

Aug. 15, 1950

H. M. DUNLAP

2,518,764

TABLE TOP REFRIGERATOR WITH ELEVATING INTERIOR

Filed Nov. 15, 1946

5 Sheets-Sheet 1

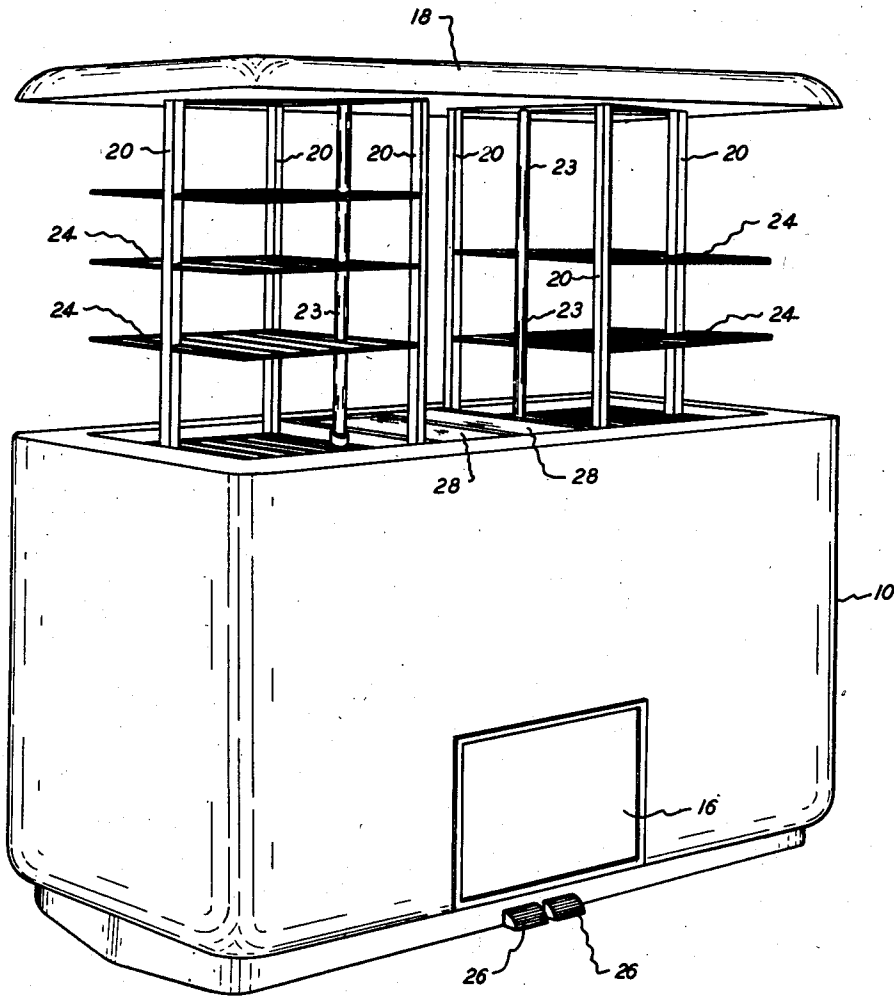


FIG. I.

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5 Sheets-Sheet 2

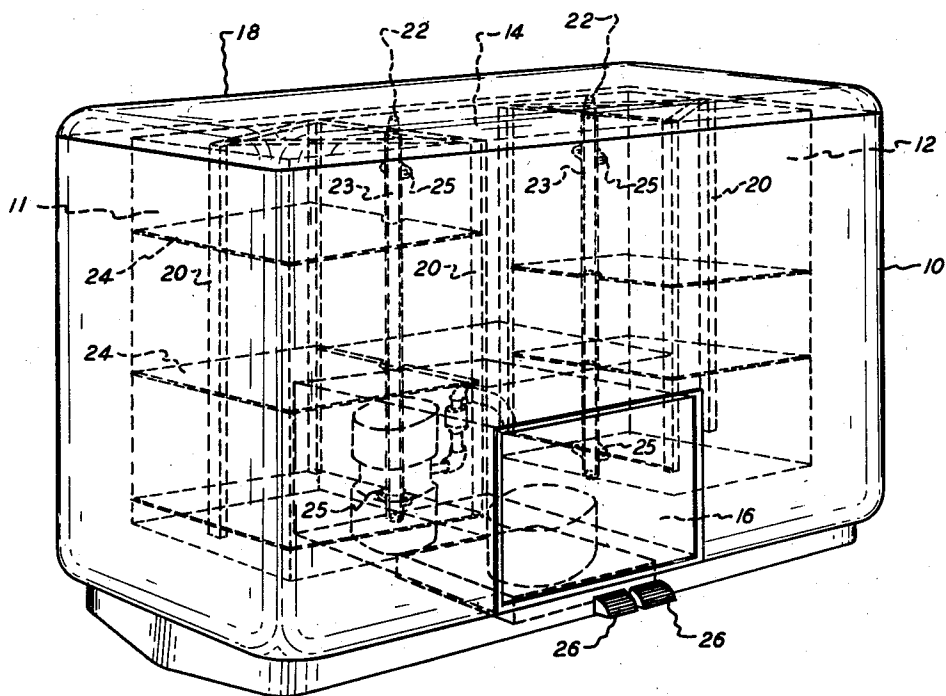


FIG. II.

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5 Sheets-Sheet 3

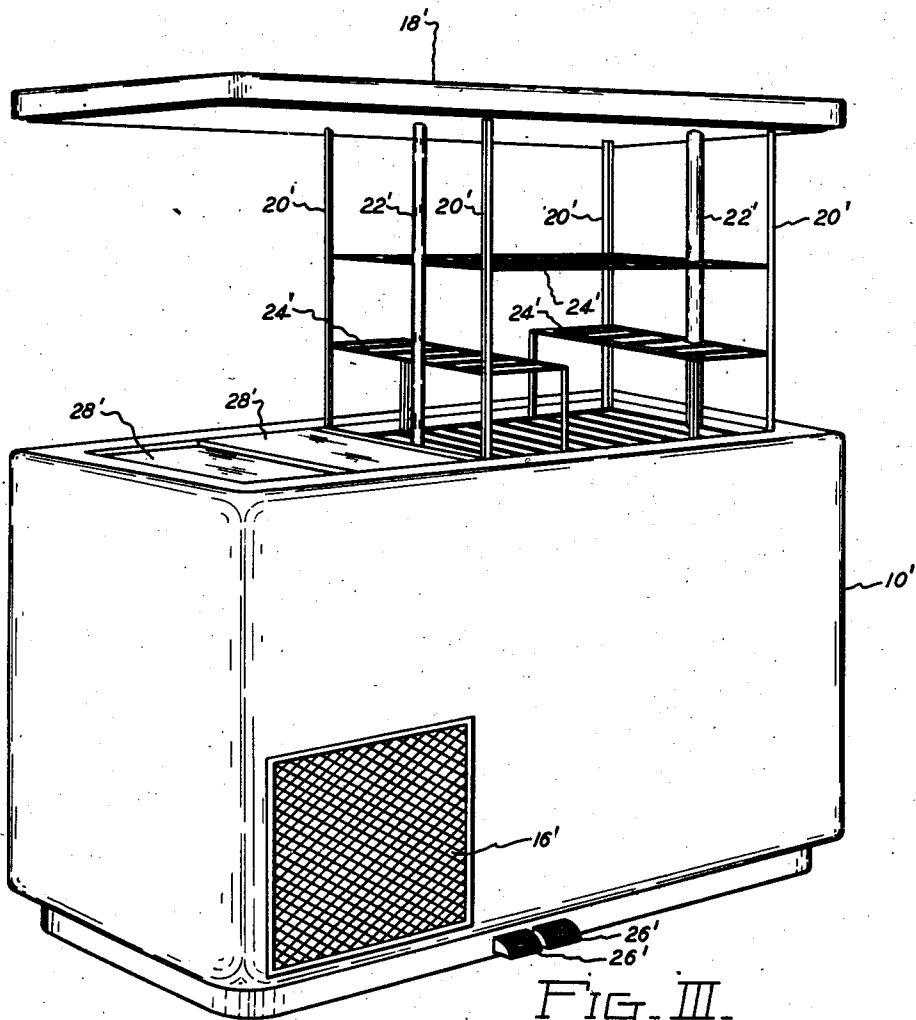


FIG. III.

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5 Sheets-Sheet 4

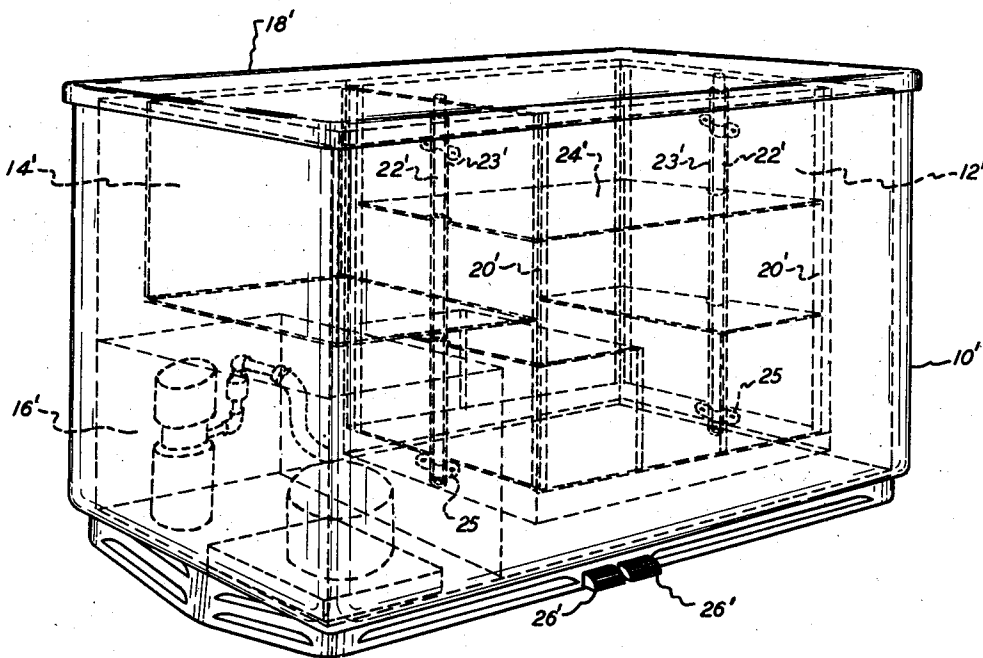


FIG. IV

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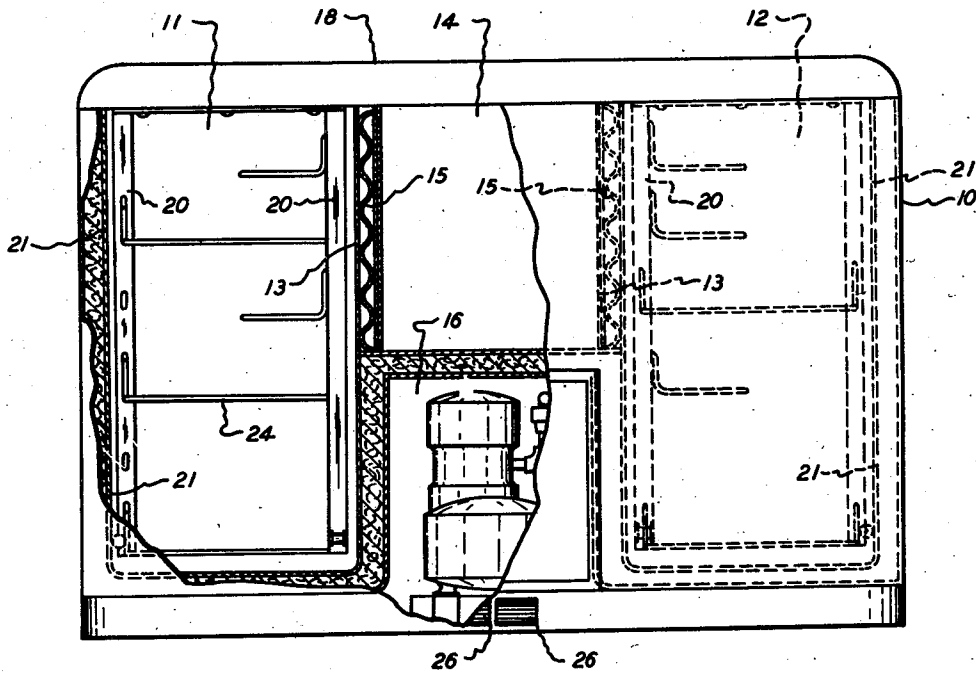


FIG. V.

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# UNITED STATES PATENT OFFICE

2,518,764

## TABLE TOP REFRIGERATOR WITH ELEVATING INTERIOR

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Application November 15, 1946, Serial No. 710,007

2 Claims. (Cl. 62-89)

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This invention relates to improvements in household refrigerators and low temperature units, and more particularly to household refrigerators of the table top or top opening type.

It has been long known that one of the most common faults of the conventional side opening refrigerators is that when the door is open the cold air within the cabinet, being heavier than the warm air of the surrounding room, flows out the lower portion of that opening and is replaced by warm air which flows into the upper portion of that opening. This necessitates a recooling of most of the refrigerator and the enclosed air every time the door is opened. In the preparation of the average meal the refrigerator is opened countless times, even by the most farsighted housewife, thereby thoroughly warming the inside of the refrigerator cabinet and requiring the compressor to work extra time to pull the temperature back down to the level desired for the protection of the food stored. Many makeshift expedients, such as drawers or small doors between the shelves, have been designed and used to correct this one fault or weakness in the conventional design. The obvious cure for this fault lies in providing a refrigerator with the opening in the top. Then when the door is opened, the cold air within the cabinet, being heavier than the air surrounding the cabinet, stays inside of the cabinet compartment. The only loss of cold in such a refrigerator lies in the momentary contact established between the air within the cabinet and the outside air. This loss, however, is negligible in comparison with the loss incurred when even the most brief opening of the conventional vertical door refrigerator. The disadvantage of a top opening refrigerator lies in the inaccessibility of the goods stored in the bottom of the well or compartment. When a normal top opening refrigerator is utilized to capacity, boxes and packages are piled on top of each other, making the lower ones more or less inaccessible, and at the same time lowering the efficiency of the refrigerator.

Aside from the purely mechanical advantages to be gained providing a top opening refrigerator, they are definite advantages to be gained in providing a table top refrigerator, for such a design will fit in better with the modern style of kitchen and the associated appliances. At the present time the refrigerator is the only article in the kitchen which is not of a table top design, thereby making it necessary to provide a special place for, and special cabinet designs around the refrigerator. A table top refrigerator, however,

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will fit in very nicely with the modern design of cabinet sinks, table top stoves and the modern method of installing cupboards.

It is an object of this invention to provide a refrigerator of table top design which will blend in with the other appliances normally used in a kitchen.

Another object is to provide an efficient refrigerator in a table top design which may be opened countless times without losing the refrigerated air and thereby making the compressor work overtime.

A further object is to provide mechanical means for lifting the lid and interior contents of such a refrigerator so that the contents are easily accessible.

A still further object is to provide a refrigerator in which two, three, or more different temperatures may be maintained in as many different compartments, the same to be incorporated in a table top refrigerator design.

Further objects and improvements incorporated in my invention will be apparent from the following specifications and the accompanying drawings, in which,

Fig. I is a perspective view of three temperature refrigerator with the lid, the top and the inside shelves in the up or accessible position.

Fig. II is a perspective view of the refrigerator of Fig. I, with the inside shelves down or in a closed position,

Fig. III is a perspective view of a two temperature refrigerator embodying my invention, with the inside shelves and the lid up and in an accessible position,

Fig. IV is a perspective view of the refrigerator shown in Fig. III with the inside shelves down or in a closed position, and

Fig. V is a side elevational view, partly in broken sections of the refrigerator of Fig. I, showing the arrangement of parts and the methods of supporting these parts.

In Figs. I, II and V, there appears a three temperature table top refrigerator. The cabinet encloses two medium temperature refrigeration compartments 11 and 12, and a low temperature compartment 14, for the storage of frozen food. Compartment 14 is situated between compartments 11 and 12, and suitable heat exchange walls 13 serves to cool the compartments 11 and 12. Compartment 14 is provided with flat plate evaporator 15 between compartment 14 and compartments 11 and 12, so disposed and insulated as to provide cooling for all three compartments. If the plate evaporator 15 is situated only between

compartment 14 and compartment 12 it will serve to keep compartment 12 at a lower temperature than compartment 11, which must depend for refrigeration on heat exchange wall 13 between compartment 11 and compartment 14. Directly below compartment 14 is situated compartment 16, in which are placed the refrigeration mechanism and the power unit for the lifting mechanism.

The top or lid 18 is mounted on taper fit piston posts 22, as more fully described in my copending application, Serial No. 710,011, filed November 15, 1946, now Patent No. 2,490,861, granted December 13, 1949, and titled Hydraulic Lift System for Refrigerators and the like, which in turn are telescopically mounted within cylinders 23, with which they react to raise lid 18. Cylinders 23 are positioned within medium temperature compartments 11 and 12, and are held in position by suitable straps or clamps 25. Guide posts 20 are secured to and hung from lid 18, and guide lid 18 during the lifting and lowering of lid 18 by reason of their engagement with the inner liner 21 of compartments 11 and 12. These guide posts 20 also serve to support shelves 24, and, when lid 18 is raised by action of piston posts 22 in cylinders 23, guide post 20 and associated shelving 24 lift out of the inside of the cabinet 10 vertically, thereby giving full access to the contents of the refrigeration compartment. Piston posts 22 are provided with a taper or slidable fit with lid 18 so that in case of power or mechanical failure lid 18 may be lifted free of piston posts 22 and the entire contents of the refrigerator lifted out of the compartments so that access may be had to the contents. A pair of foot actuated electrical switches 26 are provided to control the up and down movement of lid 18 and the associated contents of the refrigerator. The function of these foot switches and their construction is more fully described in my aforesaid copending application. In the same copending application will be found a complete disclosure of a hydraulic lifting system which may be used in this refrigerator. It is also of course possible to use cables, gears or a worm drive to accomplish this lifting. I also prefer to use in this refrigerator, shelving which is quickly detachable and which may be arranged in any number of combinations, as disclosed in my copending application, Serial No. 710,008, filed Nov. 15, 1946, entitled Shelving for Refrigerators and the like.

Low temperature compartment 14 is protected from the outside air while lid 18 is in the up or open position by sliding panels 28, or any other suitable closure.

In Figs. III and IV, there appears a two temperature table top refrigerator embodying my invention, which is different in some of its structure, but no different in its primary purpose or principal. In that structure cabinet 10' encloses the normal temperature refrigeration compart-

ment 12' and the low temperature compartment 14', which is adjacent to compartment 12'. The compartment 16' is directly beneath compartment 14' and houses the refrigerating mechanism and the power unit for the lifting mechanism. Lid 18 is mounted on taper fit piston posts 22', which are in turn telescopically mounted in cylinders 23'. The guide posts 20' operates in the same manner as the guide posts 20 in the other figures and carry the shelving 24' in the same manner. The foot switches 26' are similarly positioned and likewise serve to control the up and down movement of lid 18' and refrigerator contents. The low temperature compartment 14' is furnished with doors or sliding panels 28' which serve to maintain the very low temperature of the compartment 14' even while the lid is in the up or open position. I prefer to use a flat plate or tank type evaporator in the compartment 14' to cool both compartment 12' and compartment 14', in this structure.

Having thus described my invention what I claim as new and desire to protect by Letters Patent is:

1. A table top refrigeration cabinet enclosing refrigeration compartments, inner liners defining said refrigeration compartments, a lid on said cabinet, guide posts suspended from said lid and engaging said inner liners to stabilize said lid in vertical movement, shelving mounted on said guide posts and movable with said guide posts and said lid, and telescopically operating elevating devices associated with said lid and mounted within said cabinet.

2. A table top refrigerator comprising a cabinet having refrigeration compartments, inner liners defining said compartments, a lid on said cabinet effecting a closure of said compartments, guiding means associated with said lid and with said inner liners to guide said lid in vertical movement, elevating means comprising inner and outer telescoping members, the inner one of which members is associated with said lid and the outer one of which members is mounted in said cabinet, and fluid pressure means to cause said inner member to move out of said outer member to raise said lid.

HOBERT M. DUNLAP.

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