

(No Model.)

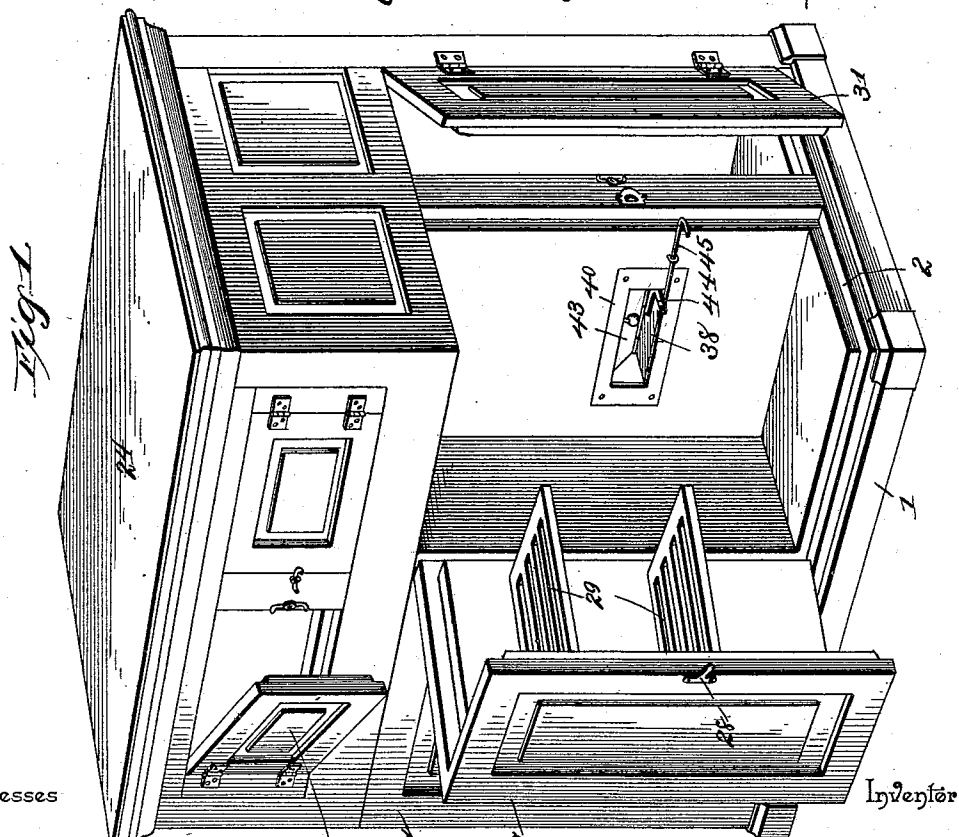
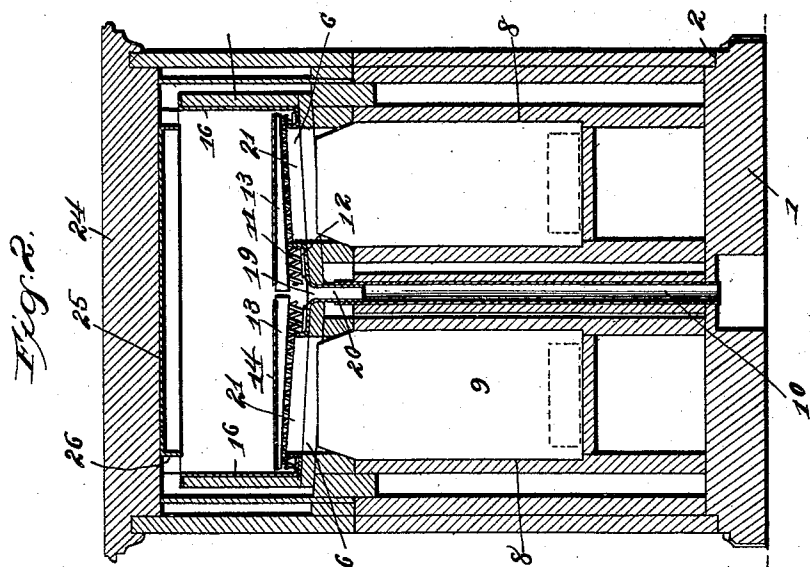
F. H. ZAHRN.

2 Sheets—Sheet 1.

REFRIGERATOR.

No. 494,049.

Patented Mar. 21, 1893.



Witnesses

Inventor

E. L. Stapelman
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By *his* Attorneys,

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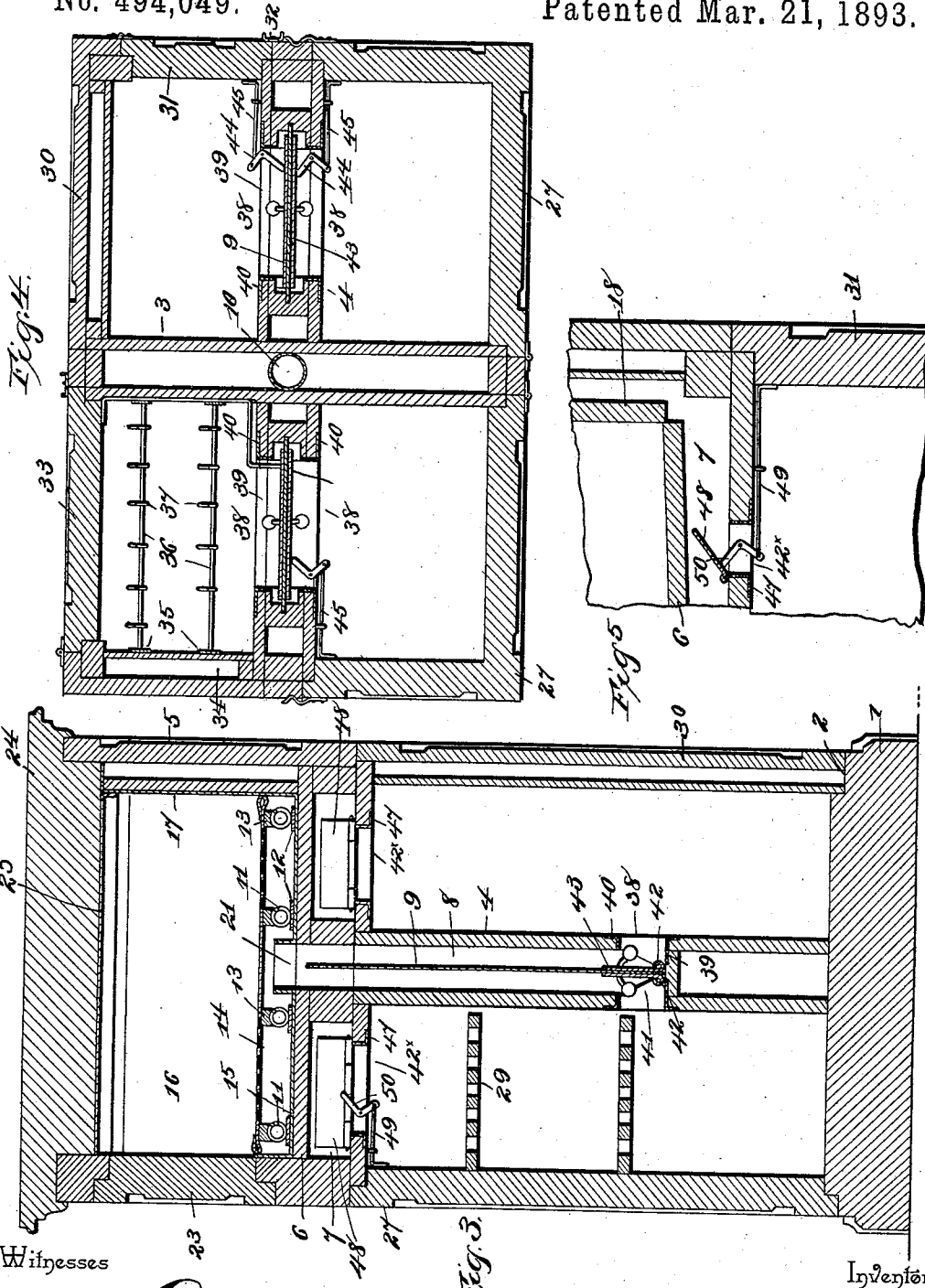
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Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK H. ZAHRN, OF MICHIGAN CITY, INDIANA.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 494,049, dated March 21, 1893.

Application filed May 16, 1892. Serial No. 433,208. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. ZAHRN, a citizen of the United States, residing at Michigan City, in the county of La Porte and State of Indiana, have invented a new and useful Refrigerator, of which the following is a specification.

My invention relates to improvements in refrigerators; and the objects in view are to provide a refrigerator of simple construction, the interiors of the compartments of which are readily accessible for the purpose of cleaning, airing, or the introduction and removal of edibles; to provide means for preventing the escape of cold air when the cold-air compartments are opened for introducing or removing articles; to provide for an automatic cut-off of the cold air, and for an automatic renewal of the same when the compartments are closed; to provide for conducting the warm air from the compartments to the top of the ice-tank for recooling and purifying; to prevent communication between the several compartments, whereby the odors of the contents of one compartment will not impregnate the contents of other compartments; to provide means for conducting cold air directly from the base of the ice to the compartments, and for accumulating the same during its non-use or when cut off from the compartments; and to provide for a rapid drip for conducting the wastewater from the ice and from the refrigerator, thereby producing a cold, dry air.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings: Figure 1 is a perspective view of a refrigerator embodying my invention. Fig. 2 is a vertical longitudinal central sectional view. Fig. 3 is a vertical transverse sectional view, taken through the warm-air exits. Fig. 4 is a horizontal transverse sectional view, taken through the cold-air discharges. Fig. 5 is a vertical section through the upper end of the compartment and the ice-box, illustrating the warm-air exit.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates a rectangular base, and the same may be constructed in any suitable manner. The base is provided with a surround-

ing rabbet 2, and has mounted upon its upper side a transverse partition 3, and a longitudinal partition 4, said partitions intersecting each other and thus dividing the refrigerator box into four compartments, one at each corner. Upon the upper ends of the partitions is mounted the rectangular top 5, having a double bottom 6, between which a warm-air space 7 is formed.

The partitions 3 and 4 each consist of two vertical sections or walls, and those of the longitudinal partition combine to form an intermediate air-space at each side of the center of the refrigerator. These air-spaces or flues are designated as 8, and they are subdivided by intermediate vertical partitions or plates 9. Between these flues, where the two partitions intersect, a drip-pipe 10 is located, and the same extends from the bottom of the top 5 through the base. The floor of the rectangular top slants from each end toward the center, as shown, and a series of coiled springs or wire coils 11 is located upon the floor. Each coil has secured to its under side a metal strip 12, and upon its upper side a wooden or metal strip 13, tapered toward its ends, so that the series of strips 13 combine to form a level support for the metal ice-tray 14, which is mounted thereon.

The drip-pan is provided with a bottom 15, end walls 16, and a back or rear wall 17, the upper edges of the three walls being bent to engage over an intermediate lining 18, which the top-section, or what may constitute the ice-box, is provided. This lining 18 is spaced from the exterior wall of the top and the space between the same and the lining is a continuation of the space 7, between the floors of the said top, so that warm air reaching the space 7, in a manner hereinafter described, will ascend and be directed to the top of the mass of ice within the ice-box or top-section. The bottom of the drip-pan is inclined from opposite ends to the center, while a perforation 19 is provided with a depending pipe 20, the said pipe extending down and into the drip-pipe 10, so that the water will be rapidly conducted from the ice. The bottom 15 of the drip-pan is provided with opposite flanged openings 21, which are above the cold-air flues 8, and communicate therewith. Within this drip-pan sits the perforated ice-

tray 14, said ice-tray being perforated at all points except directly over the openings 21, where it is imperforate. The front wall of the top is provided with a pair of opposite hinged doors 23, and the same may be opened and closed to give access to the ice-chamber. A roof 24 surmounts the top, is removable therefrom, depends within the same, and is provided with a sheet-metal plate 25, having depending flanges 26 which fit against the back wall. The side-walls of the ice-tank are shallower than the back wall, so that when the roof is in position a space is formed between the upper edges of the side-walls of the ice-tank, and the aforesaid roof.

To the front opposite edges of the transverse partition 3 there is hinged a pair of L-shaped swinging doors 27, which close the front and sides of the refrigerator, from their hinged points around to the edges of the transverse partition 4, where they are provided with catches 28, for locking them in a closed position. These L-shaped doors 27 combine with the angles formed by the two partitions 3 and 4, to form a pair of rectangular refrigerating or cold-air compartments, and when opened the doors give access to the entire compartments. The doors have their edges rabbeted, as is usual, and are provided with a series of shelves 29, which open with the doors, leaving the compartments bare to be readily cleaned, and bringing the articles outside of the compartments, whereby they may be readily removed, or other articles placed in position.

At the back of the refrigerator, one half is closed by a wall 30, forming a third cold-air chamber or refrigerator-chamber, and this is accessible through a hinged door 31, located at the side of the compartment, and provided with a suitable catch 32. The remaining half of the back of the fourth compartment is provided with a hinged door 33, the side of said compartment being covered by a side wall 34. Within this fourth compartment I have, in this instance, placed pairs of vertical uprights 35, connected by transverse bars or rods 36, from each of which is suspended a series of meat-hooks 37.

Each of the back walls of the four compartments, which back walls are formed by the partitions 4, or rather by its combined walls or sections, is provided with an opening 38, and in each opening is fitted a metallic frame 39, provided with an outer facing or flange 40, and at opposite sides with triangular flanges or side walls 41, in the angles of which latter are hinged or pivoted, at 42, cut-offs 43.

Upon each of the frames in front of each shutter, a bell-crank lever 44 is pivoted, one end of the bell-crank resting against the shutter, and the opposite end against a push-rod 45, which extends through the frame 39, and to the jamb of the door-opening, beyond which it also slightly projects. These cut-offs remain closed by gravity, when the doors are

open, so that cold air is prevented from escaping into the refrigerating or cooling compartments, but when the doors are closed, they, at their free edges, come in contact with the push-rods, and thus oscillate the bell-cranks and push the cut-offs open, permitting the entrance to the compartments of the cold air.

Openings 42^x are formed in the roofs of the several compartments, thus throwing the same into communication with the space 7 in the bottom of the ice-section or top. Metal frames are mounted in these openings, as indicated at 47; hinged cut-offs 48 are located in the frames, said cut-offs normally remaining closed; bell-cranks 50 are pivoted in the frames; and plunger-rods 49 extend through the walls to the door-jambs, to be actuated by said doors. It will thus be seen that when the doors are opened, the cut-offs terminate communication between the cold-air flues 8 and the compartments, and between the compartments and the hot-air space 7. As soon, however, as the doors are closed, communication is opened up, and a constant current of cold air passes from the base of the ice through the cold-air flues 8, and into the compartments, where, becoming warm, it rises, passes out through the openings 42^x into the space 7, thus being returned to the top of the ice, by which it is recooled and purified and returned to the compartments. By this manner it will be seen that a constant circulation of air is maintained throughout the several compartments; that said compartments may be opened, and communication to the same will be greatly facilitated; that when opened the escape of cold air will be arrested; and furthermore, that the compartments are isolated from each other, and have no communication whatever, so that their odors cannot commingle with and impregnate the articles in adjacent compartments.

Having described my invention, what I claim is—

1. In a refrigerator, the combination with the inclosing casing, and vertical intersecting partitions located therein and forming corner compartments, of angular doors corresponding each to the two outer sides of the compartments respectively, and hinged to the outer edge of one of the partitions to close against the outer edges of the other partition, substantially as specified.

2. In a refrigerator, the combination with an inclosing casing having doors or closures, vertical intersecting partitions, one of which is hollow and provided with openings communicating, respectively, with the compartments into which the interior is divided by the partitions, and an ice box or chamber communicating with the space within the hollow partition, of gravity cut-offs arranged in the openings, and devices between the doors and cut-offs whereby closing the doors will open the cut-offs, substantially as specified.

3. In a refrigerator, the combination with the base, the transverse and longitudinal par-

titions mounted thereon and intersecting each other, one of said partitions being hollow, of an ice receptacle mounted on the upper ends of the partitions, and communicating with the hollow partition, doors for closing the compartments formed at the angles of the partitions, openings formed in the rear wall of each compartment, and communicating with the space of the longitudinal partition, cut-offs hinged over the openings and normally closed, and connections between the cut-offs and doors whereby a closing of the latter will operate the cut-offs to open the same, substantially as specified.

4. The combination with the base, the transverse and longitudinal partitions, the latter forming opposite cold-air flues, and provided with openings communicating with the four compartments formed at the angles of the partitions, the top-section mounted on the partitions, and having opposite openings communicating with the cold-air flues, and a double bottom forming an intermediate warm air space 7, a surrounding inner wall, spaced to form a continuation of the space 7, an ice-receptacle mounted therein and having a drip-tube between the cold-air flues, and extending down to the base, the series of doors for closing the compartments, the series of cut-offs for closing the cold-air openings, openings formed in the roofs of the compartments and communicating with the space 7, cut-offs for normally closing the openings, and devices between the doors and the cold and warm-air cut-offs of each compartment, whereby they

are opened by a closing of the doors, substantially as specified.

5. In a refrigerator, the combination with the ice section or box having the slanting bottom, terminating in a drip-tube, the series of coiled wires, strips located at the upper and lower sides of the wires, of the ice-pan mounted on the upper strips, and the perforated ice-tray mounted in the pan and provided with perforations, substantially as specified.

6. In a refrigerator the combination with the base, the longitudinal hollow partition rising therefrom and provided with intermediate cold-air flues, openings formed in the partition, forming exits for the air in the compartments at opposite sides of the partition, a top-section mounted on the partition, and division-plates located in each of the cold-air flues, the said top-section being provided with warm-air flues, and openings in its bottom communicating with the compartments at opposite sides of the partition, an internal lining for and spaced apart from the ice-box, of a metal ice-pan having a back and opposite side walls, the latter being shallower than the former, and a superimposed cover for the same, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FREDERICK H. ZAHRN.

Witnesses:

E. F. WUEUN,
ALBERT GLÜCK.