

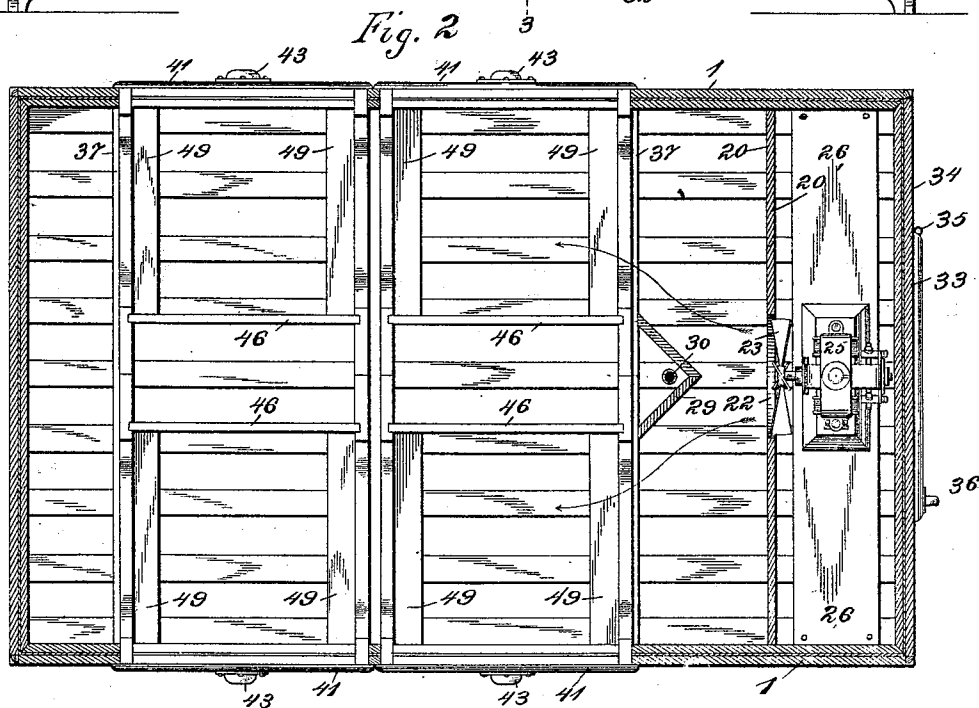
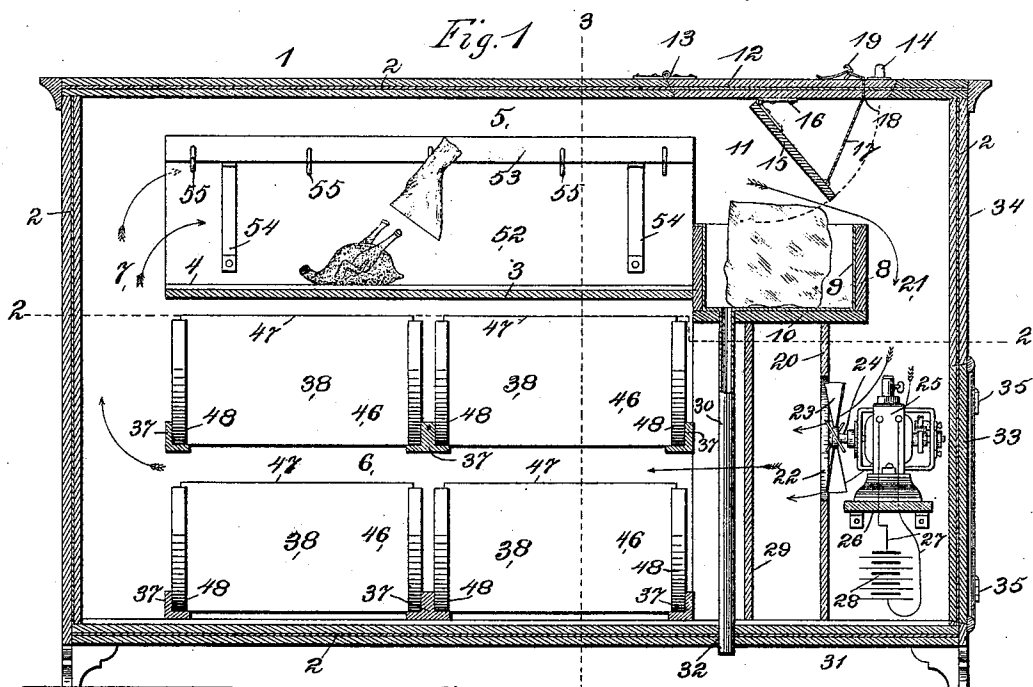
(No Model.)

2 Sheets—Sheet 1.

L. B. McCLANATHAN.
REFRIGERATOR.

No. 520,695.

Patented May 29, 1894.



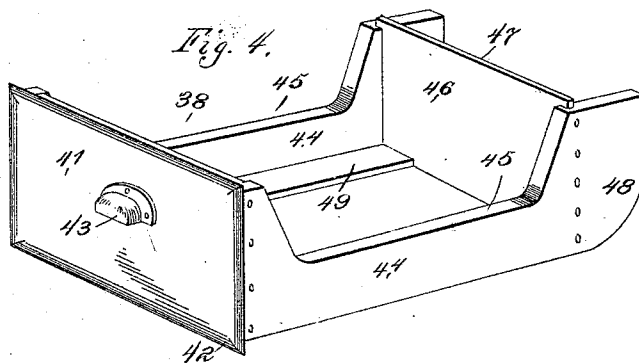
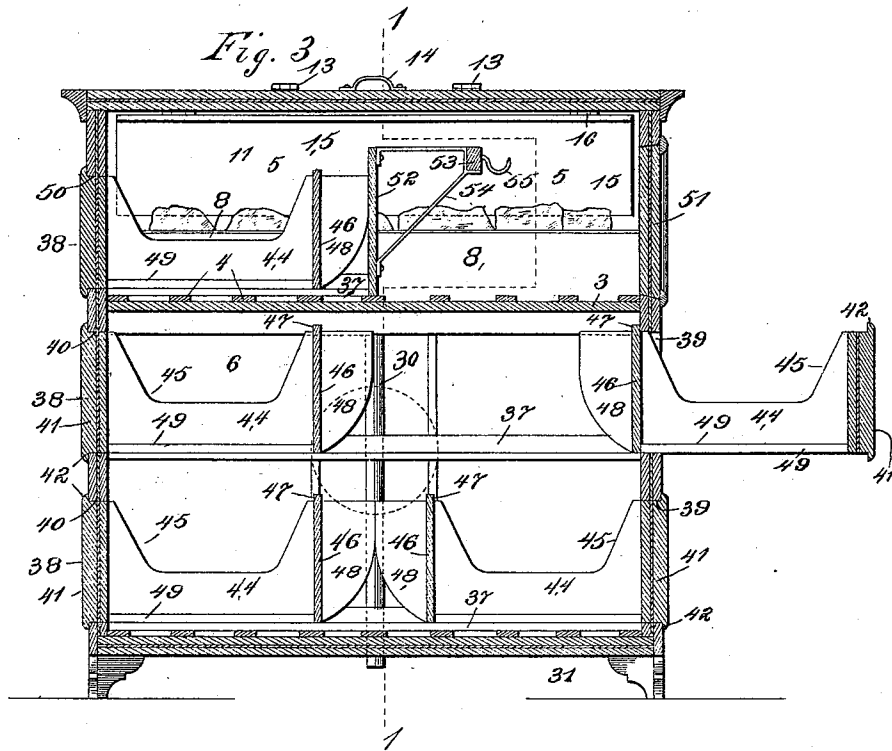
Witnesses.
W. J. Sankey.
John Anders

Inventor.
Loren B. McClanathan
By Higdon & Higdon & Longan
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UNITED STATES PATENT OFFICE.

LOREN B. MCCLANATHAN, OF ST. LOUIS, MISSOURI.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 520,695, dated May 29, 1894.

Application filed June 26, 1893. Serial No. 478,811. (No model.)

To all whom it may concern:

Be it known that I, LOREN B. MCCLANATHAN, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Refrigerators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved refrigerator of that class in which cold air is caused to circulate about the material to be cooled, by the action of a fan, and it consists in the novel construction, combination and arrangement of parts hereinafter described and designated in the claims.

The object of my invention is to provide an improved refrigerator of this class which shall be portable for use especially in households, meat-markets, and fish stalls, which shall be highly efficient in operation, economical in the consumption of ice, of low cost, and which shall have improved means for artificially setting up circulatory currents of cold air about the substances and material to be cooled.

In the drawings: Figure 1 is a sectional elevation of my improved refrigerator, taken on the line 1—1 of Fig. 3. Fig. 2 is a sectional plan view of same taken on the line 2—2 of Fig. 1. Fig. 3 is a sectional transverse elevation taken on the line 3—3 of Fig. 1. Fig. 4 is a perspective view of one of a series of detachable sliding-receptacles, detached, and which is made use of in carrying out the invention.

1 indicates a main-chamber, which is provided with top, bottom, side and end walls which are preferably double and have sheets of paper or other non-heat-conducting material 2 located between them. These walls, however, may be constructed in any known manner. The main-chamber is divided by a horizontal partition 3 having a series of slats 4 upon its upper surface, into an upper refrigerating-chamber 5 and a lower chamber 6. A vertical passage 7 is formed at the end of the partition 3, so that the adjacent ends of the upper and lower chambers are thereby connected, said passage 7 being located between said ends of said partition and the adjacent end of the refrigerator. The sides of the partition 3 extend into contact with the sides of the refrigerator.

An ice-receptacle 8 having closed sides and bottom and an open top, is provided with a metallic inner lining 9, and is located transversely of the main-chamber in the upper part thereof with one of its sides in contact with the end of the partition 3 which is opposite the vertical passage 7, so that the ice receptacle forms a tight joint at its point of connection with said partition and prevents upward or downward passage of air thereat. This ice-receptacle has a length corresponding to the width of the interior of the main chamber, and its ends are preferably in contact with the sides of said chamber. The plane of the bottom 10 of said ice receptacle is preferably a little below the plane in which said partition 3 is located. The ice-receptacle 8 does not extend upward to the top of said chamber, but an open space 11 is formed above the top of the said ice-receptacle.

12 indicates a door, which is provided with hinges 13 and handle 14 and hinged to the top of the main chamber so as to open directly above the open top of the ice receptacle, for the purpose of affording access to said receptacle, in placing ice therein, cleaning, &c.

15 indicates a hinged deflector or valve, which is hinged at its upper edge, by means of suitable hinges 16, to the undersurface of said door, so that its lower edge depends at an angle to said door, and may be thrown into contact with the ice in said ice-receptacle, and so as to more or less close the passage between the upper side of the refrigerator and said ice receptacle, for a purpose hereinafter mentioned. The length of this hinged deflector is a little less than that of the ice receptacle. (See Fig. 3.)

A suitable rope, cord, chain or other common flexible device 17 has its lower end secured to the upper side of the deflector 15 adjacent the lower edge thereof, and passes loosely through a hole or passage 18 formed in the door 12, and is wound around or otherwise secured to a common hook or other fastening 19 fixed upon the outersurface of said door adjacent the handle 14 thereof, for a purpose hereinafter mentioned.

A vertical partition 20 extends transversely across the interior of the refrigerator with its ends in contact with the vertical sides thereof, with its lower edge in contact with

the bottom thereof, and with its upper edge in close contact with the bottom 10 of the ice receptacle, so that a vertical passage 21 is formed in the end of the refrigerator that is
 5 opposite the passage 7, at the opposite end of said refrigerator. This passage extends the full width of the interior of the refrigerator, for a purpose hereinafter mentioned. Formed
 10 in this vertical partition 20 at about the center of the width and height thereof, is an opening 22, in which is located a revoluble fan 23 having arms or blades which revolve in a vertical plane and force the air contained
 15 in said passage 21 through said opening into the lower refrigerating chamber 6. This fan is preferably mounted upon the horizontal revoluble shaft 24 of a common electric motor 25, which is mounted upon a horizontal
 20 platform 26 in and extending across the lower portion of said passage 21, and connected in the usual manner by means of suitable electrical connections 27 to any common battery 28 or other source of electricity, so that said
 25 fan will thereby be revolved at a rapid rate of speed. The source of electricity may be common batteries placed within the lower portion of the passage 21 beneath the horizontal platform 26, or located upon the exterior of the refrigerator.

30 29 indicates a deflector that is V-shaped in cross section and fixed vertically beneath the ice-receptacle 8 centrally of the length thereof in longitudinal alignment with the opening 22 in the vertical partition 20, so that the
 35 salient angle of said deflector is located adjacent said opening in alignment with the center thereof. This V-shaped deflector is located directly in the path of a current of air created and projected by the fan 23, so that
 40 said current strikes said deflector and is thereby divided into two separate currents.

30 indicates a vertical drain pipe for the ice receptacle, the upper end of which communicates with the interior of said receptacle, and
 45 the lower end of which projects into the space 31 beneath the refrigerator, said pipe passing through an opening 32 formed in the bottom of the refrigerator, and passing upward within the space inclosed by the walls of the V-
 50 shaped deflector 29, so that it is thereby protected from bending and indentations during use.

33 indicates a door, closing an opening in the end 34 of the refrigerator directly opposite
 55 the electric motor 25 and the opening 22 in the vertical partition 20. This door is provided with common hinges 35 and a handle 36, so that it may be opened and closed, to provide access to the motor and other devices
 60 contained within the lower portion of the passage 21.

37 indicates a series of guide bars which are angular in cross-section and fixed within the lower chamber 6 so as to extend in a horizontal position across the same and support
 65 a series of detachable sliding receptacles 38.

The guide-bars 37 are preferably arranged

as shown in horizontal parallel rows, one row above the other, and supporting one series of the receptacles 38 above another series. 70
 There are four series of receptacles, or more, two or more series sliding out of openings 39 in one side of the refrigerator, and two or more series sliding out of openings 40 in the opposite side of said refrigerator. 75

The series of receptacles on one side of the refrigerator, in a given plane are in horizontal alignment with the receptacles on the opposite side of the refrigerator in the same plane, so that when the receptacles on both
 80 sides in a given plane are pushed inward to the limit of their inward movement, their inner ends lie closely adjacent. The front 41 of each receptacle is provided with a marginal flange 42 which engages and overlaps 85 the outer surface of the refrigerator when said receptacles are at their limit of inward movement. Each receptacle is provided with a suitable handle 43 upon its front. The side
 90 bars 44 of each receptacle are provided with opposite cut away portions 45 in their upper edges, for a purpose hereinafter mentioned, while the upper edge of the inner end 46 of each sliding receptacle projects upward a distance above the upper edges of said side bars 95
 so as to form a stop 47 which contacts with the inner surface of the refrigerator wall, and limits the outward movement of said receptacles, except when the same are to be detached. The side bars 44 have their lower
 100 inner corners 48 rounded off, and their inner ends project a distance inward beyond the ends 46 of the receptacles. The inner surface of the bottoms of these receptacles may be provided with slats 49, so as to hold the meats,
 105 vegetables, &c., a distance above said bottom. A receptacle 38 is mounted to slide in an opening 50 formed in one side of the refrigerator, so as to be located in the upper chamber 5 above the partition 3. The construction
 110 of this receptacle 38, and its mountings is identical with that of the receptacles located in the lower chamber, with the exception that this receptacle is preferably of larger size, so as to extend about the full length of
 115 the horizontal partition 3.

51 indicates a door, for affording access to the upper chamber 5. This door is located in the side of the refrigerator opposite the side in which the receptacle 38 of the upper
 120 chamber is located, and is to be provided with the usual fastenings.

52 indicates a vertical partition which is mounted upon the upper side of the horizontal partition 3 and extends in a direction longitudinally of the refrigerator, with one of
 125 its ends in contact with the adjacent side of the ice receptacle 8 and with its opposite end flush with the adjacent end of said horizontal partition. 130

53 indicates a meat-rack mounted upon brackets 54 projecting from the side of the vertical partition 52 which is adjacent the door 51, so that said meat-rack is mounted

and extends parallel with said partition and with its upper edge about in the same plane that the upper edge of said partition is in.

55 indicates a series of common meat-hooks which are secured to the meat rack, so that pieces of meat and other material may be suspended therefrom within the upper chamber of the refrigerator out of contact with the partition 3, and be accessible by way of the door 51.

The vertical walls of the refrigerator may be made transparent in a common manner, by having plates of glass set in them.

The operation is as follows: A supply of ice is placed in the receptacle 8 by way of the door 12 in the top of the refrigerator, and said door is closed and the hinged deflector 15 is swung downward by means of a flexible connection 17 and its lower edge is brought into contact with or separated a distance from the ice in the receptacle, according to whether a more or less rapid circulation of air above said ice is desired. The motor 25 being supplied with a suitable current of electricity in the manner hereinbefore described, rapidly revolves the fan 23 in the proper direction, and a current of air is thereby projected through the opening 22 in the vertical partition 20, and impinges upon the V-shaped vertical deflector 29 and is thereby divided into two currents, one of which is forced over the receptacles 38 through the spaces formed therein by the cut away portions 45 in said receptacles, and around and under the same in the lower chamber 6, and then said air passes upward by way of the vertical passage 7 at the end of the horizontal partition 3, into the adjacent end of the upper chamber 5, and around and over the receptacle 38 therein, and around and over the articles to be cooled therein, and thence passes toward the ice receptacle, and comes in contact with the inclined deflector 15, and is thereby brought into intimate contact with the ice in said receptacle and very thoroughly cooled, and thence passes between said ice and said deflector into the vertical passage 21 and thence is drawn through the opening 22 by the fan 23 and so on,—a continuous and rapid circulation being kept up in this way as long as the fan is in motion. A suitable electric switch 56 is connected to the motor, for controlling the movements of the fan, any common motor being employed as described. The receptacles 38 are detachable, by drawing them out until their stops 47 come in contact with the wall of the refrigerator, and then lifting their outer free ends upward, when the rounded corners 48 will slide past and out of the lower side of the openings in the refrigerator, and then the stops 47 may be disengaged from said wall, and the receptacles be detached. The manner of replacing the receptacles is just the reverse of this, that is, the inner ends of the receptacles are placed in the openings in the walls of the refrigerator, while their outer ends are elevated as

shown by dotted lines and the stops 47 are made to engage the inner surface of the walls, and then the outer ends of the receptacles are lowered to normal position and the receptacles are to be slid in upon the guides 37.

What I claim is—

1. An improved refrigerator, constructed with a main chamber, a horizontal partition 3 located in said main chamber and dividing the same into an upper chamber and a lower chamber and providing a vertical passage 7 at one end of said partition so that the adjacent ends of said upper and lower chambers are thereby connected, an ice receptacle 8 located in the upper portion of the refrigerator adjacent the end of the partition 3 which is opposite the vertical passage 7, and a fan 23 mounted within the walls of the refrigerator to circulate air in said upper and lower chambers and cause a current of air to pass over said ice receptacle, substantially as herein specified.

2. The improved refrigerator, constructed with a main chamber divided by a horizontal partition into upper and lower connecting chambers, a vertical passage 7 formed at one end of the horizontal partition which divides said main chamber, the sides of said partition extending into contact with the sides of the refrigerator, an ice receptacle 8 having closed sides and bottom and an open top, and located within the refrigerator adjacent the upper portion thereof so that a passage is formed above and around the same, a vertical partition 20 extending transversely across the interior of the refrigerator with its ends in contact with the vertical sides thereof, with its lower edge in contact with the bottom thereof, and with its upper edge in close contact with the bottom of said ice receptacle, so that a vertical passage 21 is formed in the refrigerator, said vertical partition 20 having an opening 22 at about the center of its height, a revoluble fan 23 arranged in the refrigerator to force air through said opening, a motor for said fan, and a deflector mounted adjacent said opening to divide said current of air, substantially as herein specified.

3. The improved refrigerator, constructed with a main chamber, an ice receptacle 8 mounted in said chamber, adjacent one end thereof and having an open top, located a distance below the top of the refrigerator, a door 12 provided with hinges and hinged to the top of the refrigerator so as to open directly above the open top of said ice receptacle, a horizontal partition 3 fixed within the refrigerator and dividing its interior into upper and lower chambers so that an air passage is formed above and below said partition and said ice receptacle with a vertical passage at each end of the refrigerator connecting with said upper and lower chambers, a hinged deflector 16 having its upper edge connected to said door 12 so that its lower edge depends adjacent said ice receptacle, so that said deflector more or less closes the passage

above said receptacle, and a flexible connection 17 secured to said deflector and passing loosely through a hole or passage 18 formed in said door and adjustably secured upon the outer surface of the refrigerator, substantially as herein specified.

4. In a refrigerator, an ice receptacle mounted therein with a passage above and below and on one side thereof, said receptacle having a length corresponding to the width of the interior of the refrigerator, a vertical partition 20 extending across the interior of the refrigerator with its ends in contact with the vertical sides thereof, and with its upper edge in contact with the bottom of said ice-receptacle, said partition having an opening 22 formed therein, a fan for forcing air through said opening, a deflector 29 that is V-shaped in cross section and fixed vertically beneath the ice-receptacle adjacent said opening in said vertical partition, and a drain pipe 30 for said ice-receptacle located within the space between the walls of said V-shaped deflector, substantially as herein specified.

5. In a refrigerator, parallel guide-bars 37 arranged within the refrigerating-chamber, and having a detachable receptacle 38 mounted to slide thereon in an opening in the wall of the refrigerator, said receptacle having a front 41, a handle 43 mounted upon said front, the side bars 44 provided with opposite cut away portions 45 in their upper edges, the upper edge of the inner end of said receptacle

projecting upward a distance above the upper edges of said side bars so as to form a stop 47 which contacts with the inner surface of the refrigerator wall and limits the outward movement of said receptacle except when the same is to be detached, and the inner ends of said side bars projecting a distance inward around the ends 46 of the receptacle, and having their lower inner corners 48 rounded off, substantially as herein specified.

6. In a refrigerator, the combination of a main chamber, a horizontal partition which divides said chamber into upper and lower chambers, an ice receptacle mounted with its bottom adjacent said partition so that a space 11 is formed above the same, a vertical partition 52 which is mounted upon the upper side of said horizontal partition a detachable receptacle 38 mounted to slide laterally above said horizontal partition and on one side of said vertical partition, a meat-rack 53 projecting from the opposite side of said vertical partition above said horizontal partition, and a fan for causing a circulation of air above said horizontal partition and said ice receptacle, substantially as herein specified.

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

LOREN B. McCLANATHAN.

Witnesses:

EDWARD EVERETT LONGAN,
JNO. C. HIGDON.