

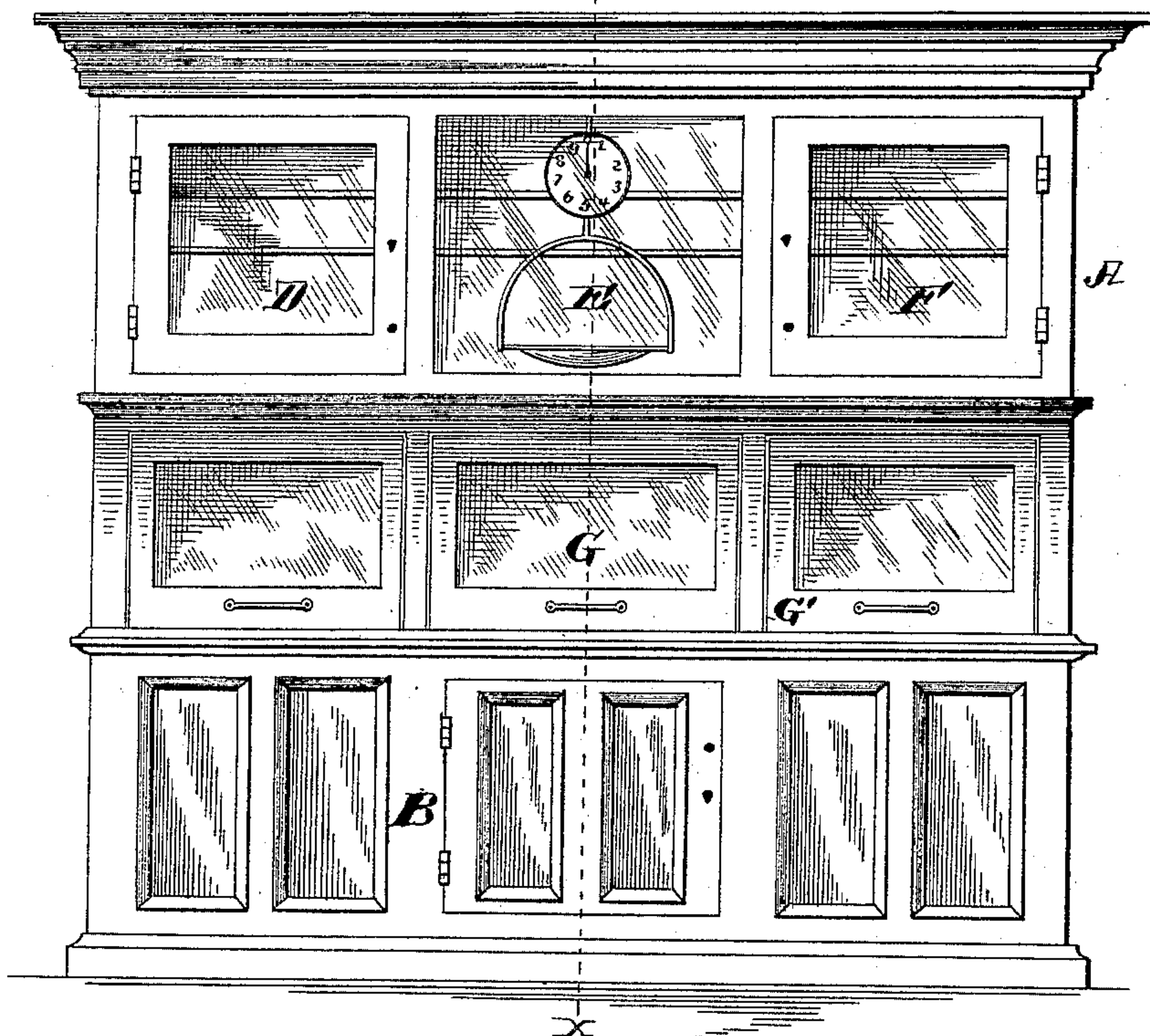
(No Model.)

F. M. KEITH.  
REFRIGERATOR.

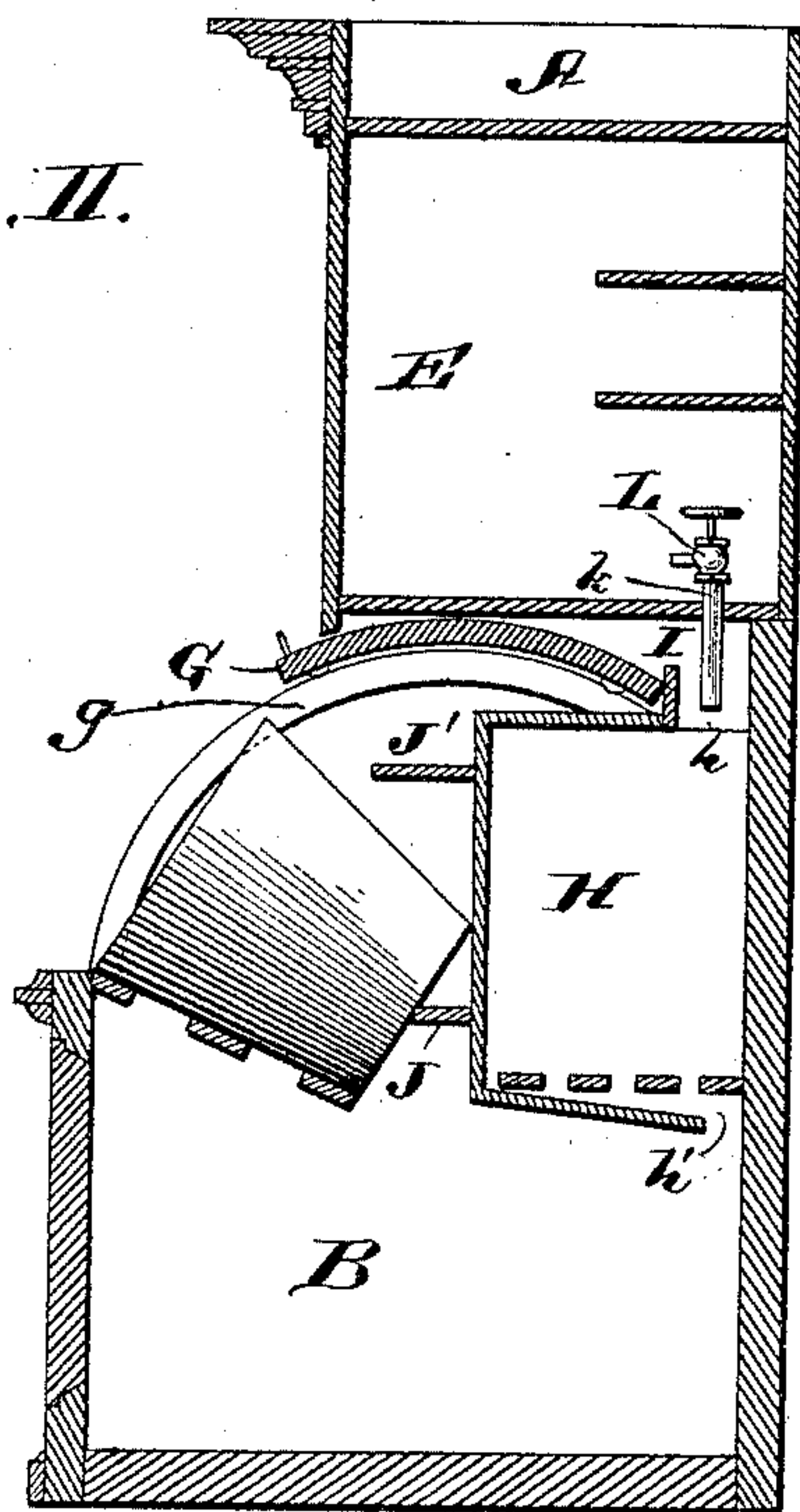
No. 432,803.

Patented July 22, 1890.

*Fig. I.*



*Fig. II.*



Witnesses:  
*J. B. McGivver.*  
*W. A. Perahard*

Inventor,  
*Frederick M. Keith*  
By his Attorney,  
*Joseph R. Edson*



# UNITED STATES PATENT OFFICE.

FREDERICK M. KEITH, OF BOSTON, MASSACHUSETTS.

## REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 432,803, dated July 22, 1890.

Application filed March 31, 1890. Serial No. 346,088. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK M. KEITH, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Refrigerators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in refrigerators; and it consists of the construction and arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

To enable others to understand my invention, I will now proceed to a description thereof in connection with the accompanying drawings, in which—

Figure I is a front elevation of a refrigerator constructed in accordance with my invention. Fig. II is a vertical transverse sectional view of the same on the plane indicated by the line *xx* of Fig. I.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates the refrigerator entire, which has a large storage-chamber B at the bottom thereof, and with a series of provision-chambers D E F erected above the storage-chamber B. These provision-chambers are smaller than the main chamber, and the case of the refrigerator may be finished in any preferred style. If desired, all three of the chambers D E F may be used for provision-chambers; but one of the chambers may be reserved for the storage of implements or utensils—as, for instance, a pair of scales may be suspended in the middle chamber of the series of chambers; but this is optional.

The main storage-chamber B is provided in its front side just below the series of smaller provision-chambers with openings which admit of ready access to the interior thereof, and these openings are closed by sliding doors G, segmental in form, and fitted in suitable ways *g* within the chamber B, so as to be ad-

justed to expose the interior of the chamber or close the opening therein. The segmental sliding door fits snugly beneath the upper provision-chamber, and below the plane occupied by the door when it is forced back to permit access to the chamber B, I provide a refrigerant-chest chamber H. This refrigerant-chamber H is located at the back or rear side of the main storage-chamber, and it is suitably secured in an elevated position therein above the floor of the same. Said refrigerant-chamber is closed at its top, front, and bottom by a wall or casing, and at the rear by the rear wall of the main storage-chamber B; but in the top and bottom of the casing or wall of the refrigerant-chamber H at the rear end of the same are provided inlet and outlet openings *h h'*, respectively, for the circulation of air through said refrigerant-chamber. The bottom of the refrigerant-chamber is composed of a grating or a series of slats suitably united together to permit air to pass into the outlet-opening *h'* in the bottom of the casing, and this bottom is inclined, as shown, to provide a drip-guide or water-shed for the escape of water from the melting ice.

At the top of the refrigerant-chamber, immediately in front of the air-inlet opening *h* to the same, I provide an abutment I, which is arranged in front of said inlet and in the path of the sliding cover, whereby this abutment provides a space between itself and the rear wall of the refrigerator for air to pass to the inlet-opening and as an abutment for arresting the inward movement of the sliding door. A considerable space is provided between the front of the refrigerant-chamber and the front of the refrigerator-casing, and this space is utilized for the storage of various articles. A shelf or ledge J is provided immediately in front of the refrigerant-chamber, and it is fixed to said chamber on a line above the bottom thereof and below the lower edge of the opening in the front of the main storage-chamber B. This shelf serves as a convenient place for storing small articles and exposing them to the low temperature of the refrigerant-chamber, and it also serves as a convenient means for supporting a tub or pail in a diagonally-inclined position across



the storage-chamber and enables the attendant to have convenient access to the pail for the purpose of removing its contents, as desired. Another shelf  $J'$  is arranged above the shelf  $J$  and fixed to the front of the refrigerator-chamber, as shown. The provision-chambers above the main storage-chamber are each provided with a tight imperforate bottom, so that free and direct communication between the provision and main chambers is prevented; but such of the provision-chambers as it is desired to have communicate with the main chamber to reduce the temperature of said provision-chamber is provided with a pipe  $k$ , which leads through the imperforate bottom of said provision-chamber into the refrigerator-chamber.

My improved refrigerator is more especially designed for the use of grocers, provision dealers, and others engaging in vending perishable articles of food, &c., and it is not essential in some instances—as for storing cheese, eggs, and the like—to have the temperature of the provision-chambers very low. I have therefore provided the pipe-connections  $L$  between said provision-chamber and the refrigerator-chamber to reduce the temperature in the elevated provision-chamber for the preservation of such articles as eggs, cheese, &c.

The cold-air pipe to each provision-chamber is provided with a valve, whereby more or less air may be drawn out of the elevated provision-chamber by the suction of the current of air which circulates through the refrigerator and lower provision-chambers, and in which downward current of air the depending pipes  $K$  are immersed, said pipes terminating in the space  $h'$  immediately above the refrigerator-chamber at the place where the temperature is lowest.

In use a circulation of air is constantly taking place through the refrigerator-chamber as the air enters the upper side of the refrigerator-chamber, is cooled in said chamber, and falls through the slatted bottom thereof out through the outlet opening into the main storage-chamber. When the valve in the cold-air pipe is opened that leads to each of the provision-chambers, the current of air circulating downward through the provision and refrigerator chambers creates a downdraft or suction through the pipe  $K$ , and as the ele-

vated provision-chamber is arranged immediately over and in close juxtaposition to the refrigerator-chamber, the temperature of the elevated provision-chamber is maintained at a lower point than if it is isolated from the refrigerator-chamber and cut off therefrom. I am thus enabled to provide a simple and inexpensive refrigerator in which a series of separate chambers can be kept at the desired temperature, and ready access to the interior of each chamber can be had through suitable doors without disturbing or opening either of the other chambers.

Slight changes in the form and proportion of parts and details of construction can be made without departing from the spirit of my invention.

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

1. A refrigerator having the storage-chamber, the refrigerator-chamber located at the rear of said storage-chamber and having an inlet-opening at the rear in the upper side thereof, and an outlet opening in the bottom of said chamber, a sliding segmental door adapted, when opened, to lie over the top of the refrigerator-chamber, and the fixed abutment arranged at the terminal of the top wall of the refrigerator-chamber and in the path of the sliding door to provide a space for the passage of air to the refrigerator-chamber and to arrest the motion of the sliding door, substantially as described.

2. A refrigerator having the storage-chamber, the refrigerator-chamber in rear thereof and having the air-inlet space or opening in the top and the outlet-opening in the bottom, the series of upper provision-chambers situated above the main chamber in close juxtaposition to the refrigerator-chamber, and the valved air-pipes leading from the provision-chamber and terminating in the air-space  $h'$  at the top of the refrigerator-chamber and in the path of the downward current of air to the refrigerator-chamber, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK M. KEITH.

Witnesses:

NORMAN W. BINGHAM,  
JOSEPH H. ROBINSON.