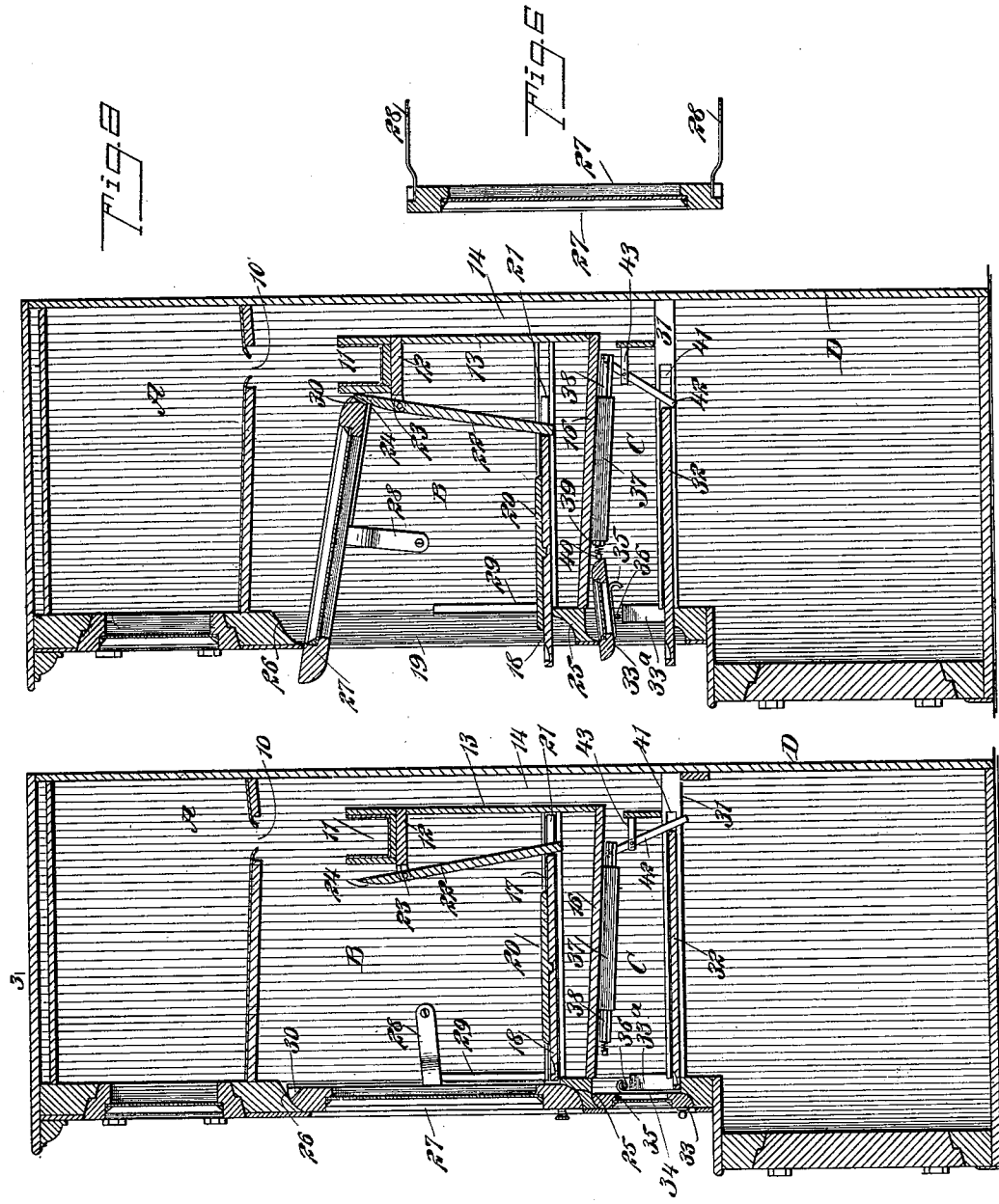
No. 659,105. Patented Oct. 2, 1900.

C. SANDER.

REFRIGERATOR.

(Application filed July 10, 1900.)

(No Model.) 2 Sheets—Sheet 1.



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FIG. 4

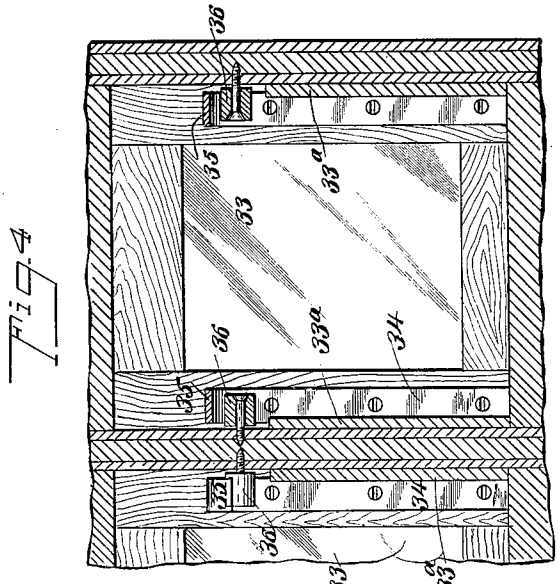
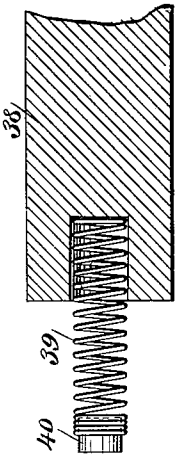


FIG. 5



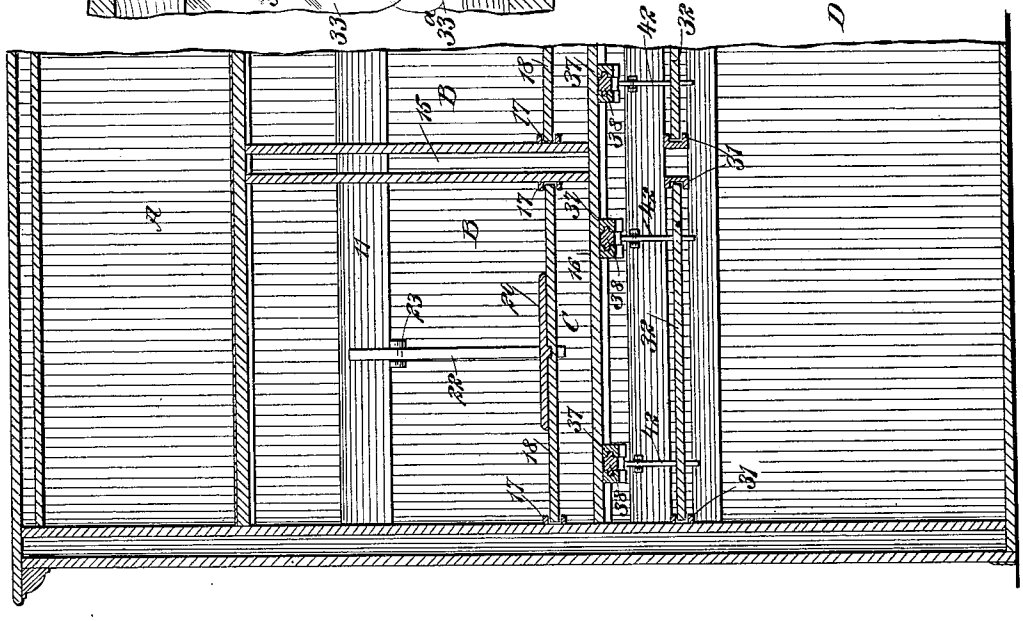


FIG. 6

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UNITED STATES PATENT OFFICE.

CARL SANDER, OF NEW YORK, N. Y.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 659,105, dated October 2, 1900.

Application filed July 10, 1900. Serial No. 23,084. (No model.)

To all whom it may concern:

Be it known that I, CARL SANDER, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Refrigerators, of which the following is a full, clear, and exact description.

My invention relates to improvements in refrigerators, especially refrigerators used by merchants; and one purpose of the invention is to provide a construction whereby when a door of a compartment is opened it will occupy a position in the compartment out of the way and will automatically cause a sliding support for material in said compartment to be carried out from the refrigerator to such an extent that the material is rendered visible and accessible.

Another purpose of the invention is to provide means for automatically replacing a partially-withdrawn sliding support through the action of closing the door of a compartment to which said support belongs.

A further purpose of the invention is to improve upon the construction of refrigerators for which Letters Patent were granted to me April 16, 1895, No. 537,722.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical transverse section through the improved refrigerator, illustrating the doors closed. Fig. 2 is a view similar to Fig. 1, illustrating the doors of the compartments adapted to contain material as opened. Fig. 3 is a longitudinal vertical section taken through a portion of the refrigerator, practically on the line 3 3 of Fig. 1. Fig. 4 is an enlarged vertical section through the inner portion of a refrigerator at a point adjacent to the doors of the lower or smaller compartments, showing the said doors in elevation and illustrating, partially in elevation and partially in section, the devices employed to fulcrum said doors when they are to be opened. Fig. 5 is an enlarged sectional view of one end of a trip-bar employed in connection with a door of a lower or smaller compartment, and Fig. 6 is a horizontal section through a door provided for an upper and larger compartment.

A represents the ice-compartment of the refrigerator, and this compartment is placed at the upper portion of the refrigerator-box. In the bottom of said compartment A a longitudinal opening 10 is made, whereby the water may be drawn from the compartment A into an offtake box or chute 11, located in the next compartment B below, and this chute or box 11 is shown supported on a horizontal shelf 12, attached to an upright 13, forming a partial auxiliary rear wall for the compartment B and an air-flue 14, which communicates with the next lower compartment C, which is preferably smaller than the upper compartment B. Both of these latter compartments are adapted to contain material or articles to be preserved.

Any desired number of compartments B and C may be employed, arranged in horizontal series, as shown in Fig. 3, the various compartments being separated by partitions 15, which are either packed with a non-conducting material or are left open for the passage and conducting of air. While the invention is shown applied to a box constructed, as shown, the main feature of the invention consists in the operation of the trays or sliding supports, upon which the articles or material are placed in the cooling-chambers, through the medium of the doors for the said chambers or compartments.

In the construction illustrated in the drawings the main bottom 16 of the compartments or chambers B extends from the front of the box to the bottom of auxiliary wall 13, as shown in Figs. 1 and 2. At a desired point above the bottom 16 slideways 17 are secured to the side walls of a compartment or chamber B, and a shelf or support 18 has movement to and from the back of the refrigerator-box in such slideways. In the drawings the shelves or slides are shown provided with a disk 20, mounted to rotate and upon which articles are placed—such as cheese, for example. In the rear edge of a slide or shelf 18 a longitudinal slot 21 is made, adapted to receive the lower end of a shifting bar 22,

the upper portion of this shifting bar being pivoted in projections 23 from the upper fixed shelf 12. When acted upon by an opened door, this shifting bar is adapted to force the shelf or sliding support 18 a sufficient distance outward to expose the contents of a chamber or compartment B and render the said contents accessible, as shown in Fig. 2. The upper forward surface 24 of the shifting bar 22 is preferably more or less inclined or rounded off.

The slideways 17 extend from the front of the refrigerator-box to the auxiliary wall 13, and the opening 19 in the front of the box, by means of which access is obtained to a compartment B, is of such height and width that the sliding support or shelf 18 may be passed out through said opening to a point in advance of the front of the box.

The upper face of the lower sill of the opening 19 is provided with a concaved or curved surface 25, and the upper sill of the opening 19 is also provided with a concaved or curved surface 26. The door 27, which is adapted to close the opening 19, fits at its sides to the side portions of the opening in an air-tight manner; but the top and bottom edges of the door 27 are curved to fit snugly to the curved surfaces 25 and 26 in the upper and lower sills of said opening, and thus provide an air-tight connection at such points, and at the same time the door 27 may be readily opened inward or within the compartment or chamber B.

Each door 27 is provided with an attached strap 28, said straps being located at the side edges of the door about centrally between the top and bottom. The inner ends of these straps are pivoted to the side walls of the compartments or chambers B, and the straps are more or less curved, so that in their action they will not interfere with stop-beads 29, located at the side surfaces of each opening 19, and these stop-beads limit the inward movement of the doors 27 and serve to guide the said doors in proper alinement when closed.

The straps 28 for the doors 27 serve as hinges, and when a door 27 of a compartment B is to be opened the lower portion of the door is drawn outward and the upper portion will consequently pass within the compartment, and as the lower portion of the door is raised the door, swinging on its hinges, will occupy the inclined position within the compartment. (Shown in Fig. 2.) When the door is fully opened, a recess 30 in the upper edge of the door will receive the upper end of the shifting bar in that compartment and force the said upper end rearward and the lower end of the bar forward, thus carrying the sliding support or shelf 18 of that compartment outward through the opening 19 to a certain extent, as is also shown in Fig. 2. By this construction it will be observed that when a door of a compartment B is opened the shelf or sliding support of that compartment is automatically carried outward. As the door is closed the lower portion of said door will strike the outer projecting edge of the shelf or sliding support and will carry the same inward to its normal position, at the same time restoring the shifting bar 22 also to its normal position.

The bottom or base D of the refrigerator-box is shown in communication with the air-space 14, which space extends also through the lower or smaller compartments C. These lower or smaller compartments C are separated from the base-compartments by shelves or sliding supports 32, corresponding to the shelves or supports 18, having guided and sliding movement in slideways 31, secured to the side walls of the compartments C and at points intermediate of said side walls, if desired. Each compartment C is provided with an opening at the front corresponding to the opening 19 for the upper compartment B, and each of these openings is normally closed by a door 33. The doors 33 are fitted in the openings so that they are adapted to close in the same manner as are the doors 27; but the doors 33 are preferably hung in a slightly-different way. The doors 33 have straps 34 attached to the inner faces of their upright members, as shown in Fig. 4, and the upper ends 35 of these straps are curved inward. When the doors 33 are closed, as shown in Figs. 1 and 4, the upper curved portions 35 of the straps 34 will rest upon friction-rollers 36, suitably supported from the side walls of a compartment C. A number of compartments C may be employed; but under the construction shown in Fig. 3 a single compartment C extends from end to end or from side to side of the box, and this large compartment is provided with any desired number of doors separated by suitable partitions. When the doors 33 are in their closed or upright position, the inner faces of their upright portions engage to a greater or a less extent with stop-beads 33^a, corresponding to the stop-beads 29 heretofore mentioned.

Opposite each strap 34 of a door slideways 37 are secured upon the under face of the bottom 16 for the various upper compartments B, and in each slideway a trip-arm 38 is mounted to slide and extend beyond the ends of said slideways. At the forward end of each trip arm or bar a spring 39 is located, adapted to extend out forwardly from the trip-bar, and a head 40, of rubber, preferably, or of other yielding material, is secured at the outer end of each spring 39. Although the compartment C may be made continuous from one end of the box to the other, the said compartment is provided with independent shelves 32, and these shelves correspond in number to the number of doors 33. Each shelf 32 or sliding support is provided with a recess 41 in its rear edge, and each recess receives the lower end of a shifting bar 42, fulcrumed upon a suitable support 43 at the rear of the compartment C. Each shifting bar 42 is pivotally attached at its upper end

to the rear portion of a trip-bar 38. When a lower door 33 is to be opened, it is drawn out from the bottom, raised upward, and at the same time carried inward at the top, the rollers 36 serving as bearings, and when the door has been carried to almost a horizontal position within the compartment C, as shown in Fig. 2, the upper edge of the door will have struck the heads 40 of the springs 39, carried by the trip bars or arms appertaining to the especial door opened, and the trip-bars will thus be forced rearward, and this movement of the trip-bars will carry the lower ends of the shifting bars forward and force out through the opening covered by the door 33 a lower shelf or sliding support 32. When a door 33 is closed, it strikes the projecting shelf and forces the same inward to its normal position.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a refrigerator-box or like receptacle having a compartment and an opening leading thereto, a shelf mounted to slide in said compartment and to extend out through the said opening, a shifting bar operatively connected with the shelf and extending into the upper part of the compartment, and a door for closing said opening, the door being supported to swing about a horizontal axis to bring the upper end of the door rearwardly against the shifting bar to slide the shelf forward.

2. A refrigerator-box or like receptacle having a compartment, an opening leading thereto, a shelf mounted to slide in said compartment and to extend out through said opening, a trip-bar in engagement with the rear of said shelf, a door for said opening, having a pivotal support within the compartment upon which the said door may rock, which door when opened engages with the upper end of the trip device thus forcing the shelf outward, which device when the door is closing engages with the projecting portion of the shelf and restores said shelf to its normal position.

3. In a refrigerator-box or like receptacle, having a chamber and an opening leading into said chamber, a shelf mounted to slide in said compartment, and capable of extending out through said opening, slideways above the shelf, a trip-bar mounted in said slideways, the trip-bar being provided with a spring-controlled head at its forward end, a shifting bar engaging with the rear of said shelf and connected with the rear portion of the trip-bar, and a door adapted to normally close said opening, which door is provided with a pivotal support within the said compartment, the upper portion of the door when said door is opened being arranged to engage with the said spring-controlled head, and the lower portion of the door, when said door is closed, being adapted to engage with the forward end of said shelf.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL SANDER.

Witnesses:
J. FRED. ACKER,
JNO. M. RITTER.