

Jan. 2, 1923.

W. S. MONTGOMERY.
REFRIGERATOR.
FILED JUNE 22, 1922.

1,440,742.

3 SHEETS—SHEET 1.

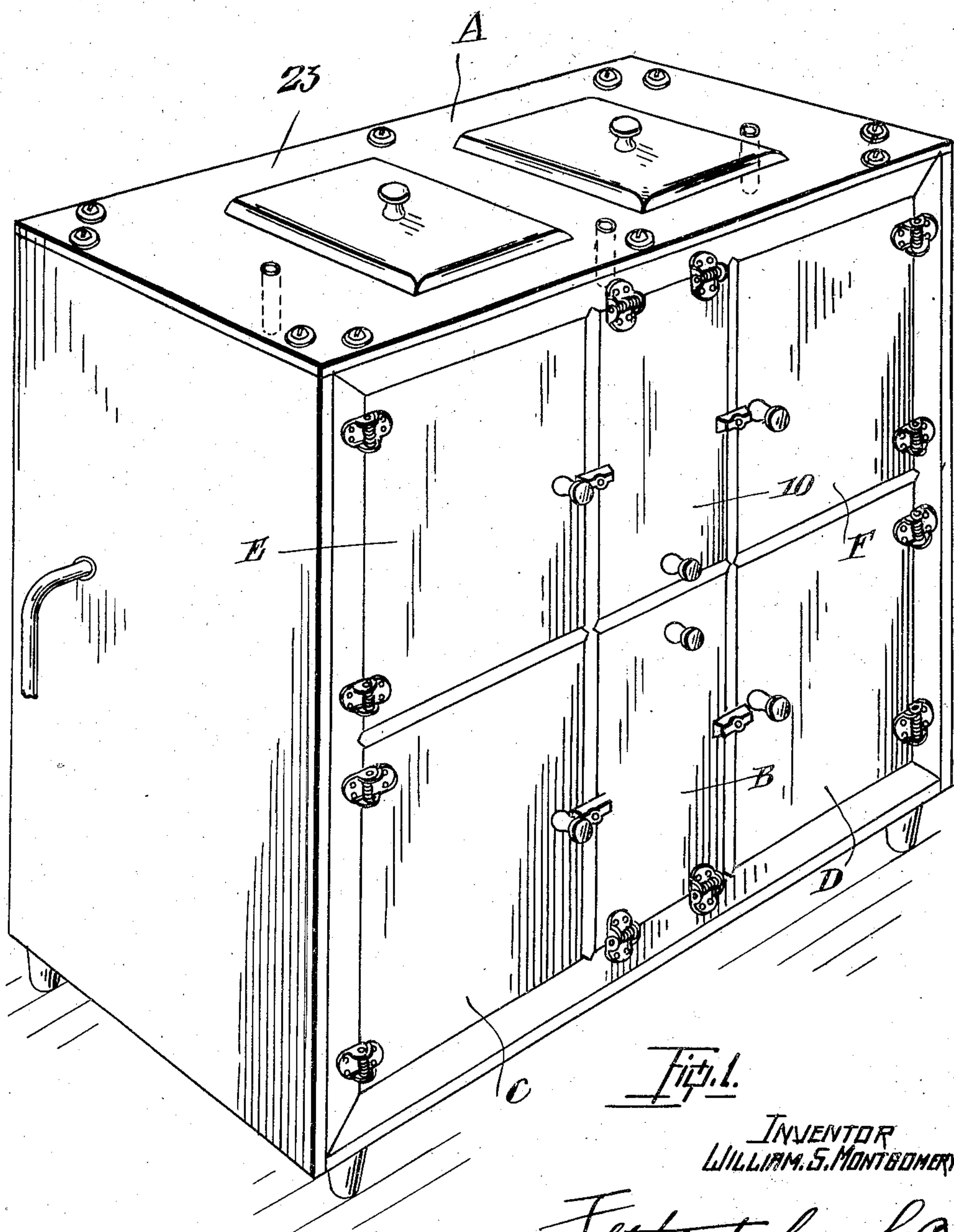


Fig. 1.

INVENTOR
WILLIAM S. MONTGOMERY

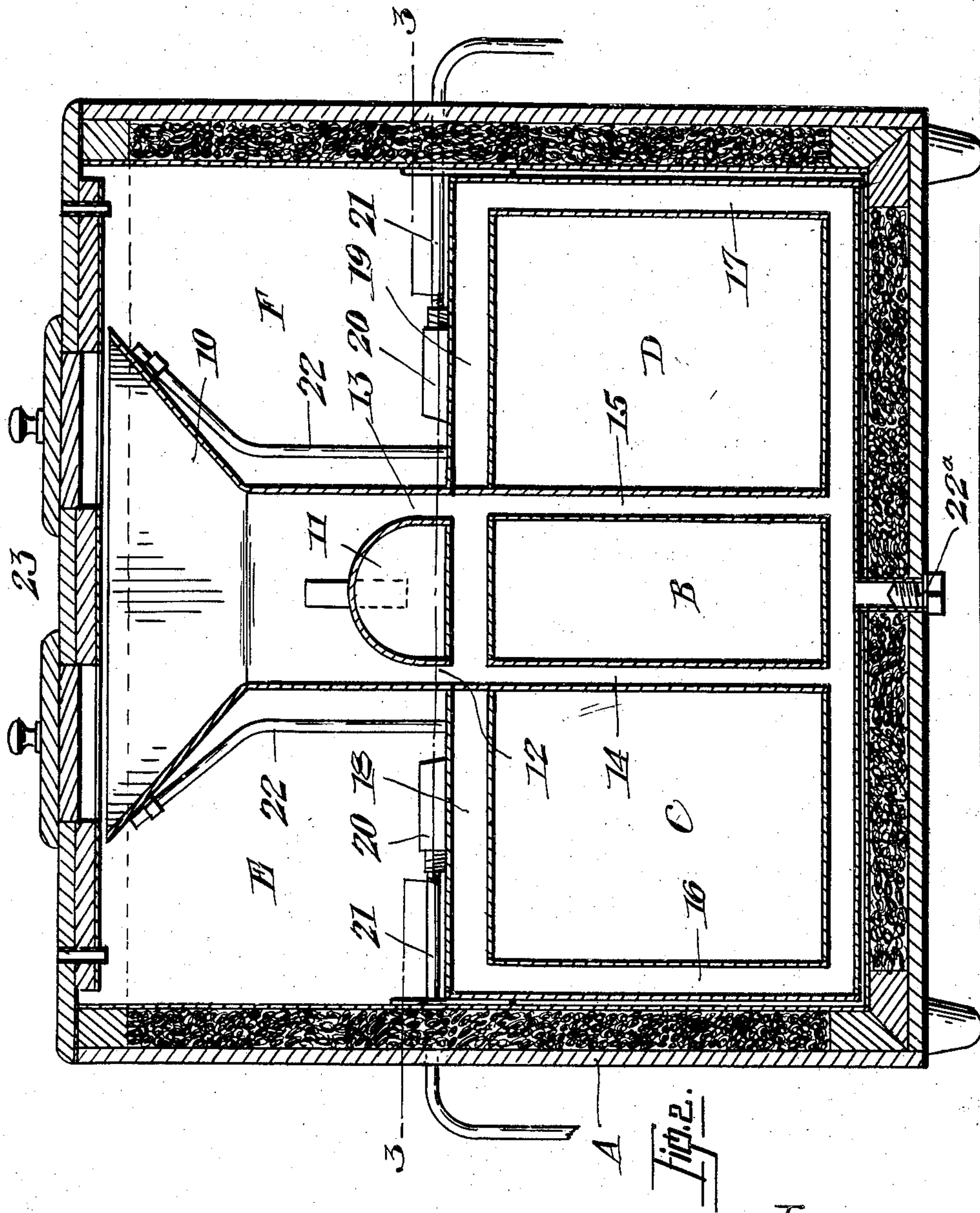
BY *Fletcher & Hough*
ATTORNEY

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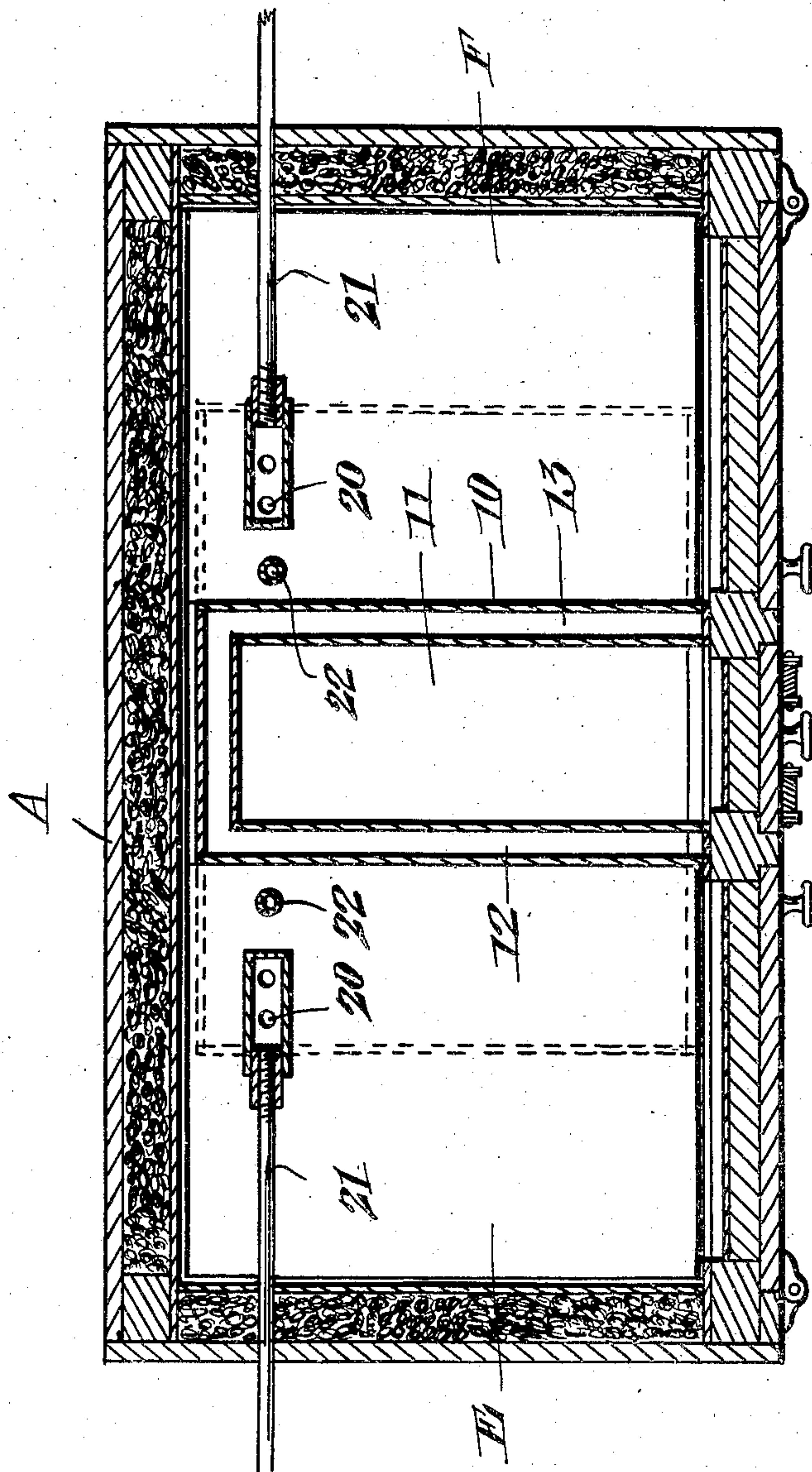
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3 SHEETS—SHEET 3.



INVENTOR
WILLIAM S. MONTGOMERY.

BY *Feltham & Co.*
ATTYS.

UNITED STATES PATENT OFFICE.

WILLIAM SCOTT MONTGOMERY, OF DALHOUSIE, NEW BRUNSWICK, CANADA.

REFRIGERATOR.

Application filed June 22, 1922. Serial No. 570,151.

To all whom it may concern:

Be it known that I, WILLIAM SCOTT MONTGOMERY, a resident of the town of Dalhousie, in the Province of New Brunswick and Dominion of Canada, have invented certain new and useful Improvements in Refrigerators, of which the following is a specification.

This invention relates to improvements in refrigerators and the like, and the objects of the invention are to provide simple, economical and effective means for utilizing the frost made from melting ice in a refrigerator before it runs off as waste.

My improved refrigerator, therefore, may be more particularly described as a combination ice, salt and self-circulating brine refrigerator. As heretofore constructed, refrigerators and especially house refrigerators were losing all the frost made from melting ice through the waste pipes while with my improved construction, this waste having been converted into brine by the addition of salt is circulated around the storage compartments of a refrigerator before being finally discharged. In this manner, I utilize at least seventy-five per cent. of the frost from melting ice that was formerly wasted and run off directly in the water. The saving in ice and the maximum of freezing efficiency thus obtained with my device can be easily understood and appreciated.

Further objects are to provide means of this character, in which the various parts will be enabled to better perform the functions required of them.

With the foregoing and other objects in view, the invention consists essentially in the combination and arrangement of parts as hereinafter described in the specification and illustrated in the accompanying drawings.

In the drawings:

Figure 1 is an enlarged perspective view of a refrigerator.

Figure 2 is a vertical section.

Figure 3 is a section on the line 3—3, Figure 2.

In the drawings, like characters of reference indicate corresponding parts in each figure.

Referring to the drawings:

A designates a refrigerator of any well-known construction, and here as an example shown as a house refrigerator of the double kind. My invention, however, is equally ap-

plicable to all sizes and makes of refrigerators, refrigerator-ships or otherwise. In the example here shown of a house refrigerator and designated by the letter A, as already mentioned, B, C, D, E, and F are storage compartments and 10 is the ice compartment, all lined or provided with, preferably, zinc walls or the like, the compartment 10 being preferably tapered towards the bottom so that the ice with which, when broken, I mix salt to form the brine and prevent it from freezing, will settle, gradually from the top, allowing the cold to descend through the several compartments.

11 is a sharp freezer or freezing chamber comprising a casing member preferably made of zinc and designed so to fit into the bottom of the ice compartment as to leave on each side, spaces or passageways connecting the ice compartment with the brine chambers which are formed between the walls, top and bottom of the storage compartments. By this means the liquid converted into brine by the addition of salt and flowing from the ice compartment will be diverted to the passageways on each side of the freezing member or sharp freezer and thence directly to the brine chambers, whereby the air in the freezing chamber will be maintained at a substantially lower temperature than the other compartments. 12, 13, 14 and 15, are brine chambers formed in the galvanized metal walls of the several compartments on each side and bottom and continued around the bottom and up the outer sides to form the chambers 16 and 17 and across the top to form the chambers 18 and 19, thus completely surrounding the several compartments C and D. These brine chambers are really hollow walls which provide means of circulation for the waste ice water converted into brine and then charged with frost, which is essentially a feature of my invention, as this brine in its circulation around the several refrigerator compartments maintains the temperature therein at freezing point or below, while being brine it does not freeze itself.

Further, it will be noted that the circulation starts with the melting ice, then, as already mentioned, is divided by the sharp freezer 11 and travels downwardly through the chambers 12 and 13, then along the base of the compartments, then upwardly along the outer sides and finally across the top

of the compartments where, as hereinafter more fully described, it is tapped by overflow pipes, thus the circulation is complete and continuous.

5 In a position in the brine chambers which will ensure that they are full of brine circulating around and across the top of the storage compartments of the refrigerator, I provide orifices 20 to which are connected
10 the overflow pipes 21. These overflow pipes are preferably mounted on a level slightly above the bottom of the sharp freezer and the brine tank, so that it will be impossible for any warm outside air to enter the brine
15 chambers.

22 are air vent pipes extending from adjacent to the orifices or apertures 20 to outside refrigerator, and open at the top, designed to prevent the overflow from syphoning brine. 22^a is a valve for draining the
20 brine tank when required. One of the overflow pipes 21 may be turned up at the end, when all the circulation of brine will go to the opposite side, making one side cooler
25 than the other. This can be arranged in very large refrigerators with a valve.

23 is the top of the refrigerator fitted and secured with felt gasket and screws, so that it can be taken off when the two overflow
30 pipes are unscrewed, when the freezer and brine chambers will all lift out to be thoroughly cleaned when necessary.

From the foregoing, it will be seen that my improved method and construction provides for refrigerators of all kinds, a perfect circulation of frost supplying brine
35 from the ice water that heretofore was discharged as waste, the simplicity of the principle involving the hollow walls for the different storage compartments connecting
40 with the sharp freezer or brine tank in such manner as to ensure, in combination with the placing of overflow pipes, a perfect circulation of the brine in every direc-

tion around, above and below the storage compartments of the refrigerator. 45

As already mentioned, it is estimated that at least seventy-five per cent of what was heretofore allowed to be discharged as waste from refrigerators, is now by my improved method and construction, utilized to
50 give the more satisfactory results from an economical and commercial point of view.

As many changes could be made in the above construction and many apparently
55 widely different embodiments of my invention within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as
60 illustrative and not in a limiting sense.

What I claim as my invention is:

A refrigerator comprising in combination an ice compartment, storage compartments
65 along side and below the ice compartment, a freezing chamber comprising a hollow casing member adapted to form a bottom for the ice compartment leaving passageways on each side, whereby the flow of liquid
70 from the ice compartment is divided, brine circulating chambers communicating with said passageways and extending downwardly around and across the top of the lower storage compartments, whereby the
75 brine from the ice compartment is circulated, first downwardly and then around and across the top of the storage compartments, brine discharge means communicating with
80 the uppermost portions of said brine chambers, whereby a continuous circulation of the brine is maintained.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM SCOTT MONTGOMERY.

Witnesses:

WILLIAM A. GALLVY,
CARMELLA LE CLAIR.