May 24, 1938. B. E. RICHARDSON 2,118,525

KNOCK-DOWN DESK

Filed Oct. 8, 1934 4 Sheets-Sheet 1

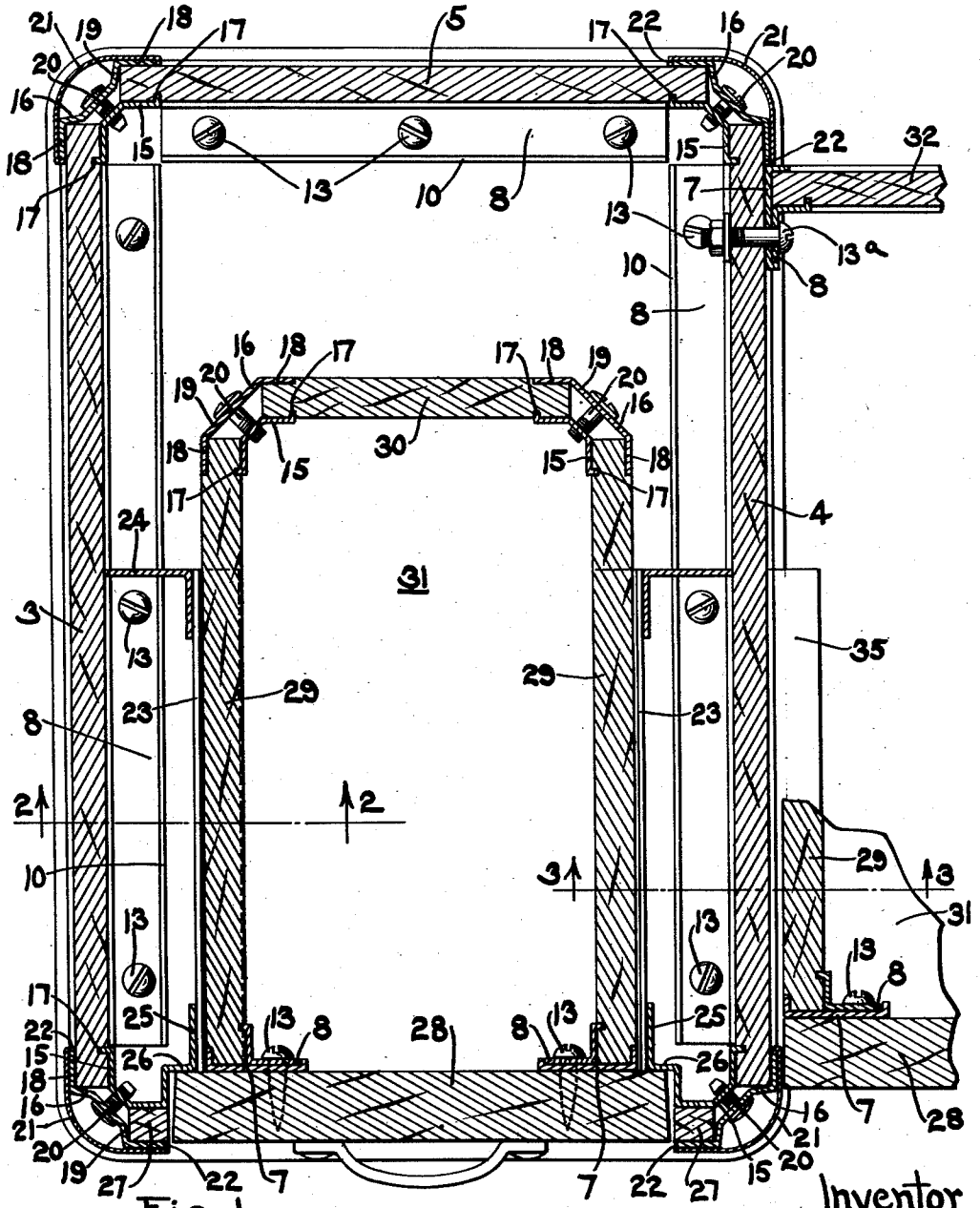


Fig. 1.

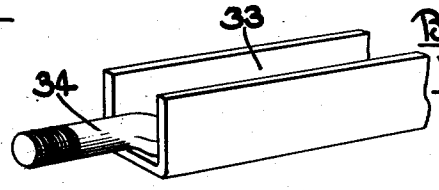


Fig. 6.

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May 24, 1938. B. E. RICHARDSON 2,118,525

KNOCK-DOWN DESK

Filed Oct. 8, 1934 4 Sheets-Sheet 2

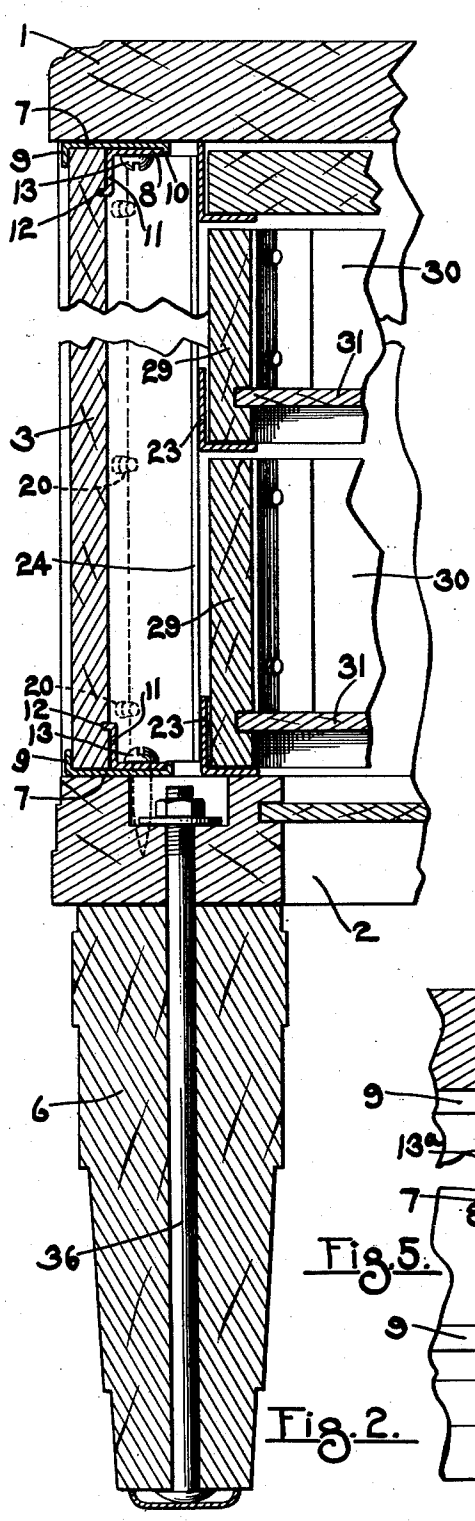


Fig. 2.

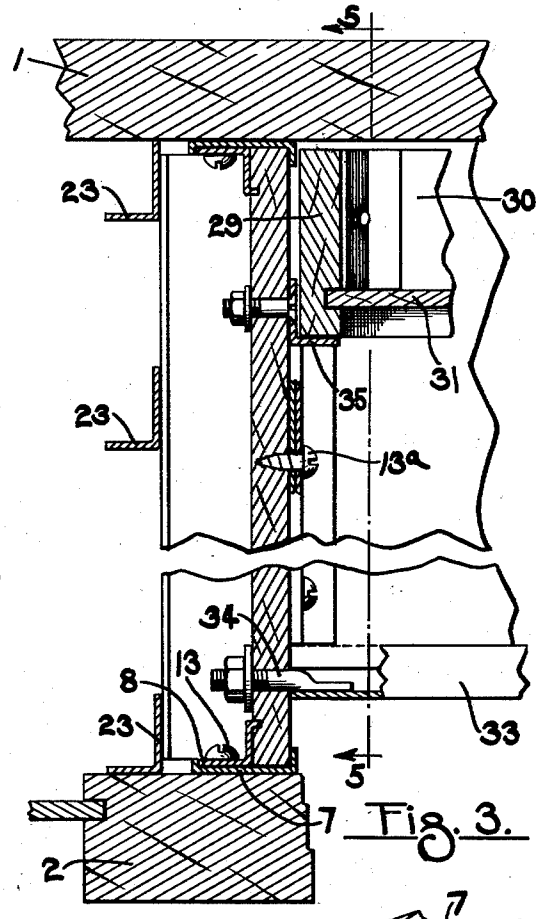


Fig. 3.

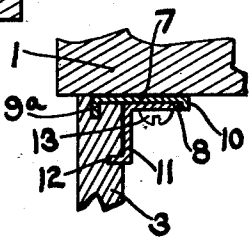


Fig. 4.

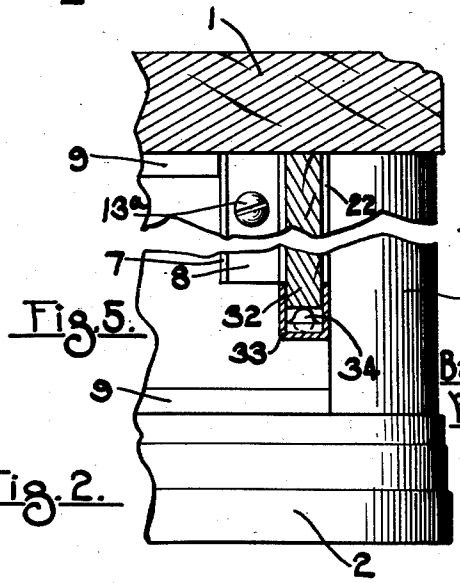


Fig. 5.

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KNOCK-DOWN DESK

Filed Oct. 8, 1934 4 Sheets-Sheet 3

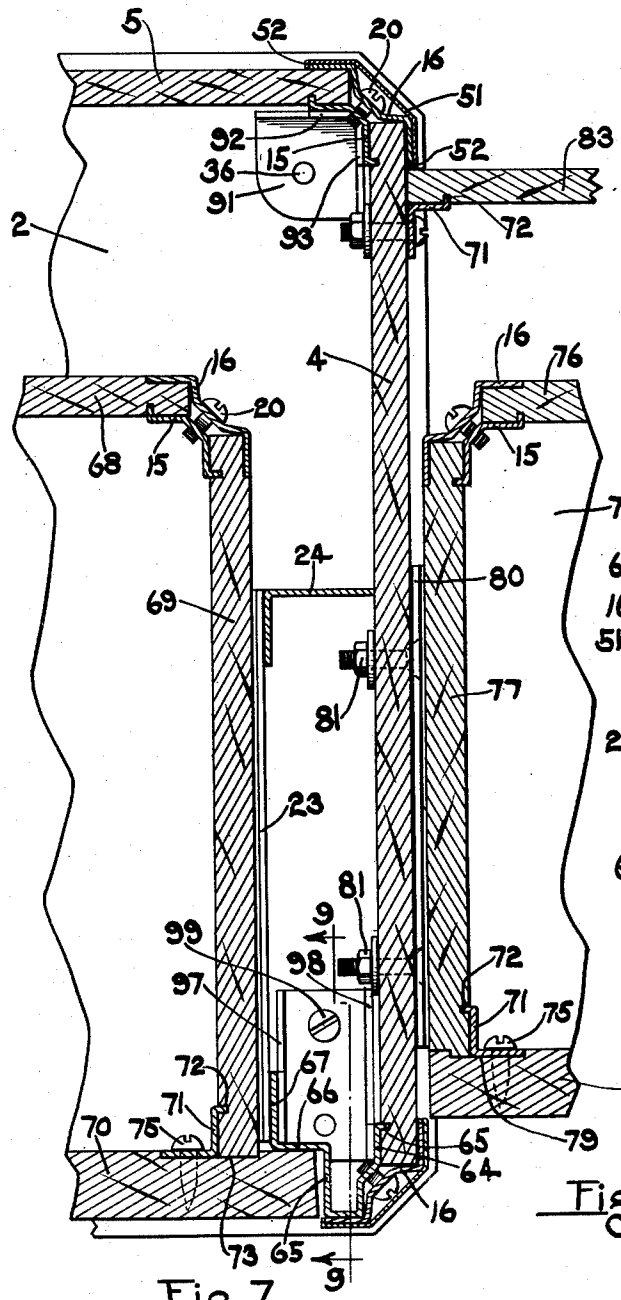


Fig. 7.

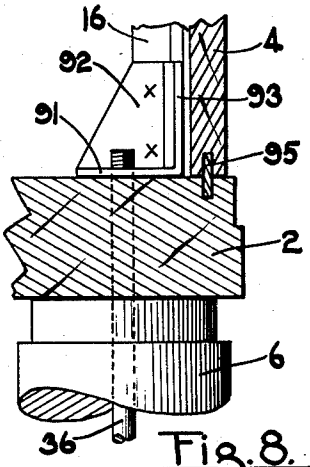


Fig. 8.

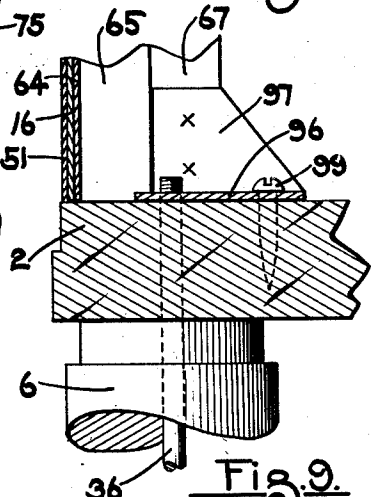


Fig. 9.

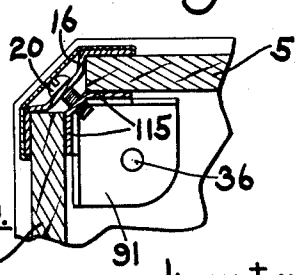


Fig. 10.

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KNOCK-DOWN DESK

Filed Oct. 8, 1934 4 Sheets-Sheet 4

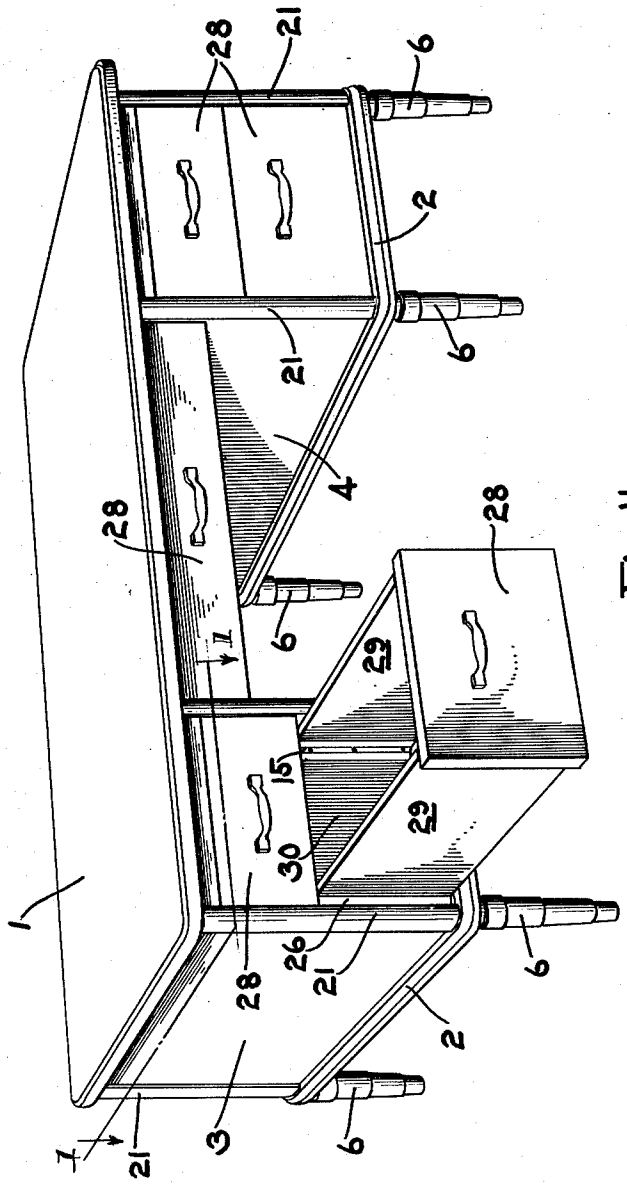


Fig. 11.

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UNITED STATES PATENT OFFICE

2,118,525

KNOCK-DOWN DESK

Bayard E. Richardson, Grand Rapids, Mich.

Application October 8, 1934, Serial No. 747,263

3 Claims. (Cl. 45—6)

This invention relates to a knock down desk construction and also to a similar knock down construction applied to analogous articles of furniture.

Furniture of bulky type such as desks has many disadvantages in storing and shipping. It is awkward to handle and occupies considerable space. When it is shipped it must be properly crated which is expensive and the shipping charge for bulky articles is high in comparison with the weight. Furthermore, the handling of assembled furniture of this character subjects it to damage.

The principal object of this invention is to provide a desk or analogous piece of furniture which may be stored, packed and shipped in knock down condition in which it will occupy only a fraction of the space it occupies when assembled. This makes it possible for a manufacturer or a dealer to carry a large stock of goods in a small storage space. Also the packing costs and shipping costs are both greatly reduced and the danger of damage to the article in handling is minimized.

The invention provides a desk composed of flat parts or relatively flat parts which may be very compactly arranged when disassembled and it provides means whereby the parts may be quickly assembled and rigidly held in assembled relation. The parts are so constructed and arranged that they may readily be properly assembled by an unskilled person and with the use of the commonest tools which are usually readily available.

Another object of the invention is to provide a knock down construction in which a relatively few different shapes are required thereby reducing the cost of production.

The invention provides various new and useful features of construction and arrangement as hereinafter more fully described and particularly pointed out in the claims, reference being had to the drawings, in which,

Fig. 1 is a sectional plan view of one pedestal and a portion of the well section of a desk embodying the invention taken on line 1—1 of Fig. 11.

Fig. 2 is a vertical section, with the central portion broken away, of one side of the pedestal on the line 2—2 of Fig. 1.

Fig. 3 is a vertical section, with the central portion broken away, of the opposite side of the pedestal and an adjacent portion of the well section on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary sectional detail illustrating a modified form of panel clamp.

Fig. 5 is a vertical section with the middle portion broken away, of the rear part of the desk taken through the well section on the line 5—5 of Fig. 3.

Fig. 6 is a fragmentary perspective view of one end of the panel bar used at the lower edge of the back panel of the well section.

Fig. 7 is a view of a modified form of applicant's construction. This view is a horizontal section disclosing a part of one pedestal and a part of the well section of the desk similarly to Fig. 1.

Fig. 8 is a vertical section through the inner wall of the pedestal illustrating the connection at the rear corners thereof.

Fig. 9 is a sectional view taken along line 9—9 of Fig. 7 illustrating the connection at the front corners of the pedestal.

Fig. 10 is a horizontal sectional view through a corner of my construction illustrating a second modification.

Fig. 11 is a perspective view of my desk.

Like numbers refer to like parts in all the figures.

The desk herein illustrated as an embodiment of the invention preferably consists of two spaced apart pedestals between which is located the well section, a single top extending over the whole structure and feet at the four respective corners of the structure beneath the pedestals. It is to be understood that the construction to which this invention pertains is applicable to analogous articles of furniture and is not confined to the specific desk herein illustrated and described.

1 represents the desk top which is of the usual oblong rectangular shape and has a pedestal located beneath it at its respective ends. Each pedestal is a box-like structure having a base 2, outer and inner vertical side panels 3 and 4, a vertical back panel 5 and a substantially open front in which the drawers are located. Feet 6 are attached to the pedestal bases 2 and support the desk upon the floor. The bases 2 are composed of flat rectangular frames and preferably have a panel enclosed within the frame forming a bottom for the pedestal.

The top and bottom edges of the vertical panels 3, 4 and 5 are attached respectively to the underside of the top 1 and to the upper side of the base 2 by edge panel clamps consisting of two pieces 7 and 8. The clamp member 7 has a flat base extending over, or under, the edge of the panel and an outer lip 9 engaging the outer surface of the panel. The base of the member 7 lies adjacent the member to which the panel is to be attached and extends inwardly beyond the inner side of the panel and its inner edge is preferably turned at right angles to form a slight ledge 10. The

clamp member 8 is an angle member having a base lying adjacent the base of the clamp member 7 and a right angle portion 11 extending adjacent the inner surface of the panel. A lip 12 is bent at right angles to the portion 11 and extends into a groove provided therefor in the inner surface of the panel. Screws 13 extend through holes located at intervals in the lengths of these clamping members, the screws passing through the base members of both clamping members 7 and 8 and into the member to which the panel is to be attached.

It will be seen that this edge panel clamp firmly holds the edge of the panel connected to the adjacent member such as the top or base and prevents movement in any direction. The outer lip 9 engaging the outer surface of the panel and the inner member 11 engaging the inner surface of the panel prevent lateral movement while edgewise movement is prevented in one direction by abutment against the base of the member 7 and in the other direction by the lip 12 in the groove in the panel. The modification illustrated in Fig. 4 is essentially the same as that just described excepting that the lip 9a enters a groove in the edge of the panel so that it will not be exposed on the outer surface of the panel. This modified edge clamp may be desired in some designs where it is undesirable to have an exposed metal strip at the point of connection.

The rear vertical corners of the pedestal panels are joined by corner panel clamps which consists of inner and outer clamps 15 and 16. The inner clamps 15 consist of two right angularly arranged members lying against the respective inner surfaces of adjacent panels and each of these members has an inturned lip 17 at its outer edge which enters a groove provided for it in the inner surface of the panel. The inner clamp is an integral member, the two base portions being joined by an angularly extending portion provided at intervals in its length with screw receiving holes. The holes in these members are preferably made plain and the screws used are of the self tapping kind.

The outer rear corner clamp members 16 comprise two right angularly arranged members 18 which engage the outer surfaces of the panels opposite the respective portions of the inner clamp members which engage the inner surfaces of the panels and these members 18 are joined by an integral angularly arranged joining portion 19 which is provided with screw holes corresponding to and opposite the threaded screw holes in the inner clamp members and screws 20 are passed through the holes in the outer clamp members and screwed into the threaded holes in the inner clamp members to draw the two members tightly against and in clamping relation to the respective panels.

The same type of corner clamp is used in the rear corners of the drawers of the structure and the joining portion 19 may extend in a straight line as illustrated on the drawers or may be indented as illustrated at the corners of the pedestal, the purpose of indenting these joining portions is to provide a recess at the corners of the structure which will give ample room for any desired design of covering plate. It is preferred that whichever type of outer corner clamp is chosen shall be adopted for the entire structure to avoid the expense of manufacturing different shapes.

An ornamental corner strip 21 is provided to cover the outer corner clamp and it consists of an integral piece of spring metal having lips 22 at its respective edges which engage the respective corresponding edges of the outer corner clamps and the body portion of the strip 21 lies over and conceals the outer corner clamp and may be shaped or ornamented variously as desired. This corner strip 21 is applied by simply snapping it into place, it being sufficiently flexible to spread and permit the lips 22 to assume their positions at the edges of the corner clamp and the resiliency of the strip thereafter retaining it in place although if desired it can be removed by prying it loose.

The drawer guides for the pedestal drawers comprise a series of metal angle members 23 arranged adjacent each inner side of the pedestal in superposed relation. It has been determined that it is not necessary for these drawer guides 23 to extend the full length of the drawers which they support and thereby the expense, weight and bulk of the surplus material is eliminated. These angle member drawer guides are supported at their rear ends by vertically extending angle members 24 to which they are attached as by welding. The members 24 are supported by resting at their lower ends upon the bottom edge panel clamps within the structure and are sufficiently wide to engage at their outer vertical edges with the inner surfaces of the respective side panels of the pedestal which prevent the drawer guides from spreading. Inward movement of the drawer guides is prevented by the drawers themselves.

To support the forward ends of the drawer guides 23 the inner corner clamps at the front corners of the pedestals are differently constructed than those at the rear corners and have the integral inward extensions 25 to which the forward ends of the drawer guides 23 are attached as by welding. These extensions 25 are offset at 26 to form abutments for the edges of the drawer fronts as hereinafter described and in place of a panel being clamped by the corner clamps at the front of the structure, wooden spacer strips 27 are located between the two clamping members and gripped thereby. The outside corner clamping member at the front corners of the pedestals are identical with those at the rear and the same corner strips 21 are used to cover them.

The drawers are composed of drawer fronts 28, sides 29, back 30 and bottom 31. The inner surfaces of the drawer fronts, sides and backs are grooved near the bottom edges to receive the respective edges of the bottom 31 to hold it in its proper position. The backs and sides of the drawers are held together by corner clamps identical with those used at the rear corners of the pedestal and the front ends of the drawer sides are attached to the inner surfaces of the drawer fronts by edge panel clamps identical with those used at the top and bottom edges of the panel of the pedestal.

The respective ends of the drawer fronts extend beyond the sides of the drawer and abut against the offset portion 26 on the extensions 25 of the inner corner clamps at the front of the pedestal and serve as stops to limit the inward movement of the drawers. This structure also provides a recess at the front of the pedestal to receive the drawer fronts so that they will not project beyond the pedestal when the drawers are closed.

The space between the pedestals of the desk, called the well, may be closed at the back by the well panel 32 which is held in place at its re-

spective vertical edges against the surfaces of the respective inner pedestal panels 4, by edge panel clamps 7 and 8 identical with those previously described. For added strength it may be preferred to substitute bolts 13a extending clear through the panels 4 instead of the wood screws 13. The lower edge of the well panel 32 is supported by a panel bar 33 comprising a channel in which the lower edge of the panel 32 is received and screw threaded studs 34 extend from the respective ends of the panel bar and are inserted through holes in the sides of the pedestal panels where they are held in place by nuts.

The well drawer which is located in the well space directly under the desk top is constructed the same as the pedestal drawer described excepting that the ends of the drawer front preferably do not extend beyond the drawer sides. The slide for the well drawer simply constitutes an angular member 35 at each side of the well bolted to the inner side panel of the pedestal.

The feet 6 of the desk are provided with central holes extending entirely through them and a bolt 36 extends through the holes in the foot having its head at the lower end of the foot, the bolt also extending through a hole in the base 2 of the pedestal and being provided with a nut by means of which the leg is firmly clamped in place.

Referring now to Figs. 7, 8 and 9, these views disclosing a very desirable modification of my invention, numeral 4 indicates the inner panel of the pedestal, 5 the rear panel and 2 the bottom thereof.

The side panel 4 and the rear panel 5 are joined by inner clamps 15 and outer clamps 16 held together by screws 20 similarly to the juncture together disclosed in Fig. 1.

An ornamental corner strip 51, similar to the corner strip 21, has lips 52 whereby it may be sprung into place over the outer corner clamp to conceal the same.

These ornamental corner strips 51 are located at each of the several corners. One of them is shown at the front corner of the inner panel 4, this corner strip being sprung to position over an outer clamp 16 with which is associated the clamp member 64. This clamp member 64 has a lip 65 which rests in a groove in the panel member 4 as clearly shown in Fig. 7 and it extends at its other side to form a boxlike extension 65 which abuts against the clamp member 16 and eliminates the necessity of the filler strip 27. The filler strip 27 is shown at the lower part of Fig. 1. The inner clamping member 64 is then offset at 66 to form an abutment for the edges of the drawer front as described in connection with Fig. 1. Drawer guides 23 are welded to the terminal portions 67 of the inner clamping members 64 and these guides 23 do not extend the full length of the drawers but terminate as shown and have their inner ends supported by the angle members 24. The members 24 rest upon the bottom panel member 2 in this modified construction. The side panels 3 and 4 prevent outward bulging of the drawer guides by contacting against the sides of the members 24.

The drawer guides 23 receive the drawer, this drawer having a back 68 and sides 69 held together by means of the clamping members 15 and 16 together with the tensioning devices 20. The connection between the front 70 of the drawer and the side members 69 consists of an L-shaped strip 71 having a lip 72. See Fig. 7. The lip 72 fits into a kerf in the side 69 and one arm of the L-shaped member 71, together with the end of the side member 69, snugly engages a recess 73 formed at the inner side of the front member 70. A screw 75 extends through the member 71 into the drawer front 70 as shown. Thus the side member 69 is held securely to the front member 70. The inner side of the front member 70 at each end thereof contacts against the abutment 66 of the clamp member 64 and limits the extent of inward movement of the drawer.

The drawer in the well section of the desk consists of a bottom member 75, a back member 76, side members 77 and a front member 78. The back member 76 is fastened to each of the side members 77 by means of the clamping members 15 and 16. The front member 78 is recessed as indicated at 79 and an L-shaped fastening member 71 with a lip 72, this being similar to the member used in connection with the other drawer, previously described, connects the sides 77 to the front 78. One arm of this L-shaped clamping member 71 is perforated and receives a screw or the like 75 therethrough as clearly shown in the drawings.

The slide for the well drawer consists of an angle member 80 which is bolted at 81 onto the side panels 4. A well panel 83 is fastened by means of a clamp 71, having a lip 72, onto the side panel 4 as clearly shown at the upper portion of Fig. 7.

Referring now to Fig. 8, numeral 2 indicates the bottom panel of a pedestal having a foot 6 thereon. A bolt 36 extends upwardly therethrough and the base portion 91 of a bracket member is threadedly engaged thereby. This bracket member has side members 92 and 93, these side members being welded onto the lower ends of the inner clamping member 15. See Fig. 8. A strip 95 is received between the lower edge of the side panel 4 and the base panel 2 and prevents lateral movement therebetween. Similar strips are also located at the tops and bottoms of the remaining side panels. Also, a second bracket member is welded at the top of the clamping member 15 and held onto the underside of the top 1 of the desk by means of wood screws.

Another bracket member, see Fig. 9, has a base portion 96 and side portions 97 and 98. These side portions are welded to the rearwardly extending portions 67 of the clamping member 74 and also to the portion of this member adjacent the lip 65. See Fig. 7. The base 96 receives the bolt 36 therethrough, see Fig. 9, and also a screw 99 is formed for supplementing this connection. Also, another bracket member of similar shape is located at the top of the clamping member 64 and is held onto the underside of the top of the desk by wood screws similar to the one indicated by numeral 99.

The purpose of this construction is to provide tensioning elements between the top and bottom of the pedestals of the desk whereby they place the side and back panels in compression and, together with the locking strips 95, hold the parts in rigid and fixed relationship.

In Fig. 10, the inner clamps 115, similar to clamps 15, serve the like purpose of maintaining the panels in rigid assembled relationship but the right angled lips are not needed inasmuch as the corner brackets are fastened to the top and bottom members of the desk and these brackets are in turn welded to the inner clamps 115 to prevent their outward separation.

From the foregoing description it will be seen that this invention provides a knock down struc-

ture which may be packed and shipped in very compact manner and occupying small space. Every wooden member of the desk excepting the bases 2 and the feet 6 is a flat panel member and the base structures 2 also are substantially flat while the feet 6 are of small cross sectional dimensions. The pedestal drawer slide structures when disassembled from the cabinet are relatively flat and occupy small space and all of the clamping members are of relatively small dimensions when disassembled and can be most compactly arranged.

The desk is susceptible to a variety of designs without any alteration in its structure. By changing the designs of the feet, the edges of the pedestal base, the edges of the top, the corner strips 21, the hardware such as locks, knobs, handles and so forth and by using a variety of woods and finishes a great variety of designs may be produced without the slightest change in structural detail. Furthermore, a design may be produced at will by selecting the desired parts of different designs from a stock of parts differently designed and a desk assembled embodying the desirable features of design in each particular which may be selected by the purchaser. Likewise the design of an assembled desk may be altered to suit the purchaser by removing certain parts such as the feet, the corner strips 21, etc., and substituting for them other parts of different design which the customer may select.

It will be seen that no other tool than a screwdriver and an ordinary wrench is required to assemble the desk and when assembled it is perfectly rigid and durable and will remain so indefinitely although it may at any time be disassembled for any occasion as readily as it had been assembled.

Although the device has been shown and described as having its panel members made of wood it is conceived that other materials may be substituted therefor such as metal, various compositions, etc. In any substitution of material it is merely necessary to provide corresponding shapes and grooves and openings to properly receive the clamping members.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In a knock down structure having panel members forming sides, corner clamps connecting adjacent edges of said panel members comprising an inner member having portions engaging the inner surfaces of the respective panels, each of said portions having lips bent at right angles and entering grooves in the inner surfaces of said panels and extending entirely along the panels and an outer member having portions directly engaging the outer surfaces of the respective panels, said outer member having exposed edges, means coacting between the inner member and the outer member to draw said members into clamping engagement with said panels, an ornamental corner strip, locking means, attached to said ornamental corner strip, engageable with the said exposed edges, said corner strip covering said outer clamp member and including a resilient body whereby the locking means is held into contact with said exposed edges by the resiliency of said strip.

2. In a knock down structure having two panel members arranged with the edge of the first panel member in abutting relation to a surface of the second panel member, the combination of, means on the surface of the second panel member against which one edge of the first panel member abuts, an abutting shoulder attached to the second panel member on the opposite side of the first panel member relative to the abutting means, L-shaped means having pivotal contact against the abutting shoulder and bearing against the face of the first panel member and means for forcing the L-shaped means toward the surface of the second panel member.

3. In a structure of the class described having a top, a base, and vertical panels, the combination of, corner clamps connecting adjacent edges of said panel members comprising an inner member having portions engaging the inner surfaces of the respective panels, each of said portions having lips bent at right angles and entering grooves in the inner surfaces of said panels and extending entirely along the panels and an outer member having portions engaging the outer surfaces of the respective panels, said clamps permitting sliding in a vertical direction, a bracket member welded to the inner member so as to be positioned closely adjacent the base, a second bracket welded to the inner member so as to be closely positioned near the top and means for drawing the brackets toward the base and top, respectively.

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