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H. M. INGRAM
REFRIGERATOR CONSTRUCTION

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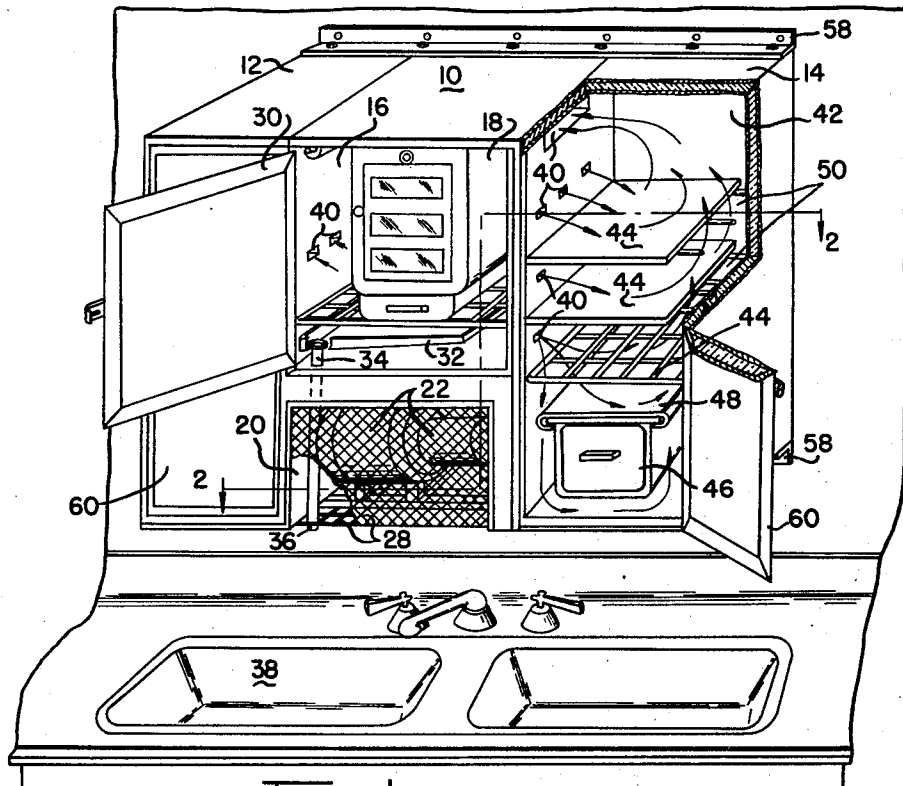
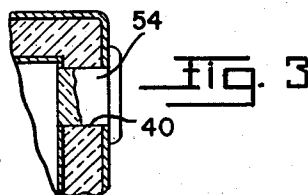
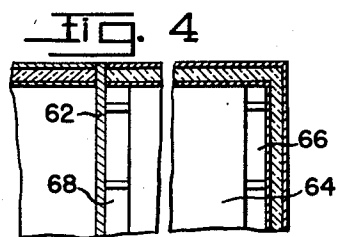
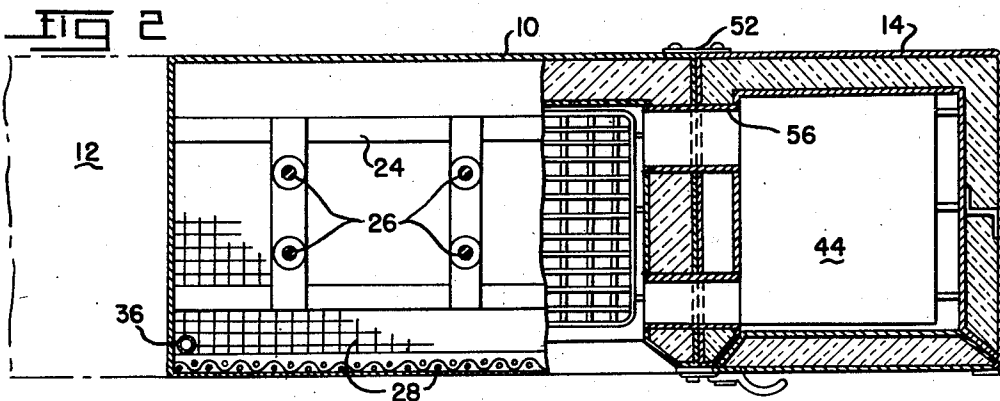


FIG. 1



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REFRIGERATOR CONSTRUCTION

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3 Claims. (Cl. 62—89)

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This invention relates to refrigerators, and particularly to a compactly constructed refrigerator especially adapted for use in apartments and the like where the available floor space is limited.

Most refrigerators constructed at the present time are of the type which set on the floor and for this reason take up considerable floor space. In many instances, such as in apartments, small prefabricated homes, remodelled homes, doctors' and dentists' offices, laboratories, and certain business establishments, it is desirable to avoid taking up any more floor space than absolutely necessary with stationary units such as refrigerators.

Having the foregoing in mind, one of the primary objects of the present invention is to provide a refrigerator construction which can be wall mounted so as to save floor space.

Another object is to provide a refrigerator construction which will substantially match wall type built-in kitchen cabinets in appearance.

A still further object of this invention is to provide a refrigerator adapted for wall mounting so that it can be located over a work table or sink and thereby provide for a step-saving arrangement for a kitchen or the like.

A still further object is to provide a refrigerator construction consisting of independent units that can selectively be connected together to form a larger or smaller refrigerator.

It is also an object to provide a refrigerator arrangement consisting of a plurality of units in which the main unit is at least partially protected and insulated by the other units whereby an efficiently operating refrigerator results with a plurality of controlled temperature arrangements available in the several units.

These and other objects and advantages will become more apparent upon reference to the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a perspective view showing a refrigerator constructed according to my invention wall mounted above a sink;

Figure 2 is a plan section through the refrigerator in Figure 1 and is indicated by the line 2—2 on Figure 1;

Figure 3 is a fragmentary view showing an insulating plug mounted in the wall of the center unit of the refrigerator to adapt the center unit for use without the side unit; and

Figure 4 is a plan section showing a heat conducting wall arranged between the center unit and the side unit.

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Referring to the drawings somewhat more in detail, the wall mounted refrigerator shown in Figure 1 comprises a center unit 10 and two side units 12 and 14. Center unit 10 comprises an upper storage compartment 16 having therein the cooling means or evaporator 18 according to practices well known in the refrigerator art.

The lower portion of center unit 10 comprises a compartment 20 for receiving the motor and compressor 22 of the refrigerator unit and which supplies refrigerant to the evaporator 18. Motor 22 is preferably mounted on the frame 24 by resilient means such as the rubber blocks 26, best illustrated in Figure 2. At least the front and bottom walls of compartment 20 have grilled openings 28 for supplying cooling air to the motor and compressor.

It will be understood that the compartment 20 could be surrounded with sound insulating material if desired in order to provide for quiet operation of the refrigerator.

The upper storage compartment 16 is, of course, completely surrounded by a layer of heat insulating material according to customary practices in the refrigerator art, and is preferably provided with a door 30 also provided with insulation and sealing means, so that when the door is closed, the compartment 16 is closed against heat loss to the atmosphere.

Positioned beneath evaporator 18 is a tray 32 inclined downwardly toward one corner of the storage compartment and communicating with a drain pipe 34. Drain pipe 34 may normally be closed by a cork or plug which can be removed when the refrigerator is being de-frosted to permit draining from tray 32 of the moisture that melts from evaporator 18. The tube 32 preferably extends downwardly through compartment 20 and opens out the bottom of the unit, as at 36. In the arrangement illustrated in Figure 1, it will be evident that the tray 32 will drain directly into the sink 38 beneath the refrigerator, thereby avoiding the problem of disposing of the waste water which normally accumulates in a refrigerator when it is defrosted.

According to the present invention, main unit 10 has a plurality of slotted openings 40 in each side wall thereof arranged at different levels and distributed over the said walls, as will best be seen in Figures 1 and 2. These openings are for the purpose of providing for air circulation between the main unit and the side units for refrigerating the storage spaces in the said side units.

Referring now to side unit 14, it will be seen

that this unit comprises a relatively large storage space 42 divided by shelves 44, and of which the lower one is in the form of a grill. Beneath the lowermost of the shelves 44 is a vegetable tray or other sort of hydrating arrangement, as at 46, and this shelf is preferably retained by being slidable on the lid part 48 which is somewhat narrower than the storage space 42 of unit 14.

The upper two shelves 44 also preferably terminate short of the outer wall of unit 14 to provide a space therebetween, as indicated at 50, for the purpose of permitting air to circulate through storage space 42. This circulation of air is represented by the arrows shown on Figure 1, and it will be seen that the disposition of openings 40 and the arrangement of the shelves 44 provides for air circulation through substantially the entire storage space 42.

It will also be noted that the uppermost of the openings 40 is preferably in the form of a single elongated opening by means of which the relatively warm air that rises toward the top of storage space 42 in unit 14 can be returned to main unit 10 adjacent the top of the evaporator 18. As will best be seen in Figure 2, main unit 10 is adapted for being detachably connected with side units 12 and 14, as by the connecting clips 52. In this manner the main unit can be employed alone or with either one or both of the side units as may be employed.

When the main unit is employed alone, the openings in the side of the unit may advantageously be closed, as by the insulating plug 54 illustrated in Figure 3. When the main unit has a side unit associated therewith, as shown in Figure 2, it is to advantage to provide the sleeve members 56 extending through openings 40 and which provide for an easily cleaned surface over the entire air circulation path within the refrigerator.

Turning again to Figure 1, the refrigerator according to the present invention may readily be mounted on a wall by means of the mounting strips 58 extending across the top and bottom at the back thereof. These mounting strips may take the form of angles, as shown, and may be provided with attaching means such as holes on sixteen-inch centers so as to fit the standard studding arrangement encountered in building construction.

In Figures 1 and 2, it will be seen that each of the side units 12 and 14 has its own door 60, and that because of this provision the refrigerator is economical because the opening of any one of the doors thereof will not bring about any great loss of cold air from the storage space of the refrigerator.

It will also be appreciated that the side units 12 and 14 effectively insulate the side walls of the main unit 10 so that this portion of the refrigerator can be operated at relatively low temperature without entailing any inefficient operation of the refrigerator.

Due to the fact that the air circulation between the main unit 10 and the side units 12 and 14 can be regulated, it will be seen that by properly sizing the openings 40 the temperatures encountered in the side units can be made somewhat higher than the temperatures encountered in the main unit, so that foods which must be held at lower temperature can be placed in the main unit, while other foods, such as fruits and vegetables, which do not need to be stored at

such a low temperature can be placed in the side units.

It will be seen that the arrangement illustrated and described thus provides for an efficient refrigerator having available a plurality of storage spaces of varying temperatures so that food can be stored under any desired conditions.

While Figures 1 and 2 illustrate an arrangement wherein the side units are refrigerated by the circulation of chilled air therethrough from the main or center unit, it is also possible to provide refrigeration for the side units by an arrangement such as is illustrated in Figure 4 wherein there is a partition 62 between the center and side units which is of reduced insulating qualities, so that there is a substantial transfer of heat from the side unit to the center unit. The Figure 4 arrangement provides for cold wall conditions in the side units so that even though there is no exchange of air between the center and the side units, the air in the side units is effectively refrigerated and will circulate therein.

Preferably, in connection with the cold wall arrangement of Figure 4, the shelves 64 of the side units are either in the form of grills or terminate short of the outer wall of the side units, as at 66, and short of the partition 62, as at 68, so that a path for air circulation within the side units is provided. In this manner, efficient cooling of the entire space in each of the side units is provided for.

The refrigerator of the present invention has been illustrated and described as a wall mounted model, and while certain definite advantages obtain from arranging the refrigerator in this manner, it will be evident that most of the inventive features of the refrigerator could be embodied in other arrangements. For example, it is conceivable that a refrigerator according to my invention could be recessed into a wall, or arranged on a floor in a conventional manner, if so desired.

Further, by the provision of supporting rollers or casters on the side units 12 and 14 or on the side and center units, the refrigerator could be made portable so as to be movable from place to place.

An important feature in connection with any of the refrigerator arrangements described above is that, due to the temperature differential which exists between the center unit and side units, the said center unit could be utilized as a freezing space for storing frozen foods, while the storage space of the side units could be maintained at a substantially higher temperature, thereby to be useful for the storing of foods at normal refrigerator temperatures.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions, and, accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. In a refrigerator; a main unit having a storage space and cooling means therein, said cooling means being spaced from one side wall of the unit and dependent from the top wall thereof, a side unit abutting the said one side wall of the main unit and also having a storage space, said units being detachably connected together, the abutting walls of said units having a plurality of registering openings distributed

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thereover to provide for restricted but distributed air circulation between said units, whereby the said cooling means chills both storage spaces, at least one of the said openings being at the extreme top of the storage spaces for the return of air from the said center unit and being as large in effective area as several of the others of the openings taken together, said one opening being longer in the horizontal direction than in the vertical direction.

2. In a refrigerator; a main unit having a storage space and cooling means in the upper end thereof, a side unit abutting one side of said main unit and also having a storage space and with a plurality of shelves, the abutting walls of said units having a plurality of registering openings distributed thereover to provide for restricted but distributed air circulation between said units, at least one of the openings being larger than the others and being adjacent the extreme top of the spaces for the return of air from said side unit to said main unit, and the others of said openings being arranged between said shelves to supply chilled air to each shelf space in the side unit, said shelves being imperforate and extending from the abutting walls of the units toward the opposite wall of the side unit and terminating short of the said opposite wall to provide for lateral circulation of air through the space between the shelves.

3. In a refrigerator; a main unit having a

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storage space and cooling means in the upper end thereof, a side unit abutting one side of said main unit and also having a storage space and with a plurality of shelves, the abutting walls of said units having a plurality of registering openings distributed thereover to provide for restricted but distributed air circulation between said units, at least one of the openings being larger than the others thereof and being adjacent the extreme top of the spaces for the return of air from said side unit to said main unit, and the others of said openings being arranged between and along said shelves to supply chilled air to each shelf space in the side unit, said shelves being imperforate and terminating short of the outside wall of the unit to provide for lateral air circulation through all parts of the side unit.

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