

May 19, 1936.

C. B. MITCHELL

2,041,258

AIR RETAINING MEANS FOR REFRIGERATORS

Filed Oct. 25, 1934

2 Sheets-Sheet 1

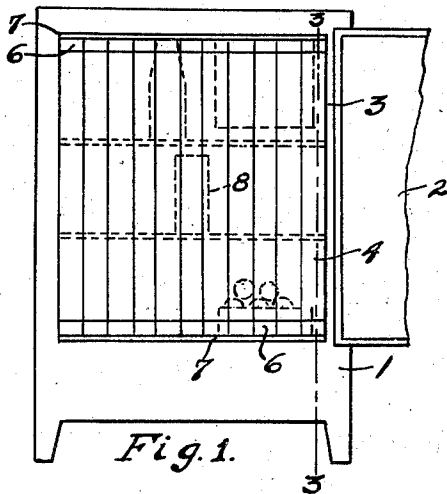


Fig. 1.

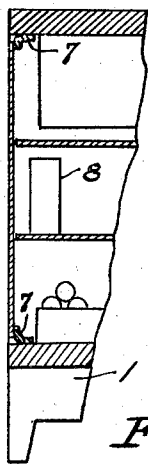


Fig. 3.

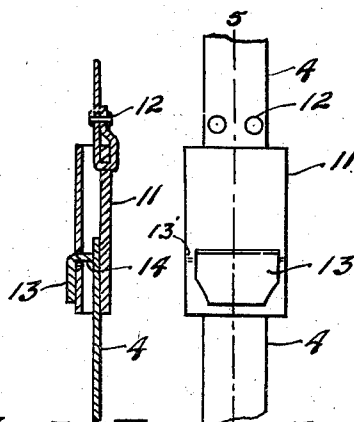


Fig. 4.

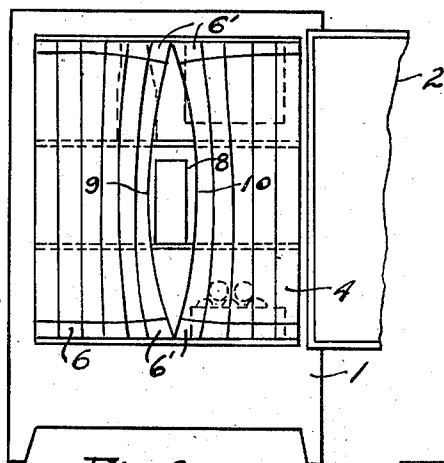


Fig. 2.

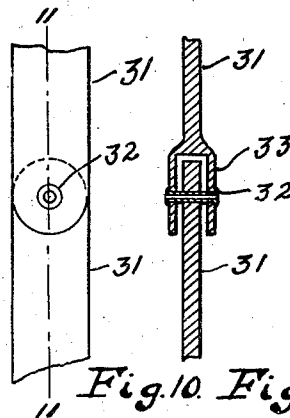


Fig. 10.

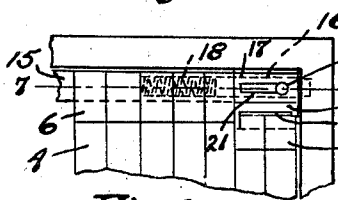


Fig. 6.

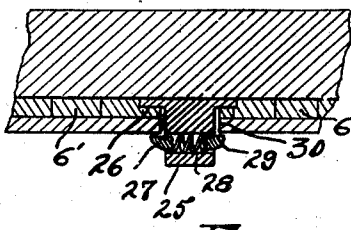


Fig. 9.

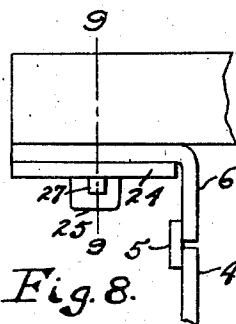


Fig. 8.

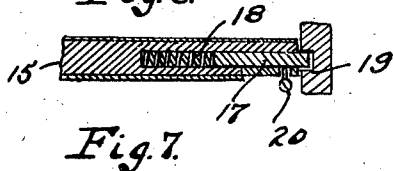


Fig. 7.

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2 Sheets-Sheet 2

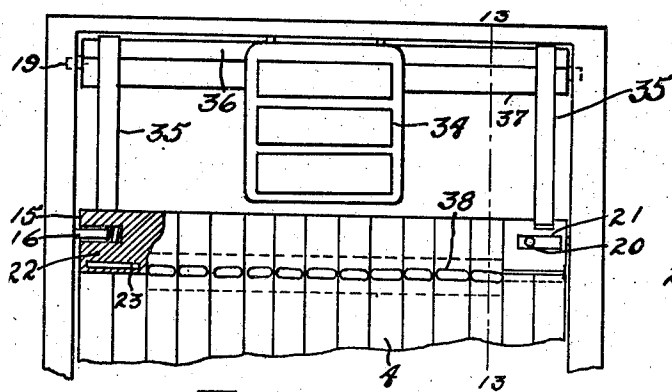


Fig. 12.

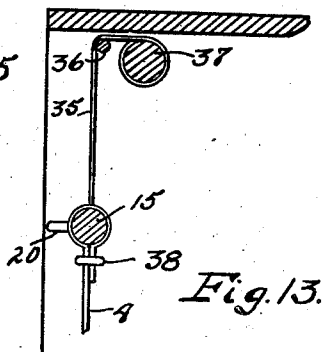


Fig. 13.

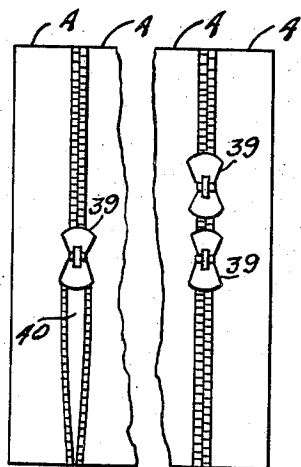


Fig. 14.

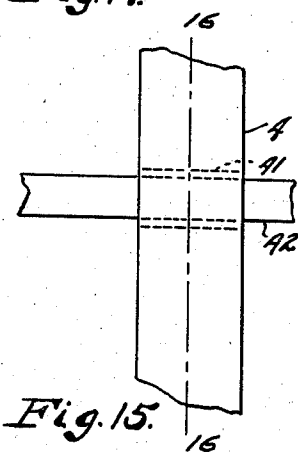


Fig. 15.

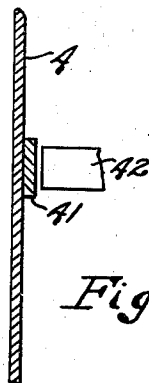


Fig. 16.

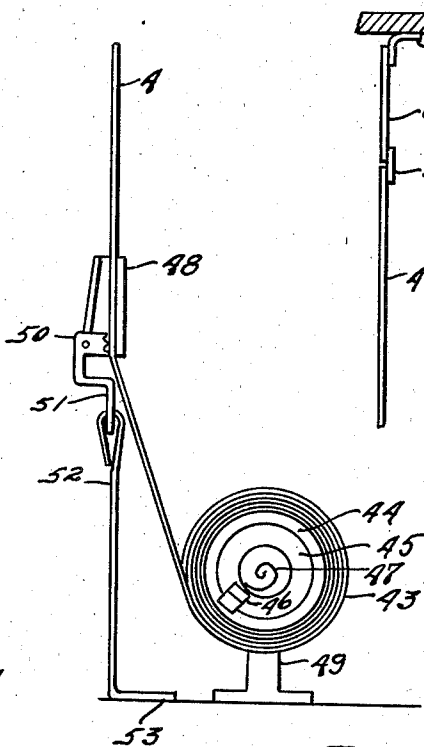


Fig. 17.

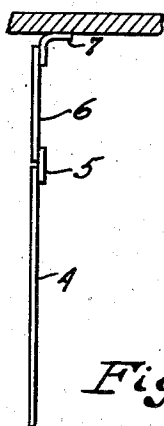


Fig. 18.

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UNITED STATES PATENT OFFICE

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AIR RETAINING MEANS FOR REFRIGERATORS

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14 Claims. (Cl. 156—10)

My invention relates to an air retaining curtain for refrigerators, and more particularly to a means adapted to be secured to a refrigerator in a manner to reduce to a minimum the loss of cold air therefrom while the door is open.

While the main object of my invention is to prevent loss of cold air from a refrigerator, an equally important object is to provide a means of easily withdrawing articles from a refrigerator and, at the same time, maintaining an effective "air-dam" to retain cold air within the refrigerator.

Another object is to provide a flexible "air-dam" or air retaining curtain that may be readily secured to a refrigerator and in a manner to be easily detached therefrom.

Another object is to provide an air retaining curtain that may be lowered bodily at its upper end to permit free access to the usual ice tray unit.

Another object is to provide a transparent air retaining curtain preferably formed from a plurality of small units so arranged as to permit access to and removal of an article from the rear thereof by merely displacing a portion of the curtain adjacent that article.

Other objects and a clear disclosure of my invention will appear in the specification that follows and from the accompanying drawings, wherein—

Figure 1 is a view of an open refrigerator showing my improved air retaining curtain in position;

Fig. 2 is a similar view showing parts displaced to permit access to an article;

Fig. 3 shows a cross-section on line 3—3 of Fig. 1;

Fig. 4 is an enlarged detail view of an adjusting means for a curtain unit;

Fig. 5 shows a cross-section on line 5—5 of Fig. 4;

Fig. 6 is a detailed view of a curtain support;

Fig. 7 shows a cross-section on line 7—7 of Fig. 6;

Fig. 8 shows a modified form of curtain support;

Fig. 9 shows a cross-section on line 9—9 of Fig. 8;

Fig. 10 shows a sectional form of curtain unit;

Fig. 11 is a view in cross-section on line 11—11 of Fig. 10;

Fig. 12 shows a modified form of curtain support;

Fig. 13 is a view in cross-section on line 13—13 of Fig. 12;

Fig. 14 shows a modified form wherein the

edges of adjacent curtain units may be secured to each other in a manner to be readily opened;

Fig. 15 shows a stiffener element for a curtain unit;

Fig. 16 shows a cross-section on line 16—16 of Fig. 15;

Fig. 17 shows a means for readily replacing curtain units; and

Fig. 18 is an enlarged detail view of a simple form of curtain attachment.

In Fig. 1, a refrigerator 1 is shown with its door 2 in open position to expose an air retaining curtain 3 constructed according to one form of my invention. This curtain is transparent and preferably formed of material sold under the trade name of "Cellophane". The curtain is made up of a plurality of relatively narrow strips 4 arranged in edge-to-edge relation. While I have shown these strips as extended vertically, they may be arranged transversely or at an angle to the vertical. The upper and lower ends of each strip, as best shown in Fig. 18, are secured by an adhesive strip 5 to an elastic insert 6 and each insert is secured to a transversely extending flexible strip 7. An adhesive surface on the strip 7 enables it to be secured to the inserts 6 and, in turn, to the top and bottom interior surfaces of the refrigerator closely adjacent the door thereof.

The purpose of the elastic inserts 6 is to permit the vertical strips 4 to readily yield laterally as shown in Fig. 2. In this view, certain strips 4 adjacent an article 8 to be removed have been moved laterally by contact of the hands of the operator applied at points 9—10 on opposite sides of an article 8. It will be noted that elastic inserts indicated as 6' have been elongated to permit lateral displacement of the associated strips 4. The article 8 may be grasped by the hands and removed thereby permitting the displaced strips 4 to spring back to their former position.

In order to insure proper tension in strips 4, an adjusting clasp 11 may be inserted in each strip. The clasp is attached to the upper portion of the strip by eyelets 12. A lever clamp 13 pivoted at 13' to clasp 11 is adapted to engage with its inner end 14 against the upper end of the lower portion of strip 4. The clamp 13 may be manipulated to engage strip 4 at any point desired to provide a strip of proper length and tension.

Figs. 6 and 7 show a modified form of support for the air retaining curtain to be used when it is desired that the entire curtain be readily detachable as a unit. To this end, the upper and

lower ends of each strip 4 are looped around and secured to a transverse rod 15. A plunger bolt 16 is slidably mounted in a recess 17 in each end of each rod. A spring 18 normally retains each bolt extended to engage within a recess 19 formed in the side wall of the refrigerator. A handle 20 on the bolt 16 extends forwardly through a slot 21 and may be operated manually to retract the bolts when it is desired to remove the upper and lower rods and attached curtain strips. An extension 22 is formed on each end or rods 15 coextensive with the slot 21. The extreme outer strips 4 are secured to these extensions 22 and the ends of the strips are passed through slots 23 formed in each extension 22. The purpose of such arrangement is to permit free access to the handles 20 by terminating the outer strips 4 below the slots 21.

A further modified form of curtain support is shown in Figs. 8 and 9 wherein the upper and lower ends of strips 4 are secured, as shown in Fig. 1, to elastic strips 6 which, however, are clamped between the refrigerator wall and a transversely extending metal strip 24. Each strip 24 is supported by means of pins 25, the bases 26 of which are attached to the refrigerator wall. Each pin 25 is provided with a pair of snap detents 27 which are retained extended by a spring 28. The detents are formed with cam faces 29. A series of openings 30 in the strips 24 register with the pins 25. The curtain is secured in place by inserting rubber terminals 6 under the strips 24 after which the pins 25 are passed through the openings 30 to permit detents 27 to first move inwardly to pass the openings 30 and then to snap outwardly to engage under the strips 24.

While I prefer to make use of thin flexible strips 4, I contemplate, in another form, a relatively thick strip 31 as shown in Figs. 10 and 11. Such form of strip, however, may preferably be formed in sections pivotally connected by pins 32, the ends of which are secured in the bifurcated ends 33 formed on alternate sections. It may be desirable, however, to provide pivoted sections for the thin strips shown in Fig. 1.

Figures 12 and 13 show a construction arranged to permit full and ready access to the usual set of ice trays 34. To this purpose, the upper end of the curtain is arranged to be dropped to a position below the ice tray unit. The strips 4 are supported on a transverse rod 15 as described for Fig. 6, the associated bolts 16 of which engage in wall recesses 19. The rod 15 is hung by means of a pair of straps 35 which pass over a small free roller 36 and engage around a spring retracted roller 37 constructed somewhat similar to the usual shade roller. To drop the curtain, the bolts 16 are retracted and the rod 15 pushed down as far as desired or to the position shown in Figs. 12 and 13. When the rods 15 are restored to their normal raised position, the spring roller 37 will rewind the straps 35 thereon or until the bolts 16 are received in the recesses 19.

The strips 4 in Figs. 12 and 13 are shown as adjustably secured to the rod 15. The upper ends of the strips are looped around the rod and passed through rings 38. The roller 15, as well as the rings 38, may be given a rough surface to contact the strips 4 in a manner to prevent any slippage of these strips. Adjustment is made by merely passing more or less of the strips through the rings 38.

In Fig. 14, the adjacent edges of the strips 4 are shown as detachably connected by means of a fastener known to the trade as the "zipper".

One or a pair of such type of fasteners 39 may be employed. Fig. 14 shows one fastener 39 as having been displaced upwardly to permit the strip edges to separate as at 40.

In one form, as shown in Figs. 15 and 16, I contemplate providing a series of stiffening elements 41 secured to the rear faces of strips 4 preferably at points adjacent the shelves 42. The elements 41 may be transparent and placed at any point on the strip. If such elements are made from opaque material, they are positioned preferably as shown.

In Fig. 17 is shown a means for supplying or renewing the strips 4. A supply of strip material is carried on a reel 43. This reel is preferably made in two parts, one outer part 44 being arranged to rotate freely on an inner part 45. A slide lock 46 is arranged to lock parts 44 and 45 together. The inner part 45 is formed as a spring roller, a spring 47 being arranged to turn part 45 in a counter-clockwise direction. The strip material feeds from reel 43 through a clasp 48 to extend to the top of the refrigerator. The reel is supported on the floor of the refrigerator by standards 49. A clamp lever 50 is arranged to grip the strip 4. This lever is provided with an extension 51 to which is secured an elastic strip 52 which, in turn, is secured at its lower end to the refrigerator floor at 53. The strip 52 acts to maintain tension on strip 4 at all times.

When it is desired to renew a strip 4, the old strip is cut off above the clamp. The latch 46 is moved to free the part 44 from the part 45 and enough new strip material is passed up through clasp 48 to reach the curtain top where it is secured in a manner hereinbefore described. The latch 46 is again set to permit the reel 43 to rotate in either direction as the strip 4 is moved up or down in use.

While I have disclosed a preferred form of my invention, as well as various modifications, it is to be understood that I make claim to the broad and generic features described and contemplate that the appended claims in scope shall embrace modifications other than those shown.

What I claim is:

1. In a refrigerator having an egress opening, in combination, an air retaining means comprising a plurality of relatively long narrow strips of air impervious material, and means to secure said strips to the refrigerator adjacent said opening in edge-to-edge relation to provide a means to retain air within the refrigerator.
2. In a device as set forth in claim 1, wherein the strips are formed to yield laterally.
3. In a device as set forth in claim 1, wherein the strips are formed to yield laterally, and yieldable means associated with an end of said strips for permitting them to be moved relative to each other to provide an access opening adjacent an article in the refrigerator.
4. A closure for impeding passage of gas through an opening, said closure comprising a plurality of relatively long narrow laterally yieldable strips of air impervious material, means for mounting both ends of the strips adjacent the opening with the strips in an edge-to-edge relation.
5. An air retaining barrier for a refrigerator comprising a plurality of long narrow laterally yieldable transparent strips of air impervious material, means for securing the strips to the inner walls of the refrigerator adjacent the door thereof with all strips in an edge-to-edge relation.

6. In an air retaining barrier as set forth in claim 5, wherein each strip comprises a plurality of pivoted sections.

7. In an air retaining barrier as set forth in claim 5, elastic means for supporting certain ends of the strips whereby the strips are permitted to move laterally to provide an access opening through the barrier between strips.

8. In an air retaining barrier as set forth in claim 5, yieldable means associated with an end of each strip to permit variation in the length thereof.

9. In an air retaining barrier as set forth in claim 5, means for securing corresponding ends of all the strips to a supporting member, and means for detachably mounting said member upon an inner wall of the refrigerator.

10. In an air retaining barrier as set forth in claim 5, means for adjustably mounting one end of the barrier to an inner wall of the refrigerator to permit movement of said end to provide access to an object in rear of said end.

11. An air retaining barrier comprising a plurality of long narrow laterally yieldable strips, an elastic element secured to an end of each strip, and means to secure the free ends of the elastic elements to a support.

12. An air retaining barrier for a refrigerator comprising a plurality of yieldable transparent strips of air impervious material arranged in edge-to-edge relation, means to secure said strips to an inner wall of the refrigerator, a series of cooperating interengaging detents spaced along the adjacent opposed edges of the strips, and a slide member arranged to engage said detents and being slidable thereover to open or close said detents in succession.

13. A retaining barrier for impeding passage of gas through an opening and comprising a plurality of elongated strips of flexible material, means for securing one end of each strip to a support with the strips placed in edge-to-edge relation, each strip being extended at its other end to provide a source of reserve strip supply whereby used portions of any strip may be cut off, and a reserve portion of strip extended to replace said used portion.

14. In a barrier as set forth in claim 13, wherein the reserve strip is formed to provide a coil of strip, and means for yieldably mounting said coil to permit limited movement of the coil and the adjacent connected strip portion.

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