

June 28, 1955

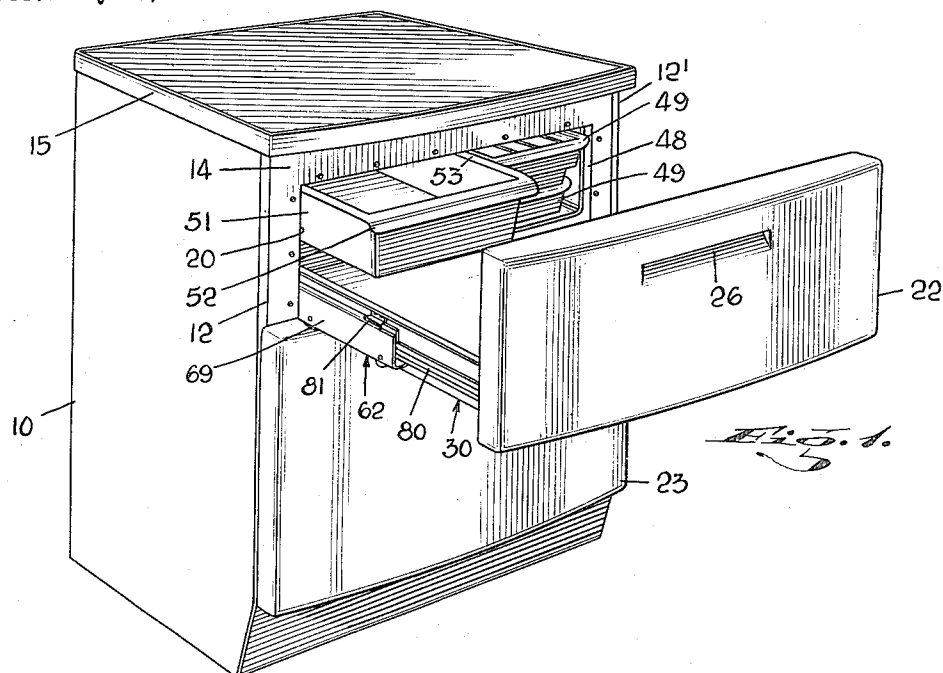
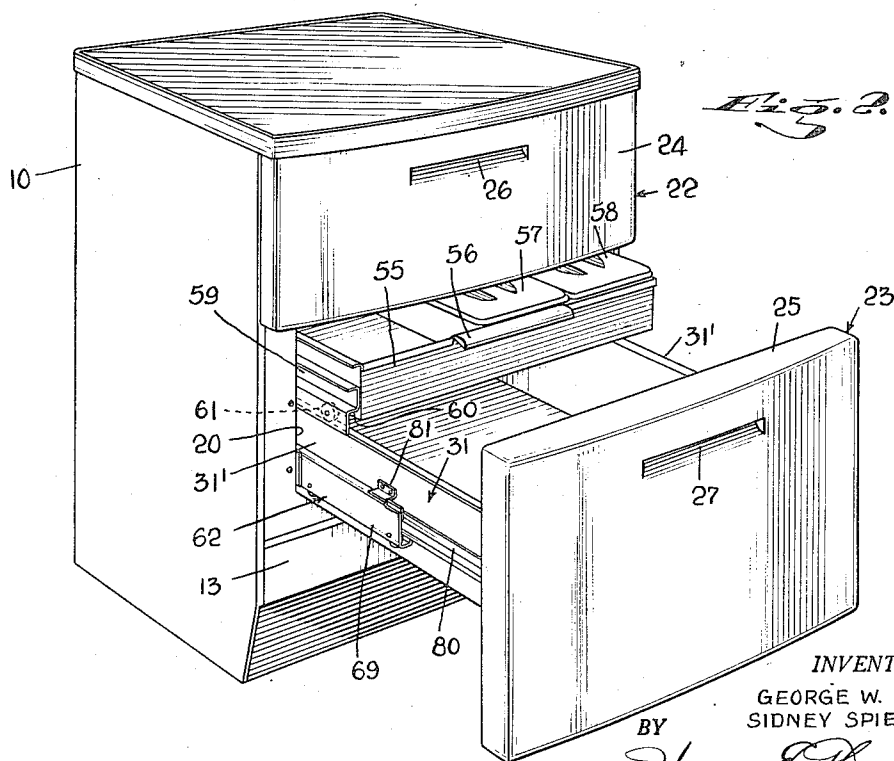
G. W. MEEK ET AL

2,711,944

REFRIGERATOR DRAWER AND LATCH

Filed May 21, 1949

3 Sheets-Sheet 1



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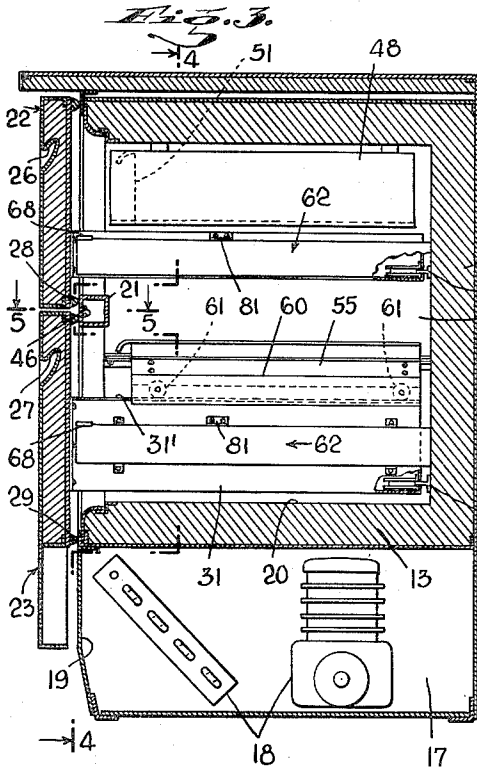
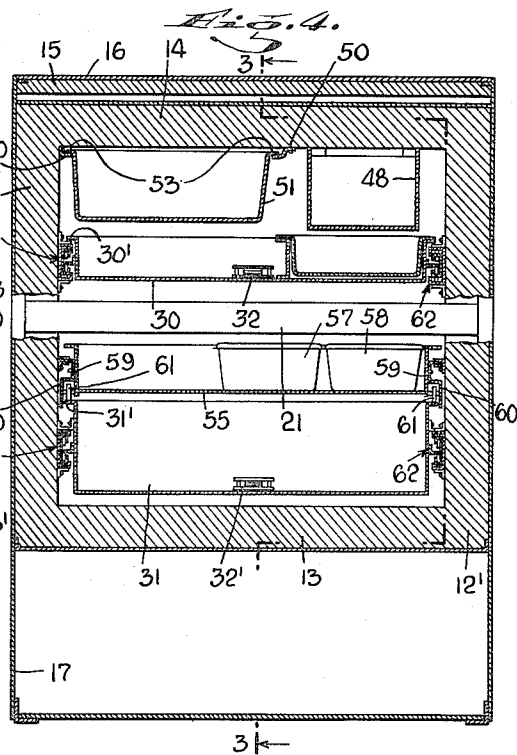
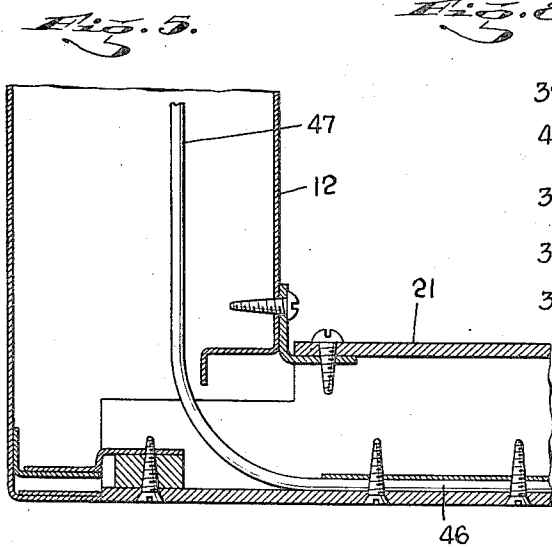
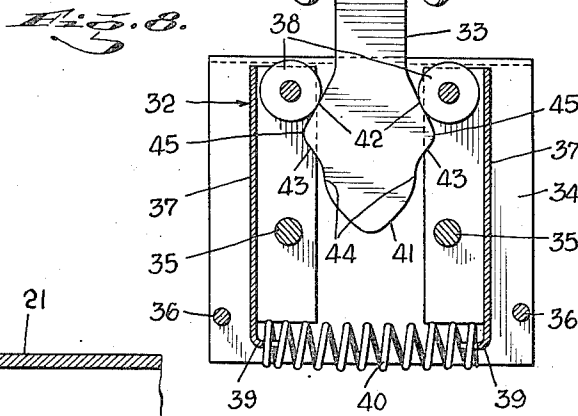
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2,711,944

REFRIGERATOR DRAWER AND LATCH

Filed May 21, 1949

3 Sheets-Sheet 2



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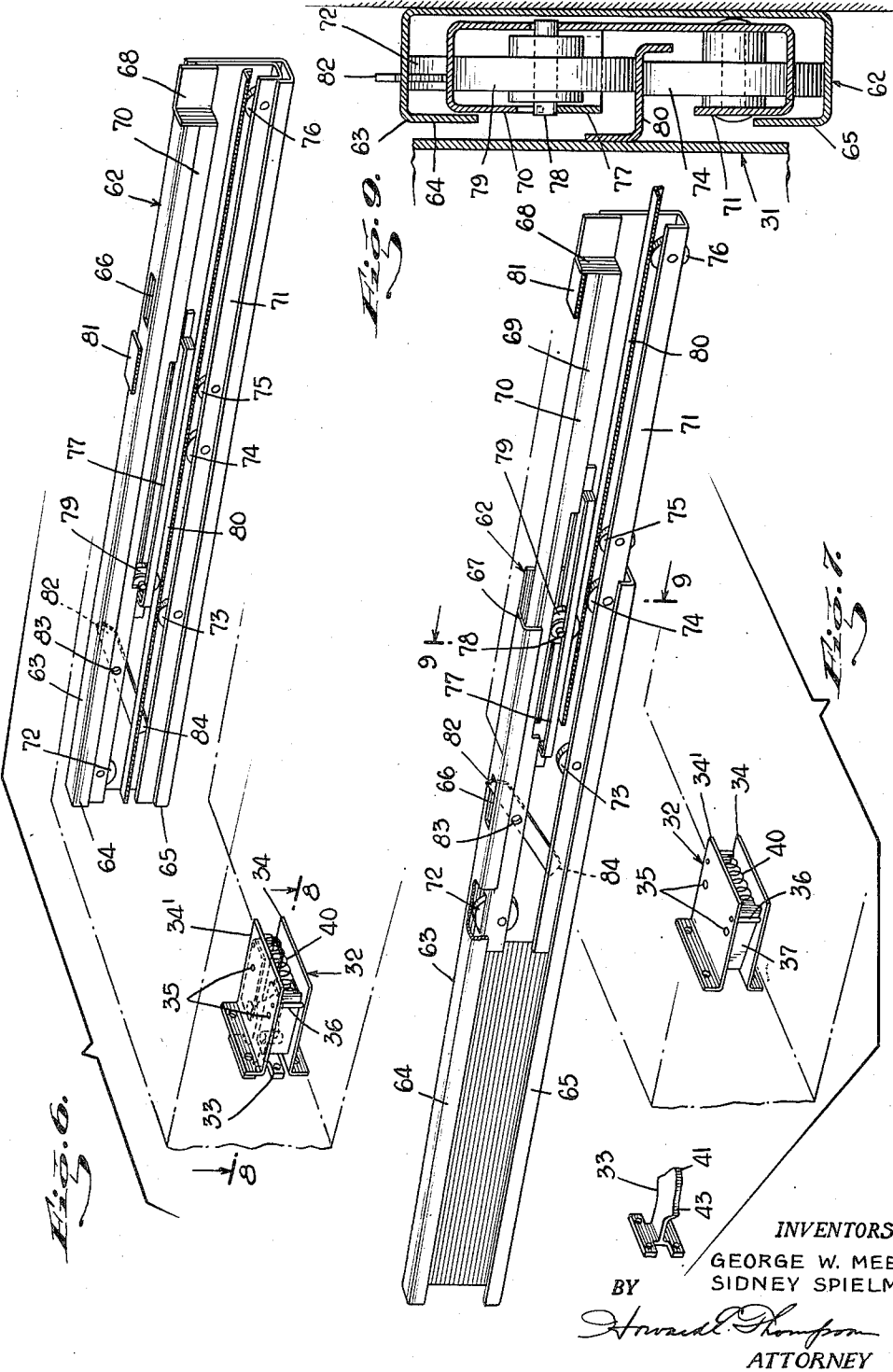
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REFRIGERATOR DRAWER AND LATCH

Filed May 21, 1949

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2,711,944

REFRIGERATOR DRAWER AND LATCH

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Application May 21, 1949, Serial No. 94,606

2 Claims. (Cl. 312—333)

This invention relates to electric refrigerators. More particularly, the invention deals with apparatus of this type and kind, in which the storage areas of the refrigerator are primarily formed by main and supplemental drawers, the main drawers including front wall structures of the refrigerator and the supplemental drawers being moved into extended or collapsed position, when said main drawers are in open position. Still more particularly, the invention deals with a refrigerator, in which the main drawer units of the apparatus have means for automatically moving and holding the drawers in closed latched position and to retain the drawers under tension in the closed position to effect a seal therefor.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawings, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a perspective view diagrammatically illustrating a refrigerator made according to our invention, showing the upper main drawer in open position and illustrating one of the supplemental drawers partly extended.

Fig. 2 is a view similar to Fig. 1 showing the lower main drawer in open position and indicating the supplemental drawer in partially extended position.

Fig. 3 is a vertical sectional view taken through the central portion of the refrigerator with part of the construction shown in side elevation, the section being substantially on the line 3—3 of Fig. 4.

Fig. 4 is a section substantially on the line 4—4 of Fig. 3.

Fig. 5 is an enlarged sectional detail view of one corner portion of the cabinet or framework, the section being on the line 5—5 of Fig. 3.

Fig. 6 is an exploded perspective view showing one of the supporting rail structures of one of the main drawers in the closed position thereof and indicating the latching and holding device.

Fig. 7 is a view similar to Fig. 6 showing the parts in extended position.

Fig. 8 is an enlarged section on the line 8—8 of Fig. 6; and

Fig. 9 is an enlarged section on the line 9—9 of Fig. 7 showing part of one drawer.

In refrigerators of the type and kind under consideration, it has been customary to provide, at the front of the refrigerator, a swinging door or doors for controlling access to the storage or refrigerating space of the refrigerator. Refrigerators of this type and kind have been employed with pull-out trays to render the stored products more accessible but refrigerators of the type and kind have been objectionable from the standpoint of service use thereof in bringing the food products in a quick and easy manner to a point readily accessible to the user.

To overcome objectionable features to apparatus of the type and kind under consideration, we have employed

a refrigerator incorporating two primary drawers, that is to say, an upper drawer and a lower drawer, controlling the large part of the storage space or area of the refrigerator so that, in pulling-out either of these drawers, the food or other products supported thereon are brought into accessible position for the user. The one advantage of this particular construction lies in the fact that the various stored products can be readily seen and can be removed without disturbing other products arranged on the drawers. Further, a refrigerator of this type and kind has the additional advantage of exposing only that part of the storage chamber or the products thereon as occupied by the drawer which is extended, thus minimizing the lowering of the temperature. Still further, supplemental drawers are employed which can be retained within the storage compartment of the refrigerator when the main drawers are extended or pulled-out as and when either of the main drawers are extended. In other words, with refrigerators of the kind under consideration, the main drawers will have thereon the food products which are used or required most generally; whereas, the other supplemental drawers will provide storage for the products which are used only from time to time.

In the accompanying drawing, we have shown one adaptation of our invention and, in Figs. 1 and 2, 10 represents the main box or cabinet of the refrigerator. This box or cabinet is defined by an insulated back wall 11, note Fig. 3, insulated side walls 12, 12', an insulated bottom wall 13 and insulated top wall 14 and, on the top wall is a top or table member 15, preferably having a surface facing 16 of plastic or other materials, so that the top of the refrigerator can be used as a table top in conjunction with other cabinets as a kitchen ensemble. In this connection, it will be understood that it will be preferable to have the table top 15—16 of a height to be flush with standard types of kitchen utility cabinets.

The side walls of the cabinet, including the back wall, have lower extensions to form a chamber or compartment 17, note Fig. 3, in which the electrical equipment or refrigerating unit is arranged, parts of this unit being diagrammatically indicated at 18 in said figure. The compartment 17 is closed by an inwardly set front wall portion, which provides, at the front of the cabinet, a toe clearance, as common with other kitchen cabinets of the type and kind under consideration.

Our invention does not deal specifically with any particular insulation or facings of the walls of the cabinet and, from this standpoint, the present illustration is diagrammatic. However, the compartment 20 of the refrigerator opens through the front of the cabinet and this compartment, at the open end, is divided by a transverse mullion 21 which, in conjunction with the front facings of the top, bottom and side walls, forms stops for limiting inward movement of the upper and lower drawers 22, 23 or the insulated wall portions 24, 25 thereof. These front wall portions 24 and 25 have recessed undercut grooves centrally of the upper portion thereof, as seen at 26, 27, to form finger-grips facilitating movement of the drawers into open position. Bordering the inner faces of the front wall portions 24, 25 of the drawers 22, 23 are conventional sealing strips 28, 29, note Fig. 3, which are adapted to strike-up against the front edges of the top, bottom and side walls, and the mullion 21 in effecting a seal of the drawers to render the compartment 20 airtight.

The drawer 22 has a shallow pan or tray portion 30; whereas the lower drawer 23 has a deep pan or tray portion 31. These pan or tray portions have laterally extending side flanges at the upper edges thereof, as seen at 30' and 31', respectively. Secured in the lower portion of the trays or pans 30, 31, at the inner ends thereof, are latch casings 32, 32'. As each of these latch casings

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are of the same construction, only one thereof will be specifically described and these casings are shown in detail in Figs. 6, 7 and 8 of the drawing. These latch casings are adapted to operate in conjunction with tongue-like latch members or elements 33, 33', secured to and projecting inwardly from the back wall 11 of the cabinet and one of these latch members is shown in detail in Figs. 7 and 8 and, as both are the same, only one will be specifically described.

Each latch casing comprises a pair of flanged plates 34, 34' which are secured together and spaced apart by pivot pins 35 and stop pins 36, note Fig. 8. Mounted on the pivot pins, within the plates 34, 34', are levers 37, supporting at their inner ends rollers 38 which are arranged in and protrude from channel portions of the levers 37, as clearly seen in Fig. 8 and are exposed at the inner flanged ends of the plates 34, 34'. The outer ends of the levers 37 have projecting hook-shaped members 39 which provide supports for a spring 40, tensioned to normally urge the rollers 38 toward each other. In other words, when the drawers are in open position and disengaged from the latch 33, the spring 40 will support the adjacent ends of the levers 37 upon the stop pins 36, maintaining the rollers 38 in a closely spaced relationship to each other and sufficiently spread to receive the contracted or converging end 41 of the latch. The latch has, at opposite sides, what may be termed wing portions defined by bevelled outwardly diverging walls 42 and other bevelled or converging walls 43, the latter joining the contracted portion in slightly tapered converging side wall portions 44. The purpose of the latter wall portion is to ease outward movement of the drawer so as to prevent a sudden jumping action of the drawer, as the rollers 38 pass over the enlargements 45 and then over the surfaces 43. The walls 44 may be said to comprise check-walls to ease the unlatching action of the drawers. At this time, it will also be understood that, when the drawers are in the closed position, the rollers 38 are disposed substantially midway upon the bevelled or diverging cam-surfaces 42; thus tensionally supporting the drawers or the sealing strips 28, 29 thereof upon the front wall surfaces of the cabinet, as well as the mullion 21. In other words, the action upon the drawers is the tendency to pull the same inwardly after the rollers have passed-over the ends 45; that is to say, when the drawer is moved into closed position, it is only essential to move the drawer to a position where the rollers 38 pass over the enlargements 45, after which the drawers are moved automatically into their closed and sealed positions. It will clearly appear, from a consideration of Fig. 8, that the latch elements 33 have, inwardly of the diverging edges 42, a relatively long reduced neck, which provides free action of the rollers 38, in the manner described.

Considering Fig. 5 of the drawing, it will be seen that a suitable electric coil 46 is disposed in the mullion, the coil being simply diagrammatically illustrated and the wires 47 leading to the coil will pass through the wall 12 and extend to the current supply which is disposed in the chamber 17. The details of this installation are not shown, as they form no particular part of the invention. The coil used is simply to provide a slight amount of temperature at the mullion to prevent sweating.

In the upper portion of the compartment 20 and arranged above the pan or tray 30 and, at the right side thereof, is the usual ice-freezing box or casing 48, in which ice-cube trays, as at 49, note Fig. 1, are adapted to be arranged. To the left of the casing 48 and slidably supported on cleats 50 secured to the top wall 14 is a pan or tray 51, having, at its outer end, a downwardly turned fingerpiece portion 52, note Fig. 1, by means of which the same can be drawn inwardly and outwardly by hand, whenever desired. The tray 51 has laterally extending flanges 53 which slide upon the cleats 50. It

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will be understood that the pan or tray 51 may be detached from the refrigerator, if desired.

Secured to the inner surfaces of the side walls 12, 12' of the cabinet, note Fig. 4, are channel cleats 54 for support and guidance of another shallow tray or pan 55 extending the full width of the compartment 20 and disposed over the tray or pan 31. The tray or pan 55 has, centrally thereof, a fingerpiece portion 56 facilitating manual operation thereof. This tray or pan may be divided into separate compartments and two of these compartments may be controlled by cover portions, as at 57, 58, note Fig. 2.

Secured to the side walls of the tray or pan 55 are flanged rails 59, the flanges of which operate in the channelled cleats 54, the rails also having a downwardly extending and outwardly offset portion 60, supporting longitudinally spaced rollers 61 which are adapted to slide-over the flanges 31' of the tray or pan 31 to provide further support and ease of operation of the tray or pan 55. This construction is shown clearly in Fig. 4 of the drawing.

Supported on the inner surface of the side walls 12, 12' in alinement with side edges of each of the pans 30, 31 are drawer slide units, all of which are of the same construction and these units are generally located by the reference character 62 in Fig. 4 of the drawing and one of these units is shown in perspective detail in Figs. 6 and 7 of the drawing and in section in Fig. 9. In other words, only one of these units will be described in detail, as the structure of each is the same. Each unit 62 comprises a fixed channel rail 63 which is secured to the inner surface of the walls 12, 12'. The channel 63 is defined by upper and lower L-shaped rails 64, 65. The upper rail, near the outer end of the unit, has an opening, as at 66, this opening forming part of the latch mechanism for checking outward movement of the drawers, as later described.

The upper part 64 of the channel rail 63 has, at its outer end, a recessed portion 67, note Fig. 7, for reception of an upwardly extending stop wall or flange 68 on a sliding channel rail 69, having upper and lower L-shaped rail portions 70 and 71. Pivoted at the rear end of the rail portion 70 is a roller 72, which operates upon the inner surface of the L-shaped rail 64 in the sliding movement of the drawer.

Rotatably mounted in the bottom L-shaped rail 71 of the sliding rail 69 are four rollers 73, 74, 75 and 76 positioned substantially, as seen in Fig. 7 of the drawing. Centrally of the sliding rail 69 and projecting from the inner surface of the rail is an elongated strap 77, upon which the shaft 78 of another floating roller 79 is adapted to bear. The roller 79 is adapted to move along the rails within the limits of the strap 77 and bears upon the upper surface of an outwardly extending flange or rail 80 secured to the tray. The flange or rail 80 is shown in section in Figs. 6 and 7 and it will also appear that the rollers 73, 74, 75 and 76 form supports for the rail 80. The rollers 73, 74, 75 and 76 also are supported upon and move over the upper surface of the bottom rail 65 of the fixed rail 63. In referring to the rail portions 64, 65, 70 and 71, these may be also regarded as channel portions of the rails from a descriptive standpoint. At this time, it is also well to point out that we prefer to use plastic-type of rollers to give the required support to render the operation of the drawers silent and to avoid the use of lubrication. This type of rollers avoids difficulties, as would be experienced if metallic rollers were used.

The flange or rail portion 80 is shown in cross-section in Fig. 9 of the drawing and to this rail portion or to a side of the drawer is attached a stop plate 81, which is adapted to strike against the stop 68 in checking outward movement of the drawer with respect to the rail 69.

Outward movement of the rail 69 with respect to the fixed rail 63 is controlled by a pivoted pawl or stop lever 82 pivoted to the rail 69, as seen at 83, and the

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lower end portion 84 of the pawl 82 is adapted to engage the bottom channel 71 when the pawl moves into the aperture 66. It will be apparent that the end 84 is heavier than the upper latching end of the pawl so that, as the rail 69 moves outwardly, and the upper end of the pawl registers with the opening 66, the pawl will swing to bring its end into engagement with one end wall of the apertures 66, thus checking and blocking outward movement of the rail 69. This usually takes place prior to engagement of the stop 81 with the stop strip or flange 68.

In Figs. 6 and 7 of the drawing, we have shown the fully closed and fully opened positions of the parts. It will be understood, however, that the drawer can be moved to a partially opened position at any time, in which event, neither of the stops may be brought into operation.

In Figs. 6 and 7, the drawer has been diagrammatically outlined in part in dot and dash lines and the relationship of the latching mechanism has also been diagrammatically illustrated. By the use of our improved guide and supporting rails, the drawers will have free and easy sliding movement and will be supported sufficiently to withstand the loads to which the drawers may be subjected in the storage of food.

While the location or arrangement of food in the refrigerator may be left largely to suit the desires of the user, it will be apparent that tall bottled goods, such as milk, soft drinks and the like, will be stored on the bottom tray or pan 31 closely adjacent the front cover of the drawer, so as to clear the forward edge of the tray or pan 55 when the latter and the drawer are in fully closed position. The clearance for the tall bottled goods will appear from a consideration of Fig. 2 of the drawing, in which figure, it will be seen that the tray or pan 55 is considerably shorter in depth than the full depth of the chamber 20.

The lower drawer, tray or pan 31 may also be used for the storage of meats and other food products, including other jar or bottle goods which may be disposed beneath the tray 55. The tray 55 is also adaptable for use in the storage of food products of various kinds and classes and the compartments having the covers 57 and 58 may be used for storage of other food products, where the use of the cover is desirable and practical. The upper drawer or the tray 30 thereof may be utilized for the storage of such products as eggs, butter, bacon and the like, and here again, some types of bottled goods can be disposed at the forward end of the tray in front of the pull-out tray 51, the forward end of which would be positioned somewhat similar to the tray 55. The pull-out tray 51 is designed for use in the storage of vegetables, fruits and the like and is substantially closed by virtue of its close proximity to the top wall 14.

In the use of our improved refrigerator, it will be apparent that, at any time, either one of the drawers 22, 23 can be opened and, in this operation, the trays 51, 55 need not be disturbed. However, when said drawers are in the opened positions, as seen in Figs. 1 and 2, the said trays 51, 55 are accessible to be moved outwardly to place or remove food products with respect thereto and, as previously stated, both trays 51, 55 can be completely removed from the refrigerator.

It will be understood that the refrigerator structure herein disclosed is applicable to refrigerators of various types and kinds, and while an electric type of refrigerator is disclosed, the same would apply to other types of refrigerating units. Furthermore, the cabinet may be varied

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as to size and drawer capacity, the present disclosure portraying the average type of household refrigerating unit.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a refrigerator, an insulated wall cabinet having a single storage compartment opening only at the front of the cabinet to control admission to said compartment, means comprising upper and lower drawers, having insulated door fronts collectively forming a closure for the front opening of the cabinet, vertically spaced tongue-like latch elements at the rear of said compartment, said elements comprising a neck-like portion adjacent the rear of the compartment, diverging side cam surfaces extending outwardly from the neck portion, converging side surfaces extending forwardly from said diverging cam surfaces, and the inner end of the drawers having tensioned latch devices having means engaging both diverging cam surfaces of said elements in urging the drawers into and holding the same in closed position upon the cabinet.

2. In a refrigerator, an insulated wall cabinet having a single storage compartment opening only at the front of the cabinet to control admission to said compartment, means comprising upper and lower drawers, having insulated door fronts collectively forming a closure for the front opening of the cabinet, vertically spaced tongue-like latch elements at the rear of said compartment, said elements comprising a neck-like portion adjacent the rear of the compartment, diverging side cam surfaces extending outwardly from the neck portion, converging side surfaces extending forwardly from said diverging cam surfaces, the inner end of the drawers having tensioned latch devices, each latch device comprising a pair of pivoted levers, a roller at the free end of each lever, tensional means normally urging the rollers toward each other, and said elements being adapted to be positioned between the rollers of said levers, with the rollers disposed on the diverging cam surfaces of said elements in urging the drawers into and holding the same in closed position upon the cabinet.

References Cited in the file of this patent

UNITED STATES PATENTS

357,943	Stamm	Feb. 15, 1887
839,876	Naery	Jan. 1, 1907
1,348,108	Harden	July 27, 1920
1,749,217	Heelan	Mar. 4, 1930
1,761,303	Hunter	June 3, 1930
1,902,795	Wolters	Mar. 21, 1933
1,981,246	Pipe	Nov. 20, 1934
2,000,981	Parsons	May 14, 1935
2,088,719	Pierson	Aug. 3, 1937
2,145,892	Roberts	Feb. 7, 1939
2,157,611	Jones	May 9, 1939
2,174,181	Rand	Sept. 26, 1939
2,187,916	Seeger	Jan. 23, 1940
2,238,635	Fletcher	Apr. 15, 1941
2,276,197	Houston et al.	Mar. 10, 1942
2,331,529	Wolters et al.	Oct. 12, 1943
2,364,007	Stanton	Nov. 28, 1944
2,376,325	Borchers	May 22, 1945
2,389,056	Jamison	Nov. 13, 1945
2,443,787	Earle	June 22, 1948
2,539,893	Cooper	Jan. 30, 1951
2,573,272	Petkwitz	Oct. 23, 1951
2,594,582	Quinn	Apr. 29, 1952