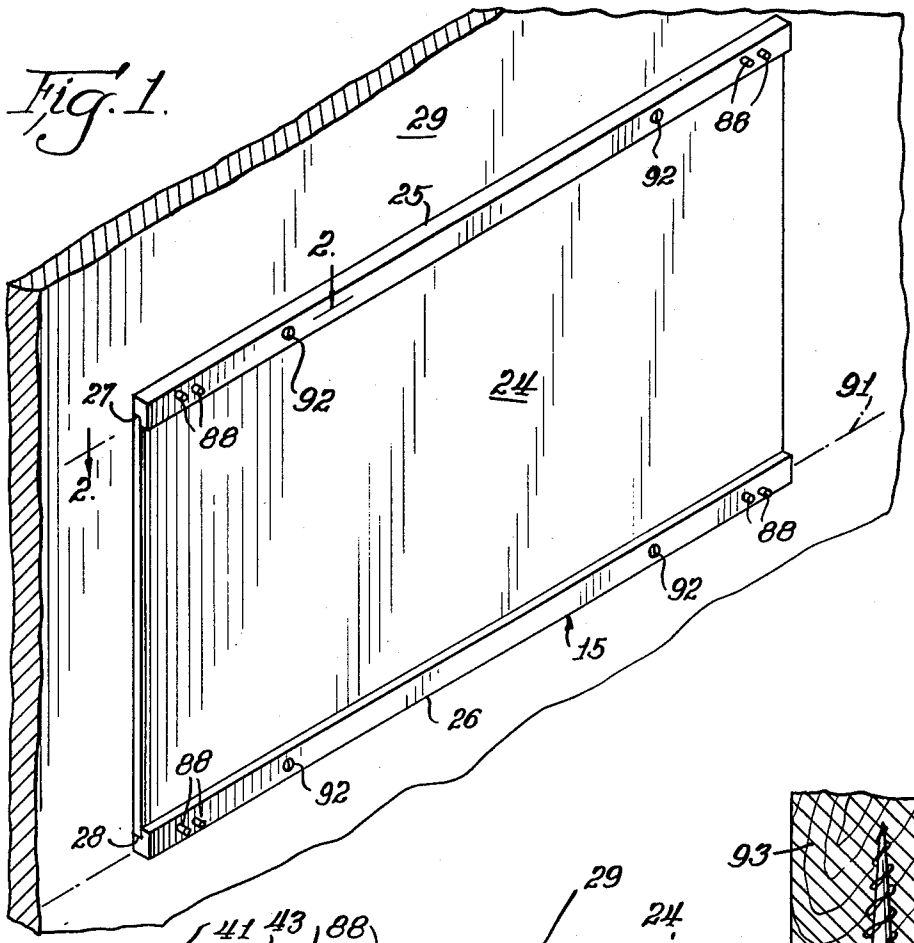
July 28, 1964 M. L. KERRIHARD 3,142,523

WALL CABINET APPARATUS AND METHOD

Filed May 7, 1962 4 Sheets-Sheet 1

Fig. 1.



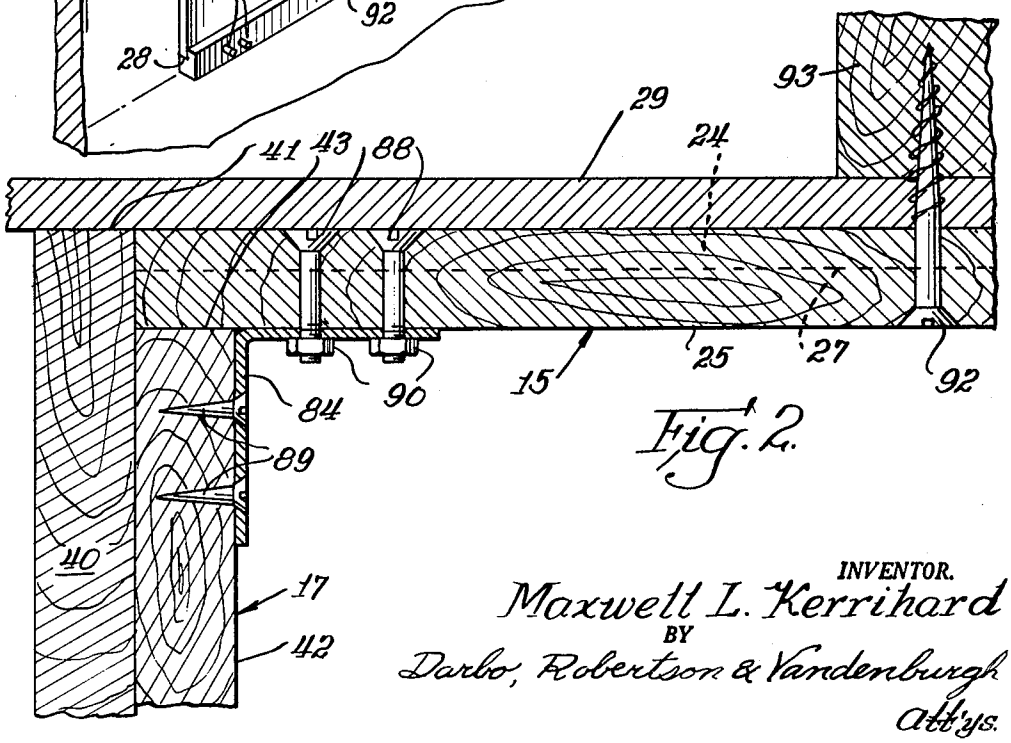


Fig. 2.

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WALL CABINET APPARATUS AND METHOD

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Fig. 3

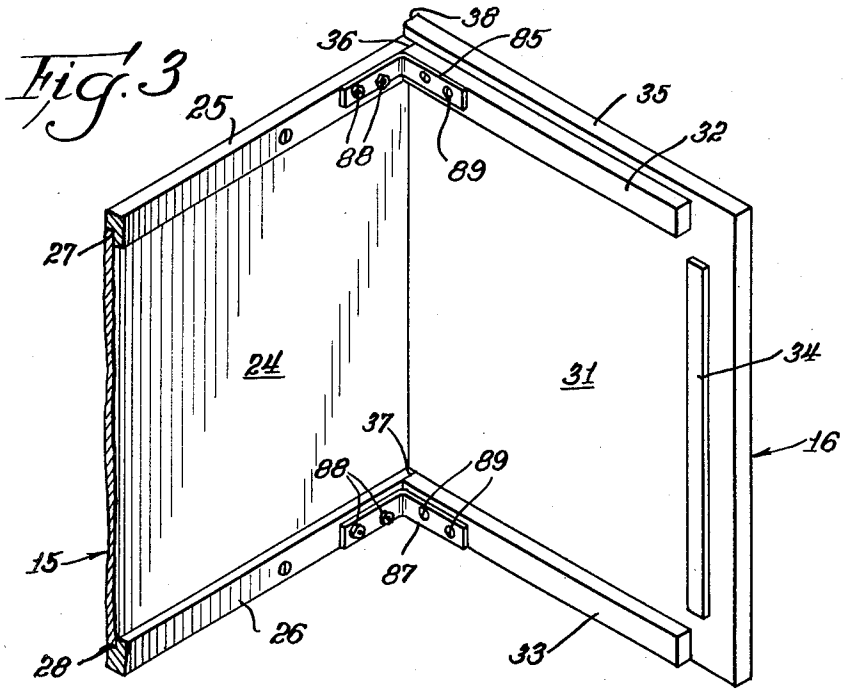
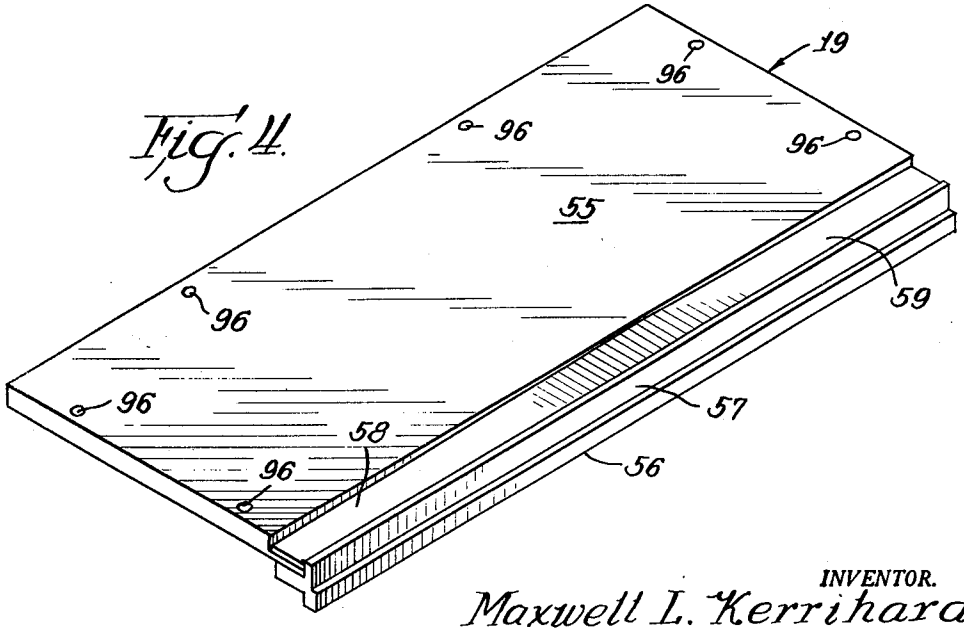


Fig. 4



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WALL CABINET APPARATUS AND METHOD

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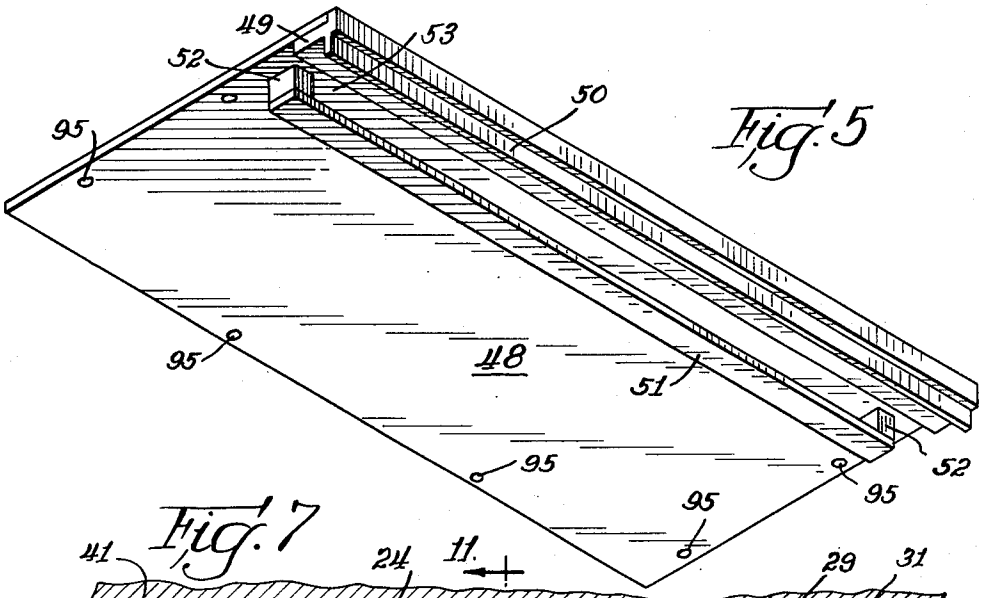
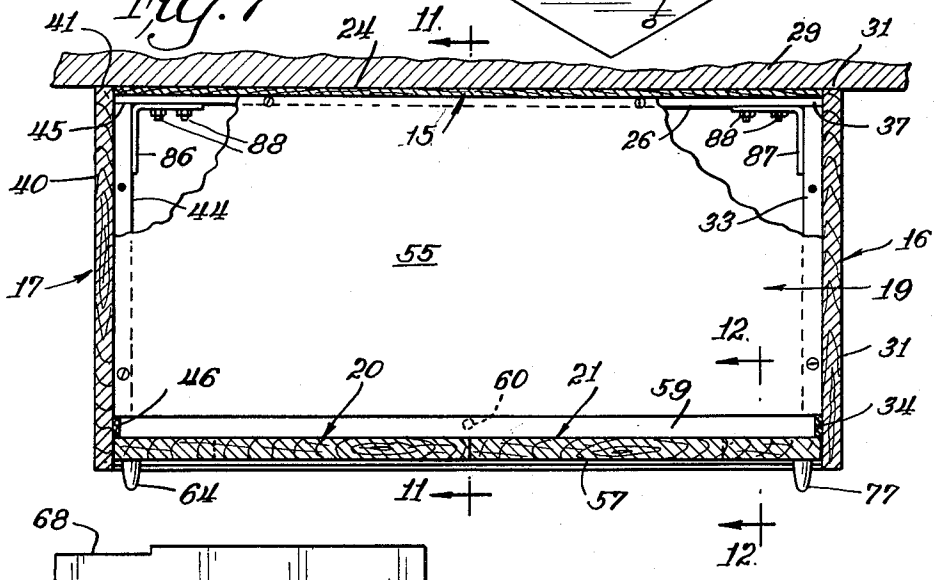


Fig. 5

Fig. 7



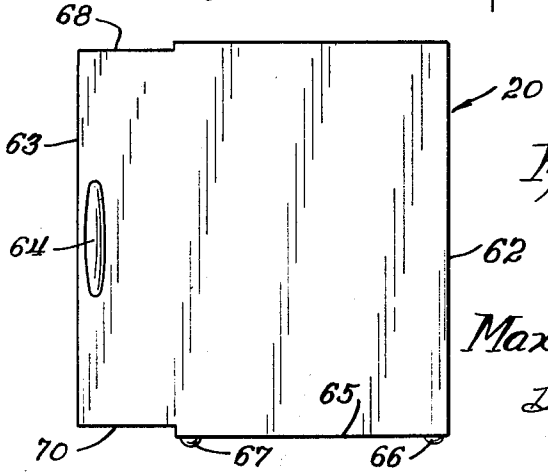


Fig. 6

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WALL CABINET APPARATUS AND METHOD

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Fig. 8.

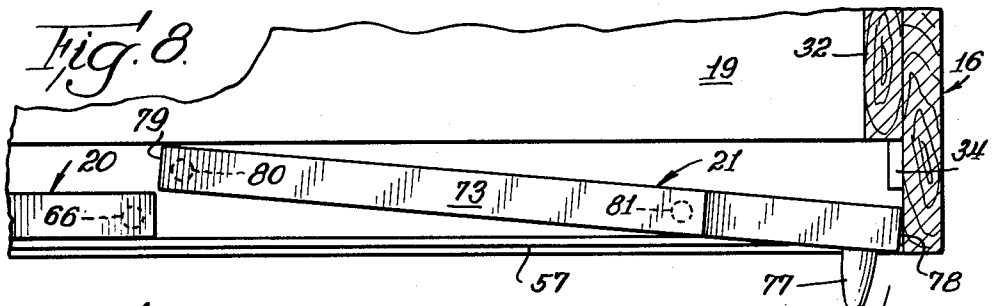


Fig. 9.

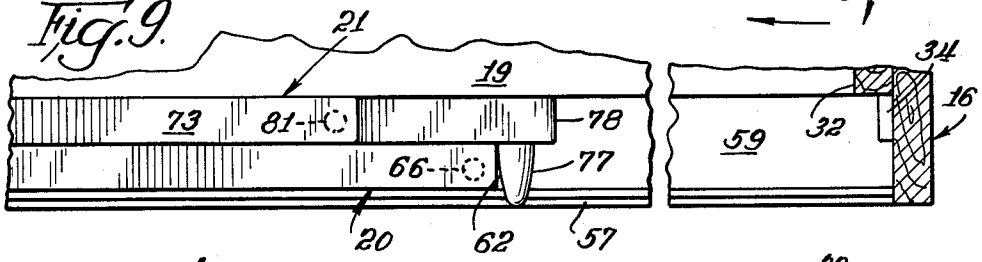


Fig. 10.

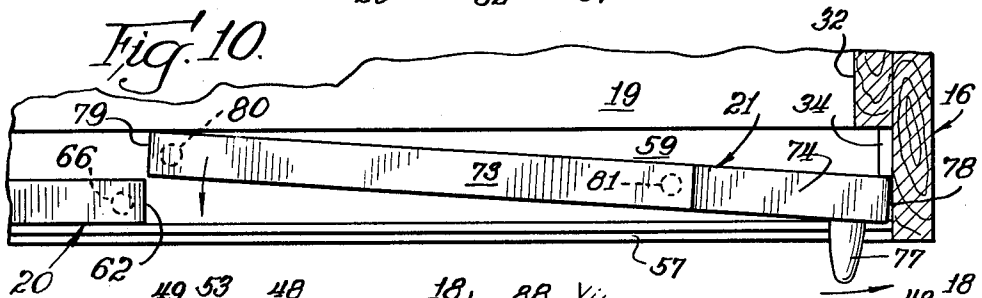


Fig. 11

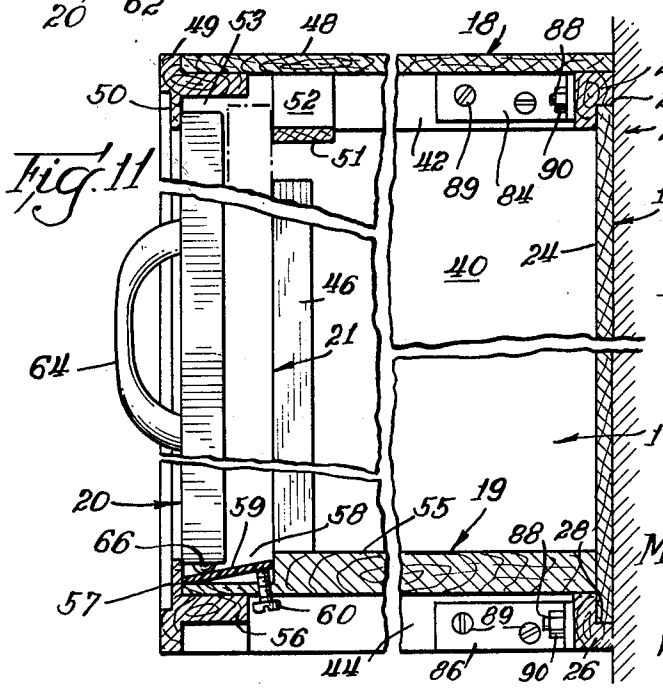
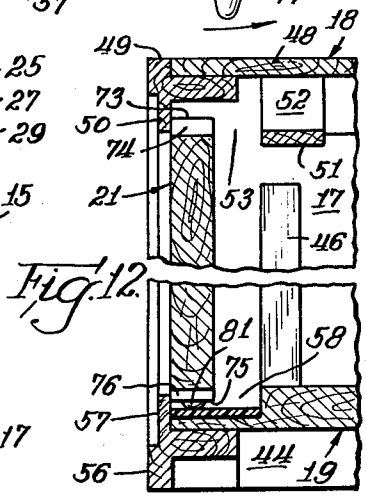


Fig. 12.



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United States Patent Office 3,142,523 Patented July 28, 1964

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WALL CABINET APPARATUS AND METHOD

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Filed May 7, 1962, Ser. No. 192,776
10 Claims. (Cl. 312—245)

The present invention relates to a wall cabinet apparatus, as for example a kitchen cabinet, and a method of erection of the same.

More and more householders are endeavoring to personally perform improvements and betterments on their property. Invariably, they do not have the experience and skills to enable them to do the job quickly and easily and to achieve a workman-like result. As a consequence there is a demand and a market for home improvement supplies and apparatus which will facilitate their use and installation by such inexperienced and unskilled individuals.

With respect to wall cabinets, and kitchen cabinets are referred to herein by way of illustration, the individual desiring to do the job himself generally has a selection of two items. One is the finished cabinet that is ready to be hung on the wall. The other is the cabinet sometimes referred to as a "knocked down" cabinet which comprises a number of performed elements which require assemblage before they are ready to be hung. While these latter types may be obtained in various stages of completion, they all require a final fitting and assembly by the purchaser.

These two major types have a common disadvantage. The unit is first completed (if not purchased in finished form) and thereafter is hung on the wall. The operation of hanging the cabinet on the wall can be most frustrating to a novice. Even though the cabinet is not so heavy that it cannot be lifted, its weight is sufficient to present a problem of holding it in place while the actual affixation to the wall is carried out. In some instances provision is made for special hanging devices which first are attached to the wall. Thereafter the cabinet is engaged with the hangers to hold the cabinet in place, either permanently or while further affixation takes place. These obviously increase the cost. The individual still is required to lift the entire cabinet into place and engage it with the hangers, a job that often is not easily performed alone.

Without the use of special hangers it is nearly impossible for an individual to hang a cabinet by himself. He requires the aid of at least one, if not two, other individuals to hold the cabinet in place while he fastens it up. Furthermore, with a bulky unit of some weight, the individual encounters the problem of supporting it in the proper position, level, etc., while it is being hung.

For the average individual, a "knocked down" cabinet has the desirable feature of being less expensive than the finished cabinet. However, many individuals who have purchased units that required assembly, have been baffled and frustrated when endeavoring to complete the unit. They do not comprehend where the parts go or what are the proper procedures for securing them together. The drawings and instructions supplied often are of little help. The individual is not trained in reading drawings and finds the description difficult to comprehend.

I have devised a wall cabinet structure to meet the needs of these people seeking to do the job themselves. One of the important advantages is that the cabinets are not pre-assembled before hanging, but the hanging and assembly operations are carried out concurrently. Thus no heavy, bulky units must be held in the air while affixation to the wall is carried out. Since the units are not assembled by the manufacturer they can be made and sold at a price competitive with the present "knocked down" units. The structure is such that it is almost self-

evident as to how it goes together. In most instances even the novice will hardly have to look at any drawings or read any instructions to ascertain where the parts go or how they are attached to each other. The parts are readily interconnected with screws or bolts. Gluing, which the amateur has difficulty in performing properly, is not required. The mounting connections may be sufficiently pre-assembled, pre-located, and/or both to enable the purchaser to achieve proper alignment of parts without any difficulty whatsoever.

One of the factors that greatly contributes to the overall result of simplicity for the novice is the door mounting and operating structure I have devised. When hinges are used, the proper mounting of the doors often proves to be a problem for the amateur. Proper alignment and positioning of the parts to achieve a satisfactory operating set of doors which have a workman-like appearance has proven to be a stumbling block. I have devised a sliding door structure which requires nothing more than slipping the doors in the tracks once the cabinet itself is assembled.

The door structure I have devised has several advantages over conventional sliding doors. Of principal importance is cost. There are no track units which must be installed and aligned by the purchaser. The top and bottom of the cabinet are formed so as to define the tracks. When the top and bottom of the cabinet have been secured in place, the tracks necessarily are in place and in the required alignment.

A further important feature is appearance. In the conventional sliding door structure, two tracks in juxtaposition are employed with each door traveling in a separate track. This of course is done to permit them to by-pass each other when the doors are moved from the closed to the open position, and vice versa. The result is that the doors are not aligned with each other but one is set back from the other. The fact that they are not in alignment detracts from the appearance. Many householders object to such a structure for just this reason. Embodiments of my invention use but a single track. The natural movements performed by an individual in opening or closing the doors will result in the doors by-passing each other when one is opened, or in the doors coming into alignment in a single plane when the open door is moved to the closed position.

Further objects and advantages will be apparent from the following description taken in conjunction with the drawings in which:

FIGURE 1 is a perspective view illustrating the assembly of the back of the cabinet on a wall;

FIGURE 2 is an enlarged partial section as viewed at line 2—2 of FIGURE 1, illustrating a portion of the end of the cabinet assembled to the back;

FIGURE 3 is a perspective view of a portion of the back with an end assembled thereon;

FIGURE 4 is a perspective view of the bottom of the cabinet;

FIGURE 5 is a perspective view of the underside of the top of the cabinet;

FIGURE 6 is an elevational view of one of the doors;

FIGURE 7 is a horizontal section through an assembled cabinet;

FIGURE 8 is a horizontal section through the cabinet at the top of the doors and illustrating the movement of a door as it is opened;

FIGURE 9 is a view corresponding to FIGURE 8 with the door fully opened;

FIGURE 10 is a view corresponding to FIGURE 8 but illustrating the movement of the door as it is closed;

FIGURE 11 is a section through the cabinet as viewed at line 11—11 of FIGURE 7;

FIGURE 12 is a partial section through the cabinet as indicated at line 12—12 of FIGURE 7.

INTENT

Although the following disclosure offered for public dissemination is detailed to ensure adequacy and aid understanding, this is not intended to prejudice that purpose of a patent which is to cover each new inventive concept therein no matter how others may later disguise it by variations in form or additions or further improvements. The claims at the end hereof are intended as a chief aid toward this purpose; as it is these that meet the requirement of pointing out the parts, improvements, or combinations in which the inventive concepts are found.

GENERAL DESCRIPTION

The shell of the cabinets of my invention comprise four pieces: a back generally **15**, two ends generally **16** and **17**, a top generally **18** and a bottom generally **19**. In the illustrated embodiment the opening in the front of the shell is closed by two doors generally **20** and **21**.

The back **15** is best illustrated in FIGURE 1. It comprises a panel **24** held between a top rail **25** and a bottom rail **26**. The various rails form supports for the top and bottom as will hereinafter be apparent. Top rail **25** has a groove or rabbet **27** along the rear bottom edge. Bottom rail **26** has a similar groove **28** along the top rear edge. Panel **24** fits within grooves **27** and **28** and normally is held in place by the affixation of the rails **25** and **26** to the wall **29**.

As best seen in FIGURES 3 and 7, end **16** comprises an end panel **31**, a top rail **32**, a bottom rail **33** and a door stop **34**. It will be noted that top rail **32** is below the top **35** of end panel **31**. Also the back ends **36** and **37** of rails **32** and **33** respectively terminate forwardly of the back edge **38** of panel **35**.

Similarly end **17** includes a side panel **40** having a back edge **41**. A top rail **42** has a back end **43** (FIGURE 2). A bottom rail **44** has a back end **45** (FIGURE 7). End **17** also includes a door stop **46**.

Top **18** comprises a panel **48** and a molding **49** which defines a facing **50**. A longitudinal bar **51** is affixed to panel **48** by supports **52**. Molding **49** and bar **51** (in conjunction with facing **50**) define a groove or top track **53** rearwardly of facing **50** and parallel thereto.

Bottom **19** includes a panel **55** having a molding **56** secured thereto. Molding **56** defines a facing **57**. Panel **55** and molding **57** define a groove or track **58** along the top of the bottom **19** and rearwardly of facing **57**. A plastic strip **59** lines the bottom of track **58**. At its ends plastic strip **59** may be secured to panel **55** as by means of an adhesive. However, the center portion of strip **59** is free and is supported on an adjusting screw **60**.

As seen in FIGURE 6 door **20** has an inner end **62** and an outer end **63**. A handle **64** is affixed to door **20** adjacent outer end **63**. At spaced distance along the bottom **65** are metal or plastic support buttons **66** and **67**. A recess **68** is provided in top **69** adjacent ends **63**. A similar recess is found in bottom **65** adjacent end **63**. Similarly door **21** has a top **73** with a recess **74** therein. It has a bottom **75** with a recess **76**. A handle **77** is affixed to the door adjacent outer end **78**. Door **21** has an inner end **79**. Buttons **80** and **81** are affixed to the bottom of door **21**.

ERECTION

When supplied in kit form rails **32** and **33** and stop **34** will be affixed to end panel **31**—usually by an adhesive. Similarly rails **42** and **44** and stop **46** are secured to panel **40**. The objects of my invention are best achieved if rails **25** and **26** are not pre-secured to panel **24**, although some of the features of my invention can be utilized even though these parts are attached together by the manufacturer. Moldings **49** and **56** are attached to panels **48** and **55** as by means of an adhesive. The doors are assembled in the manner illustrated in FIGURE 6. In some instances the handles will not be attached but only mounting holes for the handles will have been drilled.

Four angle irons **84–87** are employed. Each of these are attached to one of the back rails **25** or **26** as by means of bolts **88**. The holes for bolts **88** will have been pre-drilled. While bolts **88** are shown with a flat head, in some instances it may be desirable to use bolts of a type in which the heads are angular so as not to rotate in the rails, with provision so that the heads do not project rearwardly of the rails. Screws **89** are provided to connect the angle iron to the rails of the ends **16** and **17**. Screw holes will have been pre-drilled in these rails for the proper alignment of the angle irons.

Referring to FIGURE 1 the first step of assembly is to indicate on wall **29** the proper position for bottom rail **26** of back **15**. This is most easily performed by drawing a horizontal line **92** on wall **29** at the desired level for the bottom of the cabinet. After inserting bolts **88** in their holes, rail **26** is secured to wall **29** as by means of screws **92**. As illustrated in FIGURE 2 preferably screws **92** are positioned to enter studs **93** of wall **29**. The holes in rails **25** and **26** for screws **92** may be drilled at the time of erection. If they are pre-drilled, it will be best to provide a plurality of pairs of holes on eighteen inch centers.

Before tightening screws **92** of rail **26** to the fullest extent, panel **24** is slipped into rabbet **28** where it is supported by rail **26**. Rail **26** then is fully tightened in place. After inserting bolts **88** into rail **25**, it is slipped over the top of panel **24** and affixed in position by screws **92** secured to wall **29**.

Holes for screws **89** which hold angle irons **84–87** to ends **16** and **17** are pre-drilled in rails **32, 33, 42,** and **44**. As a first step in erecting ends **16** and **17** the angle brackets are attached to the ends by screws **89** secured in the pre-drilled holes. The ends then are taken one at a time and held in place with the bolts **88** projecting through the respective holes in the angle brackets, thus already connected to the ends. While each end is so held, nuts **90** are threaded onto bolts **88** and tightened in place. Because of the relatively small size and weight of the ends a person easily can hold an end panel in place with one hand while the nuts are fastened with the other.

After the back and the two ends have been assembled, the top and bottom are slipped in place. Top **18** is lowered down onto rails **25, 32,** and **42**. It of course fits between the end panels **31** and **40**. Screws then are inserted through the openings **95** in panel **48** and secured to the respective top rails. Bottom **19** is slid in from the front over the tops of rails **26, 33** and **44**. The bottoms of door stops **34** and **46** are sufficiently high so as to permit the bottom **19** to be slipped into place from the front. Again screws are inserted through openings **96** in bottom panel **55** and secured in the respective bottom rails.

The cabinet shell now is completely assembled and all that remains is to insert the doors. If plastic strip **59** has not previously been inserted into track **58**, it now is put in place. Thereafter, each of the doors is grasped individually. The top of the door first is inserted up into track **53**. With the top of the door raised approximately up to the top of track **53**, the bottom of the door will slip over facing **57** and into track **58**. The door now may be lowered with the buttons on the bottom of the door then resting upon strip **59**. The door is sufficiently high so that when in place, the door is higher than the door opening—i.e. the space between the top of facing **57** and the bottom of facing **50**, see FIGURE 11.

DOOR OPERATION

Assuming that the doors are in place in a common plane as illustrated in FIGURE 7 and one wishes to open door **21**, he would grasp handle **77** and pull the door handle outwardly as illustrated in FIGURE 8. A pivotal movement of the door is permitted by reason of the fact that recess **76** in the bottom **75** of the door is slightly higher than the top of bottom facing **57** (see FIGURE

12). Where the recess terminates, there is a vertical edge that will contact the inside of facing **57** and act as a pivotal axis for the movement of the door to the FIGURE 8 position. The door will stop at the FIGURE 8 position by reason of the back left corner of the door contacting the rear side of track **58**. Door handle **77** now is moved to the left with door **21** sliding in track **58** behind door **20**. The width of each of the two tracks **53** and **58** is slightly wider than the combined thicknesses of the doors.

To return the door to the closed position from the open position handle **77** is pulled to the left as illustrated in FIGURE 9. As the door approaches the end of its travel, as defined by stop **34**, the handle is pulled outwardly so that the door ends in front of stop **34** as illustrated in FIGURE 10. From the FIGURE 10 position, further pressure on door handle **77** urging it to the left, pivots the door about a pivotal axis defined by the back edge of the door contacting the front edge of stop **34**. Inner end **79** of the door will pivot forwardly to return the door to the position illustrated in FIGURE 7. Door **20** is similarly opened, but with reversed movements. For example, referring to FIGURE 7 handle **64** first is pulled outwardly and then to the right to open door **20** behind door **21**.

The closing of the doors is facilitated by the bottom of the track sloping downwardly and forwardly adjacent the center thereof as illustrated in FIGURE 11. Referring again to FIGURE 10 illustrating the closing movement of the door, button **80** of the door will be sliding downhill as the door is moved to the closed position. This not only facilitates the closing of the door but aids in ensuring that the doors remain closed. A too steep slope will impair the ease of opening the doors. To achieve the proper slope, screw **60** is adjusted after the doors have been installed. It should be raised just sufficiently so that the door closes smoothly but does not bind when the door is opened. If binding is encountered, screw **60** may be lowered to cause the door to move more freely.

Even with no experience in performing the described movements to open the doors, it will be found that the required movements are natural and easy. The pivotal movement illustrated in FIGURE 8 is a natural movement in opening a door and when it is completed the door **21** slides freely past door **20**. Similarly upon closing, just a slight pressure on handle **77** after the door **21** has returned to the FIGURE 10 position serves to close the door into alignment with the other. After operating the doors a few times one performs the opening and closing operation in a single smooth movement.

The appearance of the front of the cabinet with the doors closed is most pleasing. Other than the handles, no hardware is seen. The front of the cabinet presents a smooth clean appearance with the two doors in line and their tops and bottoms substantially concealed by facings **50** and **57**.

I claim:

1. A wall cabinet kit for assembly and erection by relatively inexperienced individuals, said cabinet kit including: a back member comprising a back panel, a separate top rail forming a top support and having a groove in the lower rear side to receive the top of the back panel, and a bottom rail forming a bottom support and having a groove in the upper rear side to receive the back panel; a right end and a left end, each end having a top support on the inner side below the top of the side and a bottom support along the inner side adjacent the bottom thereof and parallel to the top support, all of said top and bottom supports being spaced the same vertical distance apart, said supports on the ends being spaced from the front and back of the ends; top and bottom members, each of the latter members being substantially the same length as the back member, the top member having a front to back distance substantially equal to the front to back distance of the ends, the bottom member having a front to back distance substantially equal to the front to back distance of the ends less the thickness of the back member, said top and bottom members having facings along the front edge thereof; means to interconnect the parts; and door means for the front; whereby said back may be affixed to said wall, by first affixing the bottom rail to the wall, thereafter the back panel positioned in the groove in, and supported by, the bottom rail, and the top rail fitted over the back panel and affixed to the wall to assemble the back member and affix it to the wall, thereafter said ends butted to each end of the back member and affixed to the back member, said top member positioned on said top supports and affixed to the ends and back member, said bottom member positioned on the bottom supports and affixed to the ends and back member, thereby forming a cabinet shell with an open front, and said door means mounted on the shell closing the open front.

2. A kit as set forth in claim 1, wherein said supports comprise rails, and said means to interconnect the parts includes four angle brackets and means to secure the brackets to the rails; whereby with the back member affixed to the walls and the brackets secured to the back of the top and bottom rails on the ends, each end may be erected by supporting it in place and affixing the angle brackets at the respective end to the back member.

3. A kit as set forth in claim 2, wherein the back ends of the rails on the ends are spaced from the back edge of the ends a distance approximately equal to the rails on the back member; said means to interconnect the parts includes eight bolts with nuts to attach the angle brackets to the back member; said rails on the back member has pre-drilled holes therein for said bolts; and said rails on said ends have pre-drilled holes for attachment means to secure the angle brackets to the ends; whereby said bolts may be inserted into said holes before the back member is affixed to said wall, and after said back member is so affixed, with said angle brackets affixed to said ends, each end may be held in place with the angle brackets over the bolts and affixed in place by tightening nuts on said bolts.

4. A kit as set forth in claim 1, wherein the top member includes door track means on the underside thereof immediately inwardly of its facing and extending the length of the top member; the bottom member includes door track means on the upper side immediately inwardly of its facing and extending the length of the bottom member; and said door means comprises sliding doors receivable and slidable in said track means.

5. A kit as set forth in claim 4, wherein the track means on the top member includes a groove extending the length of the member and having a given front to back dimension; the track means on the bottom member includes a groove extending the length of the member and having said given front to back dimension; the bottom member defines a hard smooth surface at the bottom of the groove therein; and the door means have a thickness less than half said given dimension and a height substantially less than the vertical distance between the bottoms of the two grooves and greater than said vertical distance less the combined depths of the two grooves.

6. In a cabinet or the like including a top member and a bottom member defining a front opening between them the improvement comprising: the top member having means defining a groove along the underside thereof, extending the length of the opening and immediately adjacent thereto; the bottom member having means defining a groove along the top side thereof extending the length of the opening and immediately adjacent thereto, the base of said grooves being a given vertical distance apart, the means of the bottom member having a hard smooth surface at the bottom of the groove and for a short distance at each side of the center of the length

of the opening said surface sloping downwardly from rear to front; and a pair of doors, one door having a handle adjacent one end thereof and the other door having a handle adjacent the other end thereof, said doors each have two spaced sliding buttons at the bottom thereof, the vertical height of the doors at the handle ends being less than the vertical distance between the bottoms of the two grooves less the combined depths of the grooves, the vertical height of the remainder of the doors having a height substantially less than said vertical distance and more than said vertical distance less the combined depths of the grooves, said doors being of a thickness less than half of the front to back dimension of the grooves, said buttons being on said remainder of the door bottoms.

7. The method of assembling a wall cabinet kit including a back member having a top support along the top thereof and a bottom support immediately above the bottom thereof and parallel to the top support, a right end and a left end, each end having a top support on the inner side below the top of the side and a bottom support along the bottom thereof and parallel to the top support, all of said top and bottom supports being spaced the same distance apart, said supports on the ends being spaced from the front and back of the ends; top and bottom members, each of the latter members being substantially the same length as the back member, the top member having a front to back distance substantially equal to the front to back distance of the ends, the bottom member having a front to back distance substantially equal to the front to back distance of the ends less the thickness of the back member, said top and bottom members having facings along the front edge thereof, means to interconnect the parts, and door means for the front, said method including the steps of: affixing said back to said wall; sequentially butting said ends to the back and affixing them to the back one at a time; one at a time positioning said top and bottom members on the top and bottom supports respectively and affixing them to the back member and ends thereby forming a cabinet shell with an open front; and mounting said door means on the shell closing the open front.

8. A wall cabinet kit for assembly and erection by relatively inexperienced individuals, said cabinet kit comprising: a back member having a top support along the top thereof and a bottom support immediately above the bottom thereof and parallel to the top support; a right end part and a left end part, said parts each having a top support on the inner side below the top of the side and a bottom support along the bottom thereof and parallel to the top support, all of said top and bottom supports being spaced the same vertical distance apart, said supports on the ends being spaced from the front and back of the ends; top and bottom members, each of the latter members being substantially the same length as the back member, the top member having a front to back distance substantially equal to the front to back distance of the parts, the bottom member having a front to back distance substantially equal to the front to back distance of the ends less the thickness of the back member, said top and bottom members having facings along the front edge thereof, said top member including door track means on the underside thereof immediately inward of its facing and extending the length of the top member, the bottom member including door track means on the upper side immediately inwardly of its facing and extending the length of the bottom member, said track means on the top member including a groove extending the length of the member and having a given front to back dimension, the track means on the bottom member including a groove extending the length of the member and having said front to back dimension, the bottom member defining a hard smooth surface at the bottom of the groove therein and

sloping downwardly from back to front for a short distance either side of the center of the length of the bottom member; means to interconnect the parts; and door means for the front, said door means comprising sliding doors receivable and slidable in said track means and having a thickness less than half said given dimension and a height substantially less than the vertical distance between the bottoms of the two grooves and greater than said vertical distance less the combined depths of the two grooves, said door means comprising two doors said doors each having spaced support means at the bottom thereof, one door having a handle adjacent one end thereof and the other door having a handle adjacent the other end thereof, said doors at the handle ends have recesses in the top and bottom with the vertical dimension of the doors at the recesses being less than said vertical distance less the combined depths of the two grooves; said parts have door stops affixed thereto with the front of the door stop being rearwardly of the plane of the front of the two grooves a distance approximately equal to the thickness of the doors; whereby said back may be affixed to said wall, said ends butted to each end of the back member and affixed to the back, said top member positioned on said top supports and affixed to the ends and back member, said bottom member positioned on the bottom supports and affixed to the ends and back member, thereby forming a cabinet shell with an open front, and said door means mounted on the shell closing the open front.

9. A cabinet kit as set forth in claim 8, wherein said spaced support means comprises two spaced sliding buttons projecting downwardly from each door.

10. In a sliding door structure for a cabinet or the like defining a door opening with a downwardly facing way along the top thereof and an upwardly facing way along the bottom thereof, said ways defining a given vertical clearance distance therebetween, the improvement comprising: means defining the upper surface of the bottom way and providing a hard smooth surface unobstructed for the width of said way, said means for a short distance at each side of the center of the length of the opening sloping downwardly from rear to front; a pair of door members slidably positioned in said ways, one door member having a handle adjacent one end thereof and the other door member having a handle adjacent the other end thereof, each of said door members having spaced support means projecting downwardly therefrom and resting on said surface, each of said door members having a vertical height substantially less than said clearance distance and a width less than half the width of the ways; and guide members at the front and back sides of the way to confine the movement of the door members, when the members are slid parallel to the length of the ways, to said width of the ways; said members including means to permit the handle ends of said door members to be pivoted forwardly of said ways by a forwardly pull on the respective handle when said doors are in a common plane at the front of the way to thereby pivot the opposite end of the respective door member rearwardly to a position at which the door members will slide past each other along the way.

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