

April 22, 1952

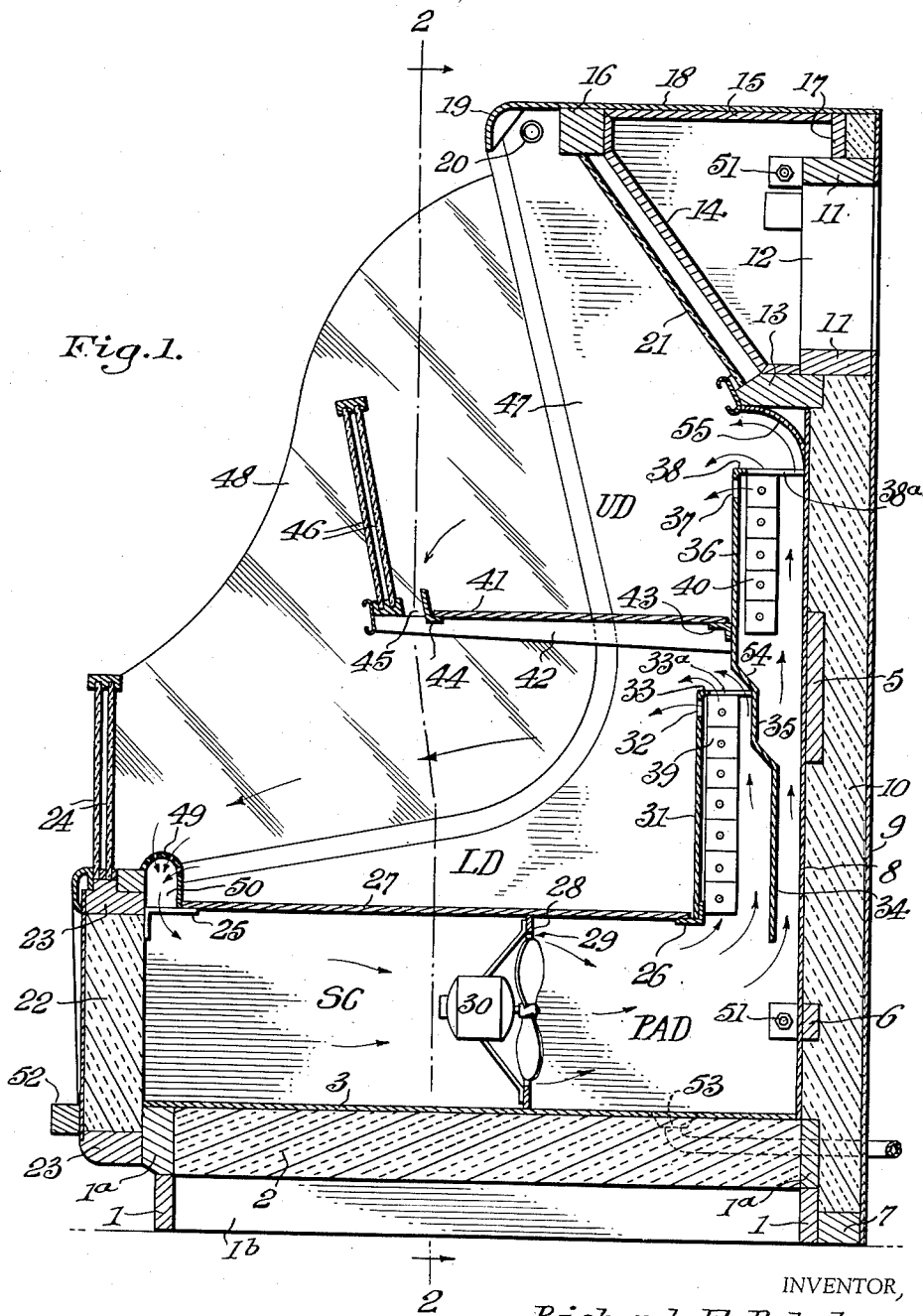
R. E. PABST

2,594,066

TWO-DECKER DAIRY SELF-SERVICE REFRIGERATOR

Filed June 13, 1950

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

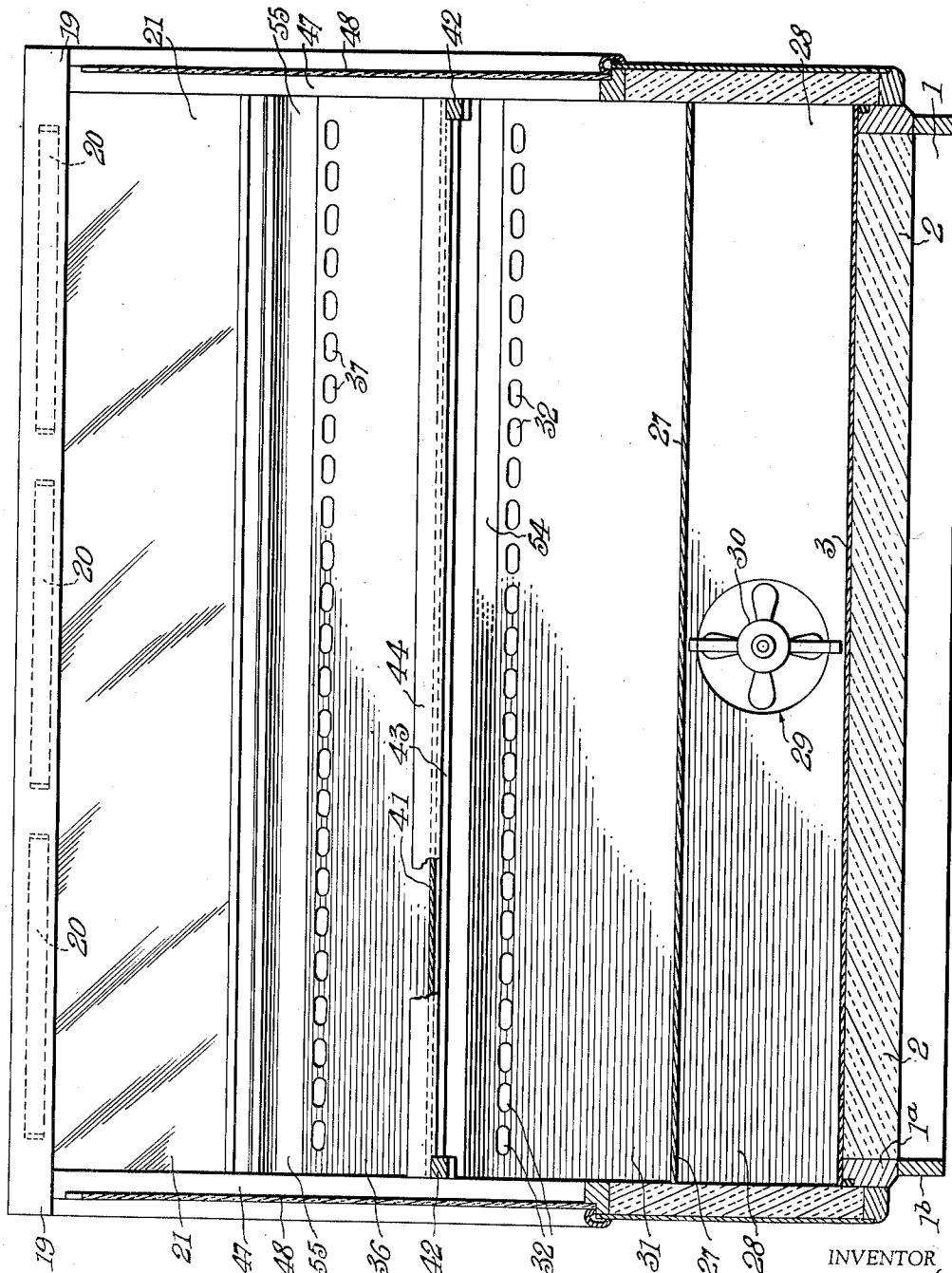


Fig. 2.

Richard E. Pabst,

BY *Albert E. Dittrich,*

ATTORNEY.

UNITED STATES PATENT OFFICE

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TWO-DECKER DAIRY SELF-SERVICE
REFRIGERATORRichard E. Pabst, San Antonio, Tex., assignor to
Ed Friedrich, Inc., San Antonio, Tex., a corpo-
ration of Texas

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2 Claims. (Cl. 62—89.5)

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My invention relates to the art of refrigeration and, more specifically, to open-top or self-service refrigerators.

The present invention has for its object to provide a split coil arrangement for refrigerating the bottom and top decks of a refrigerator separately.

To the attainment of the aforesaid object and end, invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, and then be particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which:

Fig. 1 is a vertical cross section on the line 1—1 of Fig. 2.

Fig. 2 is a vertical section on the line 2—2 of Fig. 1.

In the drawings, in which like numerals of reference indicate like parts in all the figures, it will be seen that there is provided a base frame composed of the wooden elements 1, 1^a, 1^b, and a heat and cold insulation 2. 3 designates a metal floor on the base frame.

The back of the refrigerator is composed of inner and outer metal wall plates 8 and 9 respectively, on wooden framework 5, 6, and 7. The space between the wall plates 8 and 9 is filled with a heat and cold insulation 10.

At the top of the refrigerator there is provided a canopy comprising a window frame 11—12 and wooden beams 13, 16, and 17, together with wooden supports 14 and 15, there being a metal sheet 18 on top of the canopy, the front of the sheet 18 being curved at 19 to shield fluorescent lamps 20 located in front of the beam 16.

21 is a mirror to reflect the contents of the upper deck hereinafter again referred to.

22 is the heat insulation of the front wall of the refrigerator, which wall includes the wooden framing 23 and a thermopane glass front 24.

Mounted on brackets 25, 26 is a porcelain shelf 27 forming the bottom of the lower deck or food chamber. The shelf 27 is spaced above the metal floor 3 and there is provided a vertical partition 28 separating the space between the floor 3 and shelf 27 into two compartments. About midway the length of the partition 28 there is provided an opening 29 in which a blower unit 30 is removably secured. The partition 28 divides the space into what I call a pressure-air-duct PAD and a suction chamber SC. At the rear of the shelf 27 there is provided a vertical wall 31, and between the wall 31 and the rear wall of the

refrigerator there is provided a vertical partition 34 having a forwardly stepped portion 35 and 54, to provide a rear wall 36 for the upper deck chamber. At their upper ends the walls 31 and 35 are each provided with a row of outlets 32 and 37 respectively.

So far as described, it will be seen that the walls 31 and 36 and the partitions 34, 35 provide two independent ducts for conveying air from the chamber PAD to the lower deck LD and the upper deck UD. Within each duct formed between the elements 31, 34—36 and 8 are located, adjacent the walls 31 and 36, cooling coils 39 and 40 respectively. The ducts containing these coils are provided at the top with horizontal walls 33 and 38, respectively, the walls being provided with openings extending the full length of the refrigerator from one end to the other.

41 is a porcelain shelf supported on brackets 43 and 44 carried on arms 42. At the front of the arms 42 there is provided a thermopane glass front 46. The shelf 41 does not extend entirely to the glass front 46, but there is provided a duct 45 through which air may pass downwardly from the upper deck UD to the lower deck LD.

The refrigerator is provided with removable ends 47, the major portions of which are heat and cold insulated. Other portions of the ends are constituted by transparencies 48 so that the contents of the refrigerator may be viewed through the ends of the case.

49 designates a perforated guard which provides a down-air duct 50 through which return air from the lower deck is passed into the suction chamber SC.

51 designates tie-bolts for securing the ends of the refrigerator to the intermediate body, and 52 designates a basket guard rail along the front of the refrigerator adjacent the base of the same.

The portion 54 of the partition wall 34—36 serves as a deflector to deflect air that passes through the opening 33^a forwardly toward the front of the lower deck of the refrigerator.

In operation, when the fan or blower unit 30 is set into motion, air will be drawn from the suction chamber SC and forced under pressure into the pressure-air-duct PAD and upwardly through the passages containing the refrigerating coils 39 and 40 respectively. The air is forced out through openings 32 and 37 respectively and flows toward the down-air ducts 45 and 50. Air also passes through the openings 33^a and 38^a and is deflected over the contents of the lower and upper decks respectively. The air flowing out of the air duct containing the coil 40 also is de-

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flected forwardly by a curved deflector 55. At the same time air flows down through down-air ducts 45 and 50 into the suction chamber SC. It is to be noted that the entrances to the up-air ducts at the rear of the refrigerator are located at or slightly below the level of the porcelain shelf 27.

Any suitable means may be provided for controlling the refrigeration of the coils 39 and 40.

53 is a suitable drain through which condensation water may be carried off.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation and advantages of the invention will be clear to those skilled in the art to which it relates.

What I claim is:

1. A refrigerated self service display case having a base with front and back walls, a shelf disposed in said case in spaced relation with said base, a vertically extending partition mounted on said base and engaging said shelf, a vertically extending rear wall on said shelf arranged in spaced relation with the back wall of said case, said rear wall terminating in a perforated horizontal flange and with a plurality of openings formed in said rear wall adjacent said flange, a second shelf disposed in said case superjacent said first shelf, said second shelf having a vertically extending rear wall terminating in a perforated horizontal flange engageable with the back wall of said case, the rear wall of said second shelf having a plurality of openings therein adjacent its horizontal flange, the rear wall of said second shelf being spaced from the back wall of said case with the lower end portion of said rear wall extending below said second shelf and projecting between the rear wall of said first shelf and the back wall of the case to define a plurality of air ducts, refrigerating means positioned in each of said air ducts adjacent the rear walls and horizontal flanges of said shelves, an air circulating fan positioned in said partition for forcing a stream of warm air through said ducts and over said refrigerating means to cool said air prior to its delivery through the openings in said rear walls and the perforations in said horizontal flanges.

2. A refrigerated self service display case having a base with front and back walls, a shelf disposed in said case in spaced relation with said base, a vertically extending partition interposed

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between said shelf and base and defining a low pressure chamber and a high pressure chamber, a vertically extending rear wall on said shelf arranged in spaced relation with the back wall of said case, said rear wall terminating in a perforated horizontal flange and with a plurality of openings formed in said rear wall adjacent said flange, a second shelf disposed in said case superjacent said first shelf, deflectors positioned adjacent the forward edges of said shelves and defining air passageways with the air passageway for the first shelf communicating with the low pressure chamber, said second mentioned shelf having a vertically extending rear wall terminating in a perforated horizontal flange engageable with the back wall of said case, the rear wall of said second shelf having a plurality of openings therein adjacent its horizontal flange, the rear wall of said second shelf being spaced from the back wall of said case with the lower end portion of said rear wall extending below said second shelf and projecting between the rear wall of said first shelf and the back wall of the case to define a plurality of air ducts communicating with the high pressure chamber, refrigerating means positioned in each of said air ducts adjacent the rear walls and horizontal flanges of said shelves, an air circulating fan positioned in said partition for directing a stream of warm air from the low pressure chamber through the high pressure chamber and over the refrigerating means prior to delivering the cooled air through the openings in said rear walls and horizontal flanges, said second mentioned shelf being cooled by conduction by the air stream flowing through the perforated horizontal flange formed on the rear wall of the first mentioned shelf.

RICHARD E. PABST.

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