

W. K. KNUTSON.  
REFRIGERATOR.  
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1,420,711.

Patented June 27, 1922.

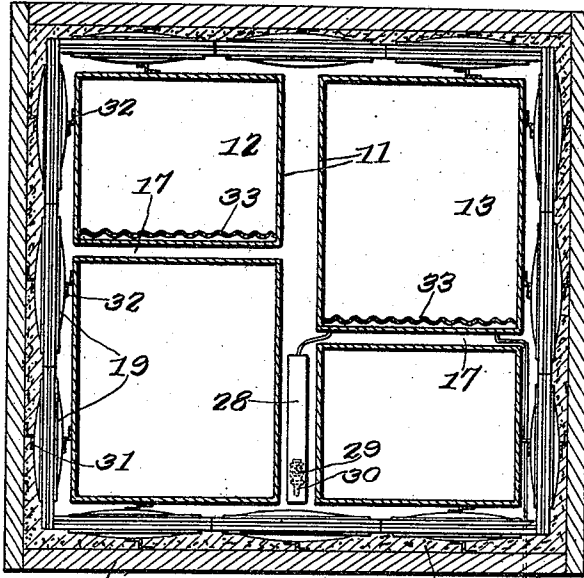


Fig. 1.

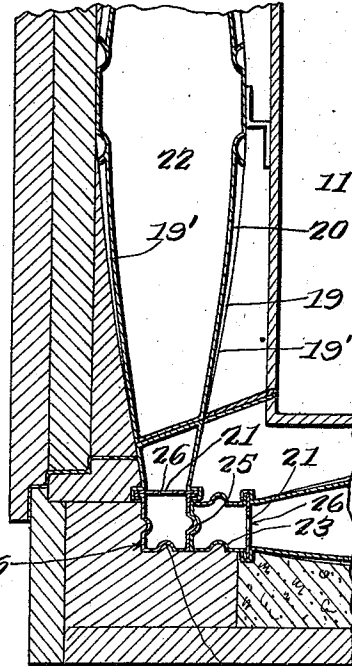


Fig. 3.

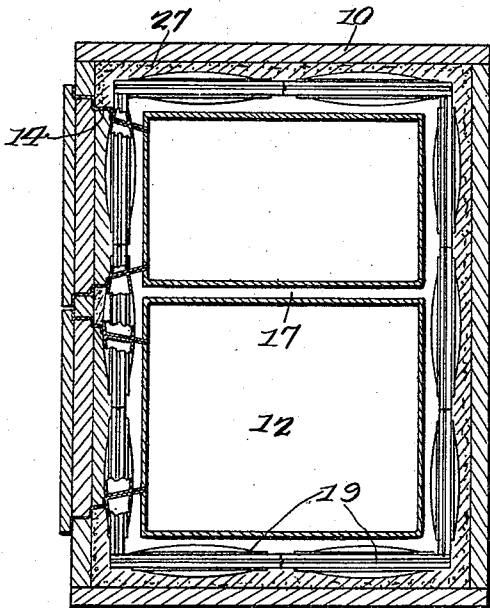


Fig. 2.

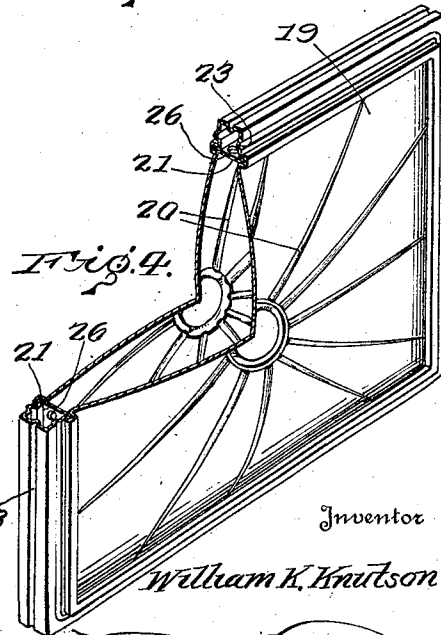


Fig. 4.

Witness

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# UNITED STATES PATENT OFFICE.

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## REFRIGERATOR.

1,420,711.

Specification of Letters Patent. Patented June 27, 1922.

Application filed March 17, 1921. Serial No. 453,126.

*To all whom it may concern:*

Be it known that I, WILLIAM K. KNUTSON, a citizen of the United States, residing at Wichita Falls, in the county of Wichita, State of Texas, have invented certain new and useful Improvements in Refrigerators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in refrigerators and particularly to vacuum refrigerators.

One object of the invention is to provide a refrigerator having an inner vacuum wall between the outer wooden shell and the inner compartment wall.

Another object is to provide a refrigerator which has a vacuum inner wall, an inner compartment wall, with a circulating air space therebetween, and a heat excluding and cold retaining filling between the vacuum wall and the outer shell.

Another object is to provide a refrigerator of such construction that it is readily adapted for use as a fireless cooker, and in which a compartment is so built that ice and food for general consumption may be stored so as to obviate opening the main ice chamber.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawings:

In the drawings:

Figure 1 is a vertical sectional view through a refrigerator, on a line running parallel with the front and back of the refrigerator.

Figure 2 is a vertical sectional view taken in a plane at right angles to that of Figure 1, and passing through the door, and the smaller ice compartment.

Figure 3 is an enlarged horizontal sectional detail view through one corner of the refrigerator showing the interlocking of the vacuum walls, and a portion of the door.

Figure 4 is a sectional perspective view of one of the sections of the vacuum wall.

Referring particularly to the accompanying drawing, 10 represents the outer shell or wall of the refrigerator, which is preferably formed from wood, but which may be formed of any other material desired. Spaced inwardly from the wooden or outer walls are the metal or composition walls 11, said walls

being so grouped as to form the two enclosures 12 and 13, each opening, on one side, toward the front opening 14 of the refrigerator, and each being divided into upper and lower compartments, as clearly seen in the sectional views. Within the corner angle of the outer shell is secured a vertical corner post 15 which is rabbetted throughout its entire length, as shown at 16. The upper compartment of the enclosure 12 is adapted to contain a small quantity of ice for general use, such as for ice-tea, or the like, so that the main ice compartment, which is the upper one of the enclosure 13, need not be opened except for the purpose of refilling with ice. The lower compartments of both enclosures serve as food spaces, while the upper compartment of the enclosure 12 may also be used for food, if desired. It will be noted that the upper and lower compartments of both of the enclosures are separated by the horizontal transverse cold air passages 17, which communicate with the vertical passages 18, between the enclosures, and the passages outside of said enclosures.

Between the walls of the enclosures and the outer shell walls of the refrigerator are disposed the hollow walls which are made up of rectangular sections 19. Each section comprises two side plates 19', of sheet metal which are bowed longitudinally as well as vertically or transversely, as more clearly seen in the sectional views of the drawing. These plates 19' are formed with corrugations 20 which radiate from the centers of the plates toward the longer and shorter sides thereof. The longer and shorter sides of the plates are connected by the transverse strips 21, so that there is formed a completely enclosed space 22 from which the greater part of the air, or the entire amount of air has been withdrawn, so that there is produced a vacuum or partial vacuum. Connected to the longer and shorter marginal edges of the plates 19' are the elongated hollow metal members or tubes 23, the same being connected thereto by crimping the meeting edges thereof. Two adjacent sides of each metal tube 23 are formed with the longitudinally extending grooves 24, while the remaining side is formed with the outwardly projecting longitudinally extending rib 25. These tubes 23 are disposed within the rabbets of the corner posts 15, in such position that the side

rib of one tube snugly fits within one of the grooves of the other tube. Each of the strips 21 is formed with a longitudinal series of holes 26 to permit communication 5 between the space within the section 19 and the attached tubes 23. Between the sections 19 and the enclosures 12 and 13 form cold air passages for the circulation of the cold air from the ice of the upper 10 compartments. Between the sections 19 and the outer shell of the refrigerator is packed a filler of some heat resisting and impervious substance 27.

Between the two enclosures is disposed a 15 tank 28 for containing drinking water, a pipe 29 leading from the lower portion thereof to a suitable faucet 30, externally of the front wall of the refrigerator.

Between the outer shell and the hollow 20 sections 19 are disposed substantially Z-shaped braces 31 which are secured to said walls to hold them in proper spaced relation. Similar braces 32 are disposed between and secured to the sections 19 and 25 the walls of the enclosures 12 and 13, to support the enclosures in proper spaced relation within the confines of the hollow sectional walls.

By this construction the cold air from 30 the ice chambers, which escapes through the perforations of the shelves 33, on which the ice rests, will circulate completely around the enclosures and thus render and keep cool the enclosures and the contents thereof.

35 What is claimed is:

1. A vacuum wall for a refrigerator comprising sections made up of oppositely and outwardly bowed plates, and members con-

necting the marginal edges of the plates of the individual sections and formed for in- 40 terlocking engagement with other sections.

2. A vacuum wall for a refrigerator comprising sections each made up of a pair of outwardly and oppositely bowed plates, 45 tubes interlocked with the side and end edges of the plates and connecting said plates, a perforated strip between each tube and the adjacent edges of the plates, each of the tubes having a longitudinal groove in each of two of its unattached sides and 50 a longitudinal rib in the remaining unattached side.

3. A vacuum wall for a refrigerator comprising sections each made up of a pair of outwardly and oppositely bowed plates, 55 tubes interlocked with the side and end edges of the plates and connecting the plates, each of the tubes having a longitudinal groove in each of two of its unattached sides and a longitudinal rib in the 60 remaining unattached side.

4. A vacuum wall section for a refrigerator including a pair of outwardly and oppositely bowed plates, a hollow frame extending around the marginal edges of the plates 65 and being connected thereto, each side and end member of the hollow frame having a longitudinal groove formed in each of two adjacent sides and a longitudinal rib in the remaining side. 70

In testimony whereof, I affix my signature in the presence of two witnesses.

WILLIAM K. KNUTSON.

Witnesses:

SAM J. BEATTIE,  
FRANK J. DORSEY.