 and 40 and bringing them into screw-threaded engagement with the nuts 39 by the use of a pair of pliers engaging the heads of the rods, said heads being exposed at the lower or outer surfaces of the brackets 36 as illustrated in Figures 14 and 15. It will now be observed that with all of the tie-rods drawn tight the various units of the desk will be rigidly secured together. The desk may now be turned to its normal upright position and the drawers, as 44, 45 and 46 may next be mounted therein.

The drawers 44 mounted in the right hand pedestal and in the upper portion of the left hand pedestal are all of the same size and construction. Each of these drawers 44 is of knock-down construction and comprises a bottom 48 and side pieces 49 composed of wood composition, as Masonite, or other suitable light, strong material. Each bottom 48 is preferably scored at one side at 50 a short distance from the longitudinal edges thereof, to provide a marginal strip 51 which may be easily flexed to extend outwardly substantially normal to the central portion 51' of the member, as illustrated in Figure 10. The side members 49 are secured along one longitudinal edge thereof to the side strips 51 of the bottom in any suitable manner as by staples 52 or their equivalent. The sides 49 are usually secured to the bottom 48 at the factory and when being shipped are folded inwardly over the bottom, as illustrated by broken lines in Figure 10.

The front and rear end pieces as 53 and 54 of each drawer are preferably relatively thick members, composed of wood or the like and are of substantially the same area as the cross section of the interior of the drawer. When assembling the end pieces 53 and 54 with the bottom and side members of a drawer, these pieces are inserted between the respective ends of the side pieces over the bottom member 48 and secured to the side and bottom pieces by brads or screws 55. The front end piece 53 has secured to the outer face thereof by any suitable means, as by glue, a front panel 56 composed preferably of the same material as the front panel 2 of the desk such as Masonite. This front panel 56 is of greater area than the cross section of the front end piece 53 and is arranged to project outwardly a short distance beyond the top, bottom and side surfaces of the bottom 48 and side pieces 49, as indicated in Figures 9 and 11. It follows therefore that when the drawer is in the close position the

front panel 56 thereof will contact with the outer face of the panel 2 and limit the inward movement of the drawer.

Each drawer may be provided with a suitable handle or finger piece 57 by which the drawer may be readily moved to and from the closed position. This handle or finger piece 57 may, as indicated in Figure 11, be secured to the front end piece 53 by a screw 58 which extends outwardly through the end piece and front panel 56 connected with it into the handle 57. It will be observed that the screw 58 not only secures the handle to the drawer but also provides additional means for securing the front panel to the end piece 53.

Each rear end piece 54 has a pair of supporting straps 60 secured to the ends thereof as indicated in Figures 9 and 12. These straps 60 extend a short distance above the upper surface of the end piece 54 and the side piece 49 of the drawer and are provided with eyelets 60' at the upper ends thereof for the reception of corresponding guide rods 61. There are, as illustrated in Figure 13, two of these guide rods 61 for each drawer, one for each strap 60. Rods 61 extend across the interior of the desk in a horizontal plane a short distance above the respective drawer opening as 17, provided in the front panel of the desk, see Figure 16. The guide rods 61 are inserted through respective holes 62 provided in the back panel 3 and the front ends thereof are screw-threaded in suitable nuts 63 inserted in corresponding holes 64 provided in the front panel 2. A washer 65 may be mounted on each rod 62 and positioned between the head of the rod and the rear panel 3, as illustrated in Figure 16, for preventing the head from passing into or through the back panel as the rod is being tightly secured in place.

It will now be understood that the forward portion of each drawer 44 is supported by the front panel 2 by contact of the lower longitudinal edge of the side members 49 with the lower wall of the drawer opening 17, said opening being of slightly greater cross sectional area than that of the drawer to permit the drawer to move freely therethrough. The rear end of the drawer is supported by the co-action of the straps 60 and guide rods 61 which not only provides for the free and easy movement of the drawer to and from the closed position, but also limits the outwardly movement of the drawer by the engagement of the strap with the inner ends of the nuts 63 as the drawer is moved into the outermost position.

The drawers 45 and 46 are constructed and operated in the same manner as the drawers 44, the only difference in the structure of these drawers and that of drawers 44 being in the size and form thereof.

In assembling the drawers with the desk, the rear ends of the drawers are first inserted a short distance into the respective drawer opening in the front panel to bring the straps 60 inside of the desk. The guide rods 61 are then inserted through the back panel 3 and straps 60 of the respective drawers and then screw threaded into the nuts 63.

On the completion of the assembling of the drawers with the desk, the desk is ready for use. It will be noted that the drawer space in each side or pedestal of the desk is completely enclosed by the top and bottom members and the front, back and side panels. This prevents the entrance of dust and other foreign material into



said drawer spaces and maintains the same in substantially a clean, sanitary condition.

In Figures 18 to 22 inclusive, I have illustrated a slightly modified structure in that it includes the use of metal legs, as 68 and 68' in place of the wooden legs 8 and 9, and a bottom frame 69, also composed of metal, in place of the bottom members 5. The legs 68 and 68' are composed of sheet metal, such as brass or steel. The central portion 70 of each leg is bent in right-angular formation as shown in Figure 20, and the side portions 70' are bent inwardly upon themselves to form guide members for supporting the adjacent ends of the front, back and side panels, 2, 3 and 4. It will thus be understood that the upper end of each leg 68 and 68' is substantially L-shape in cross section similar to the structure of the legs 8 and 9 and will readily enter into the openings 6 or 7 provided in the under surface of top 1 of the desk. The frame 69, as shown more particularly in Figure 19, is composed of sheet metal such as brass or steel which has the central portion thereof bent to form a rail 71 substantially U-shape in cross section. The longitudinal edge portions 72 of each rail 71 are bent inwardly to extend into the interior of the rail to provide guide members adapted to engage opposite sides of the front, back and side panels in engagement therein.

In Figure 18, I have illustrated the lower portion of one side or pedestal of a desk. It will be observed by referring more particularly to Figures 20 and 22 that the frame 69 is provided with a substantially L-shape slot or aperture 73, in the lower transverse wall of the rail at each corner of the frame adapted to receive the upper portion of the leg 68 or 68' therethrough. Each leg has the lower end portion 74 thereof formed substantially solid, as indicated in Figures 21 and 22, which provides a shoulder or shelf 74' intermediate the ends of the leg upon which the rail 69 rests to be supported thereby. The legs 68 and 68' are constructed substantially alike with the exception that leg 68' is provided with a slot or recess 75 which extends inwardly from the upper end thereof, as indicated in Figure 18. The slot or recess 75 receives a tie-portion 15 or 15' of the front or back panel, 2 or 3, therein in the same manner as the slot 30 formed in the leg 9 receives the said portion.

When assembling the legs 68 and 68' and the front, back and side panels 2, 3 and 4 with the top 1, the lower edges of these panel members are inserted into rail members 71 of the frame 69, as illustrated in Figure 19, so as to be firmly held by the guide member 71' against lateral displacement. The vertical edges of these panel members extend into the corresponding legs 68 and 68' adjacent the guide members 70' thereof as clearly illustrated in Figure 20. It will thus be understood that the panel members are supported by the legs 68 and 68' in the same manner as the corresponding panels are supported by the legs 8 and 9. In securing the legs and panel members to the top 1 each tie-rod 34 is inserted upwardly through a suitable opening provided in the lower end portion 74 of the leg and a hole 77 provided in the lower transverse wall of the rail at a respective corner of the frame 69, see Figure 22. The upper end of each tie-rod 34 is secured to the top 1 by a nut 39 mounted in the same manner described above for the structures shown in Figures 1 to 17 inclusive. It will be understood that in the structure shown in Figures 18 to 22 inclusive the frame 69 is substituted for a

bottom member 5 so that in this structure the drawer compartment in each pedestal of the desk is not completely inclosed as in the desk shown in Figure 1 and is not, therefore, completely insulated from dust and other foreign material.

In the structure shown in Figures 23 to 26 inclusive, I have illustrated a single pedestal desk having a closed back and which is constructed in substantially the same manner as the double pedestal desk illustrated in Figure 1. The main difference in the structures of the two desks resides in the construction of the legs 80 and 81 positioned at the outer side of the knee space and in the manner of connecting the side panel associated with these legs with the top, as 1'. The legs 80 and 81 distinguish from the legs 8 and 9 primarily in that the upper ends thereof are each provided with an angular or substantially L-shape recess 82. This recess 82 formed in the outer positioned leg 80 has one side 82' thereof of substantially the same length as the recess 29 in the leg 8 for receiving the side panel, as 4', therein. The other side 82'' of the slot is relatively short, being substantially equal in length to the slot 30 formed in the leg 9 for receiving the outer end portion of the tie member 15'' associated with the front panel of the desk therein. The leg 81 positioned at the rear side of the desk is formed substantially like the leg 80 with the exception that both sides 82' of the slot 82 are of the same length, see Figure 35, and equal to the length of the side portion 82' of the slot in leg 80 for receiving the side panel 4' and back panel 3' therein. Inasmuch as the desk shown in Figure 23 is of the closed back type, the rear panel 3' is not provided with the knee opening as is the case with the front panel 2' of this desk.

In securing the legs 80 and 81 to the back and side panels 3' and 4' and to the top 1', nails or brads 83 are driven through the outer wall of each leg and the adjacent portion of the panel associated therewith into the vertically disposed strip, as 84, formed at the inner side of each leg by the recess 82, as shown in Figure 24. It will thus be seen that the nails 83 secure the legs 80 and 81 and adjacent panel members to each other. These legs are in turn secured to the top 1' by the tie-rods 34 and the angle brackets 35 secured to the lower edge portion of the side panel 4', as illustrated in Figures 24 and 25. The tie-rods 34 are inserted through the holes in the corresponding brackets 36 and have the upper ends thereof screw-threaded in nuts 39 mounted in the top 1' in the manner illustrated in Figure 24 and as described hereinbefore for the structure shown in Figures 1 to 17 inclusive.

In Figures 27 to 30 inclusive, I have illustrated a top and a bottom member of slightly different construction than that shown in Figures 2 and 8. The board used in constructing the top and bottom members shown in Figures 27 to 30 is substantially the same as that used in constructing the top and bottom members shown in Figures 2 and 8, the primary difference being in the thickness of the board and the degree of temper of the material. The Masonite board used in the latter structure is only about one-half as thick as the board used in the first described top and bottom members and is of a greater degree of temper. It will, therefore, be understood that these members are lighter in weight than the first described top and bottom members while the strength and rigidity thereof are equal to or greater than said first described members.

In order to compensate for the reduced thickness of the material used in the top and bottom, as 1'' and 5', shown in Figures 27 and 30 respectively, I provide relatively narrow cleats or supporting strips composed of the same material as the body portion 90 and 91 of the top and bottom members. These body portions 90 and 91 are cut to the required size and the cleats or supporting strips are fixedly secured to one side of these members in any suitable manner as by glue or paste.

The cleats or supporting strips, as 92 and 93, for the top member 1'' are arranged longitudinally and transversely thereof respectively. The longitudinal strips 92 are each provided with apertures 6' and 7' formed by cutting or stamping. The apertures 6' are arranged, as shown in Figure 27 adjacent the ends of the longitudinal cleats while the apertures 7' are arranged intermediate the ends of said cleats. The apertures 6' and 7' preferably extend completely through the cleats 92 for receiving the upper ends of the outer and intermediate legs 8 and 9 respectively. These cleats 92 are also provided with grooves 12' extending longitudinally thereof between apertures 6' and 7' for receiving the upper edges of the front and back panels as 2 and 3 shown in Figures 5 and 6 respectively or 2' and 3' shown in Figure 23, depending upon the type of the desk. It will be noted that the top illustrated in Figure 27 is adapted more particularly to a single pedestal desk, such as shown in Figure 23.

The cleats 93 are arranged to extend transversely or crosswise of the body member 90 between the cleats 92 adjacent corresponding apertures 6' or 7'. The cleats 93 are provided with grooves 10' arranged in proper alignment with the corresponding apertures 6' and 7' for receiving the upper edges of respective side panels 4 or 4' therein, depending upon the type of desk formed. The grooves 10' and 12' are preferably formed to extend but part way through the cleats, as indicated in Figure 28, so that the portions of the cleats at either side of the grooves will remain tied together to provide for maximum strength.

The nuts 39' for the tie bolts or rods 34 are, as shown in Figure 29, mounted in the cleats 92 only, so that the nuts do not appear at the upper surface of the top member as is the case in the desk structure shown in Figures 1 and 23.

The bottom member 5' is composed of the hereinbefore mentioned body member 91 and marginal cleats or supporting strips 94 and 95. The cleats 94 are each provided with apertures 96 adjacent the ends thereof. These apertures are adapted to align with corresponding apertures 25' formed in the body portion 91 when the cleats are secured to the body portion to provide continuous openings through the bottom member for receiving the legs 8 or 9. Cleats 94 are provided with grooves 27' in their surface which extend between corresponding apertures 96 for receiving the lower edges of the front and rear panels.

The cleats or strips 95 are secured to the body 91 adjacent the longitudinal edges thereof to extend between end cleats or strips 94. The cleats 95 are provided with grooves 26' in their upper surface arranged in proper alignment with corresponding apertures 96 in cleats 94 for receiving the lower edges of the side panels 4 or 4' therein. It will be noted by referring to Figures 27 and 30, that grooves 10' and 25' do not

extend through the cleats 92 or 94 into communication with corresponding apertures 6', 7' and 96. When the grooves are so constructed, the upper and lower edges of the side panels may be notched at their ends as indicated at 98, Figure 31, so as to readily receive the adjacent portions of the cleats 92 or 94 therein.

In Figures 32, 33 and 34, I have indicated a panel support associated with one of the legs of a desk and which provides a simple, economical structure that may be used in place of either the bottom members shown in Figures 8 and 30 or the bottom frame 69 shown in Figure 18, when it is desired to construct a desk or the like at a minimum cost. This panel support is in the form of a rectangular frame 100 composed preferably of metal and which has an interior cross section slightly greater than the cross section of a leg 8 or 9. The frame 100 is provided with a substantially square web or bottom portion 101 arranged at the lower side and to extend inwardly from one corner thereof as illustrated in Figure 33. This member 101 provides an angular recess 102 at the opposite corner or sides of the frame adapted to receive the upper end portion of a leg 8 or 9 therethrough. An ear or lug 103 extends outwardly from a side of the frame 100 adjacent the bottom member 101 at the lower edge of said frame for connection with a tie-rod as 105, Figure 34.

When using the supporting members 100 in a desk, stand or similar structure there is one member provided for each leg. Each supporting member 100 is assembled with its respective leg by inserting the upper end portion of the leg through the recess 102. The supporting member is normally positioned at the lower end of the leg recess 29 with the bottom portion 101 thereof resting upon the end portion 32 of the leg. Each member 100 is preferably secured to its respective leg by a nail 106, or its equivalent, passing through a suitable hole provided in the bottom portion 101. The legs are next assembled with the corresponding side panel members and with the top members in the manner hereinbefore explained. That is, the upper ends of the legs are positioned in respective apertures provided in the top member and the vertical edges of corresponding side panels are seated in the recess 29, of the leg associated therewith. The lower edges of the side panels are recessed as at 107 a short distance from the ends thereof for receiving the adjacent side of the frame 100 therein as illustrated in Figures 32 and 34.

It will thus be evident that the side panels are each supported at their ends by the engagement thereof with the frames 100 and particularly with the bottom portions 101 of said frames. Furthermore the legs are maintained against lateral movement relative to each other and to the side panels due to the engagement of the supporting frames in the recesses 107 of the panels.

Inasmuch as the supporting members 100 and the legs are secured together by nails 106, it is obvious that the legs and panel members will be rigidly secured together by tie-rods as 105 passing through holes 104 in the ears 103 and screw-threaded at their upper ends in nuts 39 or 39' associated with the top member. When nuts as 39' having a closed upper end are used, I preferably provide the lower ends of the tie-rods with screw-threads and mount thereon an internally screw-threaded sleeve or bicycle nut 108 to obtain a rigid mounting or assembly. The vertical edges of the front, back and side panels used

with the supports 100 are preferably tongued and grooved as illustrated at 22 and 23, Figures 7 and 6, which maintains said edges in the leg recesses 29 by preventing lateral deflection of said edges.

Although I have shown and particularly described several forms of desk construction, it will be readily apparent that many other articles of furniture embodying top, side, bottom and leg members as well as alternate forms of general combination may be produced without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. An article of furniture of the class described comprising, in combination, a horizontally disposed top member, a bottom member arranged beneath the top member in spaced opposed relation therewith, vertically disposed panel members interposed between the top and bottom members, said top and bottom members having recesses and openings respectively arranged in aligned relation with each other, leg members extending through said openings and engaging in said recesses, said leg members having means supportably engaging the adjacent edge portions of the panel members, and means including tie-rods connected with said top and leg members for releasably securing the top, bottom, leg and panel members to each other.

2. An article of furniture of the class described comprising, in combination, a horizontally disposed top member, a bottom member arranged beneath the top member in spaced opposed relation therewith, vertically disposed panel members interposed between the top and bottom members, said top and bottom members having grooves in the adjacent surfaces thereof receiving the adjacent edge portions of the panel members therein, said top and bottom members also having recesses and openings respectively arranged in aligned relation with each other and in predetermined relation with the grooves of the corresponding member, leg members extending through the openings in the bottom member and engaging in the recesses in the top member, and means including tie-rods connected with said top and leg members for releasably securing the top, bottom, leg and panel members to each other.

3. In a knock-down article of furniture of the class described, a top member provided with a leg receiving recess extending inwardly from the under side thereof, a bottom member having a leg receiving opening extending therethrough in alignment with the recess in the top member, panel members interposed between said top and bottom members, a leg member extending through the opening in the bottom member and fitted into said recess in the top member, and means including a screw member releasably connected with the top and leg members for releasably securing the top, bottom, leg and panel members to each other.

4. A knock-down article of furniture as in claim 3 wherein at least one of the top and bottom members is provided with grooves in a surface thereof receiving the corresponding edges of the panel members therein.

5. A knock-down article of furniture as in claim 3 wherein the top, bottom and panel members are each a unitary one piece member composed of a pressed wood composition.

6. In a knock-down article of furniture of the class described, a top member provided with a leg receiving recess in the under side thereof, a bottom member having a leg receiving opening

extending therethrough in alignment with the recess in the top member, panel members interposed between said top and bottom members with the vertical edges thereof arranged in abutting relation with each other and provided with tongues and recesses having engagement with each other for maintaining said panel members in vertical aligned relation with respect to each other, a leg member extending through the opening in the bottom member and fitted into the recess in the top member, said leg member having a recess extending longitudinally thereof receiving the said adjacent edges of the panel members therein, and means including a tie-rod connected with the top and bottom members and arranged at one side of the leg member for releasably securing said top, bottom, leg and panel members to each other.

7. In a knock-down article of furniture of the class described, a top member and a bottom member arranged beneath the top member in opposed relation therewith, vertically disposed front, back and side panels interposed between the top and bottom members with adjacent vertical edges thereof arranged in abutting relation with each other, said top and bottom members having grooves in the adjacent surfaces thereof removably receiving the adjacent edge portions of the panel members therein, said top and bottom members also having leg receiving recesses and openings respectively arranged in aligned relation with each other, leg members extending through the openings in the bottom member and received in the recesses in the top member, said leg members having recesses extending longitudinally thereof receiving the adjacent portions of the bottom members and said vertical edges of the panel members therein, and means including tie-rods extending between the top and bottom members at one side of the leg members for connecting said top, bottom, leg and panel members to each other.

8. A knock-down article of furniture as defined in claim 7, wherein said adjacent vertical edges of the panel members are provided with tongues and recesses having engagement with each other for maintaining said edges against lateral displacement with respect to the leg recesses.

9. In a knock-down article of manufacture of the character described, a top member provided with leg receiving recesses in its under side, a bottom member having leg receiving openings extending therethrough in alignment with the recesses in the top member, panel members interposed between said top and bottom members, leg members extending from a position below the bottom member up through said openings and having their upper ends fitted into said recesses in the top member, said leg members having holding means beneath the bottom member for supporting said latter member, and means including tie rods connected to said top member and to said holding means releasably securing the top, bottom, leg and panel members to each other.

10. In a knock-down article of furniture of the class described, a substantially horizontally disposed top member provided with a leg receiving recess in the under side thereof, a bottom member having a leg receiving opening extending therethrough in alignment with the recess in the top member, panel members interposed between said top and bottom members, a leg member extending through the opening in the bottom member and fitted into said recess in the top member,

and means releasably connecting the top, bottom, leg and panel members to each other.

11. In a knock-down article of furniture of the class described, a substantially horizontally disposed top member provided with a leg receiving recess in the under side thereof, a bottom member having a leg receiving opening extending therethrough in alignment with the recess in the top member, panel members disposed in vertical intersecting planes intermediate said top and bottom members, a leg member extending through the opening in the bottom member and

fitted into said recess in the top member, said leg member having a pair of slots extending longitudinally thereof in angular relation with respect to each other receiving adjacent ends of the panel members therein, said slots being connected at their inner adjacent sides so that said ends of the panel members extending into said slots are in abutting relation with each other, and means releasably connecting the top, bottom, leg and panel members to each other.

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