July 21, 1959 J. V. SPALVINS 2,895,311

REFRIGERATION TABLE ASSEMBLY

Filed Sept. 7, 1956

2 Sheets-Sheet 1

FIG. 1.

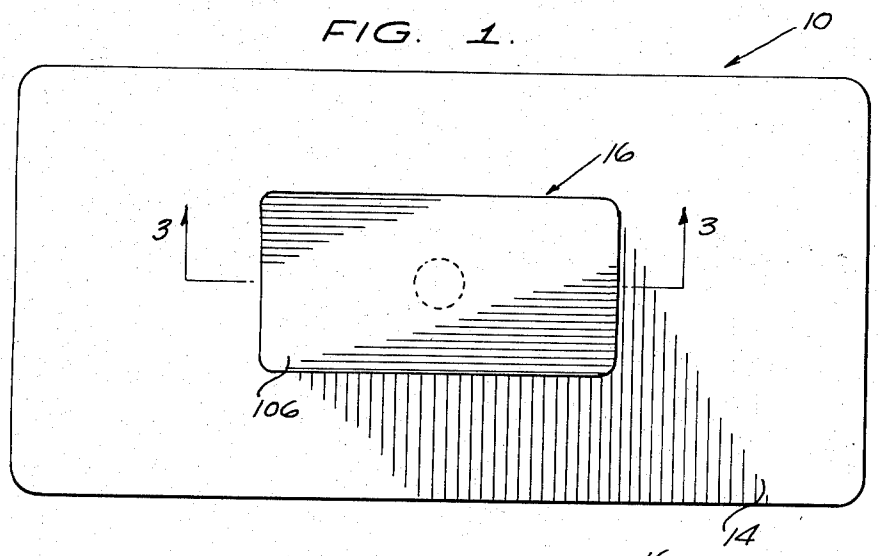
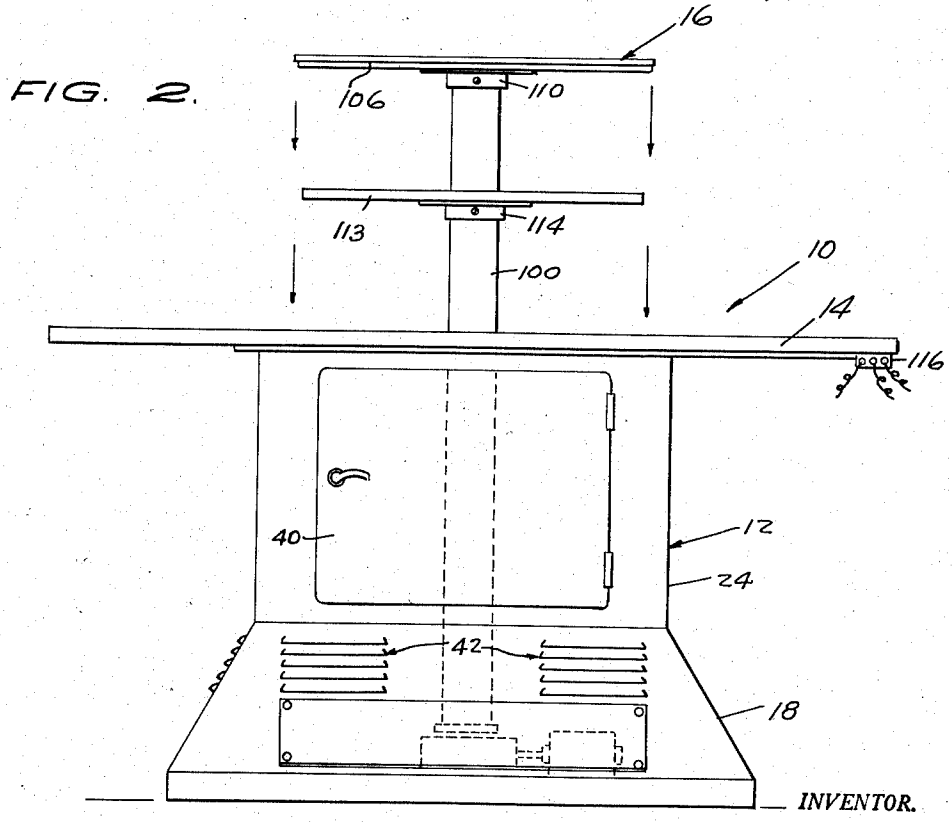


FIG. 2.



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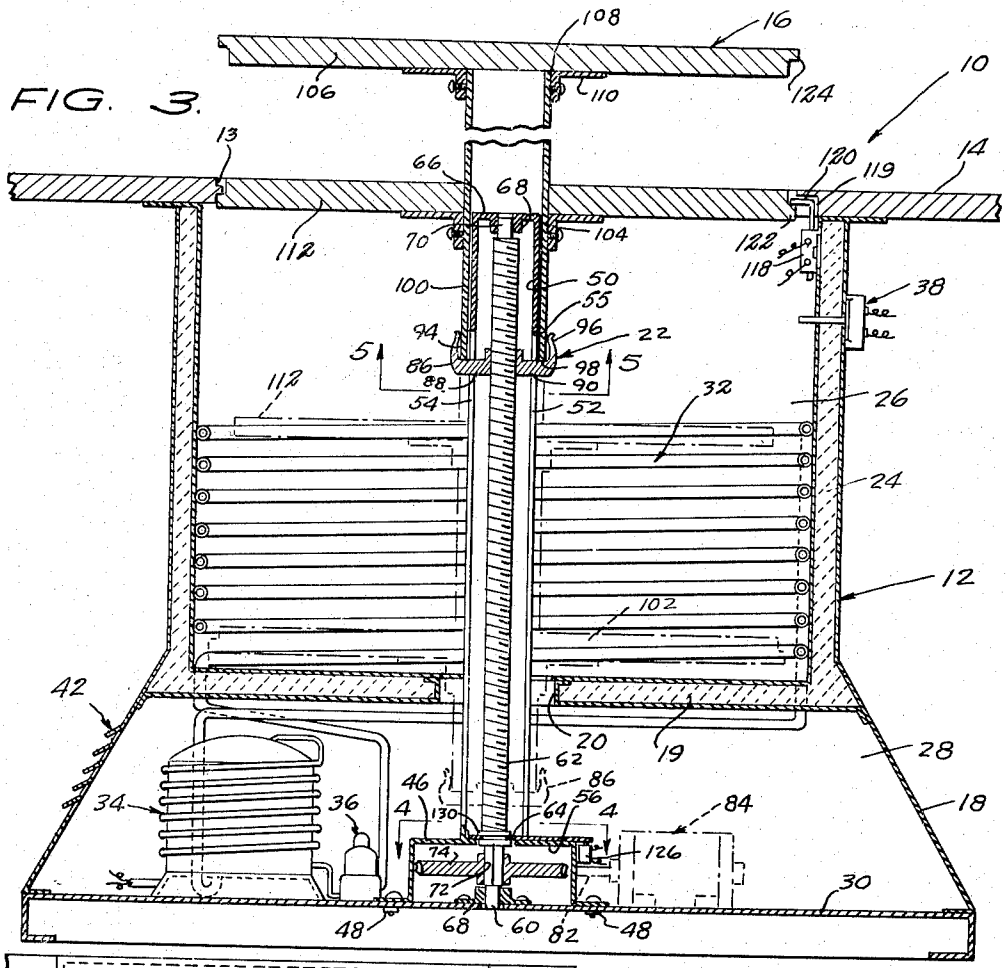
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2 Sheets-Sheet 2

FIG. 3.



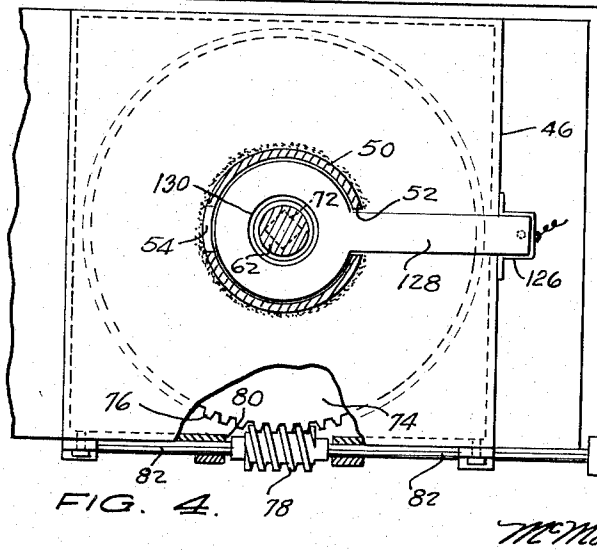


FIG. 4.

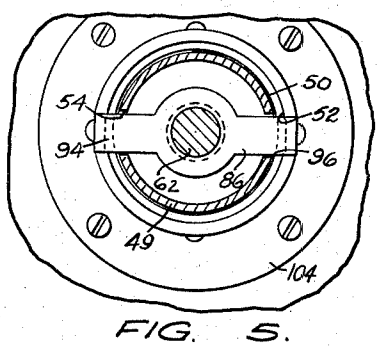


FIG. 5.

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REFRIGERATION TABLE ASSEMBLY

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Application September 7, 1956, Serial No. 608,496

5 Claims. (Cl. 62—258)

This invention relates generally to a combined refrigerator and table assembly.

The primary object of the invention is to provide a practical and efficient assembly of this kind which renders unnecessary the taking of countless steps by a housewife between a table and a distant refrigerator when setting table for meals, which otherwise is necessary.

Another object of the invention is to provide an assembly of this kind incorporating a refrigerator cabinet having an extended table top thereon, the top having an opening providing access to the interior of the cabinet, and a plurality of vertically spaced shelves which are together elevatable through the access opening to positions above the table top, any one of the shelves being arranged to be positioned to serve as a closure for the access opening.

Another object of the invention is to provide, in an assembly of this kind, improved shelf elevating and depressing means, preferably electrically operated, and which involves safety stop means operated by the shelves.

A still further object of the invention is to provide an assembly of this kind which is readily and economically manufactured, easily used and maintained, and which is highly practical, utilitarian and acceptable for the purpose intended.

These together with other objects and advantages which will become apparent reside in the details of construction and operation as more fully hereinafter described, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a top plan view of a combined refrigerator and table assembly in accordance with the present invention;

Figure 2 is a front elevational view of Figure 1, showing the shelf assembly thereof in an elevated position relative to the table top;

Figure 3 is an enlarged fragmentary vertical longitudinal sectional view taken substantially on line 3—3 of Figure 1, showing the shelf assembly in phantom lines depressed into the refrigerating compartment of the cabinet;

Figure 4 is a further enlarged fragmentary horizontal sectional view taken substantially on line 4—4 of Figure 3, with portions broken away and shown in section for clarity; and

Figure 5 is a further enlarged fragmentary horizontal sectional view taken substantially on line 5—5 of Figure 3.

Referring to the drawing in detail, the illustrated combined refrigerator and table assembly, generally designated 10, comprises a refrigerator cabinet 12 having its upper end closed by a table top 14, having a longitudinally elongated central access opening 13 therein, through which is vertically movable a shelf assembly 16. While a rectangular shaped cabinet and table top and shelf assembly are disclosed herein, it is to be understood that they can be of other cross sections and shapes.

The cabinet 12 includes a hollow base portion 18 having at its upper end a horizontal insulated wall 19 which is centrally apertured at 20 for accommodating elevating and depressing mechanism, generally designated 22, for the shelf assembly 16. The portion of the cabinet 12 above the wall 19 has an insulated side wall 24 which, with the bottom wall 19, defines a refrigerator compartment 26. Within the base portion 18 is a lower compartment 28 closed by a bottom wall 30. Extending around the inner surface of the sidewall 24 of the compartment 26 is a refrigerating coil 32 which is operatively connected to a condenser 34 and a compressor 36 located within the base compartment 28. The top of the coil 32 is preferably spaced downwardly from the table top 14. A suitable thermostat 38 may traverse the cabinet side wall 24 and be exposed in the refrigerating compartment 26, and be operatively connected to the compressor 36 in any conventional manner. As seen in Figure 2 the cabinet side wall 24 may have therein a suitable access door 40. The base portion 18 may be suitably louvered as at 42, to provide for the dissipation of heat and for air circulation about the refrigerating mechanism.

The elevating and depressing mechanism 22 includes a housing 46 suitably secured upon the base bottom wall 30, as by means of bolt assemblies 48.

A single vertically extending tubular guide sleeve 50 is fixed to and rises from the housing 46, and has a sidewall 49 provided with diametrically opposed vertically elongated guide slots 52 and 54, having closed upper ends 55 spaced downwardly from the upper end of the guide sleeve 50. Suitably secured within the housing 46 is an upwardly opening journal block 58 which has journalled therein the lower end 60 of an externally threaded vertical screw 62 which rises into the guide sleeve 50 through an opening 64 in the top 56 of the housing 46. The sleeve 50 is closed at its upper end by a wall 66 which includes a downwardly open journal boss 68 which has journalled therein the upper end 70 of the screw 62. The screw 62 has adjacent its lower end 60 a polygonal cross section portion 72, having disposed thereon a worm wheel 74, whose toothed portion 76, see Figure 4, is marked with a longitudinally arranged worm gear 78 on a motor shaft 82 extending through an aperture 80 in the side of the housing 66. The motor shaft 82 extends from a suitable reversible power means 84, such as an electric motor 84, so that operation of the motor 84 results in rotation of the screw 62. The screw 62 has threaded thereon a carrier nut 86 which includes arms 88 and 90 extending through the related slots 54 and 52 of the guide sleeve 50, Figure 3, and having thereon upwardly angulated end portions 94 and 96, respectively, defining a cup receiving therein the lower end 98 of a tubular slide 100 which is telescoped on the upper end of the guide sleeve 50. Thus, when the screw 62 is rotated, the carrier nut 86 and the slide 100 will be elevated or depressed.

The shelf assembly 16 comprises a lower shelf 112 which is circumposed about an intermediate portion of the slide 100 and is supported thereon by means of a suitable bracket 104. An upper shelf 106 is secured on the upper end 108 of the slide 100 by means of a suitable bracket 110. Depending on the length of the slide 100, one or more intermediate shelves may be mounted thereon, depending on the height of the items to be placed between the respective shelves. As seen in Figure 2, the slide 100 may have an intermediate shelf 113 secured thereon by means of a suitable bracket 114, the intermediate shelf or shelves 112 are dimensioned to pass freely through the table top opening 13.

Secured in any suitable manner and in any convenient position on the underside of the table top 14, Figure 2, is a control switch 116 which is effectively connected to

the electric motor **84** for determining the direction of rotation of the screw **62** and for controlling the amount of elevation or depression of the shelf assembly **16**. Suitably secured to the refrigeration compartment sidewall **24** adjacent the upper edge thereof is a limit or cut-off switch **118** which includes an actuator **119** having a lateral arm **120** disposed in the path of movement of both the upper and lower shelves. The switch **118** is effectively connected to the electric motor **84** for cutting off electric current flowing to the same. Thus when the lower shelf **112** moves upwardly to the extreme elevated position shown in Figure 3, wherein the lower shelf is in substantially planar alignment with the table top **14** and closes the opening **13**, a depressed peripheral flange **122** on this shelf engages under the switch arm **120** and opens the switch **118**, so as to deactivate the motor **84**. Food products disposed on the upper surface of the lower shelf **112** are there accessible from the top of the table. The upper shelf **106** includes an elevated peripheral flange **124** which is arranged to engage the upper side of the switch arm **120** when the upper shelf **106** is depressed from an elevated position to closing relation in the opening **13** in the table top **14**, and forms part of the table top.

A safety cut-off switch **126**, which is connected in circuit with the electric motor **84**, is mounted on the side of the housing **46** in position to be operated to open position by elevation of a plate **128** which overlies the housing **46** and is journalled on the screw **62** between a pair of flanges **130**, Figure 3. The switch **126** is normally closed, but in the event that any objects, such as food articles or the like, or the table top **14**, extend across the opening **13** beneath the shelf of the shelf assembly **16**, prevent complete lowering of the shelf assembly, continued rotation of the screw **62** results in a slight elevation of the screw relative to the housing **46**, so that the plate is correspondingly elevated and permits the switch **126** to open and cut off the motor **84**.

The foregoing is considered as illustrative only of the principles of the invention. Since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, as fall within the scope of the appended claims.

What is claimed is:

1. In a combined refrigerator and table assembly, a refrigerator cabinet having a sidewall and a bottom wall defining a refrigerating compartment, a hollow base beneath and supporting said cabinet, said base having a bottom wall, a hollow housing secured upon said base bottom wall, a lower journal boss mounted within said housing, a vertical guide tube having upper and lower ends, the lower end of the guide tube being secured upon said housing concentrically around said lower journal boss, a vertical screw having a lower end journalled in said lower boss and an upper end, a traveler nut threaded on said screw and slidably engaging the interior of said guide tube, said guide tube having a sidewall provided with opposed vertically elongated guide slots, said nut having arms projecting therefrom and extending through said slots, a tubular slide having an upper end, and a lower end portion slidably telescoped upon the upper end of the guide tube, said lower end portion of the slide resting upon said nut arms, a table top on the upper end of said cabinet and closing the refrigerating compartment, said table top being provided with a relatively large access opening through which said slide rises, an upper shelf mounted on the upper end of the slide, a lower shelf mounted around said slide and spaced below said upper shelf, said shelves being dimensioned to close said access opening in the table top, a boss on the upper end of the guide tube in which the upper end of the crew is journalled, and driving means in said base and operatively connected to the lower end of the screw.

2. In a combined refrigerator and table assembly, a refrigerator cabinet having a sidewall and a bottom wall defining a refrigerating compartment, a hollow base beneath and supporting said cabinet, said base having a bottom wall, a hollow housing secured upon said base bottom wall, a lower journal boss mounted within said housing, a vertical guide tube having upper and lower ends, the lower ends of the guide tube being secured upon said housing concentrically around said lower journal boss, a vertical screw having a lower end journalled in said lower boss and an upper end, a traveler nut threaded on said screw and slidably engaging the interior of said guide tube, said guide tube having a sidewall provided with opposed vertically elongated guide slots, said nut having arms projecting therefrom and extending through said slots, a tubular slide having an upper end, and a lower end portion slidably telescoped upon the upper end of the guide tube, said lower end portion of the slide resting upon said nut arms, a table top on the upper end of said cabinet and closing the refrigerating compartment, said table top being provided with a relatively large access opening through which said slide rises, an upper shelf mounted on the upper end of the slide, a lower shelf mounted around said slide and spaced below said upper shelf, said shelves being dimensioned to close said access opening in the table top, a boss on the upper end of the guide tube in which the upper end of the crew is journalled, and driving means in said base and operatively connected to the lower end of the screw, said lower shelf being positioned on said slide to enable said lower shelf to be elevated from a depressed position within said refrigerating compartment, to an extreme elevated position wherein said shelf is in closing relation to said access opening in coplanar relation to said table top, said drive means including an electric motor, a normally closed stop switch connected with said motor and mounted beneath said table top in the region of said access opening, said stop switch having an actuator having a lateral arm extending into said access opening, said lower shelf being arranged to engage the upper side of said switch arm and open the stop switch and stop the motor as said lower shelf reaches said extreme elevated position.

3. In a combined refrigerator and table assembly, a refrigerator cabinet having a sidewall and a bottom wall defining a refrigerating compartment, a hollow base beneath and supporting said cabinet, said base having a bottom wall, a hollow housing secured upon said base bottom wall, a lower journal boss mounted within said housing, a vertical guide tube having upper and lower ends, the lower ends of the guide tube being secured upon said housing concentrically around said lower journal boss, a vertical screw having a lower end journalled in said lower boss and an upper end, a traveler nut threaded on said screw and slidably engaging the interior of said guide tube, said guide tube having a sidewall provided with opposed vertically elongated guide slots, said nut having arms projecting therefrom and extending through said slots, a tubular slide having an upper end, and a lower end portion slidably telescoped upon the upper end of the guide tube, said lower end portion of the slide resting upon said nut arms, a table top on the upper end of said cabinet and closing the refrigerating compartment, said table top being provided with a relatively large access opening through which said slide rises, an upper shelf mounted on the upper end of the slide, a lower shelf mounted around said slide and spaced below said upper shelf, said shelves being dimensioned to close said access opening in the table top, a boss on the upper end of the guide tube in which the upper end of the crew is journalled, and driving means in said base and operatively connected to the lower end of the screw, said lower shelf being positioned on said slide to enable

said lower shelf to be elevated from a depressed position within said refrigerating compartment, to an extreme elevated position wherein said shelf is in closing relation to said access opening in coplanar relation to said table top, said drive means including an electric motor, a normally closed stop switch connected with said motor and mounted beneath said table top in the region of said access opening, said stop switch having an actuator having a lateral arm extending into said access opening, said lower shelf being arranged to engage the upper side of said switch arm and open the stop switch and stop the motor as said lower shelf reaches said extreme elevated position, said upper shelf being arranged to engage the upper side of said switch arm and cut-off said motor as said upper shelf is depressed from an elevated position and reaches closing relation to the access opening.

4. In a combined refrigerator and table assembly, a refrigerator cabinet having a sidewall and a bottom wall defining a refrigerating compartment, a hollow base beneath and supporting said cabinet, said base having a bottom wall, a hollow housing secured upon said base bottom wall, a lower journal boss mounted within said housing, a vertical guide tube having upper and lower ends, the lower ends of the guide tube being secured upon said housing concentrically around said lower journal boss, a vertical screw having a lower end journalled in said lower boss and an upper end, a traveler nut threaded on said screw and slidably engaging the interior said guide tube, said guide tube having a sidewall provided with opposed vertically elongated guide slots, said nut having arms projecting therefrom and extending through said slots, a tubular slide having an upper end, and a lower end portion slidably telescoped upon the upper end of the guide, said lower end portion of the slide resting upon said nut arms, a table top on the upper end of said cabinet and closing the refrigerating compartment, said table top being provided with a relatively large access opening through which said slide rises, an upper shelf mounted on the upper end of the slide, a lower shelf mounted around said slide and spaced below said upper shelf, said shelves being dimensioned to close said access opening in the table top, a boss on the upper end of the guide tube in which the upper end of the screw is journalled, and driving means in said base and operatively connected to the lower end of the screw, said lower shelf being positioned on said slide to enable said lower shelf to be elevated from a depressed position within said refrigerating compartment, to an extreme elevated position wherein said shelf is in closing relation to said access opening in coplanar relation to said table top, said drive means including an electric motor, a normally closed stop switch connected with said motor and mounted beneath said table top in the region of said access opening, said stop switch having an actuator having a lateral arm extending into said access opening, said lower shelf being arranged to engage the upper side of said switch arm and open the stop switch and stop the motor as said lower shelf reaches said extreme elevated position, said screw being sufficiently loose in said upper and lower journal bosses to enable the screw to rise when a shelf bears upon an obstruction on the table top and extending across the access opening while said motor is in operation, and a normally closed safety switch, operatively associated with the screw and a part on said base and arranged to be opened and to cut off the motor whenever the screw is so elevated.

5. In a combined refrigerator and table assembly, a refrigerator cabinet having a side wall and a bottom wall defining a refrigerating compartment, a hollow base beneath and supporting said cabinet, said base having a bottom wall, a hollow housing secured upon said base bottom wall, a lower journal boss mounted within said housing, a vertical guide tube having upper and lower ends, the lower ends of the guide tube being secured upon said housing concentrically around said lower journal boss, a vertical screw having a lower end journaled in said lower boss and an upper end, a traveler nut threaded on said screw and slidably engaging the interior of said guide tube, said guide tube having a side wall provided with opposed vertically elongated guide slots, said nut having arms projecting therefrom and extending through said slots, a tubular slide having an upper end, and a lower end portion slidably telescoped upon the upper end of the guide tube, said lower end portion of the slide resting upon said nut arms, a table top on the upper end of said cabinet and closing the refrigerating compartment, said table top being provided with a relatively large access opening through which said slide rises, an upper shelf mounted on the upper end of the slide, a lower shelf mounted around said slide and spaced below said upper shelf, said shelves being dimensioned to pass freely through and close said access opening in the table top, a boss on the upper end of the guide tube in which the upper end of the screw is journaled, and driving means within said base and operatively connected to the lower end of the screw, said lower shelf being positioned on said slide to enable said lower shelf to be elevated from a depressed position within said refrigerating compartment to an extreme elevated position wherein said shelf is in closing relation to said access opening in coplanar relation to said table top.

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