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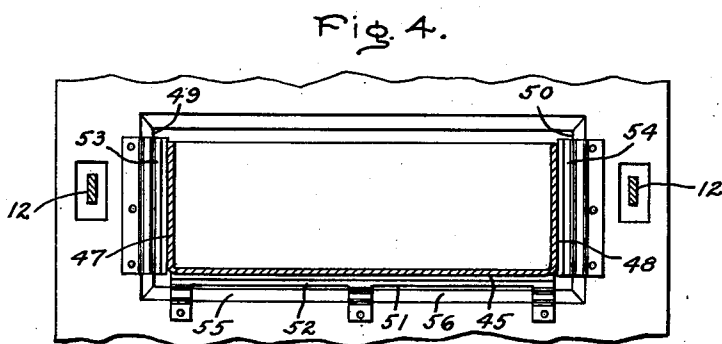
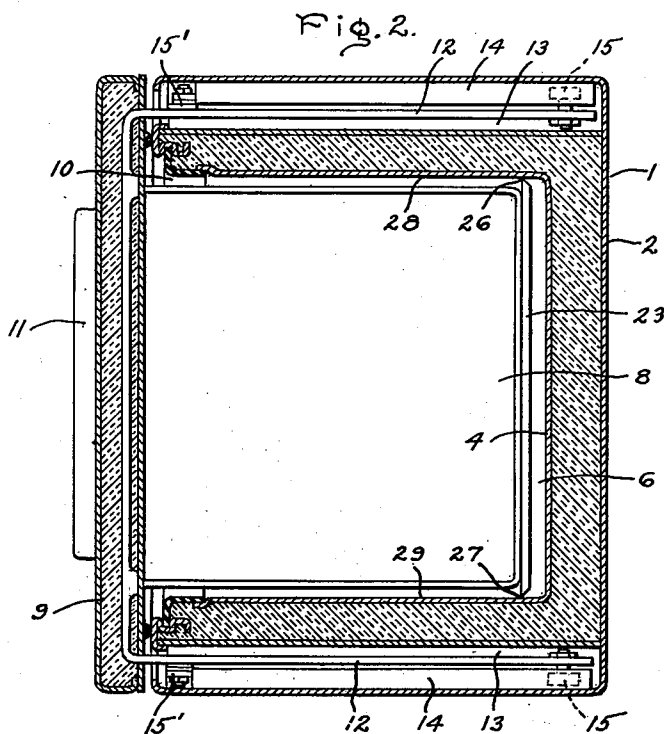
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FROST REMOVING ARRANGEMENT FOR REFRIGERATOR CABINETS

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2 SHEETS—SHEET 2



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FROST REMOVING ARRANGEMENT FOR
REFRIGERATOR CABINETS

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My invention relates to refrigerator cabinets employing sliding drawers and more specifically to frost removing arrangements for such cabinets.

It is sometimes desirable in household refrigerators, for example, in storing frozen foods, to provide a sliding drawer. This drawer may move within a refrigerated compartment or the drawer itself may be refrigerated. In either event, frost forms on the drawer or on the liner of the refrigerated compartment, and this frost may gradually fill the space between the liner and the drawer, retarding the sliding of the drawer. By my invention a portion of the frost so collecting is automatically removed each time the drawer is opened, minimizing the thickness of frost. This permits reduction in clearance between the drawer and the liner, thus enabling the securing of a somewhat larger storage space.

It is an object of my invention to provide a refrigerator cabinet having a sliding drawer and including an improved arrangement for minimizing accumulation of frost.

It is another object of my invention to provide a refrigerator cabinet having a sliding drawer and including an arrangement for removing frost each time the drawer is used.

Further objects and advantages of my invention will become apparent as the following description proceeds and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

In carrying out the objects of my invention, a scraper is arranged either on the drawer or on the cabinet adjacent the drawer for removing the frost each time the drawer is slid out for access thereto. In this way frost is progressively removed as the drawer is used and the total amount allowed to collect at any time is minimized.

For a better understanding of my invention reference may be had to the accompanying drawings in which Fig. 1 is a sectional elevation view of a portion of a refrigerator cabinet illustrating one embodiment of my invention; Fig. 2 is a sectional plan view taken along the line 2—2 in Fig. 1; Fig. 3 is a sectional elevation view of a portion of a refrigerator cabinet illustrating the modified form of my invention; and Fig. 4 is an elevation view taken along the line 4—4 of Fig. 3.

Referring now to Fig. 1, there is shown a refrigerator cabinet 1 including an outer wall 2 and spaced inner walls 3 and 4. The inner wall 3 defines a fresh food compartment, a portion of which is indicated at 5, and the inner wall 4 defines a frozen food compartment 6. The access

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opening of the fresh food compartment is closed by a door 7.

A drawer 8 is slidably received within the compartment 6 and provides a storage space for frozen foods. The drawer includes a front portion 9 which is arranged to close the access opening 10 of the frozen food compartment 6, and a handle 11 is provided for withdrawing the drawer from its compartment. The drawer may be arranged to slide within the compartment 6 in any suitable manner. For example, rails 12 secured to the front portion 9 of the drawer may extend into the space 13 between the inner and outer walls and ride on channels 14 secured to the outer wall 2. Rollers 15 secured to the rails 12 and rolling within the channels 14 and rollers 15' secured to the channels and supporting the rails facilitate easy movement of the drawer. The specific arrangement for slidably mounting the drawer on rails extending into the insulation space between the inner and outer walls is not part of my invention, but is described in detail and claimed in a copending application of Ray Patten, Serial No. 87,984, filed April 16, 1949, and assigned to the assignee of the present invention.

In order to maintain the compartment 6 at a suitable temperature for refrigerating the frozen food in the drawer 8, a refrigerating system is provided. This system is illustrated diagrammatically in Fig. 1 and includes a motor-compressor unit 16, a condenser 17, and an evaporator 18. The evaporator consists of tubing 19 secured in serpentine fashion to the exterior of the inner wall or liner 4. Liquid refrigerant is supplied through a restricting tube 20 to the evaporator tubing 19 and vaporized refrigerant is withdrawn from a header 21 through a suction line 22. In order to minimize the collection of frost along the upper portion of a compartment 6 fewer turns of tubing are secured to this portion of the wall 4 so that this portion will run at a slightly higher temperature than the remainder of the wall and hence frost will preferentially collect on the remainder of the wall 4.

Since the wall 4 is maintained at a temperature well below 32 degrees Fahrenheit, frost progressively builds up along the interior surface of the wall 4 within the compartment 6. Frost so collecting would eventually fill the space between the wall 4 and the drawer, making it difficult to remove the drawer and rendering it necessary to defrost the compartment completely. In order to minimize the accumulation of frost on the wall 4, I provide a scraper 23 secured to the drawer 8 and adapted to engage the wall 4 along the bot-

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tom and two sides thereof. The edge 24 of the scraper 23 rides along the bottom surface 25 of the frozen food compartment 6 and the edges 26 and 27 ride along the side walls 28 and 29, respectively. Thus, each time the drawer is pulled open for access to the contents thereof, the scraper 23 is automatically moved along the wall 4 of the frozen food compartment and removes the frost which has collected thereon.

In order to catch the frost removed from the wall 4, a receptacle 30 is provided within a machinery compartment 31 beneath the access opening 10 of the frozen food compartment. The receptacle is supported at each side by rails, one of which is shown at 32, which are secured to opposite walls of the machinery compartment 31. A trim piece 33 formed of substantially the same thickness as the front 9 of the drawer is secured to the forward portion of the receptacle 30 to provide a pleasing appearance, and a handle 34 is provided on this trim piece for removing the receptacle when desired. Normally the heat within the machinery compartment causes melting and evaporation of any frost collected within the receptacle but it may be necessary occasionally to remove the receptacle for cleaning. An opening 35 is provided in the top 36 of the trim piece for permitting frost forced over the edge 37 of the access opening to fall into the receptacle 30.

In Figs. 3 and 4 there is shown a modified form of my invention in which the drawer is refrigerated, and the scraper is mounted on the cabinet for removing frost collecting on the exterior of the drawer. The same numerals have been used to designate corresponding parts in Figs. 3 and 4 and in Figs. 1 and 2. Referring now to Figs. 3 and 4, there is shown a drawer 38 which is mounted for sliding movement within the frozen food compartment 6 in the same manner as the drawer 8 shown in Figs. 1 and 2. The drawer is refrigerated by refrigerating apparatus including the motor-compressor unit 16 and the condenser 17. A plurality of turns of evaporator tubing 39 are secured to the exterior of the rear wall 40 of the drawer and a plurality of turns of evaporator tubing 41 are also secured to a shelf 42 within the drawer for refrigerating the contents thereof. In order to permit sliding movement of the drawer the liquid line 20 is provided with a flexible coil portion 43 and the suction line 22 similarly provided with a flexible coil portion 44.

Since temperature of the drawer is maintained well below 32 degrees Fahrenheit frost gradually collects on the wall of the drawer 38. This frost would gradually build up until it filled the space between the bottom wall 45 of the drawer and the bottom portion 46 of the inner wall 4 and also the space is between the side walls 47 and 48 of the drawer and the side wall portions 49 and 50, respectively, of the inner wall 4. This accumulation of frost would make it difficult to slide the drawer and would necessitate defrosting of the frozen food compartment. In order to minimize the collection of frost on the drawer and hence to reduce the frequency of defrosting, I provide a scraper 51 secured to the cabinet adjacent the access opening 10 of the frozen food compartment 6. The scraper 51 includes a portion 52 along the lower edge of the access opening for engaging the bottom wall 45 of the drawer and portions 53 and 54 extending upwardly along the sides of the access opening for engaging the walls 47 and 48, respectively, of the drawer. Thus, each time the drawer is moved for access to the

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contents thereof, frost is scraped from the bottom and two side walls of the exterior of the drawer. In order to permit the frost so removed to fall into the receptacle 30, openings 55 and 56 are provided in the lower portion 52 of the scraper. The scraping edge of the scraper is positioned forwardly of the front face 57 of the cabinet so that frost removed from the drawer may fall through the openings 55, 56, past the face 57 of the cabinet, and into the receptacle 30.

While I have shown and described specific embodiments of my invention, I do not desire my invention to be limited to the particular constructions shown and described, and I intend by the appended claims to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A refrigerator cabinet including an outer wall, a spaced inner wall defining a compartment, a drawer slidably received within said compartment, means adjacent said inner wall for cooling said compartment, said inner wall being maintained at a temperature on which frost forms thereon, and a scraper secured to said drawer for scraping frost from said inner wall when said drawer is moved.

2. A refrigerator cabinet including an outer wall, a spaced inner wall defining a compartment, said compartment having an access opening at the forward end thereof, a drawer slidably received within said compartment and having a portion for closing said access opening, means for cooling said compartment, said compartment being maintained at a temperature at which frost forms therein, a scraper arranged to engage said frost when said drawer is moved relative to said compartment for removing said frost, and a receptacle positioned below said access opening and extending forwardly thereof of said compartment for receiving said removed frost.

3. A refrigerator cabinet including an outer wall, a spaced inner wall defining a food storage compartment, a machinery compartment disposed below said food storage compartment, a drawer slidably received within said food storage compartment and having a portion for closing said access opening, means for cooling said food storage compartment, said food storage compartment being maintained at a temperature at which frost forms therein, means arranged to engage said frost when said drawer is moved relative to said food storage compartment for removing said frost, and a receptacle disposed within said machinery compartment below said access opening of said food storage compartment for receiving said removed frost.

4. A refrigerator cabinet including an outer wall, a spaced inner wall defining a compartment, said compartment having an access opening at the forward end thereof, a drawer slidably received within said compartment and having a portion for closing said access opening, means for cooling said compartment, said compartment being maintained at a temperature at which frost forms on said inner wall, a scraper secured to said drawer for engaging said frost to remove said frost when said drawer is moved relative to said compartment, and a receptacle positioned below said access opening of said compartment for receiving said removed frost.

5. A refrigerator cabinet including an outer wall, a spaced inner wall defining a food storage compartment, a machinery compartment disposed below said food storage compartment, a

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drawer slidably received within said food storage compartment and having a portion for closing said access opening, means for cooling said food storage compartment, said food storage compartment being maintained at a temperature at which frost forms on said inner wall, a scraper secured to said drawer for engaging said frost to remove said frost when said drawer is removed relative to said food storage compartment, and a receptacle disposed within said machinery compartment below said access opening of said food storage compartment for receiving said removed frost.

6. A refrigerator cabinet including an outer wall, a spaced inner wall defining a compartment, said compartment having an access opening at the forward portion thereof, a drawer slidably received within said compartment and having a portion for closing said access opening, means for cooling said drawer, said drawer being maintained at a temperature at which frost forms thereon, a scraper mounted on said cabinet adjacent said access opening and engaging said drawer forwardly of the front face of said cabinet for scraping said frost from said drawer when said drawer is moved, and a receptacle positioned below said access opening and extending forwardly thereof for receiving said removed frost.

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7. A refrigerator cabinet including an outer wall, a spaced inner wall defining a compartment, said compartment having an access opening at the forward portion thereof, a drawer slidably received within said compartment and having a portion for closing said access opening, means for cooling said drawer, said drawer being maintained at a temperature at which frost forms thereon, a scraper mounted on said cabinet adjacent said access opening for scraping said frost from said drawer when said drawer is moved, and a receptacle positioned below said access opening for receiving said removed frost, the portion of said scraper adjacent the bottom of said access opening having an opening therein for permitting frost to fall therethrough into said receptacle.

LEONARD W. ATCHISON.

REFERENCES CITED

The following references are of record in the file of this patent:

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