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C. C. THOMAS

2,148,787

REFRIGERATING APPARATUS

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Fig. 1.

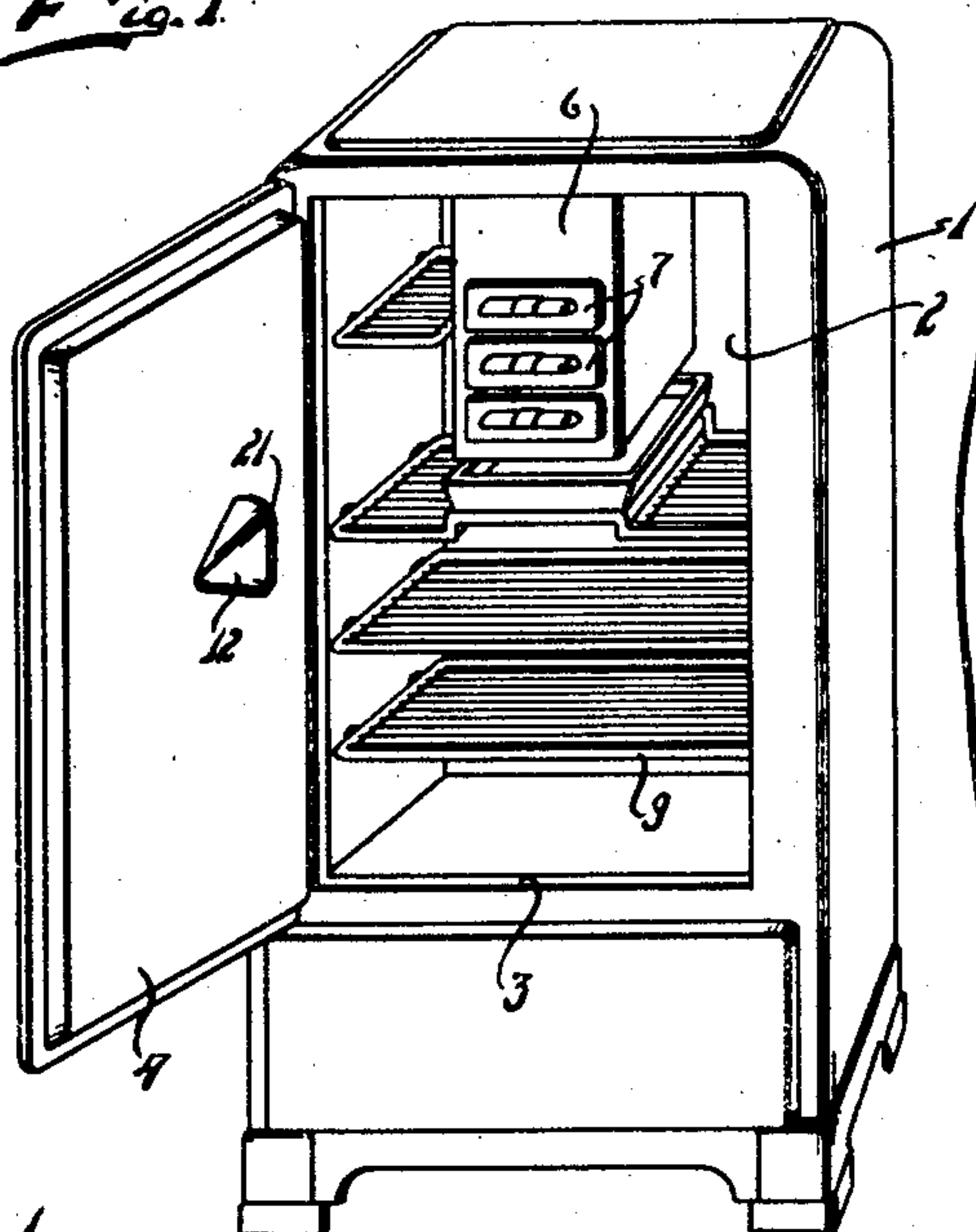


Fig. 2.

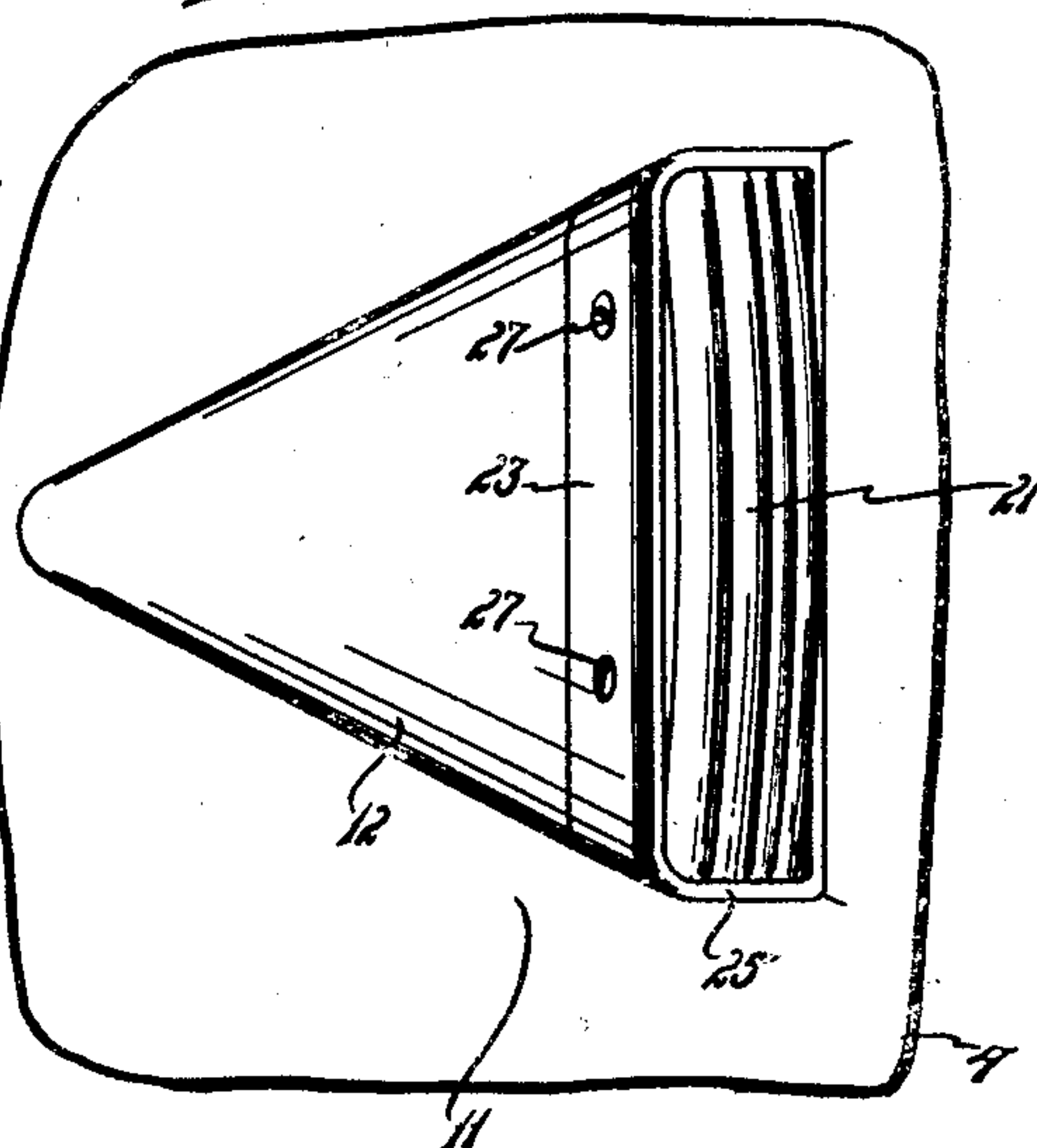


Fig. 3.

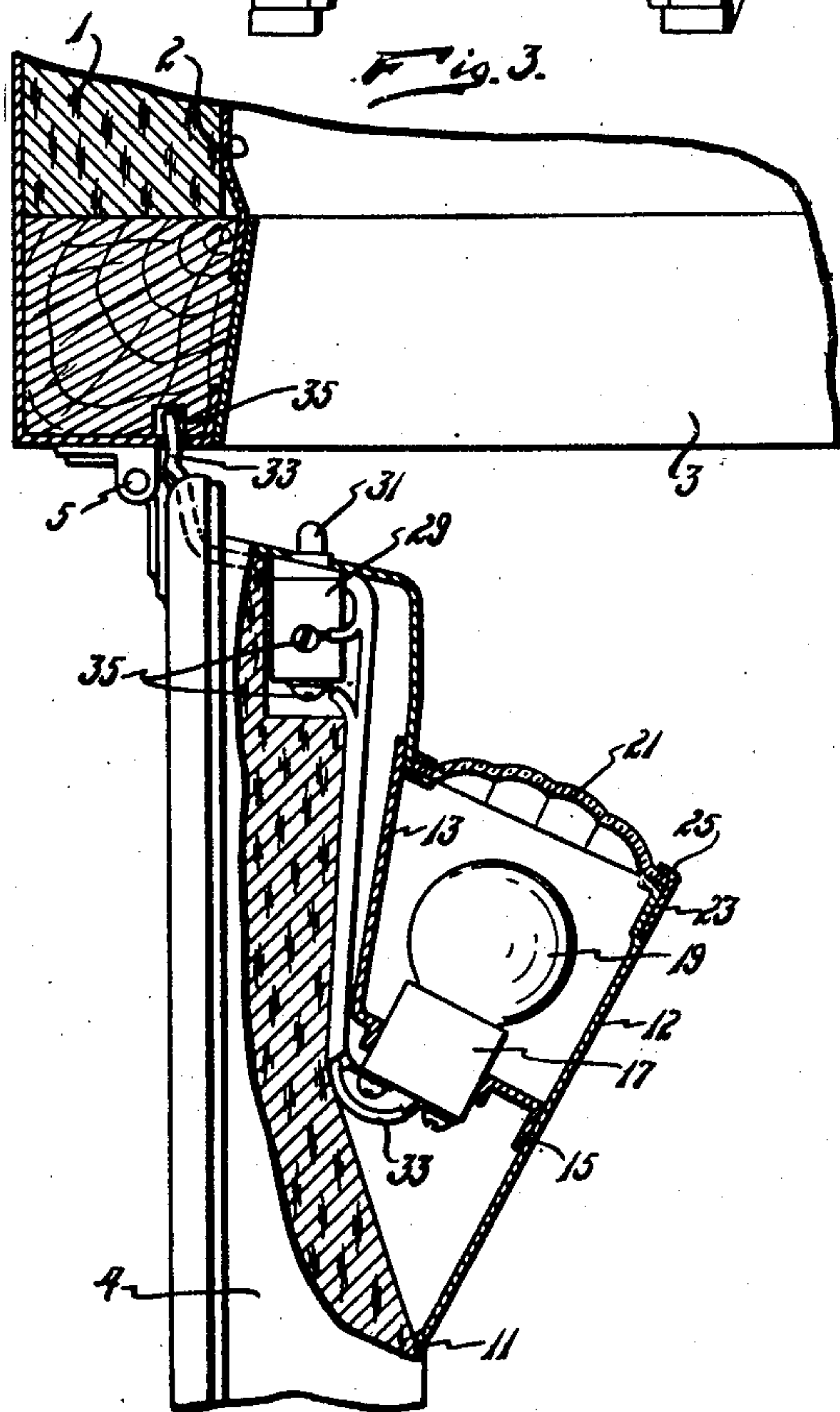
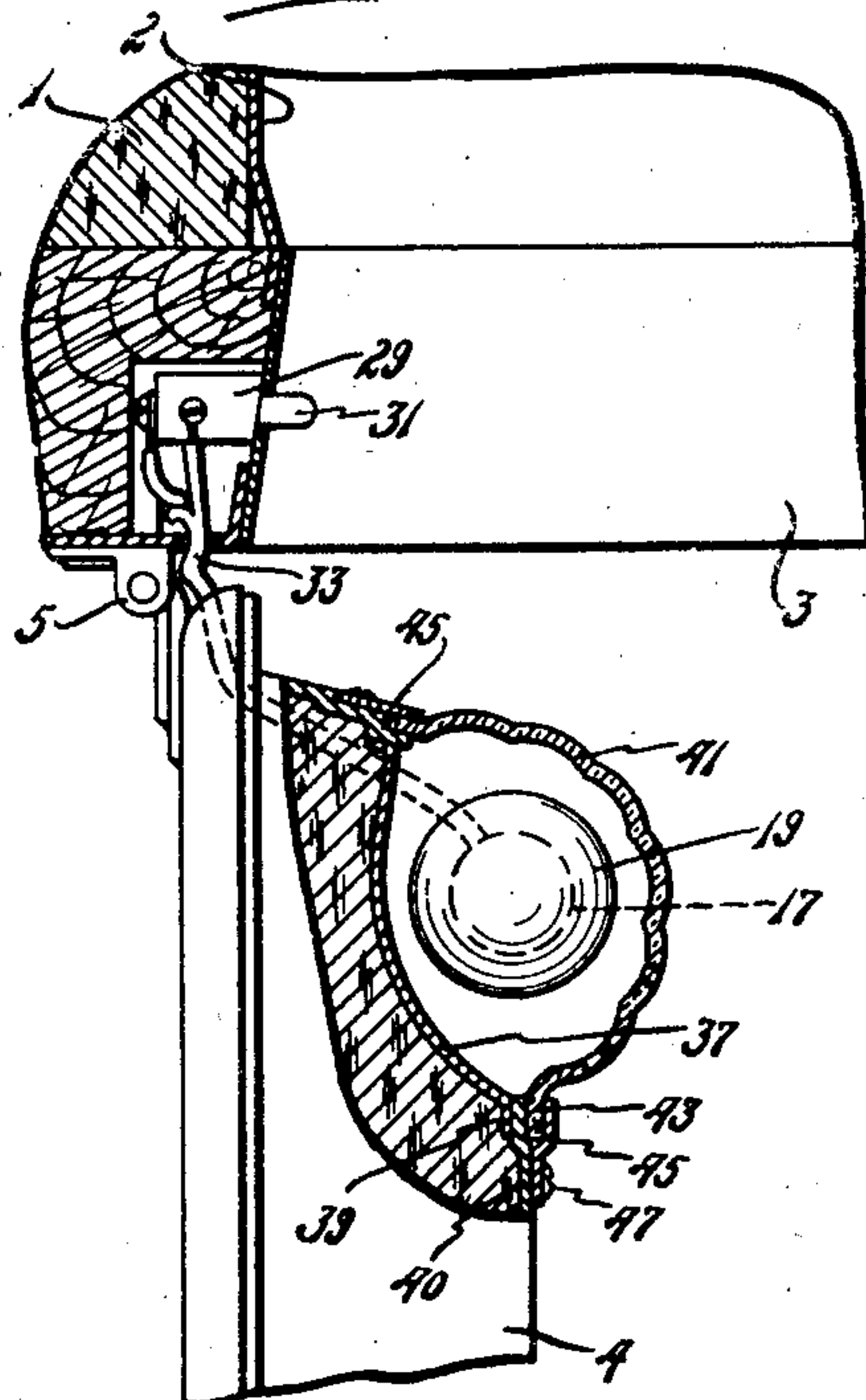


Fig. 4.



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REFRIGERATING APPARATUS

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1 Claim. (Cl. 240—4)

My invention relates to refrigerating apparatus and more particularly to illuminating means for refrigerators of the household type.

It is an object of my invention to provide a refrigerator with an illuminating device which is carried by one of the inherent moving elements of the refrigerator cabinet so that a flood of light is automatically directed to the various interior parts of the refrigerator cabinet as the door is opened.

It is also an object of my invention to provide an illuminating device on the door of a refrigerator and have the device so positioned that it directs its light beam in the direction of the door hinges so that as the door is conveniently pivoted it will then automatically focus the light beam to all parts of the interior of the refrigerator and on either side of the cooling unit therein.

Another object of my invention is to provide a refrigerator with a light or illuminating device which is arranged so that when an electric current is passing through the illuminating device the same is disposed out of the path of the refrigerated circulating air to prevent warming the air in the refrigerator.

The novel features that I consider characteristic of my invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of specific embodiments, when read in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of a refrigerator provided with my illuminating means arranged in the door thereof;

Fig. 2 is an enlarged side elevational view of the illuminating device with a portion of the door panel broken away to show how the device is mounted thereon;

Fig. 3 is an enlarged sectional view taken horizontally through the illuminating device and the adjacent portions of the door and cabinet to illustrate the details thereof; and

Fig. 4 is a similar view illustrating another embodiment of my invention.

Referring more particularly to Figs. 1, 2 and 3 of the drawing, I have illustratively disclosed my illuminating device operatively associated with a refrigerator comprising a heat insulating cabinet 1 enclosing a food storage compartment 2 having an open doorway 3 which is closed by a door 4 of the usual heat insulating door which is piv-

otally supported on hinges 5 connected between one vertical edge of the door and one side of the cabinet 1 in the usual manner. The food storage compartment is cooled by means of a cooling unit 6 which is suspended from the center of the top wall of the cabinet in intermediate spaced relation from the side walls of the food storage compartment. The cooling unit 6 may be a conventional refrigerant evaporator having ice cube freezing trays 7 slidably disposed therein. For supporting small food articles to be cooled in the refrigerator cabinet, a plurality of large shelves 8 are horizontally positioned in vertical spaced relation therein on suitable shelf supports projecting from the side walls of the food storage compartment in the usual manner.

In order to provide an efficient illuminating device which may be automatically turned to focus its light to all parts of the interior of the refrigerator on either side of the cooling unit thereof, I provide a lamp receiving compartment in the pivoted door 4 by cutting the sheet metal lining 11 thereof and bending a flap 12 away from the door. Into the compartment thus provided, a lamp housing 13 of sheet metal is inserted. The lamp housing 13 is of substantially L-shaped cross-section and is of a suitable conformation for reflecting and projecting the light through the opening thus formed in the inner lining of the door.

One edge of the L-shaped lamp housing 13 extends in abutting substantially parallel relation against the flat inner surface of the lining 11 of the door adjacent the aperture. The other edge of the L-shaped lamp housing 13 is provided with a flange 15 turned back at substantially right angles thereto for engaging the outwardly bent flap 12 of the door lining in substantially parallel abutting relation. The edges of the lamp housing may be secured to the abutting surfaces of the door lining in any suitable manner, as by soldering or welding. The side of the L-shaped lamp housing 13 opposite the opening in the door is provided with a lamp receiving socket 17 for supporting a small incandescent bulb 19 therein. The inner surface of the lamp housing 13 is preferably provided with a coating of hard vitreous enamel, such as white porcelain, whereby an efficient light reflecting surface is provided.

For closing the opening thus provided in the lining of the door, a light projecting and diffusing lens 21 is fitted thereon and secured in place by a frame 23 having a glass retaining flange 25 turned inwardly around its outer edge.

To secure the glass retaining frame 23 in position over the open end of the lamp compartment, suitable fastening means may be provided such as screws 27 extending therethrough.

5 For automatically controlling the energization of the electric light bulb 19 which is mounted in the lamp housing on the door, I provide a push switch 29 mounted in the door adjacent the hinged edge thereof. The switch 29 may be a
10 push switch of conventional construction having a push plunger 31 which is projected through a position that as the door is closed in the doorway the plunger 31 engages the cabinet and is depressed into the switch 29 for separating its
15 circuit closing contacts.

Connecting from the terminals of the lamp socket 17, a pair of insulated electrical conductors 33 extend through the heat insulating material within the door adjacent the lining thereof to
20 the push switch 29. The terminals 35, of the switch are connected into one of the energizing conductors 33 which is suitably cut for connecting the switch into the circuit. The conductors 33 extend from the door adjacent the hinges 5
25 thereof, where the minimum of relative motion occurs between the door and the cabinet. The lamp energizing conductors 33 pass into the side wall of the refrigerator cabinet and extend through a passage 35 therein to the usual machine compartment in the base of the refrigerator cabinet for convenient connection with the electrical service means from which the refrigerant compressor is operated.

It will be apparent that as the refrigerator door
35 is opened and the lamp is automatically energized by the push switch 29, it is also turned to a position such that it is disposed out of the path of the cold circulating air to prevent warming the air in the refrigerator. Also as the door is turned
40 to various positions, the light projecting lamp housing therein is also turned to direct its light beam to all parts of the interior of the refrigerator and on either side of the cooling unit, or into the freezing chamber therein, at the convenience of
45 the operator.

Referring more particularly to Fig. 4 of the drawing, I have disclosed another embodiment of my invention comprising an arcuate lamp housing
50 37 which is installed in the inner corner of the door. The arcuate lamp housing 37 is provided with outwardly turned flanges 39 which are suitably turned for snugly abutting the separated edges of the door lining 40 which are cut back to receive the lamp housing 37 and to which it is secured, as by welding for example. In this embodiment of my invention, the lamp receiving
55 socket 17 is mounted in the bottom wall of the lamp housing for supporting the incandescent bulb 19 in a vertical position therein. The inner surface of the arcuate lamp housing 37 is preferably provided with a coating of a hard vitreous enamel, such as white porcelain, to provide an adjacent light reflecting surface.

For closing the lamp housing to protect the
65 lamp and to prevent the entrance of foreign matter, I provide a light diffusing glass 41 which is preferably of curved conformation and is provided with substantially flat marginal edges 43

adapted to be clamped under a retaining frame 45 which is secured in place upon the door by suitable fastening means, such as by screws 47. For receiving the flat marginal edges 43 of the light diffusing globe 41, the adjacent edges of the sheet metal door lining are preferably depressed to provide a suitable seat therein, and the globe fits symmetrically into the corner of the door.

In accordance with the present embodiment of my invention, the push switch 29 is mounted in the wall of the refrigerator cabinet adjacent the inner surface of the doorway 3 with its actuating plunger 31 projecting through a suitable aperture into the doorway. From the lamp socket 17, the lamp energizing conductors 33 pass from the door at a point adjacent the door supporting hinges 5 where the relative movement of the door and cabinet is a minimum. From this point, the lamp energizing conductors 33 pass into the heat insulated wall of the cabinet and one of the energizing conductors is opened for connection through the contacts of the switch 29. The operation of this embodiment of my invention is substantially the same as that previously described, and as the door is opened, the plunger 31 is released for energizing the incandescent light bulb. At the same time, the lamp is turned away from the cold circulating air to prevent warming the air in the refrigerator.

It will be seen that in accordance with my refrigerator illuminating arrangement a light projecting lamp is provided at a position where it does not interfere with inserting and removing articles from the refrigerator, while by mounting it within one of the inherent moving parts of the refrigerator, it is automatically turned to project its light to all parts of the refrigerator at the will of the operator while removing the heat generating bulb therefrom.

Aside from the specific embodiments of the invention herein shown and described, it will be understood that numerous details of the construction may be altered or omitted without departing from the spirit and scope of the invention as disclosed and claimed, and that I do not desire to limit the invention to the exact constructions herein set forth.

I claim:

In combination in a refrigerator a heat insulating cabinet enclosing a food storage compartment having an open doorway, a refrigerant evaporating element positioned in said compartment adjacent the upper wall thereof but being spaced from at least two side walls thereof to allow space for the storage of foods adjacent the sides of the evaporating element, a door for closing said doorway, hinged means for pivotally supporting said door along one of the vertical edges thereof, electric light means mounted on said door and being arranged to reflect light primarily in the direction of the hinged portion of the door, and means for energizing said light means when said door is opened whereby said light means is turned away from the cold circulating air in the refrigerator and projects light first on one side of said evaporating element and then on the other side as the door is moved from closed to open position.

CHARLES C. THOMAS.