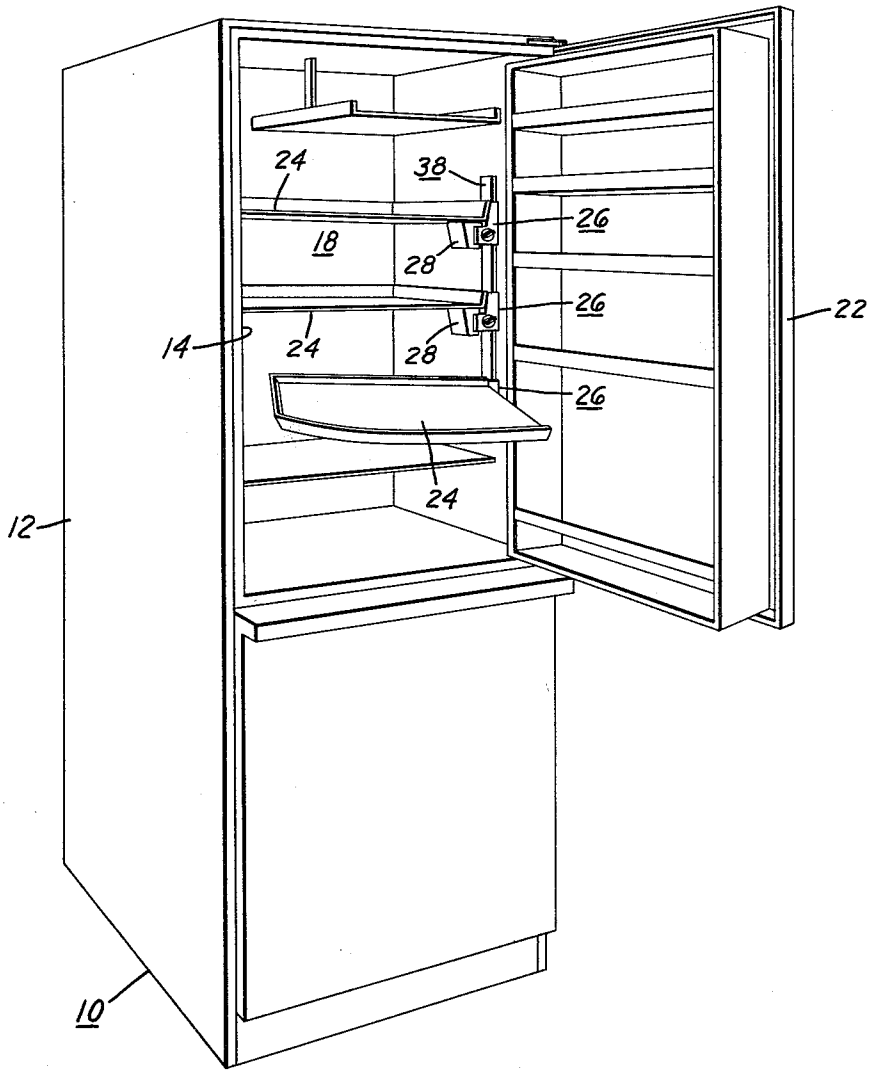
May 25, 1965 G. L. GILBERT 3,185,116

REFRIGERATING APPARATUS

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Fig. 1



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REFRIGERATING APPARATUS

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Fig. 2

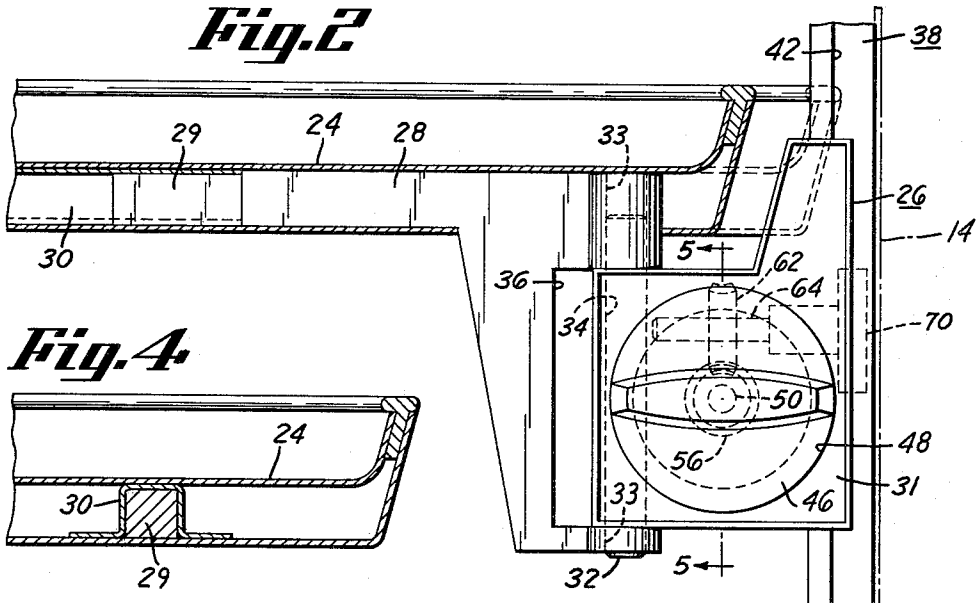


Fig. 4

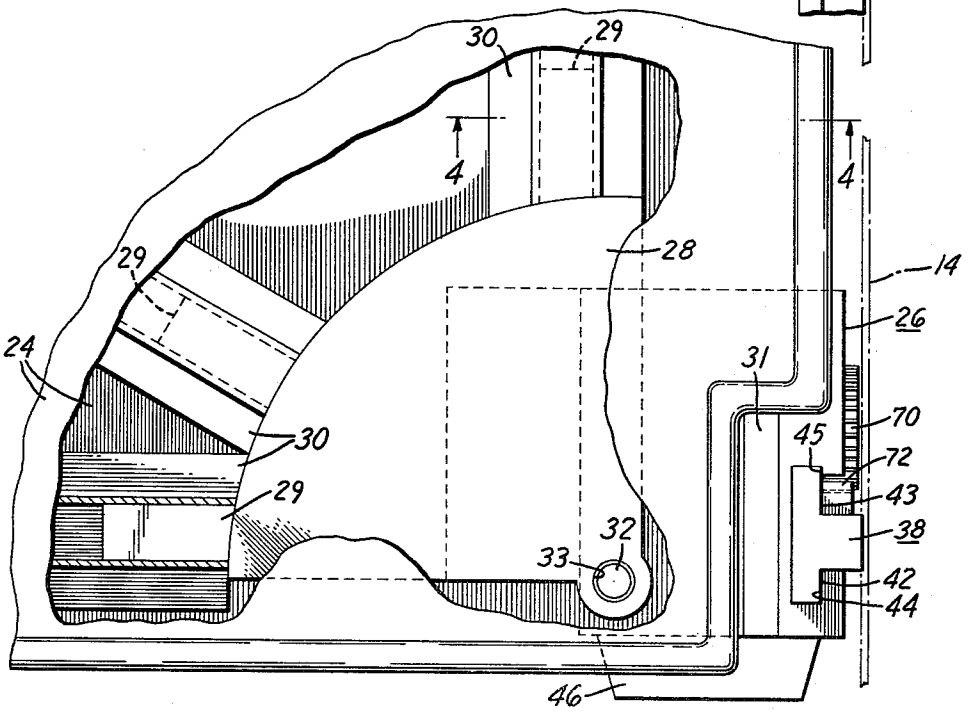


Fig. 3

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Fig. 6

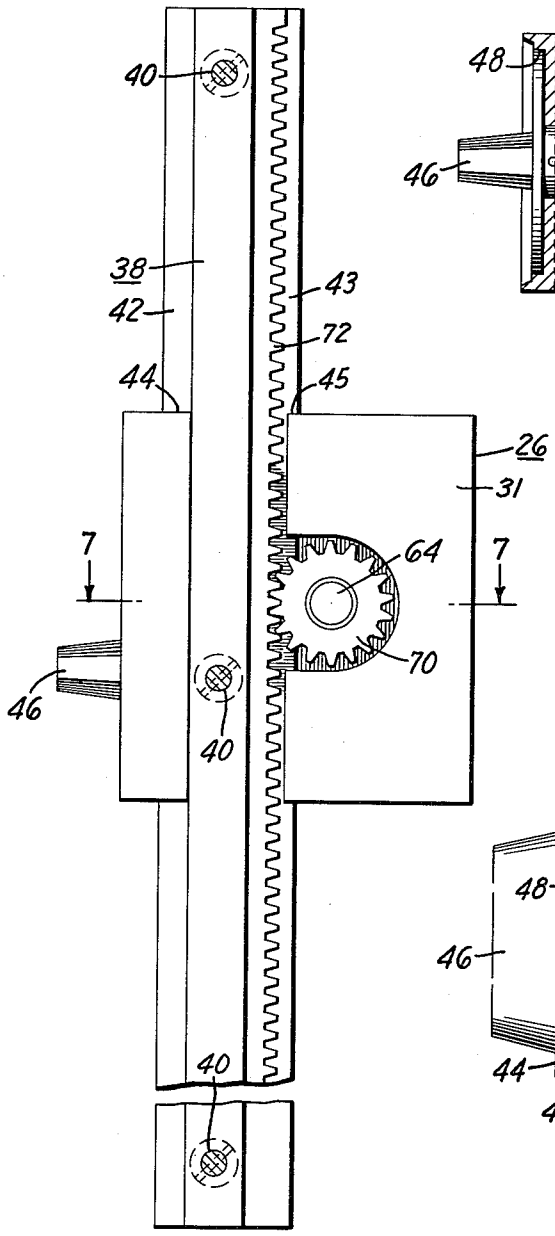


Fig. 5

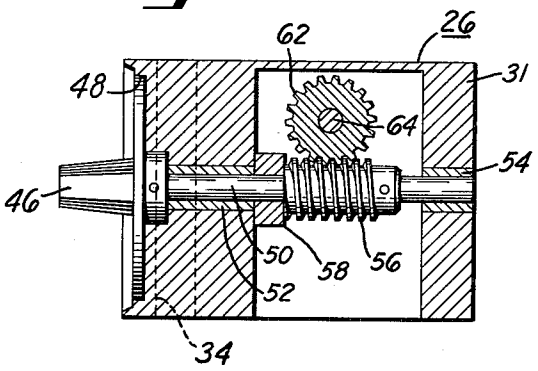
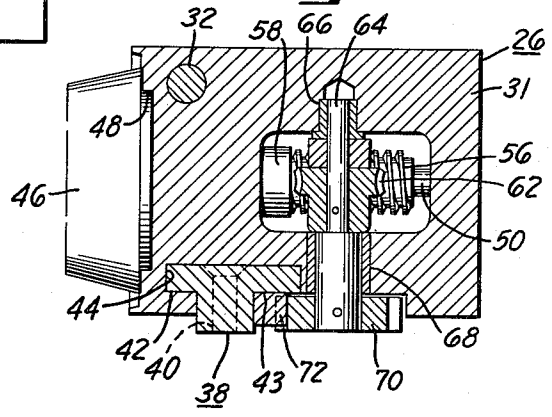


Fig. 7



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REFRIGERATING APPARATUS

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1 Claim. (Cl. 108—141)

This application relates to refrigerators and more particularly to an adjustable shelf arrangement in the food storage compartment thereof.

Objects of the present invention are to provide an unusually compact shelf adjusting mechanism for vertically adjusting a shelf within a compartment such as the food storage space of a refrigerator or the like, without removing the shelf from or extending the same outwardly of the compartment.

Another object is to provide a shelf adjusting mechanism including an actuator on one side only of the shelf for moving it into one of a plurality of vertical positions without tilting the shelf.

Still another object is to provide such shelf adjusting mechanism which is associated with a cantilevered shelf including means in association therewith for effecting pivotal movement of the shelf outwardly of the compartment; and to provide such a shelf adjusting mechanism including a single knob for actuating the operative parts thereof so as to produce a desired vertical adjustment of the shelf.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

FIGURE 1 is a view in perspective of a refrigerator cabinet including the present invention;

FIGURE 2 is a fragmentary view in front elevation of the present invention;

FIGURE 3 is a fragmentary plan view partially broken away of the present invention;

FIGURE 4 is a view in vertical section taken along the line 4—4 of FIGURE 3;

FIGURE 5 is a view in vertical section taken along the line 5—5 of FIGURE 2;

FIGURE 6 is a view in side elevation of the invention; and

FIGURE 7 is a view in horizontal section taken along the line 7—7 of FIGURE 6.

Referring now to the drawings, for purposes of illustrating the invention, a household type refrigerator cabinet **10** is shown in FIGURE 1 comprising an outer shell or panel **12** and an inner liner **14** forming the top, bottom, back and upright side walls of a food storage space **18** within the refrigerator cooled by an evaporator of a closed refrigerating system (not shown). A door **22** normally closes an opening in the front of the refrigerator cabinet.

In FIGURE 1 it can be seen that a plurality of shelves **24** are formed as cantilevers supported at one corner thereof by improved lifting mechanisms and shelf brackets **26** supported on the side wall of the liner **14** in an out of the way location in the food storage space **18**. More particularly, in the preferred embodiment, each shelf **24** is supported by a bracket or pivot block **28** having fingers **29** directed radially outwardly of the top surface thereof fitting into channels **30** in the base of the shelf **24** at one corner thereof, as best shown in FIGURES 2 and 3, for securing the shelf **24** against tilting with respect to the lifting mechanism and shelf bracket arrangement **26**. The pivot block **28** is connected to a bracket portion **31** of the lifting mechanism **26** by means of a pin **32** extending through aligned openings **33, 34** in the pivot block **28** and

bracket **31**, respectively, and the block **28** is recessed at **36** to be freely pivoted relative to the lifting mechanism and shelf bracket **26** whereby the shelf **24** can be swung outwardly of the food storage compartment **18** as illustrated in FIGURE 1.

Each lifting mechanism and shelf bracket **26** is associated with an elongated, substantially vertically extending rack **38** secured to one of the upright side walls of the inner liner **14** adjacent the front of the refrigerator by suitable fastening means such as screws **40** with said rack having tracks formed at **42, 43** on either side thereof interlockingly engaged with channel portions **44, 45** in the bracket portion **31** of the lifting mechanism **26** for slidably supporting it for vertical movement therealong.

The lifting mechanism **26** further comprises a knob **46** disposed on the front face of the bracket **31** in a recess **48** formed therein and a shaft **50** connected to and extending from the rear face of the knob being rotatably supported in the bracket **31** by means of sleeve bearings **52, 54** on either end thereof (see FIGURE 5). The intermediate portion of the shaft **50** is formed as a worm gear **56** held in spaced relation with the bracket **31** by means of a spacer **58** rotatably mounted on the shaft **50** and located in axial abutment with the bracket **31** and one end of the worm gear **56**. The worm gear **56** operatively engages a gear **62** secured to a cross shaft **64** directed transversely of the bracket **31** having the ends thereof rotatably journalled therein by means of sleeve bearings **66, 68**. The outboard end of the shaft **64** is secured to a pinion **70** that engages teeth **72** on the inside surface of the rack **38**, whereby rotation of the knob **46** will drive the gears **56, 62** and pinion **70** to move the bracket **31** vertically of the rack **38** so that the cantilevered, nontilting shelf **24** secured to the bracket **31** will be moved into one of a plurality of vertical positions within the food storage compartment **18** depending upon the desires of an individual user.

The shelf **24** is free to pivot about the shelf bracket **31** of the lifting mechanism **26** throughout the vertical movement of the bracket **31** on the rack **38** and in all positions the mounting of the pivot block **28** on the bracket **31** is such that the cantilevered shelf **24** is held against nontilting relative to a substantially horizontal plane. Thus, food or the like supported by the adjustable shelf arrangement of the present invention is always readily accessible and furthermore, will not tip or spill during the vertical adjustment.

While the embodiment of the present invention, as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

A vertically adjustable pivotal shelf structure for use in a refrigerator cabinet comprising, an elongated rack adapted to be fixedly secured to a side wall of the refrigerator cabinet, a housing slidably supported on said rack, a shelf cantilevered outwardly from said housing, means connecting said shelf to said housing for pivoting said shelf relative to said housing, said housing having a front face, a knob supported on said front face, a first shaft rotatably supported by said housing having one end thereof fixedly secured to said knob, means forming an opening interiorly of said housing, actuator means located within said opening including a worm element fixedly secured to said first shaft for rotation therewith and a gear having the teeth thereof meshed with said worm, a second shaft directed transversely of said first shaft having the ends thereof rotatably supported by said housing, said second shaft being fixedly secured to said gear, said second shaft having an end extension thereon directed exteriorly of said housing, a drive gear fixedly secured to said shaft extension having the teeth thereon meshing with the teeth of said rack whereby upon rotation of said

knob said housing and shelf are vertically adjusably positioned with respect to said rack within the refrigerator cabinet.

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