No. 624,090. Patented May 2, 1899.

F. E. RANNEY.

REFRIGERATOR.

(Application filed May 28, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig-1

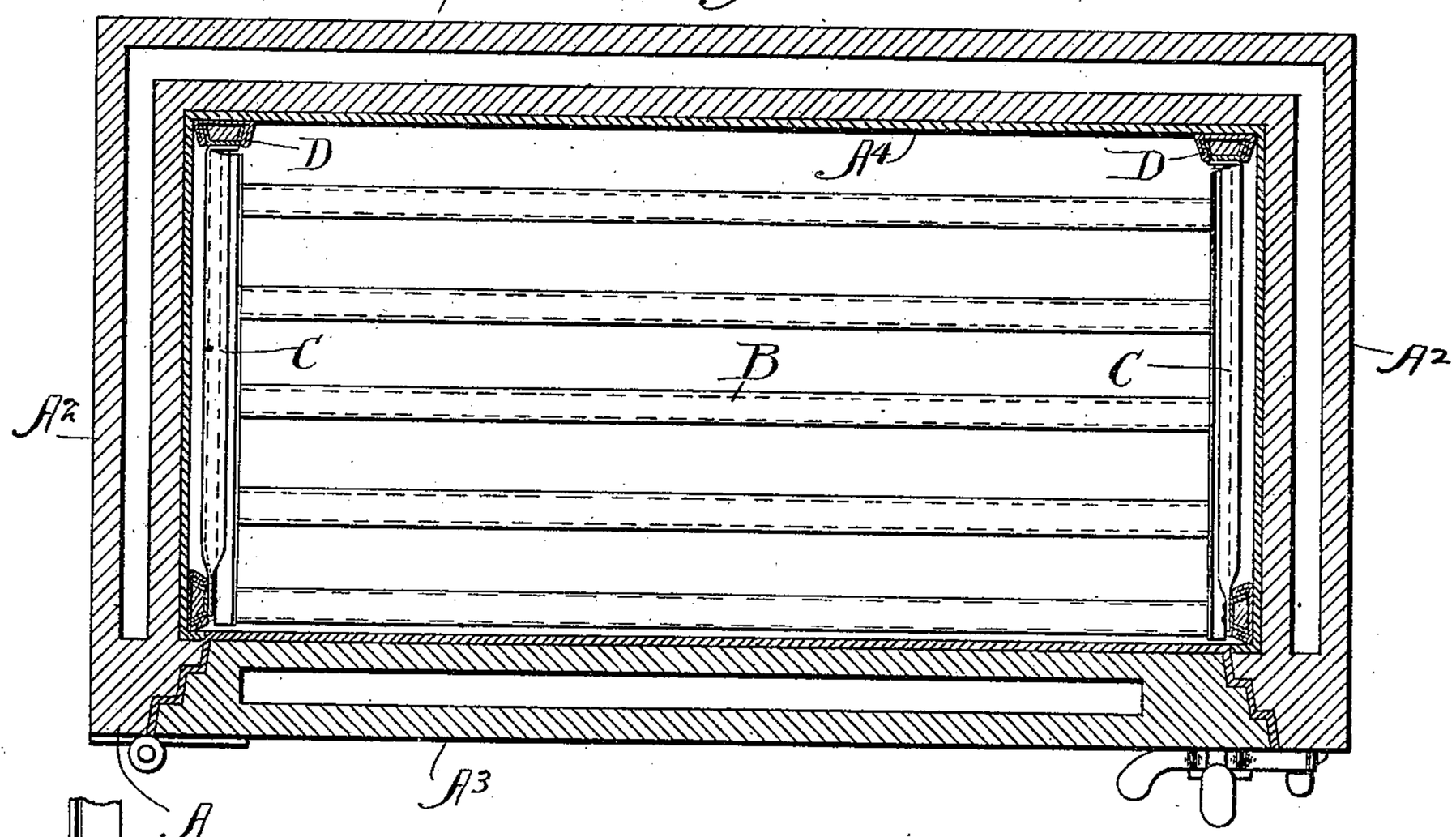

Fig-2

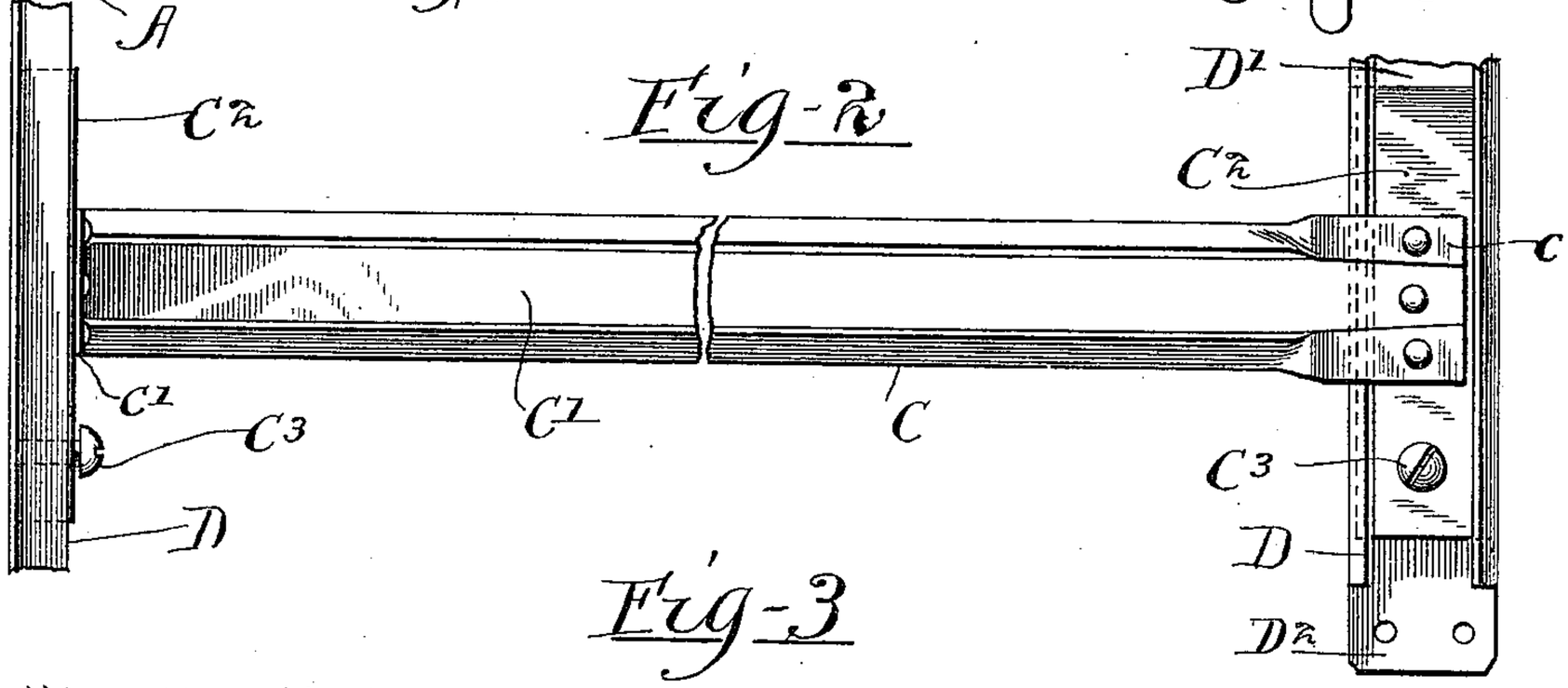

Fig-3

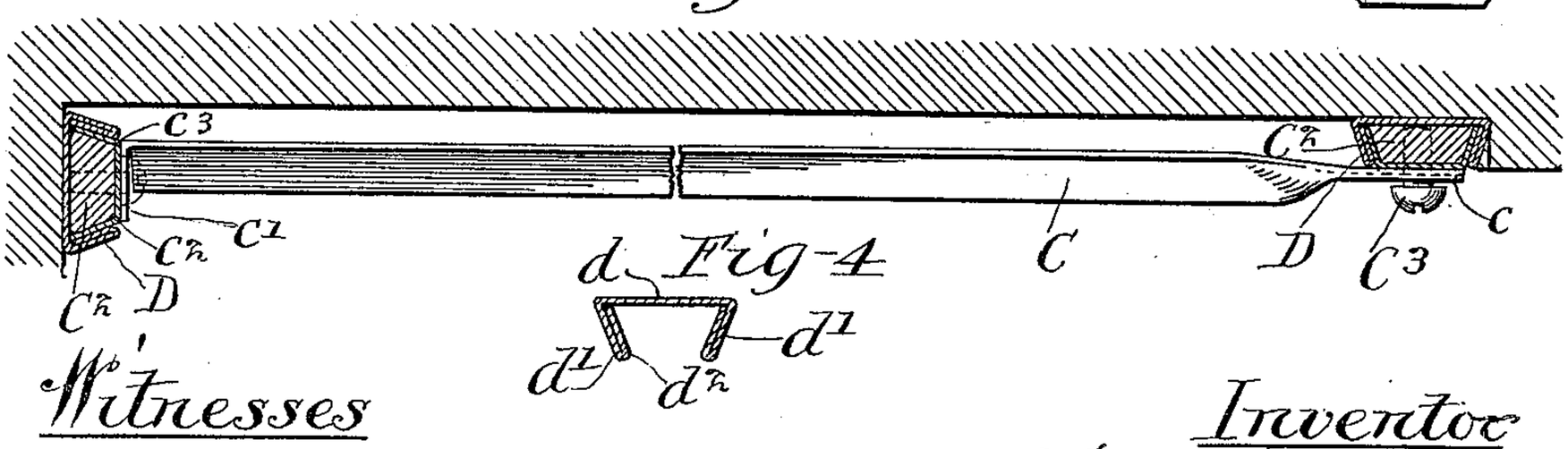

Fig-4

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

Fig. 5

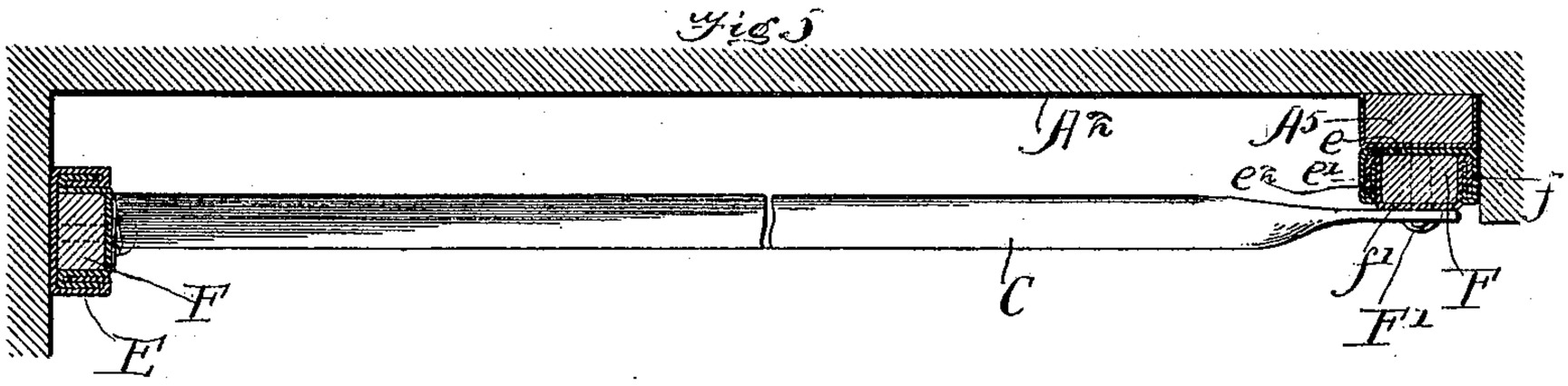

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Witnesses—
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Harold G. Barnett.

Inventor
Fred E. Ranney.
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His Attorneys

UNITED STATES PATENT OFFICE.

FRED E. RANNEY, OF GREENVILLE, MICHIGAN.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 624,090, dated May 2, 1899.

Application filed May 28, 1898. Serial No. 681,977. (No model.)

To all whom it may concern:

Be it known that I, FRED E. RANNEY, of Greenville, in the county of Montcalm and State of Michigan, have invented certain new and useful Improvements in Refrigerators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in refrigerators, and refers more specifically to an improved means for supporting the shelves in the provision-chamber, whereby they may be adjusted vertically therein, as the circumstances may require.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan section of a refrigerator provided with my invention. Fig. 2 is a detail view of one of the guide-supports and means for securing the same in position. Fig. 3 is a plan section of the parts shown in Fig. 2. Fig. 4 is a cross-section of one of the guide-standards. Fig. 5 is a plan section of a modified form of connection between the shelf-supporting guide and the guide-standard. Fig. 6 is an end view of one of the guide-standards shown in Fig. 5. Fig. 7 is a cross-section of the guide-block shown in Fig. 5. Fig. 8 is a side elevation, broken away, of two adjacent shelf-supports and showing means for preventing accidental detachment of the guide-supports from the standards. Fig. 9 is a detailed view of a modified form of the device. Fig. 10 is a longitudinal section taken on line 10 10 of Fig. 9. Fig. 11 is a detail view of a still further modification. Fig. 12 is a cross-section taken on line 12 12 of Fig. 11.

In said drawings, A A′ designate the front and rear walls of a refrigerator, and A^2 A^2 the side walls thereof. Said walls are secured rigidly together in any suitable manner to form a rectangular box or chest inclosing the provision-chamber. Said walls will preferably be made of two separate thicknesses to provide space between the same for an insulating material. The front wall is provided with an opening closed by a door A^3, by which access to the interior of the provision-chamber may be had. The walls of the provision-chamber are provided with a lining A^4, preferably of zinc. B designates a shelf in said provision-chamber, which is supported at its opposite ends upon supporting-bars C, which latter has adjustable sliding engagement at their opposite ends with vertically-arranged guide-standards D, secured in the front and rear walls of the provision-chamber.

The supporting-bars are preferably constructed like the guide supports or cleats shown in my prior application for United States Letters Patent, Serial No. 669,143, said supports being provided in the inner or adjacent faces with guide-grooves C′, within which the ends of the shelves rest and slide, and on their opposite ends with integral lugs *c c′*, by which they are attached to supporting parts. Said supporting-bars are provided on their opposite ends with rigidly-attached transversely-arranged guide-blocks C^2, which engage guide-grooves D′ in said standards, and said blocks are provided with suitable means by which they may be adjustably secured in rigid engagement with said standards.

The guide-standards D are preferably made of a single strip or blank of metal and comprises a central section *d* and two marginal sections or wings *d′ d′*. Said marginal sections are shown as bent or folded upon themselves to form a double thickness of metal, which are then bent toward each other at an acute angle to the central section *d*, thereby forming inclined guide-grooves of less width at their outer than at their inner sides, which are adapted to be engaged by the guide-blocks C^2, said guide-blocks being provided with oppositely-arranged oblique edges c^2, which engage and closely fit upon the inclined sides of the groove D′. The central section *d* of the standard is desirably extended at each end slightly beyond the marginal sections or wings thereof, thereby forming lugs D^2, by which the standards are secured in place by means of screws or the like.

Any suitable means may be employed for adjustably securing the guide-blocks C^2 in engagement with the standards D. As shown in Figs. 1, 2, and 3, said blocks are provided with clamping-screws C^3, of any suitable form,

which have screw-threaded engagement with the blocks and impinge at their inner ends against the central sections of the standard. Said screws when forced inwardly act to move the guide-blocks outwardly, with their oppositely-inclined edges in close frictional engagement with the inclined sides of the guide-grooves D'. The frictional engagement between said guide-block and standard will ordinarily be sufficient to hold the shelf in place; but, if desired, said screws C^3 may be pointed, so that they will indent the metallic standard, and thereby form an interlocking connection between the same which will serve to hold the block positively in place. Said standard may further be provided at suitable intervals with screw-sockets adapted to receive the ends of said clamping-screws. The guide-blocks C^2 may be made of wood or metal and may be provided with a metallic covering c^3, when made of wood, to prevent the exposure of the wood in the provision-chamber. The guide-standards in the front part of the provision-chamber are preferably secured to the inner side of the end wall A^2, at the intersection thereof with the front wall, in order to afford easy access to the adjusting means of the shelf, while the standards at the rear portion of the chamber are attached to the rear wall A' thereof, and the lugs c' on the rear end of the supporting-bars C will be bent at right angles to the main body thereof to bring the supporting-blocks attached thereto in proper relation to said standards.

In Figs. 5, 6, 7, and 8 I have shown a modified form of the guide-standards and guide-blocks which engage the same. Said guide-standards (designated by the letter E) each consist of a central section e and marginal sections or wings e', formed integral with and at right angles to said central section and providing between the same a guide-groove E' of uniform width, within which a guide-block F, secured to the guide support or cleat, is adapted to rest and slide. Said guide-block is of rectangular shape in cross-section and adapted to closely fit within said groove E'. The guide-block has interlocking engagement with the standard, which prevents the same from being moved laterally out of the slot E'. As herein shown, said marginal sections or wings of the standard are provided with integral rearwardly-directed flanges e^2, which extend parallel with and at a distance from the marginal sections or wings e' and provide between the same inwardly-opening guide-slots adapted to be engaged by oppositely-arranged outwardly-extending flanges f, attached to the inner sides of said guide-block. As herein shown, said flanges f are formed integral with a metallic covering f', which covers the outer and side faces of said guide-block F. The block is provided with a clamping-screw F', which has screw-threaded engagement therewith and acts in the manner of the set-screw C^3 to adjustably hold the block and shelf supported thereby in position.

The standard F in the front portion of the provision-chamber is shown as attached to a strip or block A^5, which is interposed between said standard and the adjacent face of the end ball A^2, and the standard at the rear portion of the provision-chamber is attached to the rear wall thereof at such distance from the end wall as to bring the rear end of said supporting-bar in line with the front end thereof. This construction is desirable where the jamb to which the door is attached is of greater depth than that shown in Fig. 1, in order to bring the guide-grooves of the shelf-supports in line with the outer faces of the door-jamb and to thereby facilitate the insertion of the shelf into the provision-chamber. Such construction also provides greater space between the supporting-bars and the adjacent end walls, thereby affording an unrestricted space for the upwardly-moving current of warm air passing from the provision-chamber.

In Figs. 9 and 10 is shown a further modification in which the guide-blocks of the bars C are held in positive engagement with the supporting-standard D. The fastening devices shown in said figures consists of a spring-latch G, attached to the block H and adapted to have interlocking engagement with the standard. Said spring consists of a straight shank portion g, which engages a longitudinal slot in the block and a right-angle portion g', which passes through a transverse opening in the block and is adapted to engage at its inner end notches or sockets d^3 in the standard. Said spring-latch is provided between its ends with an outwardly-bent portion g^2, which serves as a handle by which the latch may be manipulated. The block H is provided with a metallic covering h, which latter is provided with a slot h' for the passage of the handle portion g^2 of the latch.

In Figs. 11 and 12 is shown a further modification of the means for fastening the guide-blocks upon the standards, said standard and block being made like the construction shown in Figs. 1 to 4, inclusive. In said figures the block I is provided with a transverse bolt which extends from the inner to the outer side thereof, said bolt being countersunk in the inner face of the block to afford a smooth sliding contact between the same and standard. Upon the outer end of said bolt is secured a clamping-plate I^2, which is provided with the inclined flanges or wings i, engaging the outer faces of the inclined portions d' of the standards. The bolt is provided with a suitable nut, herein shown as in the form of a thumb-nut, by which the plate is clamped into close frictional engagement with the outer faces of said inclined portions of the standards. The same movement of the bolt acts to draw the inclined edges of the guide-block into close frictional engagement with

the inner inclined faces of the guide-grooves, thereby increasing the clamping-surfaces between said parts.

As a means for preventing the guide-block becoming entirely detached from the standards, which latter will ordinarily not be made to extend throughout the vertical depth of the provision-chamber, I have shown stop-blocks J, located a distance from the upper and lower ends of said standards slightly less than the length of said blocks. Said blocks may be secured in position in any suitable manner by means permitting the same to be readily detached when it is desired for any reason to disengage the guide-blocks from the standards.

Obviously many other means may be provided for adjustably holding the supporting-bars in rigid relation to the guide-standards, and I do not wish to be limited to the particular constructions herein shown, except as made the subject of specific claims.

A main or principal advantage of the construction described, embracing vertically-arranged guide-standards and shelf-supporting bars provided with rigid guide-blocks adapted to have adjustable sliding engagement with said standards, rests in the fact that thereby the shelf may be moved vertically to any position within the range of said standards and may be clamped in said position as rigidly as though it were rigidly attached to a stationary portion of the refrigerator structure proper. A further important advantage gained by the use of the construction is that the shelves may be adjusted while in position in the provision-chamber, thereby obviating the necessity of removing the shelves and disconnecting the parts. The facility of making the various adjustments herein contemplated and in restoring the parts to the arrangement of shelves in use before the adjustment makes the refrigerator most convenient and adapted to a very much greater range of use than would otherwise be the case.

The construction herein shown is cheap to make and while occupying but little space in a provision-chamber is exceedingly strong and durable.

I claim as my invention—

1. The combination of grooved supporting-standards, supporting-bars provided with guide-blocks which have sliding engagement with said standards, a shelf sustained on said bars, said standards being provided on the opposite sides of the grooves occupied by said guide-blocks, with inwardly-opening grooves and the block being provided with flanges which engage said grooves, and means for securing said blocks in rigid engagement with the standards.

2. The combination of grooved supporting-standards supporting-bars provided with guide-blocks which have sliding engagement with said standards, a shelf sustained on said bars said standard being provided on the opposite sides of the grooves occupied by said guide-blocks with inwardly-opening grooves and the blocks being provided with flanges which engage said grooves and means for securing said blocks in rigid engagement with said standards comprising a spring-latch extending through an aperture in said block and engaging a suitable recess in the grooves of said standards.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 22d day of April, A. D. 1898.

FRED E. RANNEY.

Witnesses:
JNO. LEWIS,
ELIZABETH M. KNETTLES.