Nov. 8, 1938. J. H. MINER 2,136,145

REFRIGERATOR

Filed July 14, 1936

Fig. 1.

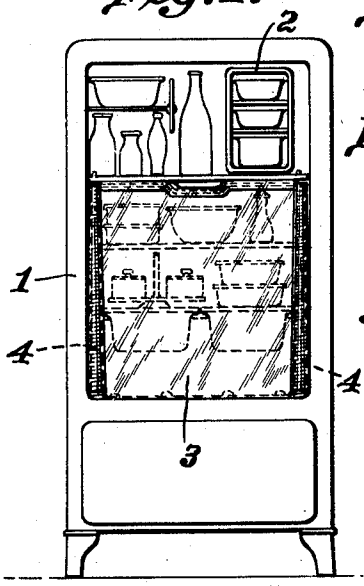


Fig. 8.



Fig. 7.

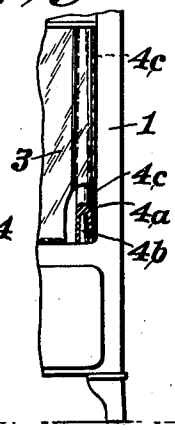


Fig. 2.

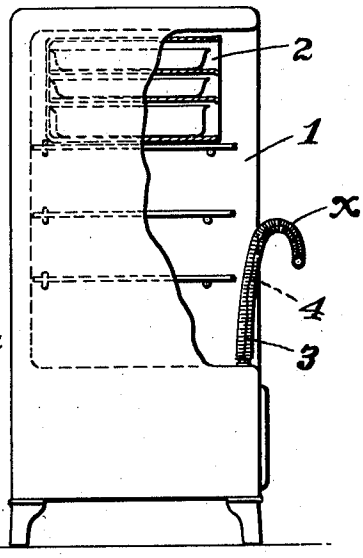


Fig. 3.

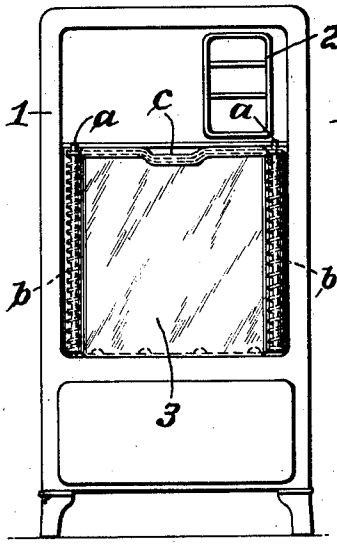


Fig. 4.

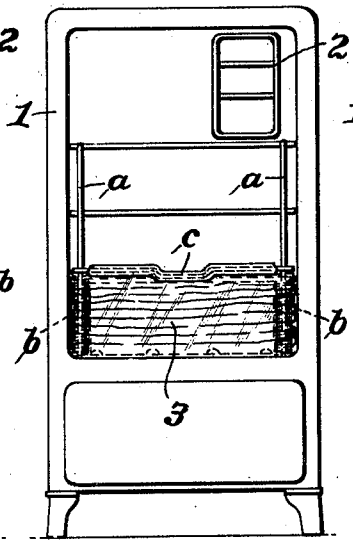


Fig. 5.

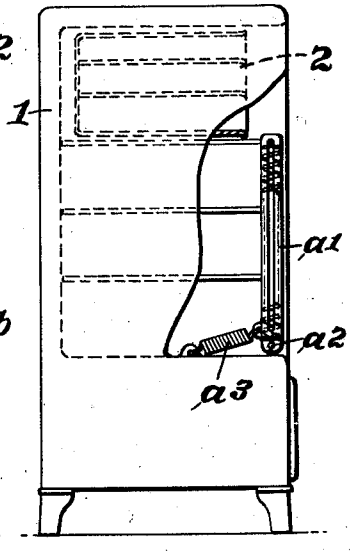
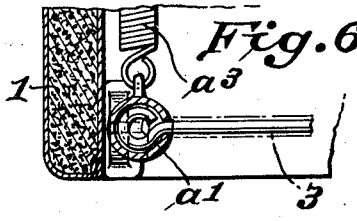


Fig. 6.



Inventor:

James H. Miner,

By Spear, Marshall & Hull

Attorneys.

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2,136,145

REFRIGERATOR

James H. Miner, Meridian, Miss.

Application July 14, 1936, Serial No. 90,574

9 Claims. (Cl. 62—89)

The invention concerns means for conserving the cold air in refrigerators.

In the accompanying drawing

Figure 1 is a front view in the nature of a diagram of the refrigerator with my invention in place, the outer door of the refrigerator being omitted.

Fig. 2 is a side view in the nature of a diagram of a refrigerator embodying the invention, the body of the refrigerator being broken away.

Figure 3 is a view of a modification showing a curtain which may be slid up or down on side guides subject to the pressure of spring means which will elevate the curtain to normal position when said curtain is released from downward pressure.

Figure 4 illustrates the form of Figure 3 with the curtain pressed down to expose the contents of the refrigerator.

Figure 5 is a side view of the refrigerator partly broken away and showing the pivotally mounted support for the curtain.

Fig. 6 is a detail plan view partly in section.

Fig. 7 is a view of a modified form of resilient side post.

Fig. 8 is a plan view of the resilient side post shown in Fig. 7.

In the drawing 1 indicates a refrigerator body of an ordinary construction. 2 represents the evaporation unit. 3 indicates a shield or curtain member composed of flexible material fixed at its lower edge to the frame of the refrigerator and sustained in an upright position by spring members 4 connected with the margins of the curtain or shield. This shield or curtain member when the front door of the refrigerator is open will retain the cold air in the bottom portion of the refrigerator against escape therefrom, and by turning the upper portion of the shield or curtain downwardly as indicated at *x* in Fig. 2 access may be had to the various shelves as may be desired. The drawing of Fig. 2 shows the shield or curtain only partly drawn down, but it will be understood that it may be further lowered to get access to the lower shelves.

As soon as the operator is through with inspection or handling of the goods, it is only necessary to release the curtain from its position shown in Fig. 2, and then the spring members along the margins of the curtain will straighten to upright position and restore the curtain to its effective position to retain the cold air at the bottom portion of the refrigerator when the front door is opened. This curtain fits in the front opening of the refrigeratotr close to the front door and occupies little space and hence does not interfere at all with the capacity of the refrigerator to hold a full quantity of goods or articles.

The spring members along the sides of the curtain may assume various forms but I prefer to employ coiled springs, and preferably to form these coils tapered from their lower ends to their upper ends so that the upper portion of the curtain will have a high degree of flexility and yet it will restore itself to vertical position when the operator releases it from his control. The upper portion, of course, will have to perform flexibly to a greater degree than the lower portion because no matter whether the goods desired are on, or to be placed upon either the upper or the lower shelves, the upper portion will always be operated, excepting in the case of a shelf, like the uppermost one, being exposed above the top of the shield or curtain.

The spiral spring can be wound with sufficient closeness of its turns to make practically a spring rod having a high degree of flexibility, and this is the element which I prefer to employ as a means for holding the curtain in place. The curtain is rigidly fixed at its lower edge and may be set to normally lean against the front of the racks or shelves. The spring members may be concealed in the margin of the curtain, and the curtain may be transparent to enable the user to view the contents of the various shelves without first manipulating the curtain.

Referring to Figures 3 and 4, a curtain is here shown of flexible material having its edges guided on suitable side rods or posts *a* positioned adjacent the frame at the sides of the front opening. This curtain is secured at its lower edge in any suitable way to the frame of the refrigerator, and its side edges are adapted to slide on the posts or guide bars *a*, it being understood, as stated above, that the curtain is flexible and will fold to the necessary degree to permit the curtain to be moved from the position shown in Figure 3 to that shown in Figure 4, or to a lower position, for exposing the desired portion of the interior of the refrigerator.

Springs are provided at *b* for raising and holding the curtain in its elevated position shown in Figure 3. These springs are of spiral form and are guided on the side rods, and these side rods may assume any desirable form, solid or tubular, in which latter case the inner sides of the tubes would be provided with vertical slots to receive the edges of the curtain, or any suitable cross bar means connected with the curtain.

When the curtain is lowered by a pressure of

the hand thereupon, which may be applied at the depressed portion of the upper edge of the curtain or rod at *c*, it will assume a folded up condition, and if desired the curtain may be so mounted that it may be swung like a door hinged at one side so as to expose the lowermost portion of the interior of the refrigerator.

The presence of the depressed portion of the upper edge of the curtain or the cross rod which may be provided to carry the same, will induce the operator to apply the pressure for lowering the curtain at substantially the vertical center line thereof, so that the pressure will be applied in such relation to the width of the curtain as will insure an even movement of the sides of the curtain downwardly, and there will be little or no tendency for the curtain to cant or assume an abnormal position.

The side rods or posts a^1 may be pivotally mounted at their lower ends as indicated at a^2 and they may be held in upright position by coil springs a^3. This pivoting of the side rods or posts will enable the device to be moved outwardly and downwardly from its vertical position for gaining access to the bottom of the refrigerator for cleaning or for placing or removing articles. The side springs may be arranged in a hem in the edges of the curtain.

Where a feature shown in one form of the invention is capable of incorporation in one of the other forms illustrated herein, it is to be regarded as included in said other form, in order to save multiplication of illustration and description. For instance, the rods *a* of Figs. 3 and 4 may be hinged at their lower ends and held upright by springs such as a^3 in Figs. 5 and 6.

As indicated in Fig. 7 I may employ rubber side posts *4a* instead of posts made in the form of spiral springs. These rubber posts preferably will be tapered upwardly so that their upper portions may be bent forwardly and downwardly to gain access to the space within the refrigerator. These posts may be hollow at their lower ends to removably engage studs *4b*, preferably tapered, on the frame, thus providing for the ready removal of the entire curtain unit and its replacement with ease and quickness. This will allow cleaning to be performed.

The curtain may be of light, waterproof, flexible or foldable material. A bar is used across the top of the curtain where necessary, and this may be provided with any desired form of hand hold at its center, such as a slightly depressed part.

At the outer side of the side posts or on the ends of the curtain in the form in which the curtain may have a hem containing the side post, there may be a fin or flange *4c* for closing any crevice which otherwise might exist at this point between the post or the curtain side edge and the wall of the door opening. In the case of the rubber side posts the housewife need not bend the posts downwardly, but simply draw the upper ends of the posts outwardly so that the posts assume an outward inclined position, and this may be true also of the other forms of posts or side members which might be used.

It will be noticed that a salient feature of my invention is that the appliance lowers from its upper edges, without regard to whether the curtain contracts or folds.

I claim as my invention:

1. In combination with a refrigerator, a flexible shield and resilient means at the side edges of the shield to hold it spread out across the door opening, said resilient means and the shield being arranged to yield to a force exerted downwardly upon the appliance to lower the shield and allow access to the refrigerator chamber, said resilient means being arranged to restore said shield to substantially normal position when relieved of said force, said shield at its lower end remaining in such position as will prevent undue loss of cold air, substantially as described.

2. A refrigerator shield appliance according to claim 1 in which the resilient means extend along the side edges of the shield, substantially as described.

3. Apparatus according to claim 1 in which the resilient means is in the form of resiliently flexible posts at the side edges of the shield bendable forwardly and downwardly intermediate of their lengths, and restorable to upright position automatically when released.

4. An appliance according to claim 1 in which the resilient means consist of compression springs at the side edges of the shield connected at their upper ends with the upper part of the shield to restore the same to its spread out condition after being lowered.

5. An appliance according to claim 1 in which the resilient means comprises springs connected with the upper part of the shield and exerting stress vertically upon said shield to hold it yieldingly in substantially upright position.

6. An appliance according to claim 1 in which said resilient means comprise compression springs at the side edges of the shield stressing the same upwardly into spread out position and guided vertically in their compression and expanding movements.

7. An appliance according to claim 1 in which the resilient means is controlled by guides which are pivotally mounted, and spring pressed to assume normally a substantially vertical position to place the shield across the door opening.

8. An appliance according to claim 1 in which the yielding means consists of resilient posts tapered upwardly and bendable intermediate of their length forwardly and downwardly relative to the door, substantially as described.

9. Apparatus according to claim 1 in which the shield is collapsible into folded condition under pressure tending to move it downwardly.

JAMES H. MINER.