Nov. 20, 1962

J. PIPE

3,065,038

KNOCK DOWN CABINET

Filed March 12, 1959

4 Sheets-Sheet 1

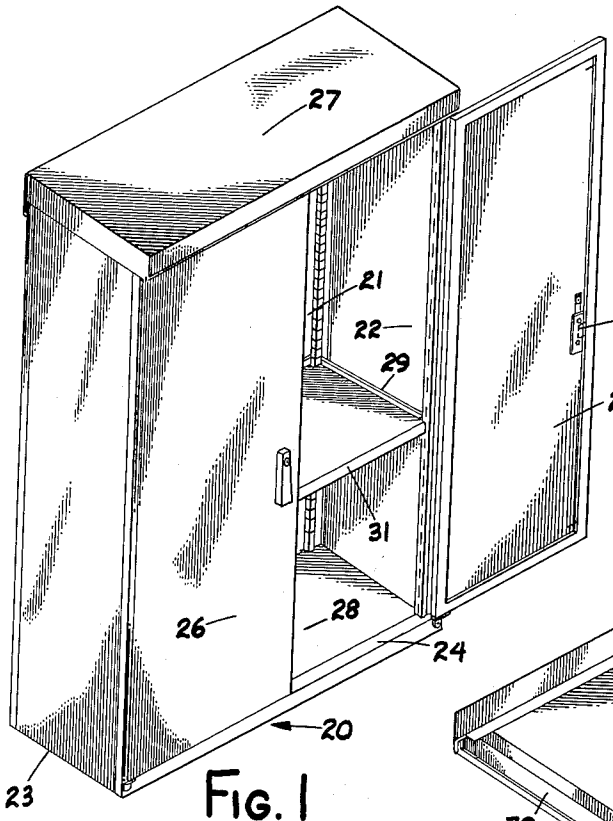


FIG. 1

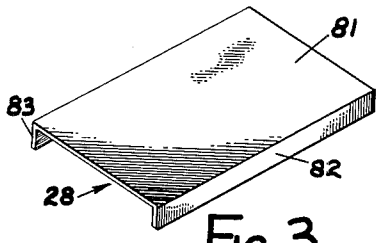


FIG. 3

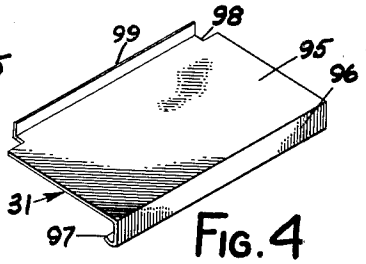


FIG. 4

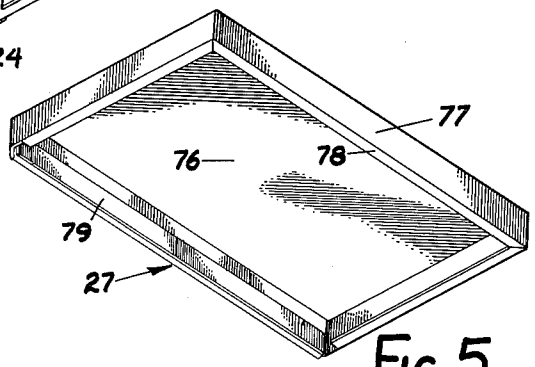


FIG. 5

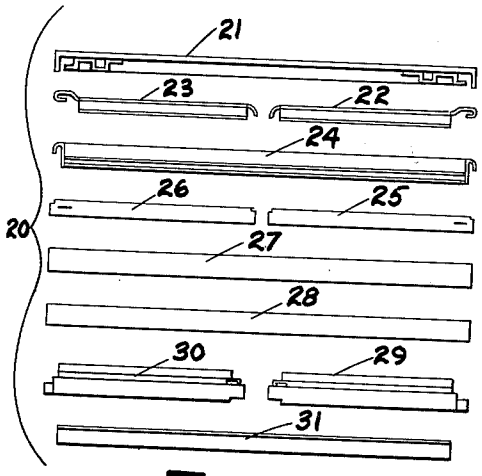


FIG. 2

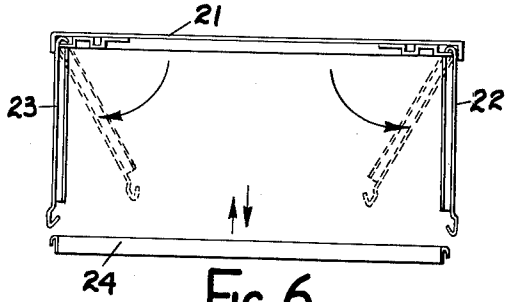


FIG. 6

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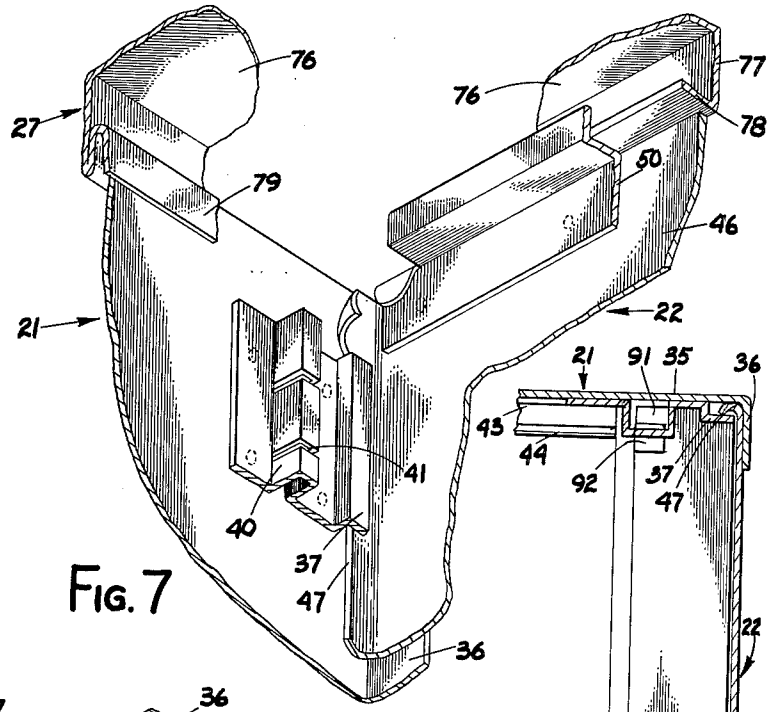


FIG. 7

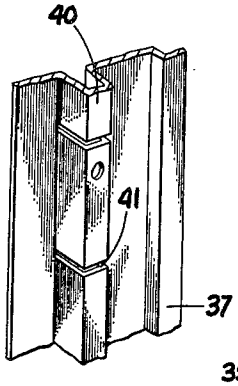


FIG. 9

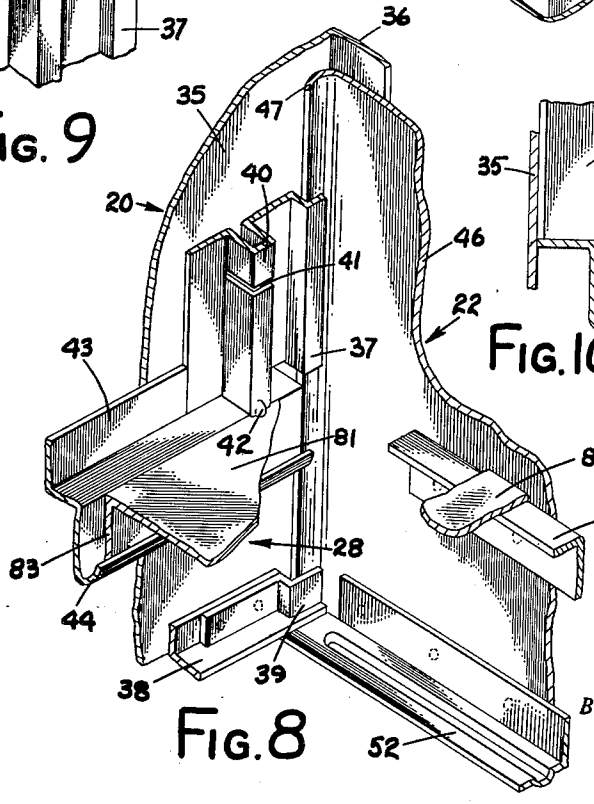


FIG. 8

FIG. 10

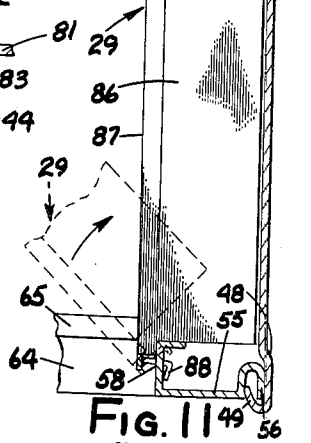


FIG. 11

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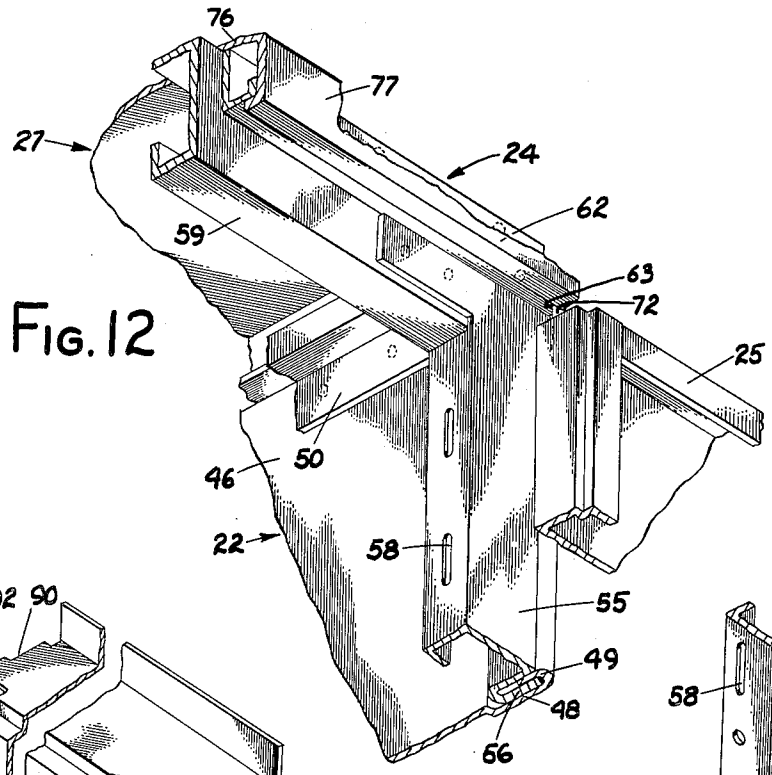


FIG. 12

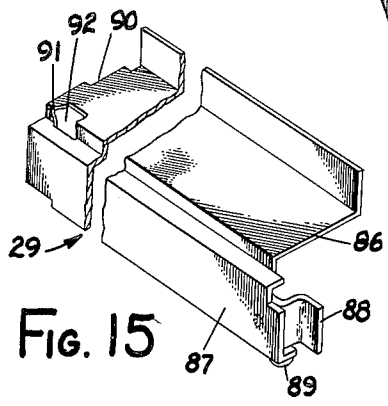


FIG. 15

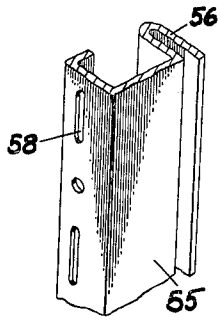


FIG. 14

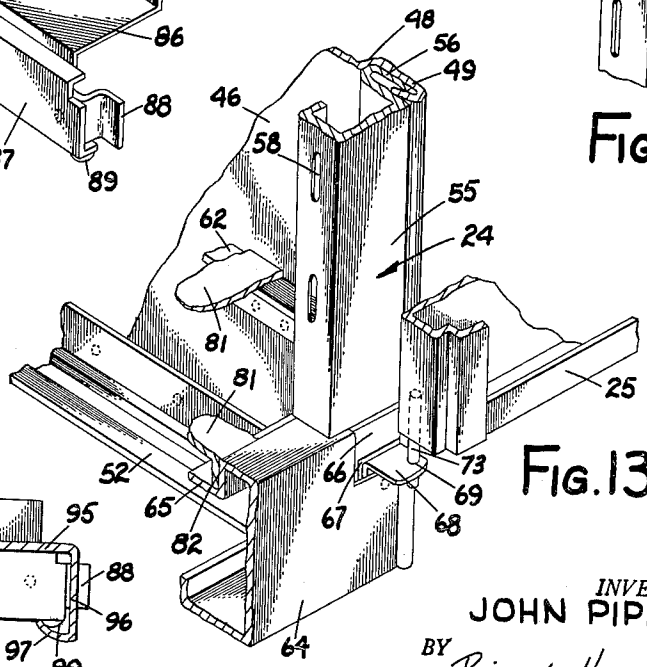


FIG. 13

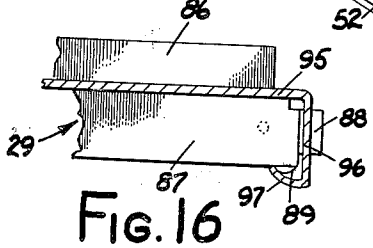


FIG. 16

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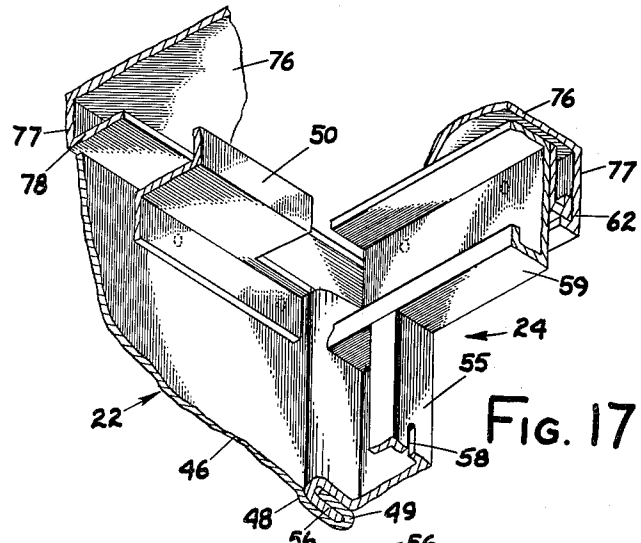


FIG. 17

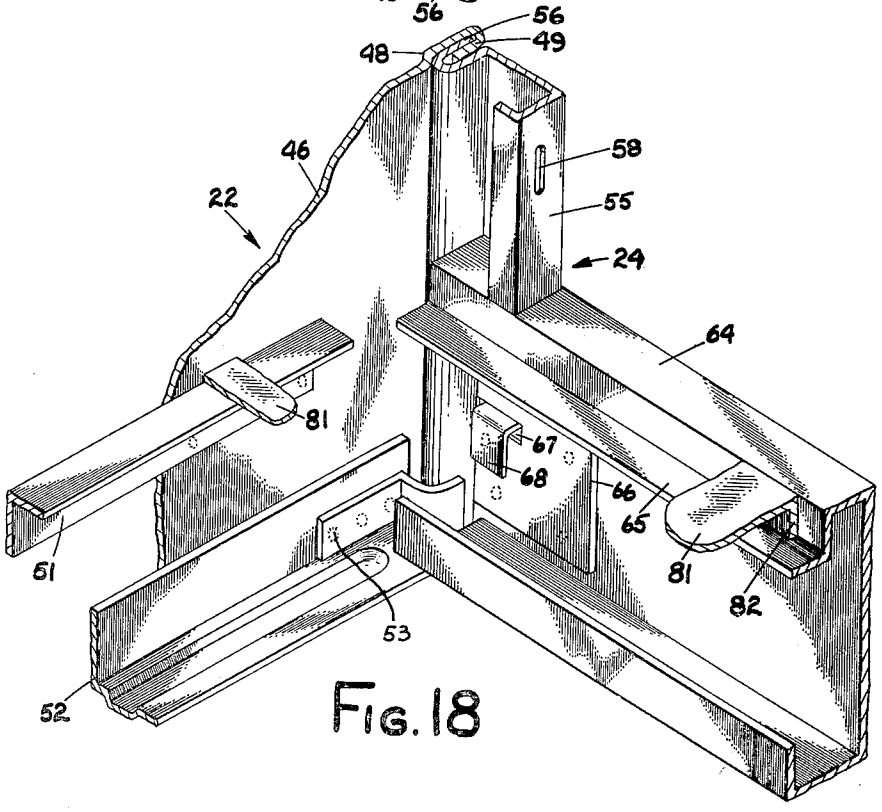


FIG. 18

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United States Patent Office 3,065,038 Patented Nov. 20, 1962

3,065,038

KNOCK DOWN CABINET

John Pipe, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich., a corporation of Michigan

Filed Mar. 12, 1959, Ser. No. 798,906
4 Claims. (Cl. 312—263)

This invention relates to furniture. More particularly, it relates to an office furniture construction particularly useful as a storage cabinet and locker.

With the rather frequent increases in freight rates in recent years, there has been a decided trend in the furniture industry, especially in the office furniture industry, to ship standard items in a knock-down condition and in one package in order to effect a savings in shipping space. Such furniture is assembled at the showroom prior to sale or is assembled by the purchaser after the sale. In either case, at the point of assembly, the assembler is usually limited in experience and skill. Consequently, it is a practical necessity that the knocked-down component parts of knock down office furniture be at a minimum and be free of complex and complicated fastening structure. In addition, it is necessary that the mode of assembly be simple, easy and readily grasped. A competing requirement, of course, for knock down furniture is that the structure and design of the knocked-down component parts be such as to permit the same to be shipped in a compact package with a minimum of waste space.

A general object of this invention is to provide a knock down, office storage cabinet.

A specific object of this invention is to provide a knock down, office storage cabinet having a minimum of sub-assemblies.

Another specific object of this invention is to provide a metal knock down cabinet with component parts which can be assembled with a minimum of conventional fasteners such as nuts and bolts.

Another specific object of this invention is to provide a knock down cabinet which, upon assembly, is rugged and sturdy and which is a rigid structure.

Still another object of this invention is to provide a knock down cabinet having knock down component parts which, upon assembly, are positively fastened together with a minimum of nuts and bolts to give an integrated structure.

These and other objects which may appear as this specification proceeds are achieved by this invention which shall be described with reference to the drawings which are briefly described as follows:

FIG. 1 is a perspective view of a preferred embodiment of the assembled, knock down cabinet of this invention;

FIG. 2 is an exploded view of a stack of component parts or sub-assemblies of the cabinet of FIG. 1;

FIG. 3 is a top, perspective view of the bottom shelf means of the cabinet of FIG. 1;

FIG. 4 is a top perspective view of an intermediate shelf means of said cabinet;

FIG. 5 is a bottom perspective view of the cabinet cover means;

FIG. 6 is a plan view of the cabinet in partially assembled condition illustrating in phantom view and by arrows a preferred mode of assembly;

FIG. 7 is a perspective view of pertinent portions of the inside, right rear, upper corner of the cabinet of FIG. 1;

FIG. 8 is a perspective view of pertinent portions of the inside, right rear, lower corner of the cabinet;

FIG. 9 is a perspective view of pertinent portions of an intermediate portion of the bracket standard member of the cabinet;

FIG. 10 is a sectional view looking towards the right side of the cabinet in the region of the bottom end of the bracket standard member;

FIG. 11 is a top sectional view of the right side portion of the cabinet, illustrating in phantom view and by an arrow one of the steps in the mode of assembly;

FIG. 12 is a perspective view of pertinent portions of the outside, upper, right hand corner of the cabinet;

FIG. 13 is a perspective view of pertinent portions of the outside, lower, right hand corner of the cabinet;

FIG. 14 is a perspective view of an intermediate portion of the right hand corner post member;

FIG. 15 is a perspective view of the end portions of a right side bracket assembly of said cabinet;

FIG. 16 is a sectional view of the front portion of an intermediate shelf means in position, looking towards the left hand side of the front portion of a right side bracket assembly of the cabinet;

FIG. 17 is a perspective view of pertinent portions of the upper, right hand, inside front corner of the cabinet;

FIG. 18 is a perspective view of pertinent portions of the lower, right hand, inside front corner of the cabinet.

The drawings in general disclose a knock down cabinet construction in which the assembled components are fastened together in a rigid structure. This structure is obtained by a combination of static forces applied through cooperative, interjacent, interlocked, structural connection elements incorporated into the component parts. The basic components of a knock down cabinet construction are: a back panel assembly, a right side panel assembly, a left side panel assembly, a front frame assembly, and a bottom shelf means. There may also be included a cover or top means for the cabinet.

In the more specific aspects of this invention the basic components of a knock down cabinet construction may comprise at least a pair of side bracket assemblies. In addition, there may be provided at least an intermediate shelf means. These components in combination with the basic components already mentioned provide transverse bracing which gives even greater rigidity and structural strength to the overall cabinet structure.

In greater detail, the drawings disclose a sheet metal storage cabinet 20. The cabinet 20 comprises a number of component parts. The parts (FIG. 2) are: a back panel 21, a right side panel assembly 22, a left side panel assembly 23, a front frame or panel assembly 24, a right door assembly 25, a left door assembly 26, cover means 27, a bottom shelf means 28, a right side bracket means or assembly 29, a left side bracket means or assembly 30, and an intermediate shelf means 31. Each of the door assemblies 25 and 26 may comprise a door latch and lock combination 32. Since the door latch and lock combination 32 is not critical to this invention, it need not be further described in detail. However, it may be noted that the door latch and lock combination described and claimed in my copending application, Serial No. 791,881 filed February 9, 1959, for Door Latch and Lock, now Patent No. 3,004,420 is particularly useful in the knock down cabinet construction of this invention.

The back panel assembly 21 comprises (FIGS. 7 and 8) a rectangular panel 35 having a frontwardly directed, lateral flange member 36 along each side thereof. Fastened to the front face of the panel 35 are a pair of Z-bar bracket members 37, a bottom angle bar member 38, a pair of auxiliary Z-bar bracket members 39, a pair of side bracket standards 40 and a bottom shelf support 43.

Each Z-bar bracket member 37 (FIGS. 7 and 8) extends from the region of the top end of the panel 35 to the region of the bottom thereof. One Z-bar bracket member 37 is disposed adjacent one lateral flange member 36; the other Z-bar bracket member 37 is disposed adjacent the other lateral flange member 36. In each

case one leg of the Z-bar bracket member 37 is fastened as by a weldment to the panel 35. In each case the other leg of each bracket member 37 is generally parallel to the panel 35 and spaced therefrom by a web portion of the Z-bar bracket member to form with the panel a lateral channel facing the adjacent flange member 36. The end of this latter leg of each Z-bar bracket member 37 terminates short of the adjacent member 36 by a distance at least approximately the width of the rear curved flange member 47 of each side panel assembly 22 and 23.

The angle bar member 38 (FIG. 8) is transversely disposed at the bottom end of the panel 35. It extends from the region of one of the back panel flange members 36 to the region of the other back panel flange member 36.

The pair of auxiliary Z-bar brackets 39 (FIG. 8) are mounted at the respective ends of the angle bar brace member 38. In each case one of the legs of the auxiliary Z-bar bracket 39 is fastened to the angel bar brace member 38 while the other leg is disposed the same distance from the panel 35 and from the flange member 36 as the corresponding leg of the main Z-bar bracket member 37.

The pair of side bracket standards 40 (FIG. 9) on the front face of the panel 35 are disposed adjacent the sides of the panel 35 (FIGS. 7 and 8). Each one extends from the region of the top end of the panel 35 to the region of the bottom end. Each standard 40 is in the form of an inverted channel bar with lateral, outwardly extending, flanges secured to the panel 35. On the side of each standard 40, adjacent each Z-bar bracket member 37, the flange thereat is integral with the Z-bar bracket member 37. Although this is not necessary, it is an advantage since the Z-bar bracket 37 and standard 40 can function structurally as an integral unit. Along the length of the standard 40 there is provided a plurality of transverse slots 41 disposed through the channel portion. The function of each slot 41 is to receive the back end of a bracket assembly 29 and 30. At the bottom end of each standard 40 (FIGS. 8 and 10) is provided on the front face thereof a protrusion or stud 42. The function of the stud member 42 is to hold down the bottom shelf means 28.

The bottom shelf support 43 comprises a transversely arranged angle bar member disposed in the bottom region of the panel 35. One leg thereof is fastened to the panel 35. The other leg extends outwardly from the panel and terminates in a downwardly depending trough portion 44. The trough portion functions to receive the bottom shelf means 28. The angle bar member 43 preferably terminates at each end in a plane substantially aligned with the web of the Z-bar bracket member 37. However, the angle bar member leg adjacent the panel terminates at the edge of each intermediate shelf standard 40 and the bottom end of each intermediate shelf standard 40 abuts the outwardly extending angle bar member leg.

The right panel assembly 22 and the left panel assembly 23 comprise the same structural members, the only difference being that one panel assembly is the miror image of the other.

Thus, with reference to the right panel assembly 22 (FIGS. 7, 8, 17 and 18) and looking directly at the inside face thereof, which face is the "front" face thereof, the assembly 22 comprises a rectangular panel 46. Along the left hand side thereof the panel 46 is provided with an inwardly extending, inwardly curved, flange member 47. It will be observed (FIGS. 7 and 8) that this flange member 47 is adapted to occupy the corresponding spaces of the back panel assembly 21 between the panel 35 and the Z-bar bracket members 37 and 39.

The right side of the panel 46 (looking directly at the "front" face) comprises a "backwardly" offset, reverse bend portion 48. This portion is formed by a terminal, frontwardly and inwardly curved, flange member 49. In plan view (FIG. 11) this portion appears roughly U-shaped or hook-shaped. This offset portion 48 extends

from the bottom end of the panel 46 to the top end thereof.

Fastened, as for example, by weldments, to the "front" face of the panel 46 are (FIGS. 7 and 8, FIGS. 17 and 18); a Z-bar ledge member 50, an angle bar ledge member 51 and an angle bar base member 52. There may also be provided a Z-bar stop member 53.

The Z-bar ledge member 50 (FIGS. 7 and 17) is transversely mounted along the top edge of the panel 46 with the top surface of the web portion thereof substantially aligned with said top edge. The ledge member 50 terminates near the offset portion 48 of the panel 46 and adjacent the flange member 47.

The angle bar ledge member 51 is transversely disposed in the region of the bottom end of the panel 46. See FIGS. 8 and 18. The length of the angle bar ledge member 51 need only be sufficient to provide adequate lateral support for the bottom shelf member 28. It should at most terminate at the offset portion 48 of the panel 46 and short of the end of the curved flange member 47.

The angle bar base member 52 (FIGS. 8 and 18) is transfersely disposed at the bottom end of the panel 46. One leg of the base 52 is adjacent to, and secured to, the panel 46. Fastened to this leg is the Z-bar stop member 53 (FIG. 18). The other leg of the base 52 extends "frontwardly" and is arranged so that when the cabinet 20 is assembled it rests on the floor.

The Z-bar stop member 53 comprises a leg portion fastened to the leg of the base 52, which is secured to the panel 46. The web of the stop member 53 extends outwardly from its leg portion secured to the base and functions to restrict backward movement of the front frame assembly 24. The remaining leg of the Z-bar stop member 53 extends laterally (looking directly at the side panel assembly 22 as in FIG. 18) towards the position of the front frame assembly 24 and functions as a guide to the front frame assembly at the time of its installation.

The front frame assembly 24 (see FIGS. 12, 13, 17 and 18) comprises a top crosspiece member 59, a bottom crosspiece member 64 and at each end of the crosspiece member is a front corner post 55. The structural elements define the doorway of the cabinet 20.

Each of the corner posts 55 has the proximate, cross sectional shape of a channel facing rearwardly with a U-shaped configuration at the outside end thereof formed by a frontwardly extending, flange member 56. Actually, each front corner post 55 in cross section (FIG. 14) resembles the block numeral five (5). The flange member 56 is adapted to seat within the bight of the U of the offset portion 48 of the side panel 46 while the curved flange member 49 of the side panel 46 is adapted to seat within the bight of the U of the front corner post 55 (FIGS. 12 and 13). The interengagement of flange members 49 and 56 provides means for locking the side panels to the front panel, whereas the interengagement of flange member 47 with Z-bar 37 and the back panel 35 provides means for locking the side panels to the back panels. The back panel means, side panel means, and front frame means thus have along adjacent sides thereof cooperative, interlocking, movement detachable, interjacent connection means. The wall of each front corner post, which wall forms the side of the doorway of the cabinet 20, comprises a plurality of vertically elongated slots 58. The purpose of each of these slots 58 is to receive and hold a portion of a corresponding side bracket assembly.

The top cross piece member 59 (see FIGS. 12 and 17) is in the form of a channel. It rests on its side on the corner post 55 and is suitably secured thereto, for example, in the manner shown in FIG. 12. The ends of the top crosspiece member 59 abut upward extensions of the U-shaped portion of each corner post 55 (FIG. 17).

The front face of the top crosspiece member 59 (FIG. 12) is provided with an L-bar ledge 62. The ledge extends the entire length of the crosspiece member 69 and is secured thereto as by weldments. At each end of the

ledge 62 there is provided a hole 63 for receiving a top door pin 72 on which the corresponding door assembly is hung.

The bottom crosspiece member 64 (FIGS. 13 and 18) is likewise in the form of a channel. It rests on its side with the corner post 55 on top thereof. Along the top inside edge thereof is provided an angle bar ledge portion 65. The ends of the bottom crosspiece member 64 abut downward extensions of the U-shaped portion of each corner post. Each extension comprises a plate member 66 which is adjacently inside of the web of the crosspiece member and which is fastened to the web, for example, by weldments. At each of the upper corners of the front face of the web of the bottom crosspiece member 64 there is provided an opening covered for the most part on the backside of the web by the plate member 66. Each plate member 66 is provided with a transverse slot 67 in the region of the corner opening in the web. Disposed through each slot 67 is an angle bar clip 68, one leg of which (FIG. 18) is fastened to the backside of the leg member 66. The other leg of each angle bar clip 68 (FIG. 13) extends frontwardly of the bottom crosspiece member 64 and is provided with a hole 69 for receiving the bottom pin of a corresponding door assembly.

Each of the door assemblies 25 and 26 (FIGS. 12 and 13) is provided with means for swivelly connecting the door to the front frame assembly 24. Such means comprise a pin 72 through the top of the door panel and having a right angle end portion which rests on the L-bar ledge 62. The other end of the pin is secured by suitable means to the inside of the door panel. Such means also comprise a pin 73 which is suitably secured to the inside of the door and which projects downwardly therefrom for insertion into the hole 69 of the angle bar clip 68.

The cover means 27 (FIG. 5) comprises a rectangularly shaped panel member 76 having on all four sides a downwardly extending apron member 77. The apron member at the front and sides of the cover member 27 has an inwardly extending rim portion 78 which gives to the apron member 77 thereat an L-shaped appearance in cross section. On the back side of the cover means 27 the apron member 77 comprises an inverted U-shaped portion 79. The legs of the U are disposed sufficiently to accommodate the top end of the panel member 35 of the back panel assembly 21 (see FIG. 7).

The bottom shelf means 28 of the cabinet 20 comprises a panel portion 81. At the front end of the panel portion 81 there is provided a front apron portion 82. At the back end of the panel portion 81 there is provided a back apron portion 83.

The right and left side bracket assemblies 29 and 30 are substantially alike, one being the mirror-image of the other. Thus, with reference to the right side bracket assembly 29 (FIG. 15), the side bracket assembly comprises a Z-bar member 86. The web of the Z is intended to be horizontally disposed, forming a lateral extension of the intermediate shelf means 31 when installed. The upper leg of the Z-bar member 86 is adapted to abut the side panel 46. The lower leg 87 of the Z is provided with an upper inset or ledge portion for receiving the side edge of the intermediate shelf means 31. The intermediate shelf bracket assembly in each case is adapted (FIG. 11) to abut the back panel assembly 21 and the front frame assembly 24.

At the front end of the side bracket assembly 29 there is provided on the inside of the lower leg 87 a horizontally disposed frontwardly extending Z-bar piece 88. One leg of the Z-bar piece 88 is fastened to the inside of the lower leg 87. The other leg of the Z-bar piece (FIG. 16) extends outwardly from the end of the channel portion 87 and thereby is adapted for insertion into a slot 58 in the front corner post 55.

Also, adjacent the front end of the leg portion 87 and the bottom thereof, there is provided a downwardly extending stud 89 (FIG. 16). The function of this stud 89 is to retain the intermediate shelf means 31 in place. At the back end of the side bracket assembly 29, the web of the Z-bar member 86 is provided with a stepped end 90 for accommodating the Z-bar bracket member 37 of the back panel assembly 21 (see FIG. 11) when the intermediate shelf bracket assembly 29 is installed. In addition, there is provided (FIG. 15) adjacent the back end of the side bracket assembly 29 an opening 92 which occupies a small segment of the web and of the downwardly extending leg 87. Between the opening 92 and the back end of the web, the web has a concavely bent strip portion 91. The opening 92 enables the strip portion 91, having slight resiliency, to fit within the slot 41 of the side bracket standard 40 and to engage the bottom slot edges, whereby the back end of the web of the Z-bar member 86 may be swung through one of the slots 41 of the side bracket standard 40 and by snap action be locked into position.

The intermediate shelf means 31 (FIG. 4) comprises a rectangularly shaped panel member 95. At the front end of the panel 95 there is provided a downwardly depending skirt 96 which has an inwardly-directed upwardly-curved lip 97. This lip cooperates with the stud 89 of the side bracket assembly 29 to hold the shelf means 31 in place. At the back end of the panel 95 there is provided an upwardly extending flange member 99 which is intended to bear against the back panel 35 when the intermediate shelf means is in normal position in the cabinet 20. Each of the rear corners of the panel member 95 is provided with a notch 98 to accommodate the lateral flanges of the shelf standard 40, which are secured to the back panel 35.

Each of the component parts just described can be placed in a stack as indicated in FIG. 2 and shipped as a compact package with a minimum of unoccupied shipping space. To assemble the cabinet 20 from these component parts, the following described procedure may be used.

The back panel assembly 21 is placed into vertical position. One of the side panel assemblies, for example, the right side panel assembly 22 is also placed into vertical position at an acute angle to the back panel assembly 21. As shown in FIG. 6, the end of the curved flange member 47 should be positioned in the openings between the ends of the Z-bar brackets 37 and 39 and the back panel flange member 36. The side panel assembly is then swung out as indicated by an arrow in FIG. 6 whereby the curved flange member 47 enters the spaces between the Z-bar brackets 37 and 39 and the back panel 35 and the end of the curved flange member 47 abuts the insides of the Z-bar brackets 37 and 39. The outer side panel assembly is then mounted in the same manner, as indicated by an arrow in FIG. 2.

The front frame assembly 24 is next installed. This may be accomplished by placing the front frame assembly 24 in vertical position, elevating it sufficiently so that the bottom of the bottom channel 64 can clear the Z-bar stop members 53 when such are present, and then, as indicated by an arrow in FIG. 6, moving the entire assembly towards the back panel 21 between the side panel assemblies 22 and 23 until the ends of the flanges 56 are at the mouth of the pockets of U-shaped portions at the front ends of the side panel assemblies. At this point it will be observed that the front inner corners of the Z-bar ledges 50 (see FIG. 17) are cut back to accommodate during this maneuver the flanges 56 of the front corner posts 55. The front frame assembly 24 is then moved forwardly, as indicated by an arrow in FIG. 6, until the flanges 56 are seated in the pockets. When this occurs, the front frame assembly 24 may then be lowered until the bottom channel 64 rests on the angle bar base member 52. In this regard, it will be observed that when the Z-bar stop members 53 are present, each end of the bottom of the bottom channel 64 is cut away as shown

in FIG. 18 to clear the Z-bar stop members 53 when the front frame assembly 24 is dropped into place. When the front frame assembly 24 is in position the web portion of the Z-bar stop member 53 and the front outer end of the Z-bar ledge member 50 preferably should abut the back of the curved portion at the juncture of the flange 56 with the front corner post 55, thereby holding the front frame assembly 24 in forward position.

So far as assembled at this point, the cabinet assembly is resistive to certain movements. By virtue of the interlocking, interjacent structural elements, backward and forward movement of the back panel assembly 21, lateral movement of the side panel assemblies 22 and 23, and backward and forward movement of the front frame assembly 24 are blocked.

The cover means 27 may be then mounted as shown in FIGS. 7, 12 and 17. When in position, the front rim portion 78 of the apron member 77 is hooked over the L-bar ledge 62 of the front frame assembly and the side rim portions 78 of the apron member 77 are seated on each Z-bar ledge 50 of the side panel assemblies 22 and 23. Moreover, the top end of the back panel member 35 of the back panel assembly 21 is seated in the bight of the U-shaped rim portion 79 of the cover means 27 (FIG. 7).

Next, the bottom shelf means 28 (FIG. 3) is installed. The front apron portion 82 of the bottom shelf means 28 is first seated into the inward facing angle bar ledge portion 65 of the bottom crosspiece member 64 (FIGS. 13 and 18). The rear portion of the bottom shelf panel 81 is then pushed downwardly until the rear apron portion 83 slides past the detent 42 and seats into the depending trough portion 44 of the bottom shelf support 43 of the back panel assembly 21. Laterally, the panel portion 81 of the bottom shelf member 28 rests on the angle bar ledges 51 of each of the side panel assemblies 22 and 23. Rearwardly, as indicated in FIG. 10, the bottom shelf member 28 is prevented from popping out by the detents 42.

Next, the side bracket assemblies 29 and 30 are installed. This may be accomplished in each case by inserting the outwardly extending portion of the Z-bar piece 88 into one of the slots 53 of the front corner post 55 (FIG. 11), and then swinging each side bracket assembly towards the corresponding side panel assembly. In so doing the rear horizontal portion of the bracket assembly is passed through an appropriate slot 41 of the bracket standard 40 adjacent the corresponding side panel assembly. The strip portion 91 is snapped into place in the slot 41. In this position, the vertically disposed leg of each shelf bracket assembly bears against the side panel 46, the outwardly extending Z-bar piece 88 in each side of the cabinet 20 bears against the front corner post 55 and the back end of each side bracket assembly bears against the back panel assembly 21. In addition, the rear of the leg portion 87 will usually abut the side of the standard 40. Thus, in such manner, the back panel assembly 21 and the rear flanges 47 of the side panel assemblies 22 and 23 are placed under slight tension while the flange member 56 of the front frame assembly and the front flange members 49 of the side panel assemblies are placed under slight tension, further adding to the rigidity of the structure.

Finally, intermediate shelf means 31 is mounted by sliding the lateral edges of the panel member 95 thereof over the ledges formed on each side of the cabinet 20 between the Z-bar web 86 and the downwardly extending leg 87 thereof in the side bracket assemblies 29 and 30. As the back end of the panel member 95 reaches the panel 35 and as the back corners at the notches 98 of the panel member 95 enter the respective slots 41 of the side bracket standards 40, the top side of the lip 97 of the skirt 96 engages the stud 89 of each side bracket assembly 29 and 30. By snap action, the shelf is pushed into position and is held in position by the engagement of the lip 97 with the studs 89. Thus, the cabinet structure is placed under slight lateral tension.

To install the doors 26 and 27, each door is first angled so as to insert the top door pin 72 thereof through the door pin hole 63 and then swung downwardly. The bottom door pin 73 is retracted into the door panel and the door panel swung further downwardly so as to place the bottom door pin 73 into line with the door pin hole 69 in the angle bar clip 68. The bottom door pin 73 is then permitted to drop into place through the pin hole 69.

Thus, there is provided an office storage cabinet, locker and the like having a rigid and sturdy construction. A minimum of bolts and nuts are involved in fastening together the component parts. Yet, after assembly, the component parts are firmly and permanently fastened together. The interlocking, interjacent structural elements of the component parts plus the structure of the component parts provide a cabinet construction that is structurally strong and vertically and horizontally rigid in all directions.

The component parts can be quickly combined without the presence of highly skilled personnel and without any special tools. In addition, the cabinet of this invention can be readily knocked down as by simply reversing the assembly procedure. Because there are no conventional fasteners to be removed, there is no chance of vital fastener means being lost.

Other advantages and features will be apparent to those of ordinary skill in the art in light of the foregoing description. Moreover, this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof. Therefore, the embodiment just described is to be regarded as illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within the metes and bounds of the claims, or that form their functional as well as conjointly cooperative equivalents, are intended to be embraced by those claims.

I claim:

1. A knock down cabinet which comprises: a back panel means; first and second side panel means disposed substantially parallel to each other and normal to said back panel means, said first and second side panel means having upright edges adjacent the upright edges of said back panel and other upright edges remote therefrom; means for connecting upright edges of said first and second side panel means adjacent said back panel means to the upright edges of said back panel means; a front panel means; the other upright edges of said first and second side panel means and the upright edges of said front panel means each having cooperative, interlocking locking means; said locking means of said first and second side panel and front panel means including abutting portions limiting only the movement of said front panel means in a direction away from said back panel means and lateral movement of said first and second side panel means relative to said front panel means, said abutting locking portions permitting movement of said front panel means in a direction of said back panel means for disconnecting the edges of the first and second side panel and front panel means; said back panel means and said front panel means comprising in pairs oppositely disposed bracket standards and posts respectively, each post having a support surface with at least one tab receiving opening and each bracket standard having a support protrusion extending towards said oppositely disposed post, said protrusion having at least one horizontal slot on substantially the same horizontal level as said tab receiving opening; and removable shelf bracket assemblies extending between said back and front panel means for limiting movement of said front panel means in the direction of said back panel means and for holding said abutting por-

tions in interlocking position, each shelf bracket assembly having a tab secured to one end and having a bent portion permitting entry thereof into said tab receiving opening when said bracket assembly is positioned at an angle to a line between said opening and said slot and subsequently permitting pivoting of said bracket assembly towards one of said bracket standards, and at its other end an edge adapted to be received by said horizontal slot for supporting the bracket assembly between said bracket standard and post.

2. A shelf bracket assembly adapted to have removable suspension between spaced upright support means involving a post having a support surface with at least one tab receiving opening and a bracket standard having a support protrusion extending toward said post, said protrusion having at least one horizontal slot on substantially the same horizontal level as said tab receiving opening, said shelf bracket assembly being an elongated member having: a support surface; a tab secured to one end of said shelf bracket assembly and having a bent portion permitting entry thereof into said tab receiving opening when said shelf bracket assembly is positioned at an angle to a line between said opening and slot and subsequently permitting pivoting of said shelf bracket assembly toward said bracket standard, and at its other end an edge adapted to be received by said horizontal slot for supporting the shelf bracket assembly between said post and bracket standard.

3. A knock down cabinet which comprises: a back panel assembly having vertically disposed, rectangular, back panel means with frontwardly directed, lateral flange means at each side end thereof and, fastened to the front face of said panel means, vertically disposed Z-bar bracket means adjacent each side end of said panel means with one leg of each of said Z-bar bracket means being spaced from said face and extending towards the corresponding side end of said panel means, horizontally disposed, angle bar means in the bottom region of said face and having a depending trough portion for receiving the back portion of a bottom shelf means and side bracket standard means adjacent each of said Z-bar bracket means, said bracket means comprising a vertically disposed inverted channel with transverse slots along the length thereof and having at the bottom thereof detent means for holding down said bottom shelf means; a right and a left side panel assembly, each comprising vertically disposed, rectangular, side panel means arranged perpendicularly to said back panel means, each of said side panel means having at the back ends thereof inwardly curved flange means interjacent said front face and said Z-bar bracket means of said back panel assembly, each of said panel means at said back ends being on the inside of said lateral flange means of said back panel assembly and each of said side panel means having at the front ends thereof a laterally offset U-portion; a front frame assembly comprising a top, horizontal crospiece member, a bottom, horizontal crosspiece member, a right side corner post member and a left side corner post member, said corner post members being fastened to said crosspiece members and defining a

doorway, each of said corner post members comprising a lateral frontwardly facing, vertically disposed, U-portion with the outer leg thereof being seated in the bight of the U-portion of the adjacent side panel assembly and with the outer leg of the U-portion of said adjacent side panel assembly being seated in the bight of the U-portion of the adjacent front corner post member, and said bottom crosspiece member having a backside horizontal ledge for said bottom shelf means; bottom shelf means comprising a horizontally disposed, generally rectangular panel means with a depending back apron portion seated in said depending trough portion and a depending front apron portion seated on said backside horizontal ledge; cover means seated on the top ends of said back panel assembly, side panel assemblies and front frame assembly; a right side bracket assembly and a left side bracket assembly, each of said side bracket assemblies comprising a Z-bar member with the web thereof being horizontally disposed and abutting said back panel assembly and the corresponding front corner post member with the upwardly extending leg of the said Z-bar member abutting the corresponding side panel means and with the downwardly extending leg having at the front end thereof a downwardly extending stud and a frontwardly extending Z-bar piece disposed in the corresponding side slot in said corresponding front corner post member, and with the back region of said web adjacent said lower leg having an opening, the web strip between said opening and the back end of said web being disposed in a corresponding horizontal slot in a corresponding side bracket standard and below the plane of said slot, and said lower leg having an inset portion for receiving the side margins of an intermediate shelf means; intermediate shelf means comprising a rectangular panel member, the lateral edges which are resting on the inset portions of said side bracket assemblies, said shelf means having a front apron member with an upwardly curved lip portion at the bottom end thereof, said lip portion at the sides thereof engaging a corresponding stud of said corresponding side bracket assembly.

4. A knock down cabinet according to claim 3, wherein each of said side panel assemblies comprise: a base member having at the front end thereof a stop member abutting the backside of said U-portion of a corresponding corner post member of said front frame assembly; and top ledge member, the front end of which abuts said backside of said U-portion.

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