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SLIDING DOOR STRUCTURE

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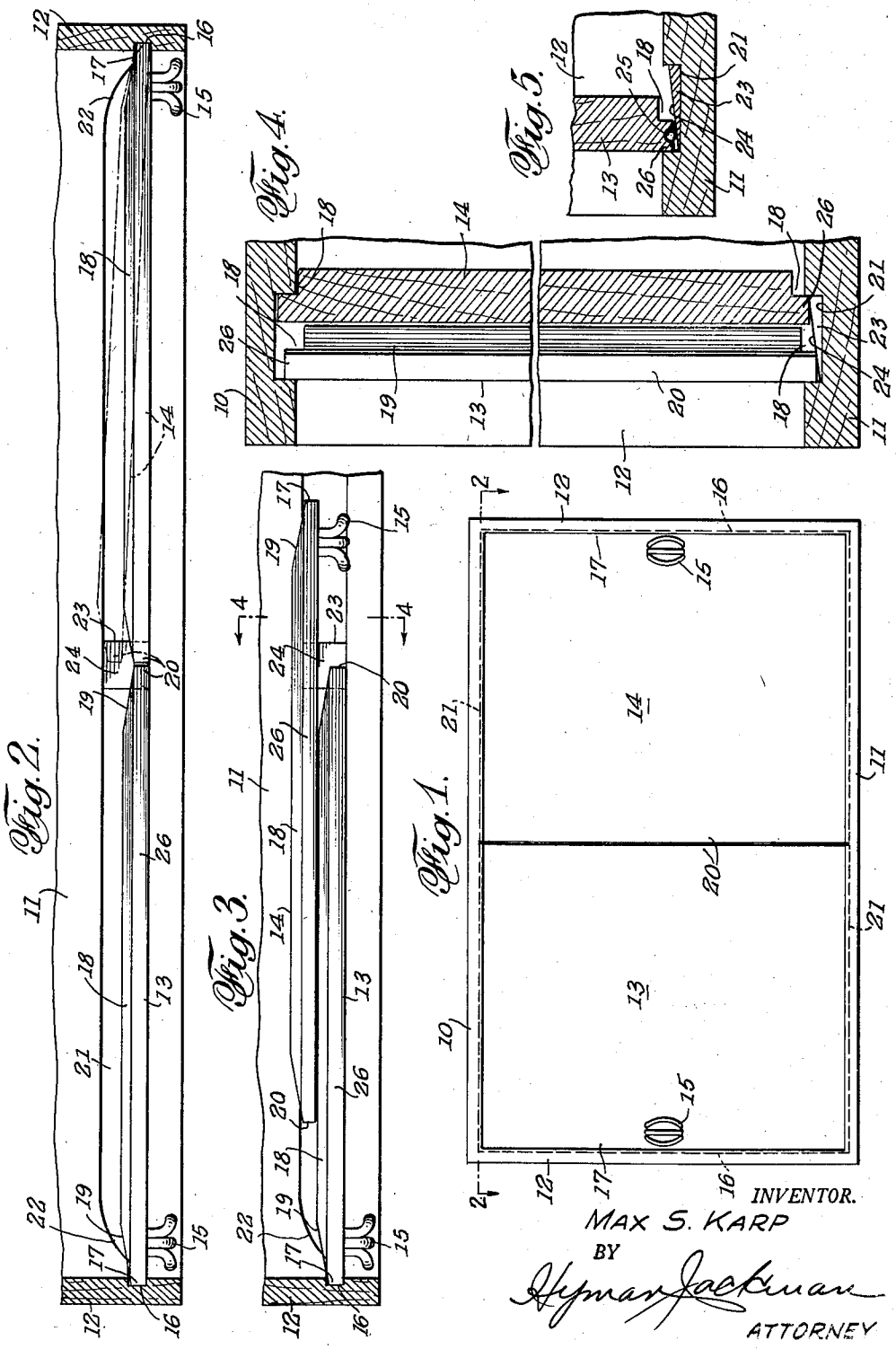


Fig. 2.

Fig. 4.

Fig. 5.

Fig. 3.

Fig. 1.

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SLIDING DOOR STRUCTURE

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6 Claims. (Cl. 20—19)

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This invention relates to a sliding door structure that is adapted to close closets, cupboards, and similar enclosures, the invention being more particularly adapted to close cupboards as embodied in furniture.

An object of the invention is to provide a sliding door structure that has the doors in flush alignment when extending across the front of an enclosure of the nature above indicated.

Another object of the invention is to provide a sliding door structure in which the adjacent edges of two sliding doors normally seek a forward position in flush alignment.

A further object of the invention is to provide, in a structure as contemplated, a forwardly and downwardly angled toe plate to support the lower adjacent edges of two sliding doors so that the adjacent edges of the doors seek a forward flush alignment when the doors are positioned to close a cupboard or the like.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawing merely shows and the following description merely describes two embodiments of the present invention, which are given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

In the drawing:

Fig. 1 is a front view of a cupboard provided with a sliding door structure according to the invention.

Fig. 2 is an enlarged cross-sectional view as taken on line 2—2 of Fig. 1.

Fig. 3 is a similar view of one end of the cupboard, showing one of the doors in open position.

Fig. 4 is a still larger and broken vertical sectional view as taken on line 4—4 of Fig. 2.

Fig. 5 is a fragmentary sectional view of a modification.

In the drawing, the top wall 10, bottom wall 11, and side walls 12, while showing or defining the walls enclosing a cupboard, also represent the front frame of a cabinet, wardrobe, closet, or other rectangular enclosure.

According to the invention, the opening framed by the mentioned walls is closed by two similar doors 13 and 14, respectively at the left and right, and arranged side-by-side in flush relationship. A handle 15 is provided on the left end of the left door and a similar handle on the right end of the right door.

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The side walls 12, on their inner faces, are each provided with a groove 16 into which the respective left and right edges 17 of doors 13 and 14 are adapted to fit to hold the doors upright when arranged in closed position.

Each door, along the top and bottom edge thereof, is provided with a rabbet 18 and, at each lateral edge, the rearward face of each door is provided with a chamfer 19 so that said lateral edges are substantially thinner than the main body of the doors. The width of grooves 16 is made accordingly. The slope of chamfers 19 is quite flat to allow the inner lateral edge 20 of one door to slide past the adjacent edge 20 of the other door when rearwardly displaced as shown by the dot-dash lines of Fig. 2. The chamfers 19 may be replaced by flatly curved faces leading from the rear face of each door to the thinner lateral edges 17 and 20.

The lower face of wall 10 and the upper face of wall 11 are each provided with a longitudinal groove 21 that extends between grooves 16, said grooves 21 being slightly wider than the sum of the thicknesses of one door and door edge 20 formed by rabbet 18. Fig. 4 shows this width of grooves 21 relative to the door portion occupied thereby. Adjacent side walls 12, grooves 21 are gradually reduced in width, as at 22, until the same are reduced substantially to the width of grooves 16 and aligned therewith. Grooves 16 and 21 comprise an inwardly directed peripheral groove in the cupboard frame. Intermediate walls 12 and preferably midway between said walls, a toe plate 23 is provided in the lower groove 21. Said plate is formed with an upper sloping surface 24 that has a forward and downward angle, substantially as shown in Figs. 4 and 5. In practice, plate 23 is made of hardwood and the sloping surface 24 provided with a coating of hard wax of similar friction-reducing material. Said plate may also be made of metal, if desired.

When it is desired to open one door, for instance door 14, the edge 20 thereof is pushed rearwardly to the angular dot-dash line position of Fig. 2. The handle 15 of said door is then employed to slide the same to the position of Fig. 3, the edge 17 of said door, as guided by the restrictions 22 of grooves 21, moving rearwardly to achieve a position parallel to and rearward of door 13. The handle will limit the open position of door 14 when the same encounters edge 20 of door 13.

To close door 14, the handle 15 is pushed toward the right until groove restrictions 22 guide edge 17 into groove 16 at the right. Edge 20 of door 14 is now clear of edge 20 of door 13 and rests on toe plate 23. Due to the weight of the door, the lower corner of the door adjacent edge 20 will slide forwardly on sloping face 24 of the toe plate to bring door edge 20 to its initial flush

position with door 13. In any case, a slight additional push on the handle will swing the door forwardly to the flush position. This position is maintained so long as door edge 17 is in groove 16. Even if the door is somewhat ajar, it will retain a forward position because the rear longitudinal edge of tongue 26 is engaged with the toe plate. Door 13 is opened and closed in the same manner.

As shown in Fig. 5, the lower edge of each door adjacent lateral edge 20 may be provided with a friction-reducing element such as a ball 25. The toe plate engaged by said ball may be waxed hardwood or metal, as desired, so that the ball will readily roll forwardly.

The doors slide easily because they ride on plate 23. Thus, wheels or rollers to support the doors are not needed in the construction and would be additional to the present improvements.

While I have illustrated and described what I now regard as the preferred embodiments of my invention, the construction is, of course, subject to modification without departing from the spirit and scope of my invention. I, therefore, do not wish to restrict myself to the particular forms of construction illustrated and described, but desire to avail myself of all modifications that may fall within the scope of the appended claims.

Having thus described my invention, what I claim and desire to obtain by Letters Patent, is:

1. A sliding door structure comprising the frame of a rectangular enclosure and having upper and lower inwardly directed longitudinal grooves therein, a pair of sliding doors arranged in flush side-by-side position and having their respective upper and lower edges engaged in said grooves, said doors having adjacent lower corner portions above an intermediate part of the lower groove, and a forwardly and downwardly sloping toe plate in said groove beneath and constituting a sliding support for said lower corners of the doors to slidingly guide the latter forwardly.

2. A sliding door structure according to claim 1: friction-reducing means interposed between said sloping toe plate and the door corners engaged thereby.

3. A sliding door structure comprising the rectangular frame of an enclosure and having an inwardly directed peripheral groove therearound, the upper and lower portions of said groove being wider than the lateral portions, a pair of sliding doors engaged in said groove and arranged in flush side-by-side position, when closing the enclosure, with the outer lateral edges of the doors disposed in said lateral portions of said groove, the adjacent inner edges of the doors being each rearwardly movable, selectively, in the wider upper and lower groove portions to bring the edge so moved rearward of the adjacent edge and adapting the door so moved to be slid relative to the other door and therebehind, and a sloping toe plate in the mid part of the lower groove portion beneath and constituting a sliding support for the lower adjacent corners of the doors, when closed, to slidingly guide the same forwardly.

4. A sliding door structure according to claim 3: each door being provided with a forwardly projecting handle and the handles being each disposed adjacent the outer lateral edges of the respective doors, said handles comprising door-sliding means and also means to swing the doors forwardly on the sloping toe plate.

5. A sliding door structure comprising the rectangular frame of an enclosure and having an inwardly directed peripheral groove therearound, the upper and lower portions of said grooves being wider than the lateral portions, a pair of sliding doors engaged in said groove and arranged in flush side-by-side position, when closing the enclosure, with the outer lateral edges of the doors disposed in said lateral portion of said groove, the adjacent inner edges of the doors being rearwardly movable, selectively, in the wider upper and lower groove portions to bring the edge so moved rearward of the adjacent edge and adapting the door so moved to be slid relative to the other door and therebehind, and a transversely sloping toe plate in the mid part of the lower groove portion beneath and constituting a sliding support for the lower adjacent corners of the doors, when closed, to slidingly guide the same forwardly, the upper and lower edges of each door being provided with longitudinal rearward rabbets defining upper and lower longitudinal forward tongues on the doors, the width of the upper and lower groove portions being somewhat greater than the sum of the thicknesses of one door and one of said tongues.

6. A sliding door structure comprising the rectangular frame of an enclosure and having an inwardly directed peripheral groove therearound, the upper and lower portions of said grooves being wider than the lateral portions, a pair of sliding doors engaged in said groove and arranged in flush side-by-side position, when closing the enclosure, with the outer lateral edges of the doors disposed in said lateral groove portion of said groove, the adjacent edges of the doors being rearwardly movable, selectively, in the wider upper and lower groove portions to bring the edge so moved rearward of the adjacent edge and adapting the door so moved to be slid relative to the other door and therebehind, and a transversely sloping toe plate in the mid part of the lower groove portion beneath and constituting a sliding support for the lower adjacent corners of the doors, when closed, to slidingly guide the same forwardly, the upper and lower edges of each door being provided with longitudinal rearward rabbets defining upper and lower longitudinal forward tongues on the doors, the width of the wider upper and lower groove portions being somewhat greater than the sum of the thicknesses of one door and one of said tongues, both lateral edges of both doors being provided with vertical rearward chamfers to provide said doors with edges fitting the narrower lateral groove portions and providing clearance for one door edge to slide past the adjacent edge of the other door when said one door edge is rearwardly moved preparatory to opening one door.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
304,222	Morrisson	Aug. 26, 1884
841,378	Curtis	Jan. 15, 1907
2,530,724	Pierson	Nov. 21, 1950

FOREIGN PATENTS

Number	Country	Date
544,394	France	June 21, 1922