Jan. 20, 1959 R. M. LA RUE 2,869,955

CABINET CONSTRUCTION

Filed Feb. 18, 1957 2 Sheets-Sheet 1

FIG. 2

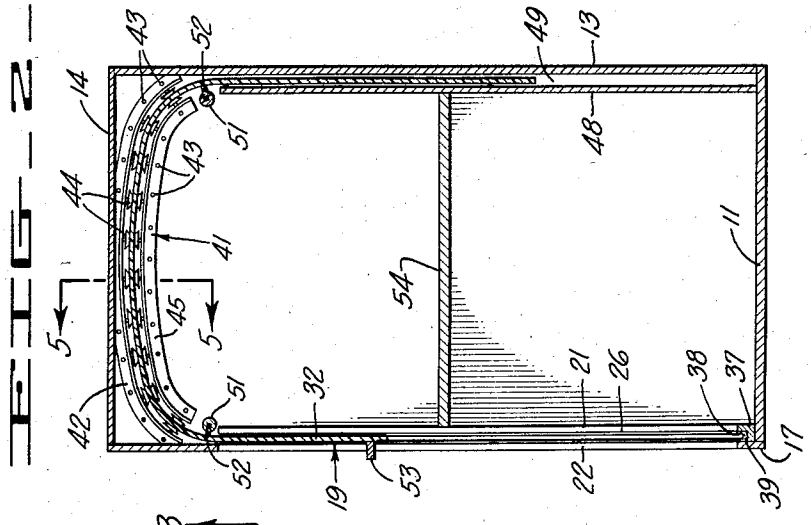
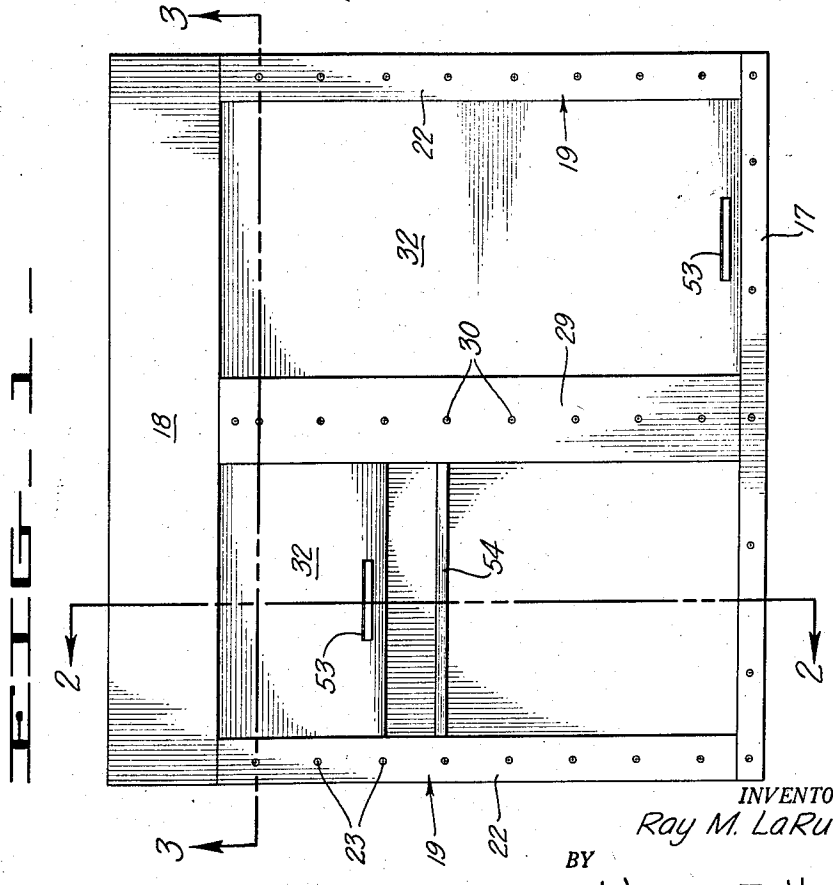


FIG. 1



INVENTOR.
Ray M. LaRue
BY
William D. Hager
ATTORNEY.

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Filed Feb. 18, 1957 2 Sheets-Sheet 2

FIG. 3

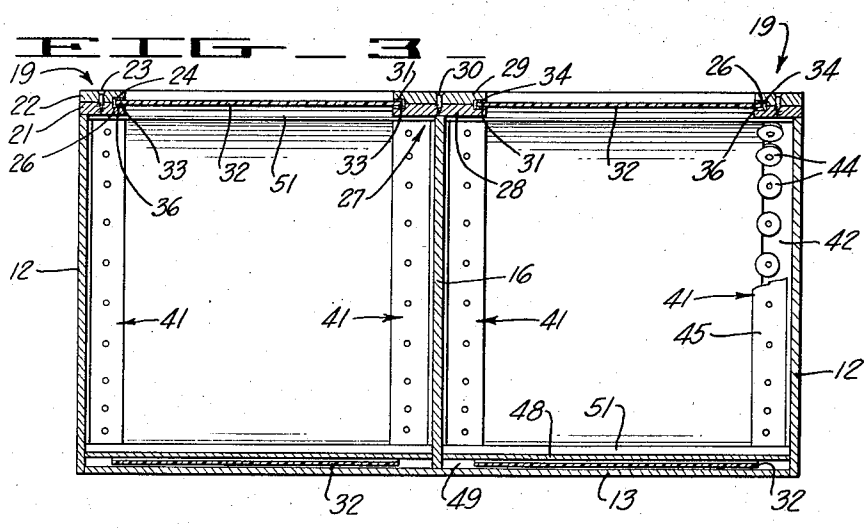


FIG. 4

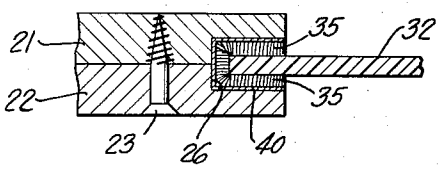
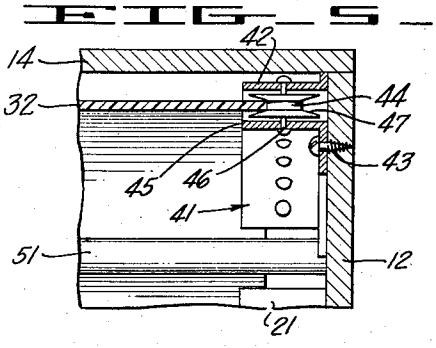


FIG. 5



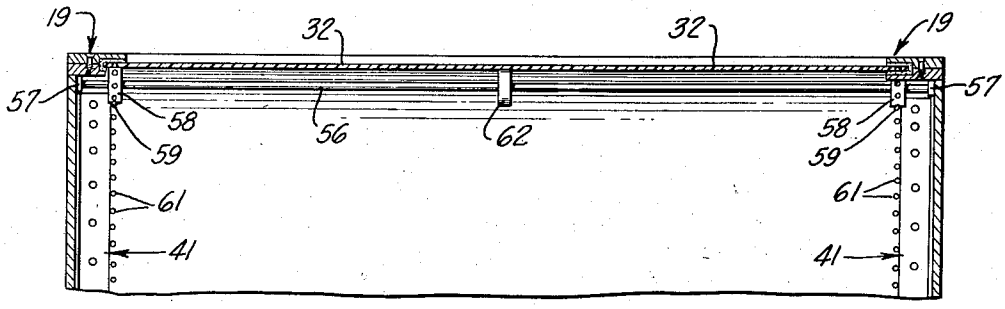


FIG. 6

INVENTOR.
Ray M. LaRue

BY

William D. Hagen
ATTORNEY

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Patented Jan. 20, 1959

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CABINET CONSTRUCTION

Ray M. LaRue, Fairbanks, Alaska

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3 Claims. (Cl. 312—297)

The present invention relates to cabinets and like storage receptacles and more particularly to cabinets of the class characterized by sliding doors.

Certain disadvantages are present in the hinged door structures customarily used for closures in connection with cabinets and related storage means. Notably, the doors must be swung outward to provide access to the cabinet. This is wasteful of space in those instances where the cabinet is situated in cramped quarters and is definitely a safety hazard as any housewife who has worked in the vicinity of such cabinets will amply testify. These undesirable aspects of hinged doors have resulted in the widespread use of sliding doors. It has been found however that such doors are in turn subject to certain drawbacks. In the more usual arrangement, only one half of the face of the cabinet can be opened at one time. Flexible sliding doors which avoid this drawback have been made but, in common with all prior types of sliding door, exhibit a pronounced tendency to jam or wedge in their tracks and can only be opened or closed by careful and slow manipulation. Attempts to mitigate this problem have previously taken the form of providing various rolling anti-friction devices to support the door along its route of travel. Heretofore, however, such anti-friction devices have been caused to bear primarily against the flat surfaces of the door whereas the prime cause of jamming is friction along the lateral edges thereof. The present invention therefore includes means providing a novel rolling anti-friction support against the lateral edges of the doors, such support extending within the cabinet to provide a structure whereby the door may travel into the cabinet and uncover substantially the entire face thereof.

The invention incorporates the above described ease of operation and freedom from dangerous projecting doors in a construction in which the changing of external appearance and the repairing of mars is readily accomplished. The invention thus constitutes a more flexible and more permanent unit in comparison with prior cabinet structures, and will be found particularly valuable in uses where pleasing appearance is required. The cabinet is substantially dust-proof, moisture proof, and insect-proof, and completely eliminates all the handicaps associated with prior cabinet structures.

Specifically, the present invention comprises a cabinet having a box structure with suitable internal shelving to provide the desired storage facility. The face of the cabinet is provided with one or more extensive rectangular access openings, the number of such openings being dependent upon the number of separately openable compartments the cabinet is to provide. Each such access opening is closed by a flat flexible sliding door which travels along grooves in two opposed parallel sides of the opening. To form the grooves, an inner slat is disposed along each of the parallel sides of the opening and a decorative outer slat is disengageably attached against the inner slat, the requisite grooves being cut along the edges of the slat assembly. To render the cabinet dust-proof, insect-proof, and moisture proof, a lining of yieldable material such as felt is disposed in the grooves. The access doors are sufficiently long that, in the fully closed position, the top ends extend rearward across the top interior of the cabinet and curve a slight distance downward immediately forward from the rear wall of the cabinet, the top end of the door preferably being curved along an elliptical arc to minimize the vertical spread of the door structure.

To guide the door within the cabinet with a minimum of friction and with lateral support to eliminate any tendency for the door to jam or wedge, a plurality of circumferentially grooved wheels are mounted with the cabinet along the arcs described by the edges of the door, the wheels being aligned co-planar with the adjacent door section. The edges of the door bear tangentially against the grooves in the wheels which thereby provide a substantially frictionless track for the door in an arrangement with which jamming of the door is eliminated. To avoid interference between the door and the contents of the cabinet, a false rear wall is disposed forwardly from the major rear wall of the cabinet to form a slot into which the door enters as it is opened.

This structure is applicable to a wide variety of cabinet configurations and to related storage facilities. The construction eliminates the operational handicaps of prior cabinets as pointed out above and is completely hazard free. As a most important feature, the double slat construction of the door guiding grooves markedly simplifies the repairing of mars and permits ready changes of color scheme inasmuch as the decorative outer slat is easily detached and replaced.

It is thus the object of the present invention to provide a new cabinet construction combining all the above discussed operational advantages in an attractive trouble free unit.

It is an object of this invention to provide a cabinet having sliding doors which cannot jam or wedge, which doors can be opened to uncover substantially the entire face of the cabinet.

It is an important object of the invention to provide a cabinet construction characterized by superior appearance and having novel provision for the changing of colors and decor and for ease in performing repairs.

It is an object of the invention to provide a cabinet which is substanttially dust-proof, insect-proof, and moisture proof.

Still another object of this invention is to provide an easily opened cabinet of compact form providing maximum usable storage space and being free of hazardous projections such as swinging doors.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification taken in conjunction with the accompanying drawing, in which:

Figure 1 is a front elevation view of a typical embodiment of the invention with one access door thereof shown partially opened;

Figure 2 is a sectional elevation view of the cabinet taken along line 2—2 of Figure 1;

Figure 3 is an inverted plan sectional view of the cabinet taken along line 3—3 of Figure 1 and showing the top interior construction thereof;

Figure 4 is a fragmentary cross-sectional view of the door guiding tracks showing a modified form of lining therein;

Figure 5 is a fragmentary cross-sectional view taken along line 5—5 of Figure 2 and further showing the novel door guiding mechanism, and

Figure 6 is a sectional view, corresponding to the top right portion of Figure 3, showing a modification of the

structure thereof for use where the access doors are relatively wide with respect to those shown in the previous figures.

Referring now to the drawing and more particularly to Figures 1, 2, and 3, thereof, there is shown an illustrative embodiment of the invention. It will be appreciated that the invention may take a variety of forms with respect to geometrical proportions, number of access doors, exterior trim, and materials employed. As here shown, a cabinet having two major compartments and two access doors is used. This embodiment comprises a box structure having a bottom member **11**, sidewalls **12**, a back wall **13**, and a top member **14**. An upright center wall **16**, disposed parallel to the sidewalls **12**, divides the cabinet into two equal sections. A narrow base slat **17** is secured across the front face of the cabinet at the lower edge thereof. Similarly a top slat **18** is secured across the face of the cabinet at the top edge thereof, the top slat being substantially broader than base slat **17** to accommodate the door guiding mechanism to be hereinafter described.

Considering now the novel door guiding structure, a vertical track assembly **19** is secured along one lateral margin of the forward face of the cabinet, the edge of the track assembly being flush with the outer surface of side wall **12**. A second matching track assembly **19** is similarly secured along the opposite margin of the forward face of the cabinet against the forward edge of the second side wall **12**. As may be seen by reference to Figure 3 in particular, each such track assembly **19** comprises an inner slat **21** secured to the cabinet proper and an outer slat **22** attached to the inner slat by a disengageable means such as screw fasteners **23**.

An important consequent of such structure is that the outer slats **22**, which are exposed to view, may be readily replaced when marred or otherwise defaced or when a change of color scheme is desired, such replacement being simply accomplished by removal of fasteners **23**. To enhance the esthetic potentialities of this readily changeable structure it may be found desirable to form the outer slats **22** of an attractive material such as colored plastic. It should be noted that this provision for ease in replacement of the exterior trim lengthens the life of the cabinet since marred or defaced slats are readily replaced.

The juxtaposed edges of inner and outer slats **21** and **22** are rabbeted on the sides which face towards the open center of the cabinet each pair of adjoining rabbets **24** thus forming longitudinal grooves **26** along the sides of the track assembly **19**. Since two separate doors are to be provided to close the two sections of the cabinet, a center track assembly **27** is secured against the forward edge of center wall **16**. Center track assembly **27** comprises an inner slat **28** centered on the center wall **16** and having substantially twice the width of the side inner slats **21**. An outer slat **29**, formed of material similar to that of outer slats **22** and having twice the width thereof, is secured against the forward face of inner slat **28** by means of screw fasteners **30**. The juxtaposed edges of inner slat **28** and outer slat **29** are rabbeted to form longitudinal grooves **31** along the two lateral edges of the center track assembly **27**.

Flat flexible sliding doors are mounted to close the two sections of the cabinet, the first such door having lateral edges **33** extending into grooves **26** and **31** of track assemblies **19** and **27** respectively, and the second such door **32** having lateral edges **34** extending into grooves **26** and **31** of track assemblies **19** and **27**. Such doors **32** may be formed of sheet metal or bendable plastic or other suitably flexible material. The doors **32** are of sufficient length to clos the face of the cabinet and to simultaneously extend across the top interior of the cabinet to rear wall **13**.

As an important feature of the invention, the grooves **26** and **31**, in which the edges of doors **32** slide, are provided with a lining **36** of yieldable material, felt being suitable for this purpose. Such lining results in the cabinet being substantially dust-proof, insect-proof, and moisture proof, thereby contributing markedly to the utility of the cabinet as a storage means for such articles as perishable or comestible goods. It will be appreciated that the lining **36** may take a variety of forms. Referring now to Figure 4, for example, there is shown a lining comprising piles of fabric **35** glued to a metal beading **40** of U-shaped cross-section, which beading is clamped within the groove **26** at the time of assembly of slats **21** and **22**.

Referring now again to Figures 1, 2, and 3, to seal the juncture between the bottom edge of doors **32** and the base of the cabinet, a cross member **37** is secured transversely within the cabinet against the rear surface of the base slat **17**. The upper forward edge of each such cross member **37** is rabbeted to form a groove **38** into which the lower edges of doors **32** enter as the doors are closed. Groove **38** is provided with lining **39** of yieldable material to preserve the dust tight integrity of the cabinet.

Considering now the means by which the doors **32** are guided across the top interior of the cabinet along an elliptical arc and down against the rear wall thereof as the doors are slid open, there are shown four matching guideways **41** mounted one against each inside surface of side walls **12** and one against each surface of center wall **16**. Each such guideway **41** comprises two spaced parallel curved supports, upper support **42** and lower support **45**, of angled cross section. One angle arm of each support **42** and **45** is secured against the adjacent wall of the cabinet by means of screw fasteners **43**, the guideways **41** being positioned immediately beneath top member **14** of the cabinet and being curved to define a continuation of the door guiding grooves **26** and **31**, the supports further being curved downwardly at the rear to guide the doors down against the front surface of rear wall **13**. The supports **42** and **45** are preferably curved elliptically to minimize the vertical spread of the door guiding means and thus to maximize the storage space within the cabinet.

A plurality of wheels **44** are mounted between the two supports **42** and **45**, the wheels being spaced at intervals along the lengths thereof. As best shown in Figure 5, such wheels **44** are mounted upon axles **46** which axles extend between the two supports **42** and **45**. Each such wheel is provided with a circumferential groove **47** through which the edge of door **32** passes. As may be seen, the above described structure provides a means by which the doors **32** are guided across the top of the cabinet and down the back thereof with a minimum of friction and with no tendency to wedge or jam.

Referring now again to Figures 1, 2, and 3, interference between the sliding doors and the contents of the cabinet is avoided by a false back wall **48** disposed within the cabinet a small distance forward from rear wall **13**. Thus a slot **49** is formed into which the doors **32** slide as the doors are opend. Additional yielding support for the doors **32** is provided by four cross braces **51** extending between the side walls **12** and the center wall **16** immediately below the extremities of the lower guideway support **45**. Each such cross brace **51** mounts a felt strip **52** which strip bears against the adjacent door. Such felt strips **52**, in addition to providing support for the doors, wipe dust from the doors as they are operated. Further elements of the cabinets are handles **53** secured to the lower forward face of the doors **32** to facilitate operation thereof, and one or more shelves **54** secured within the cabinet to maximize storage capacity.

As has been previously pointed out, the invention is not limited to a cabinet of the particular form described herein but may be adapted to a variety of configurations. The doors, for example, may be made to slide horizontally around the side of the cabinet rather than across

the top as described herein, the requisite mechanism being essentially similar.

Where it is desired to utilize doors considerably wider than those of the embodiment previously described a modified structure, shown in Figure 6 is provided. With such wide doors a tendency for the doors to jam or wedge may become noticeable in spite of the wheeled door guiding mechanism. It will be understood that, except as will now be described, the structure of this modified cabinet is substantially similar to the previously described embodiment and therefore only a portion of the modified cabinet is depicted in the figure. Such modification comprises the replacement of each door supporting cross brace (elements **51** in Figures 2 and 3) with an axle rod **56** which rod turns in bearings **57** secured to the side walls **12** and center wall **16**. Coaxially mounted upon the rods **56** are two sprocket wheels **58** at longitudinal positions corresponding to the margins of the door **32**. Teeth **59** projecting from the rim of sprocket wheels **58** engage perforations **61** spaced along the two margins of the door. Since the two edges of the door are thus constrained to move at the same rate by the sprocket structure, the door cannot wedge or jam. As may be seen, the perforations **61** in the edges of the door **32** are concealed within the grooves **26** and **31** of the track assemblies **19** and **27** and thus the dust tight feature of the cabinet is maintained. To support the center portion of the door **32**, a wheel **62** is coaxially secured to the axle rod **56** at a central position thereon and bears against the rear surface of the door **32**.

While the salient features of this invention have been described in detail with respect to certain embodiments thereof, it will of course be apparent that certain modifications may be made within the spirit and scope of this invention, and it is not desired therefore to limit the invention to the exact details shown except insofar as they may be defined in the following claims.

What is claimed is:

1. In a cabinet, the combination comprising a rectangular box structure having a bottom platform and side walls and a top wall and a rear wall and a forward face provided with a rectangular opening, two longitudinally grooved guides one secured along each lateral margin of said opening, a lining of resilient material disposed within the grooves of each said guide, a flexible sliding door for said opening, said door having opposite margins entered into said longitudinally grooved guides, and a plurality of rotatable wheels mounted within said box structure in two curvilinear columns which columns define elliptical curves tangent to the upper extremities of said guides and to said rear wall, said wheels having circumferential grooves whereby each said column of wheels forms a continuation of one of said guides to direct said flexible sliding door across the top of the interior of said box structure and down adjacent the rear wall thereof as said door is slid upward along said grooves to uncover said opening.

2. A cabinet comprising, in combination, a box structure having two side walls and a rear wall and top and bottom members, said box structure having an open forward face, a first pair of door guiding slats one secured to each of said side walls of said box structure against the forward edge of said side walls and along the lateral margins of said open forward face of said box structure, said slats being rabbeted along the edges adjacent the opening in said box structure, a second pair of door guiding slats attached to the lateral margins of said open forward face of said box structure against the forward surfaces of said first pair of slats, said second pair of slats being attached to said first pair of slats by disengageable means, a flat flexible door having lateral margins extending into said rabbeted edges of said first pair of slats, said door being slidable along said slats, and a plurality of wheels rotatably mounted within said box structure along two elliptical arcs which arcs are tangent to the upper end of said slats and to the upper end of said rear wall, said wheels having circumferential grooves forming a curvilinear continuation of said rabbets in said slats whereby said door is guided across the top interior of said box structure and down in front of said rear wall thereof.

3. In a cabinet, the combination comprising a box structure having an opening in the forward face, a pair of door guiding tracks disposed in parallel relationship along opposed lateral margins of said opening, each said track being comprised of two slats secured one against the other by disengageable means, each said track having a longitudinal groove along the edge facing said opening, a resilient lining disposed in said grooves, a flat flexible door having lateral margins engaged in said grooves and being slidable therealong, and a plurality of circumferentially grooved wheels rotatably mounted within said box structure along two elliptical arcs which arcs are tangent to the upper ends of said door guiding tracks and which extend across the top interior of said box structure, said wheels serving to form a continuation of the grooves in said door guiding tracks whereby said door is guided within said box structure as said door is slid to uncover said opening.

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