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EXPANSIBLE SHELF ASSEMBLY

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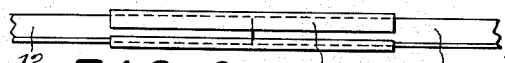

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

FIG. 7

FIG. 10

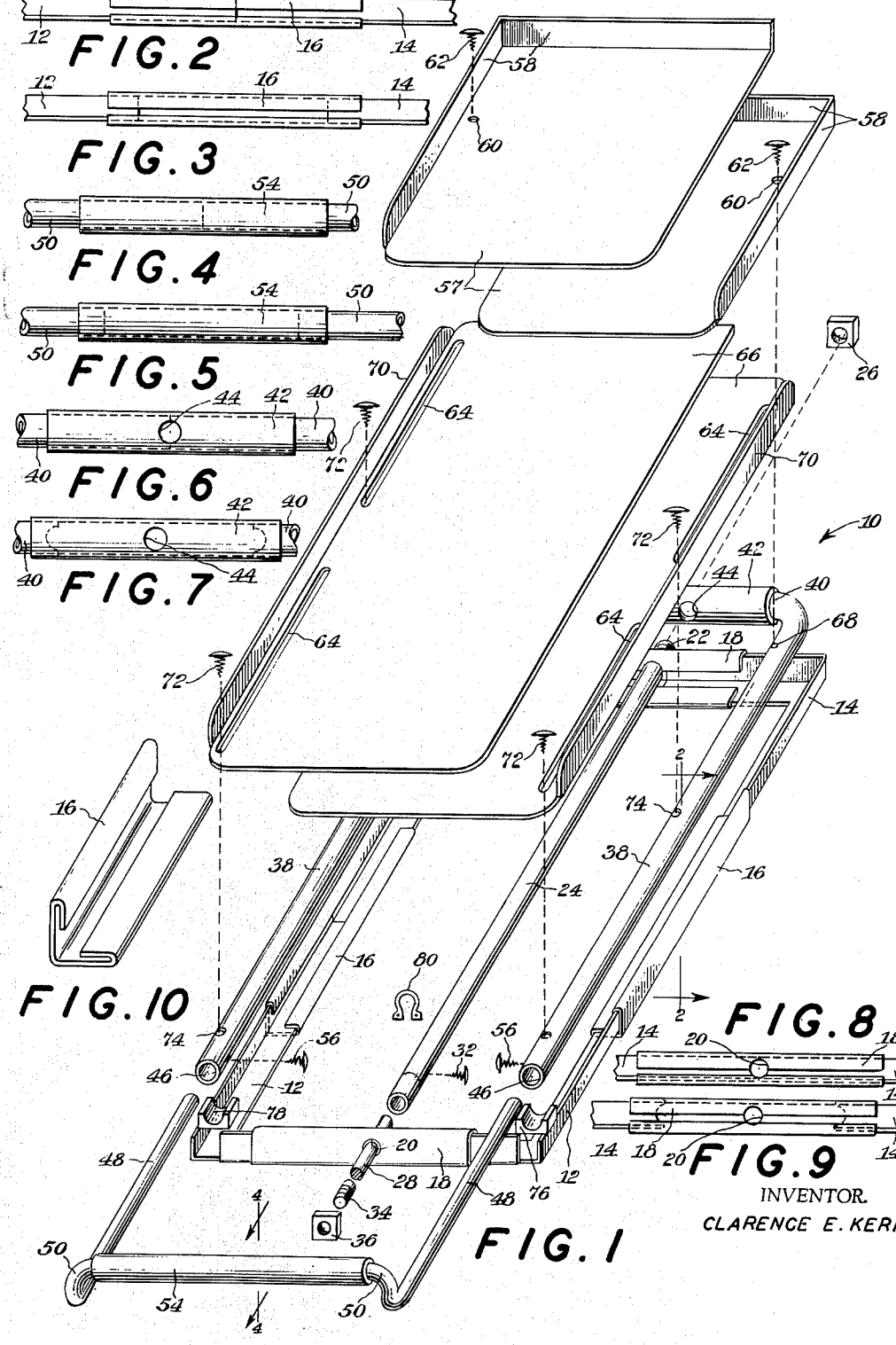

FIG. 1

FIG. 9

FIG. 8

INVENTOR.
CLARENCE E. KERR

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EXPANSIBLE SHELF ASSEMBLY

Clarence E. Kerr, 4308 E. Shan Drive, Mobile, Ala.

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This invention relates to shelf units, and more particularly, to an expansible, adjustable storage shelf assembly, which can be conveniently used wherever shelf space is required.

It is an object of the present invention to provide an extensible shelf assembly which will enable the supporting shelf surface to be withdrawn from the interior of a supporting cabinet, or the like, for gaining access to the entire shelf area.

It is another object of the present invention to provide an extensible shelf unit of the above type which can be adjusted in size and shape to fit within a cabinet or other enclosure of a wide variety of sizes.

Still another object of the present invention is to provide a size and shape adjustable shelf unit which can be readily installed within a cabinet or other enclosure, which will allow for the extension of the supporting surfaces thereof outwardly of such enclosure for providing immediate access to the entire surface area of the shelf.

Still an additional object of the present invention is to provide an adjustable, expansible shelf unit of the aforementioned type which can be mounted in tiers within or upon any suitable base, without intermediate shelf supports, which will allow for maximum accessibility to the entire area of all shelf surfaces at all times.

Another object of the present invention is to provide an expansible storage shelf assembly of this type which includes a minimum number of parts, many of which are interchangeable, and all of which are extremely simple and readily fabricated, which can be manufactured in various sizes at a relatively low cost.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

FIGURE 1 is an exploded perspective view of an expansible adjustable storage shelf assembly made in accordance with the present invention;

FIGURE 2 is a fragmentary side elevational view taken along line 2—2 of FIGURE 1, with the side frame members in a fully compacted position;

FIGURE 3 is a view similar to FIGURE 2, showing the side frame members of the base unit in extended position for installation in a larger storage area;

FIGURE 4 is a fragmentary rear elevational view, taken along line 4—4 of FIGURE 1, showing the position of carrier frame members in a fully compacted position;

FIGURE 5 is a view similar to FIGURE 4, showing the carrier frame members in extended position for wider application;

FIGURE 6 is a front elevational view of the rear portion of the carrier frame assembly shown in FIGURE 1, with the frame elements thereof in a fully contracted position;

FIGURE 7 is a view similar to FIGURE 6, with the frame elements in extended position for wider application;

FIGURE 8 is a fragmentary front plan view of certain rear portions of the base frame assembly, with the frame members in fully contracted position;

FIGURE 9 is a view similar to FIGURE 8, with the frame members in extended position for wider application; and

FIGURE 10 is an enlarged perspective view of a

frame sleeve member forming a part of the present invention providing size adjustment for the shelf assembly.

Referring now more in detail to the drawing, and more particularly to FIGURE 1 thereof, an expansible storage shelf assembly **10** made in accordance with the present invention is shown to include three basic components: a size adjustable base, a size adjustable shelf, and a size adjustable carrier which is slidably supported upon the base for reciprocating longitudinal movement between predetermined limits, and supporting the shelf thereupon for movement therewith.

The base includes a pair of front frame members **12** and a pair of rear frame members **14**. A pair of angle sleeve members **16** slidably receive the longitudinal portions of the front and rear base members **12**, **14**, to provide longitudinal adjustment of the size and shape of the base frame. A pair of end angular sleeve members **18** slidably receive the lateral portions of the base frame members to provide lateral size and shape adjustment of the base frame. Thus, it will be recognized that the size and shape of the base member can be adjusted in all directions within the approximate limits shown in FIGURES 2, 3, 8 and 9.

The central portion of the rear sleeve member **18** is provided with an aperture **20** which receives the threaded end **22** of a longitudinal rod **24** therethrough, and which is thus secured to the sleeve member **18** by means of a nut **26**. A rod **28** is slidably received through the central aperture **20** in the front sleeve member **18** for reception within the interior **30** of the longitudinal tubular rod **24**, and is secured at any desired length position within the tubular rod **24** by means of a set screw **32**. The forward end of the rod **28** has an external thread **34** which threadedly receives a nut **36** to thus fix the longitudinal size of the base frame assembly.

The carrier unit includes a pair of substantially L-shaped tubular members **38** which have rear leg portions **40** slidably received within a rear tubular sleeve member **42** having a central diametrically extending aperture **44** that slidably receives the tubular rod member **24** of the base frame assembly therethrough. The forward ends of the carrier frame members **38** define longitudinal bores **46** that slidably receive the ends of L-shaped rods **48** having perpendicularly related and offset forward portions **50** that are received within a forward sleeve member **54**. The rod members **48** are longitudinally adjustable within the tubular carrier frame members **38**, to suit any longitudinal size and shape requirements, by means of set screws **56**. Lateral adjustment of the carrier frame is accomplished by the sliding engagement of the respective ends of the tubular members **38** and rod members **48** within the rear and forward sleeve members **42**, **54**, respectively. Bearing guide members **78** mounted upon the sides of the base frame slidably support the forward portions of the tubular carrier frame members **38** and the sides of the base frame members also contribute to maintain the lateral size adjustment of the carrier frame during use.

The shelf assembly includes a pair of rear shelf portions **47** with side and rear upstanding flanges **58** that laterally overlap to provide lateral size adjustment. The forward portions of these panels **57** overlap the rear portions of a pair of forward shelf panels **66** having upstanding side flanges **70**. A pair of skirts **62** secure the rear shelf panels **57** to the rear portion of the carrier frame, by engagement within internally threaded apertures **68** thereof. The forward panels **66** are similarly secured by means of screws **72** that are received within apertures **74** in the carrier frame members. It will thus be recognized that the size and shape of the actual shelf portion of the assembly can be readily adjusted simply by varying the position of the respective

panels relative to each other. Longitudinal slots **64** in the forward panels **66** provides for longitudinal adjustment of the forward panels relative to the carrier assembly.

It will thus be recognized that in actual use, the base frame members may be supported directly upon a shelf surface of a cabinet or other storage unit or, if a plurality of these units **10** are to be used in stacked relationship, suitable brackets may be provided for suspending each base frame assembly from the sides or top of the enclosure in pre-determined spaced relationship with each other. The base frame can be adjusted to suitable size and shape during installation, after which the size and shape of the carrier frame assembly is similarly adjusted and then assembled with the base frame by extending the rod **24** through the aperture **44** in the rear carrier sleeve **42** prior to mounting the nut **26** upon the threaded end **22** of the rod **24**. The forward end of the carrier frame is received within the upwardly concave seats **78** of the bearing guide members **76** to provide minimum resistance to the longitudinal movement of the carrier frame relative to the base frame. A yoke **80** may be secured to any desired position on the rod **24**, to thus limit the forward extension of the carrier frame relative to the base frame, upon the engagement of such yoke **80** with the forward surface of the rear sleeve **42** of the carrier frame as it is extended. The shelf panels are then secured to the carrier frame in the desired size and shape provided by the size adjustment features thereof. Upon assembly, a completely self contained and interconnected adjustable storage shelf unit is provided which can be extended at will from within the interior of the storage cabinet or the like to provide maximum access to the entire shelf area for placing or removing the contents thereupon.

It will also be recognized that where only longitudinal size and shape adjustment is required, the lateral adjustment feature can be dispensed with; where only lateral size and shape adjustment is required, the longitudinal adjustment members may be dispensed with. However, because of the novel association of the parts as hereinbefore described, both lateral and longitudinal adjustment is provided with minimum number of parts and connections which further aid in the construction, assembly and mounting of each such unit.

While this invention has been described with particular reference to the construction shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An expansible storage shelf assembly, comprising in combination, a size adjustable base, the size adjustable shelf, and a size adjustable carrier slidably supported upon said base for reciprocating movement between pre-determined limits, said shelf being detachably secured to said carrier for movement therewith relative to said base, said size adjustable base comprising a plurality of frame members having a composite rectangular outline slidably interconnected to define a rectangular frame of adjustable size, said size adjustable base comprising four right angle members defining said rectangular outline, and four sleeve members each slidably receiving one end of an adjustable angle member adjustably connecting said frame members to define said rectangular frame.

2. An expansible storage shelf assembly as set forth in claim **1**, wherein said carrier comprises a plurality of frame members having a composite rectangular outline slidably interconnected to define a rectangular frame of adjustable size, and guide means slidably connecting said carrier to said base for said reciprocating longitudinal movement.

3. An expansible storage shelf assembly as set forth in claim **2**, wherein said shelf comprises a plurality of panels having marginal portions supported upon said carrier frame and having overlapping central portions accommodating adjustment of the combined size and position of said shelf relative to said carrier frame.

4. An expansible storage shelf assembly as set forth in claim **3**, wherein said guide means comprises a longitudinal guide bar secured to said base, and one end of said carrier slidably receiving said guide bar therethrough, said guide bar securing said carrier to said base and guiding said reciprocating longitudinal movement of said carrier relative to said base.

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FRANK B. SHERRY, *Primary Examiner.*

F. K. ZUGEL, *Assistant Examiner.*