April 29, 1969 K. K. KESLING 3,441,331

GLIDING SHELF

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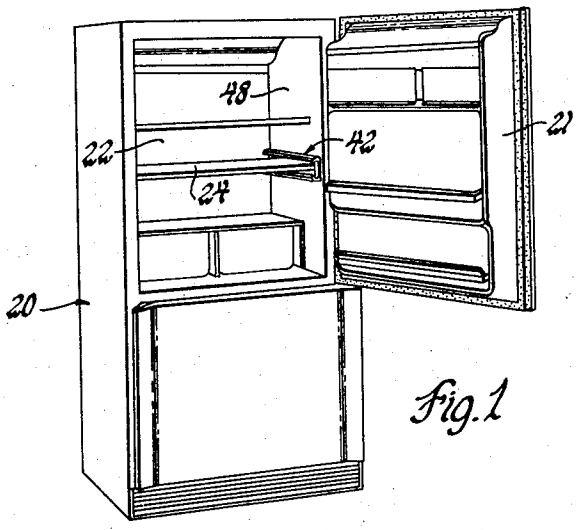


Fig. 1

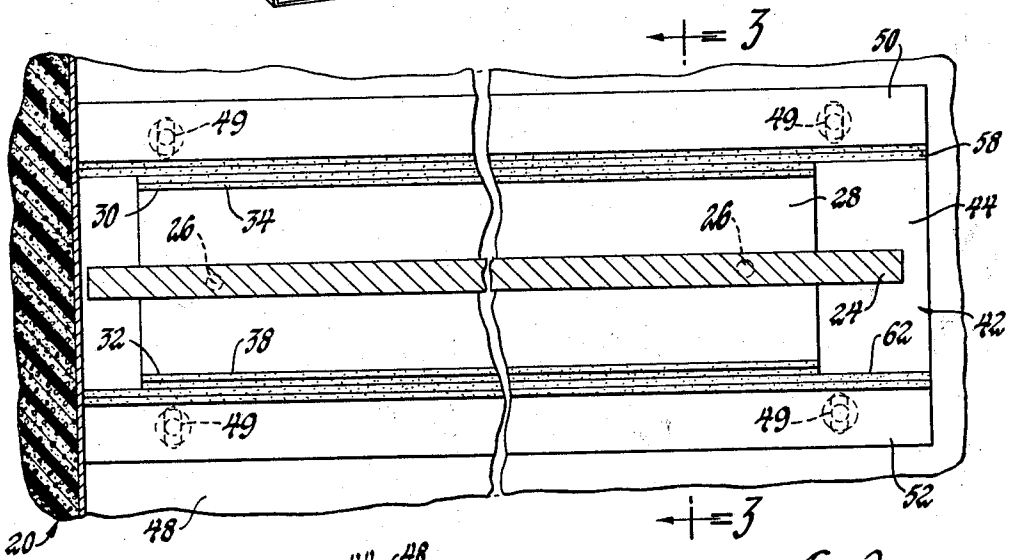


Fig. 2

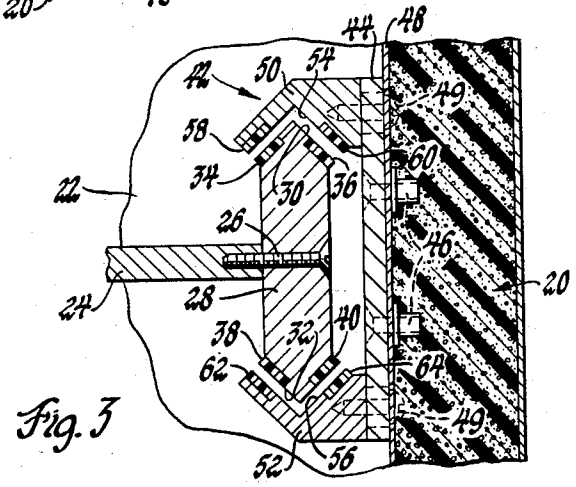


Fig. 3

INVENTOR.
Keith K. Kesling
BY
Carl A. Sickel
ATTORNEY

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GLIDING SHELF

Keith K. Kesling, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

In the preferred form, a refrigerator cabinet is provided with a laterally movable shelf supported on opposite sides thereof in glideways by magnetic repulsion. Each side of the shelf has a glide member with beveled upper and lower faces which are fitted with magnetic strips. The side walls of the refrigerator cabinet are provided with glideways having complementary beveled surfaces also provided with magnetic strips. The magnetic strips are magnetized in such a way as to provide like poles creating the repulsion which provides the floating of the glide members by magnetized repulsion within the glideway supports.

This invention relates to glideways employing magnetic repulsion for movement substantially without friction.

Glideways provided with rollers and other types of slidable supports have been used for lateral movement of shelves and drawers. These have variable amounts of friction. Some have very high starting friction which may cause the spilling of liquids from their containers. Therefore, with many of these shelves it is undesirable to place open containers containing liquids thereon if they are to be moved.

It is an object of this invention to provide a laterally movable shelf or other laterally movable device with suitable glide members and glideways in which the friction is substantially eliminated by magnetic repulsion supports.

It is another object of this invention to provide magnetic repulsion glides and glideways which are simple, inexpensive and keep the glide members in proper alignment on the glideways at all times.

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 perspective view of a refrigerator cabinet with the food compartment door open illustrating a symmetrical laterally movable shelf embodying one form of my invention;

FIGURE 2 is a fore and aft vertical sectional view through the shelf looking toward the one glide and glideway; and

FIGURE 3 is a fragmentary vertical sectional view taken along the line 3—3 of FIGURE 2.

Referring now to the drawings, and more particularly to FIGURE 1, there is shown a refrigerator cabinet **20** with a door **21** open showing a food compartment **22** provided with a laterally movable shelf **24**. As indicated in FIGURES 2 and 3, the opposite sides of the symmetrical laterally movable shelf **24** have fastened thereto by the screws **26** the glide members **28** which are shorter than the front to rear measurements of the shelf **24**. The glide members **28** are positioned vertically and have their upper and lower edges **30** and **32** beveled forming a protruding V-shape to provide an included angle of slightly less than 90°. The outer portions of each of the beveled

surfaces are notched to receive the thin rectangular magnetic strips **34**, **36**, **38** and **40** which preferably are bonded in place by a suitable adhesive such as a rubber to metal adhesive. These magnetic strips may take various forms. As one example, these strips may be made of magnetic iron powder which is bonded together by elastomeric material such as one of the forms of synthetic rubber.

Each glideway **42** includes a plate **44** fastened by the screws **46** to the side walls **48** of the compartment **22**. Fastened by the screws **49** to this plate **44** are the upper and lower rails **50** and **52**. The lower face **54** of each of the upper rails **50** is provided with a recessed V-shaped bevel which is complementary to the projecting V-shaped bevel forming the upper face **30** of the glide member **28**. The lower rails **52** likewise are provided on their upper faces with V-shaped bevels **56** which are complementary to the V-shaped bevels **32** of the glide member **28**. The upper rails **50** have their beveled surfaces notched at their outer edges to receive the magnetic strips **58** and **60**. These strips preferably are of the same magnetic material as the strips **34** and **36** and are similarly fastened in place by a suitable adhesive. These strips are preferably magnetized so that all of the north poles are on the lower edges of the strips while all of the south poles are on the upper edges of the strips.

The lower rails **52** similarly have the upper edges of their V-shaped surfaces notched to receive the magnetic strips **62** and **64** which preferably are of the same magnetic material as the magnetic strips **38** and **40**. These magnetic strips **62** and **64** also are held in place by a suitable adhesive. These strips are preferably all provided with the same pole arangement, such as by making the upper edges of all of the magnetic strips north poles and the lower edges of all of the magnetic strips south poles. These magnetic strips should be magnetized sufficiently to provide a magnetic repulsion between the strips on the glide member **28** and the magnetic strips on the upper and lower rails **50** and **52** sufficiently powerful to cause a strong enough repulsion to support the shelf **24** with a maximum load thereon without actual contact between the glide member **28** and the rails **50** and **52**. This type of support will provide virtually frictionless movement without any of the parts having moving or starting friction so that the shelf **24** may be moved substantially without effort. If open containers containing liquids are placed on this shelf, the shelf can be moved slowly enough at all times so that the liquid will not spill.

Magnetic strips such as are made in large quantities for magnetic door seals are satisfactory. The arrangement is simple and easy to manufacture. The magnetic strips are preferably bonded in place by suitable rubber-to-metal adhesives. However, they may be fastened by fastening devices of any type desired.

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

I claim:

1. In combination, a support, a glideway mounted upon said support, a laterally movable shelf provided with a glide member guided by said glideway, a first magnetic means supported by said glideway and extending longitudinally thereon, a second magnetic means extending longitudinally along said glide member adjacent said first magnetic means, said first and second magnetic means being provided with substantially similar poles for supporting said glide member upon said glideway by magnetic repulsion for ease of movement of said shelf.

2. A combination as defined in claim **1** in which the first magnetic means comprises two spaced substantially parallel magnetic strips and the second magnetic means comprises two spaced substantially parallel magnetic

strips located between and substantially aligned with the two strips of the first magnetic means.

3. A combination as defined in claim 1 in which the first magnetic means comprises two spaced substantially parallel pairs of magnetic strips and the second magnetic means comprises two spaced substantially parallel pairs of magnetic strips located between and substantially aligned with the first two pairs of magnetic strips, each pair of strips having exposed surfaces in the transverse direction at opposite angles, the adjacent exposed surfaces of the strips of the first and second magnetic means being substantially adjacent and substantially aligned and substantially parallel.

4. In combination, a glideway, a glide member located in said glideway, wherein the improvement comprises a first magnetic means comprising a first set of spaced substantially parallel magnetic strips supported by said glideway and extending longitudinally thereon, a second magnetic means comprising a second set of substantially parallel magnetic strips extending longitudinally along said glide member located between and adjacent and substantially parallel to said first set of spaced parallel magnetic strips, said first and second sets of magnetic strips being provided with substantially similar poles for supporting said glide member in said glideway by magnetic repulsion.

5. A combination as defined in claim 4 in which said first set and said second set of magnetic strips each comprise two pairs of longitudinally parallel magnetic strips, each pair of strips having exposed surfaces in the transverse direction arranged at substantially opposite angles, the surfaces adjacent the magnetic strips of said first and second magnetic means being substantially aligned and substantially parallel.

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JAMES T. McCALL, *Primary Examiner.*

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