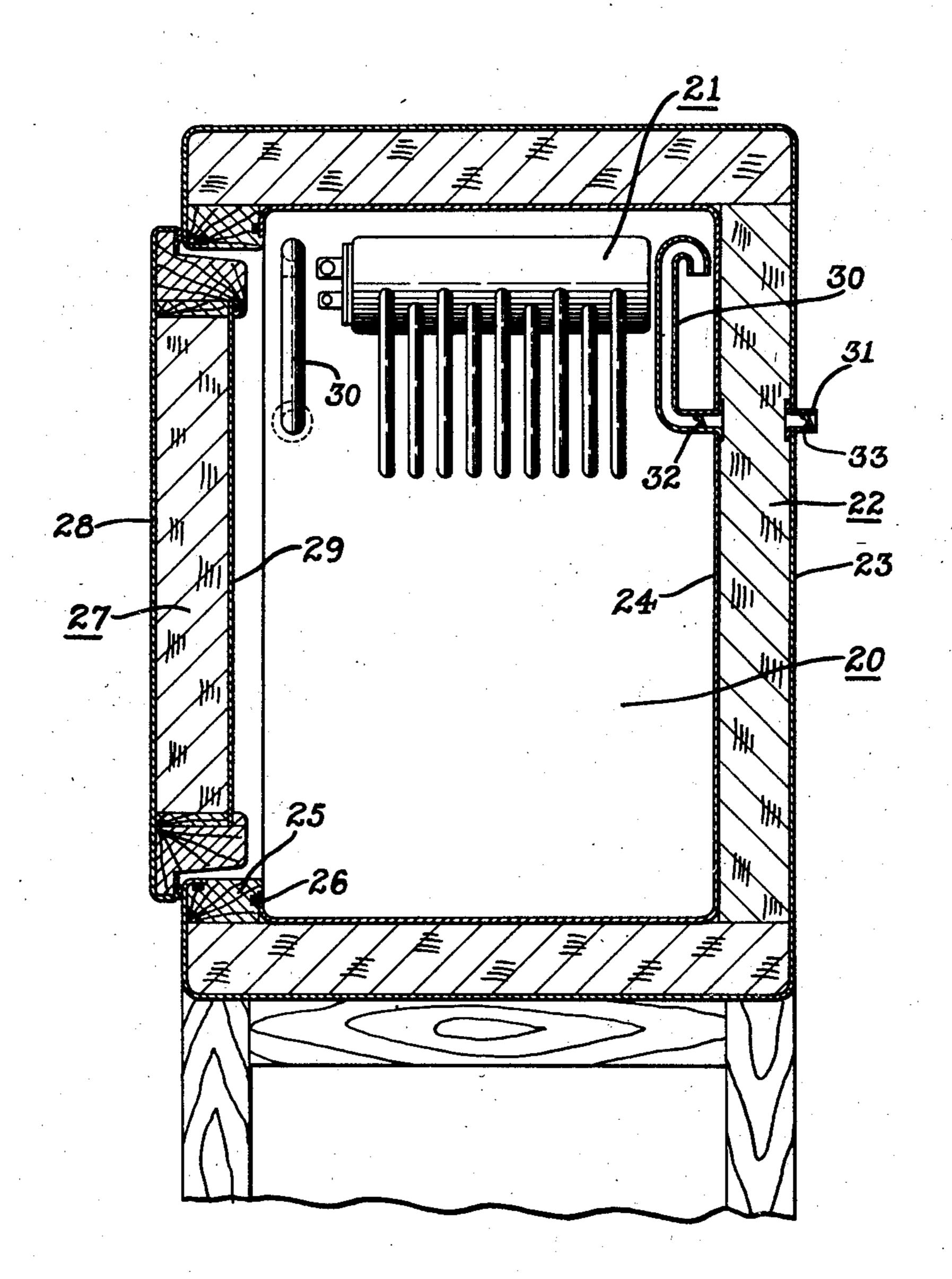
REFRIGERATING APPARATUS

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REFRIGERATING APPARATUS

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having an insulated wall.

In refrigerators of this character, air This moisture wets the insulation and causes a very insanitary and disagreeable condition. The condensation of moisture is caused by air having a high relative humid-13 ity being cooled below the dew point by the relatively cold lining of the refrigerator.

of the air within the insulating wall to hermetically sealed insulated wall.

the condensation of atmospheric moisture only from the source of dehydrated 90

condensation of atmospheric moisture with- such periods when the air within the wall is 95 in the insulating wall.

present invention will be apparent from the closed.

This invention relates to a refrigerator preferred form of the present embodiment is clearly shown.

In the drawing:

entering the insulated wall has condensed The figure is a vertical cross sectional 5 moisture on the lining of the refrigerator. view of a refrigerator embodying my 55 invention.

A refrigerator, embodying my invention, generally designated as 20, has refrigerating means, such as an iceless cooling unit, generally designated as 21 which contains re- 60 frigerant and which does not discharge said With the varying temperatures outside, refrigerant into the refrigerated space. The and possibly inside the refrigerator, the air refrigerator may be provided with an inwithin the insulating wall is caused to ex-sulating wall 22 having a shell comprising pand and contract periodically. This, in an outside cover 23, an inside lining 24 and 65 turn, periodically renews the high relative a stationary insulating material, such as humidity of the air within the insulating cork or the like. The shell of the insulating wall, since the periodic expansion and con-wall may be connected to the frame work traction causes a fresh supply of air to enter 25 and may have means for hermetically 20 the insulating wall, which fresh supply of sealing the wall, such as a gasket at 26. The 70 air generally has a relatively high humidity. door also may comprise an insulating wall I have overcome these objections by caus- 27 provided with an outside cover 28 and an ing the periodic expansion and contraction inside lining 29 and this door may also be a

25 withdraw air into the wall from a source of In order to compensate for the expansion 75 relatively dry air, and to discharge the air of air within the insulating walls of the from within the insulating wall to any con-refrigerator, I provide breathing means venient place which does not pollute the in- which may comprise a passage or tube structerior of the refrigerator, such as the outside ture 30 leading from a source of dehydrated 29 atmosphere. The periodic expansion and air independent of the refrigerant in the 80 contraction of air, with the ordinarily at- cooling unit 21, as, for instance, the inside of tendant influx and discharge of air, I have the refrigerator and another passage or tube preferred to call a breathing action. This structure 31 leading from the inside of the breathing action, according to my invention, wall to the outside of the refrigerator. There introduces relatively dry air into the in- may be a plurality of these passages and the 85 sulating wall and prevents the introduction door also may be provided with one or more of air from the wall into the interior com- of these passages. The passages may be partment of the refrigerator. provided with check valves 32 and 33 which An object of this invention is to prevent cause the insulating wall to withdraw air within an insulating wall of the refrigerator. air during the periods when the air within Another object of this invention is to per- the wall is contracting. The check valves mit free flow of air into and out of the also permit the air from within the wall to insulating wall and at the same time prevent/escape outside of the refrigerator during expanding. This is the operation during Further objects and advantages of the normal conditions as when the door 28 is

following description, reference being had It is obvious that, since the air within the to the accompanying drawing wherein a refrigerator ordinarily is colder than the air

from the interior of the refrigerator will not condense moisture within the insulated wall because the relative humidity of the air 5 within the refrigerator has been reduced by the cooling unit below the dew point of air

within the insulating wall.

Ordinarily it is desirable to prevent air from within the insulating wall from enter-10 ing the interior of the refrigerator, because of sanitary reasons. The air within the in- wall provided with breathing means adaptsulated wall is generally undesirable in the ed to inhale from within the refrigerator refrigerator because of the odor of the in- and to exhale outside the refrigerator, comsulation. By the means described herein, prising a passage connecting the interior of 15 it is possible to prevent the fouling of the the wall with the interior of the refrigerator, 50 air within the refrigerator by the air of the another passage connecting the interior of insulating wall, since the passages always the wall with the exterior of the refrigerator induce the air outwardly from the inner com- and means to cause air to flow in said paspartment of the refrigerator to the wall in- sages only from the interior of the refrig-20 stead of inwardly.

air from within the insulated walls is dis- the refrigerator, said last named means incharged outside of the refrigerator, some- cluding a check valve in one of said pastimes it may be possible to discharge the sages, said refrigerator having a cooling ele-25 air back into the food compartment without ment containing refrigerant and permitting 93 causing too objectionable an odor within the said wall to inhale and to exhale independrefrigerator. In such a case one or more ently of said refrigerant. passages may be provided into the insulated 5. A refrigerator having an insulating wall from the food compartment where the wall provided with breathing means adapt-30 air is dehydrated. It is important to pre- ed to inhale from within the refrigerator 93 vent the outside, warm and humid air from and to exhale outside the refrigerator, com-

35 vention as herein disclosed, constitutes a the wall with the exterior of the refriger- 100 preferred form, it is to be understood that ator and means to cause air to flow in said other forms might be adopted, all coming passages only from the interior of the refrig-

What is claimed is as follows:

wall provided with breathing means adapt- cluding a check valve in each of said pased to inhale from within the refrigerator and to exhale outside the refrigerator by reason of periodic changes in the tempera-45 ture of said wall and having a cooling element containing refrigerant and permitting said wall to inhale and to exhale independently of the flow of said refrigerant.

2. A refrigerator having an insulating 50 wall provided with a relatively impervious shell, and breathing means adapted to inhale into the wall from within the refrigerator, and to exhale outside the refrigerator by reason of periodic changes in the temper-55 ature of said wall and having a cooling element containing refrigerant and permitting said wall to inhale and to exhale independ-

ently of the flow of said refrigerant.

3. A refrigerator having an insulating 60 wall provided with breathing means adapted to inhale from within the refrigerator and to exhale outside the refrigerator, comprising a passage connecting the interior of the wall with the interior of the refrigerator, 65 another passage connecting the interior of

within the insulating wall, air withdrawn the wall with the exterior of the refrigerator and means to cause air to flow in said pasages only from the interior of the refine erator to the interior of the wall and from the interior of the wall to the exterior of 75 the refrigerator, said refrigerator having a cooling element containing refrigerant and permitting said wall to inhale and to exhale

independently of said refrigerant.

4. A refrigerator having an insulating 75 erator to the interior of the wall and from 85 While, in the preferred embodiment, the the interior of the wall to the exterior of

entering the insulated wall and to thus pre- prising a passage connecting the interior of While the form of embodiment of the in- another passage connecting the interior of within the scope of the claims which follow. erator to the interior of the wall and from the interior of the wall to the exterior of 1. A refrigerator having an insulating the refrigerator, said last named means in 195 sages, said refrigerator having a cooling element containing refrigerant and permitting said wall to inhale and to exhale independ-

ently of said refrigerant. 6. A refrigerator having an insulating wall provided with a relatively impervious shell, and breathing means adapted to inhale into the wall from within the refrigerator, and to exhale outside the refriger- 115 ator, comprising a passage connecting the interior of the wall with the interior of the refrigerator, another passage connecting the interior of the wall with the exterior of the refrigerator and means to cause air to flow 120 in said passages only from the interior of the refrigerator to the interior of the wall and from the interior of the wall to the exterior of the refrigerator, said refrigerator having a cooling element containing refrig- 125 erant and permitting said wall to inhale and to exhale independently of said refrigerant.

7. A refrigerator having an insulating wall provided with a relatively impervious shell, and breathing means adapted to in- 120

hale into the wall from within the refrig- 12. A refrigerator having an iceless coolerator, and to exhale outside the refriger- ing unit containing refrigerant and an insuator, comprising a passage connecting the lating wall provided with breathing means interior of the wall with the interior of the adapted to inhale into the wall air independ-5 refrigerator, another passage connecting ent of said refrigerant and dehydrated 70 the interior of the wall with the exterior of by said cooling unit and to exhale outside the refrigerator and means to cause air to the refrigerator, comprising a passage conflow in said passages only from the interior necting the interior of the wall with air deof the refrigerator to the interior of the wall hydrated by said cooling unit, another pas-10 and from the interior of the wall to the ex-sage connecting the interior of the wall with 75 terior of the refrigerator, said last named the exterior of the refrigerator and means to means including a check valve in one of said cause air to flow in said passages only from passages, said refrigerator having a cooling the source of dehydrated air into the wall element containing refrigerant and permit- and from the wall to the exterior of the re-15 ting said wall to inhale and to exhale independently of said refrigerant.

8. A refrigerator having an insulating wall provided with a relatively impervious shell, and breathing means adapted to in-20 hale into the wall from within the refrigerator, and to exhale outside the refrigerator, comprising a passage connecting the interior of the wall with the interior of the refrigerator, another passage connecting the 23 interior of the wall with the exterior of exterior of the refrigerator, said last named and from the wall to the exterior of the re- 95 said passages, said refrigerator having a cooling element containing refrigerant and permitting said wall to inhale and to exhale 35 independently of said refrigerant.

9. A refrigerator having an iceless cooling unit containing refrigerant and an insulating wall provided with breathing means adapted to inhale into the wall air independent of 49 said refrigerant and dehydrated by said cooling unit and to exhale outside the refriger-

ator.

10. A refrigerator having an iceless cooling unit containing refrigerant and an in-45 sulating wall provided with a relatively impervious shell and breathing means adapted to inhale into the wall air independent of said refrigerant and dehydrated by said cooling unit and to exhale outside the refriger-50 ator.

11. A refrigerator having an iceless cooling unit containing refrigerant and an in- pervious shell and breathing means adapted sulating wall provided with breathing means to inhale into the wall air independent of adapted to inhale into the wall air independ-55 ent of said refrigerant and dehydrated by said cooling unit and to exhale outside the refrigerator, comprising a passage connecting the interior of the wall with air dehy- said cooling unit, another passage connectdrated by said cooling unit, another passage ing the interior of the wall with the exterior connecting the interior of the wall with the of the refrigerator and means to cause air to 125 exterior of the refrigerator and means to flow in said passages only from the source cause air to flow in said passages only from of dehydrated air into the wall and from the source of dehydrated air into the wall the wall to the exterior of the refrigerator, and from the wall to the exterior of the re- said last named means including a check 130 ^{C5} frigerator.

frigerator, said last named means including 80 a check valve in one of said passages.

13. A refrigerator having an iceless cooling unit containing refrigerant and an insulating wall provided with breathing means adapted to inhale into the wall air independ-85 ent of said refrigerant and dehydrated by said cooling unit and to exhale outside the refrigerator, comprising a passage connecting the interior of the wall with air dehydrated by said cooling unit, another passage 53 the refrigerator and means to cause air to connecting the interior of the wall with the flow in said passages only from the interior exterior of the refrigerator and means to of the refrigerator to the interior of the wall cause air to flow in said passages only from and from the interior of the wall to the the source of dehydrated air into the wall means including a check valve in each of frigerator, said last named means including a check valve in each of said passages.

14. A refrigerator having an iceless cooling unit containing refrigerant and an insulating wall provided with a relatively 100 impervious shell and breathing means adapted to inhale into the wall air independent of said refrigerant and dehydrated by said cooling unit and to exhale outside the: refrigerator, comprising a passage connect- 105 ing the interior of the wall with air dehydrated by said cooling unit, another passage connecting the interior of the wall with the exterior of the refrigerator and means to cause air to flow in said passages only from 110 the source of dehydrated air into the wall and from the wall to the exterior of the refrigerator.

15. A refrigerator having an iceless cooling unit containing refrigerant and an in- 115 sulating wall provided with a relatively imsaid refrigerant and dehydrated by said cooling unit and to exhale outside the refriger- 120 ator, comprising a passage connecting the interior of the wall with air dehydrated by valve in one of said passages.

ment.

16. A refrigerator having an iceless cooling unit containing refrigerant and an insulating wall provided with a relatively impervious shell and breathing means adapted 5 to inhale into the wall air independent of said refrigerant and dehydrated by said cooling unit and to exhale outside the refrigerator, comprising a passage connecting the interior of the wall with air dehydrated by 1) said cooling unit, another passage connecting the interior of the wall with the exterior of 15 the wall to the exterior of the refrigerator, lation from said wall of air, independent of 80 valve in each of said passages.

17. A refrigerator having a food compartment, an iceless cooling unit in said coman insulating wall carrying said door and provided with stationary insulating material and a relatively impervious shell surrounding a substantial part of said food compart-

material provided with relatively impervi- of said shell. means having a tube structure having con-signature. nections with the interior of said wall and with the exterior of said refrigerator for inhaling into the wall only air, independent of said refrigerant, dehydrated by said cooling unit and for exhaling outside the refrigerator with the aid of pressure fluctuations between the air inside of said wall and 45 the air outside of said wall.

19. A refrigerator having an iceless cooling unit containing refrigerant, an insulating wall containing stationary insulating material provided with relatively impervious inner and outer shells, and breathing means for said insulating wall including a tube structure extending from said inner shell inwardly near said cooling unit and connected with the interior of said wall, and 53 including a tube structure having an opening to the outside of said refrigerator.

20. A refrigerator having an iceless cooling unit containing refrigerant, a hollow, substantially impervious wall containing stationary insulation, breathing means having a connection with the interior of said wall for inhaling air independent of said refrigerant, and having a discharge opening to the exterior of said refrigerator, and c5 provisions whereby the air inhaled by said

breathing means is chilled and dehydrated by said cooling unit so that condensation of moisture from said air within said wall is prevented at the temperatures prevailing in said wall.

21. A refrigerator having a food compartment, an iceless cooling unit in said compartment containing a refrigerant, a substantially impervious shell having insulation disposed therein and forming an insulated 75 wall surrounding the greater part of said the refrigerator and means to cause air to compartment, a closure device for closing a flow in said passages only from the source point of entry to said compartment, and of dehydrated air into the wall and from means permitting inhalation into and exhasaid last named means including a check the refrigerant, said means being arranged to inhale said air, when said closure device is closed, only from within said compartment.

23 partment containing a refrigerant, a door, 22. A refrigerator having a food compart-85 ment, an iceless cooling unit in said compartment containing a refrigerant, a substantially impervious shell having insulation disposed therein and forming an in-25 ment not covered by said door, and breathing sulated wall surrounding the greater part of 90 means adapted to inhale into and to exhale said compartment, a closure device for closfrom the wall air, independent of said re- ing a point of entry to said compartment, frigerant, said breathing means being and means permitting inhalation into and adapted to inhale said air, when said door exhalation from said wall of air, independent is closed, only from within said compart- of the refrigerant, said means being ar- 95 ranged to inhale said air, when said closure 18. A refrigerator having an iceless cool-device is closed, only from within said coming unit containing refrigerant, an insulat- partment, and said means being arranged to ing wall containing stationary insulating exhale said air to the atmosphere exterior

ous inner and outer shells, and breathing In testimony whereof I hereto affix my

HARRY B. HULL.

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