

Feb. 28, 1939.

A. R. CONSTANTINE

2,149,114

REFRIGERATOR

Filed April 25, 1935

4 Sheets-Sheet 1

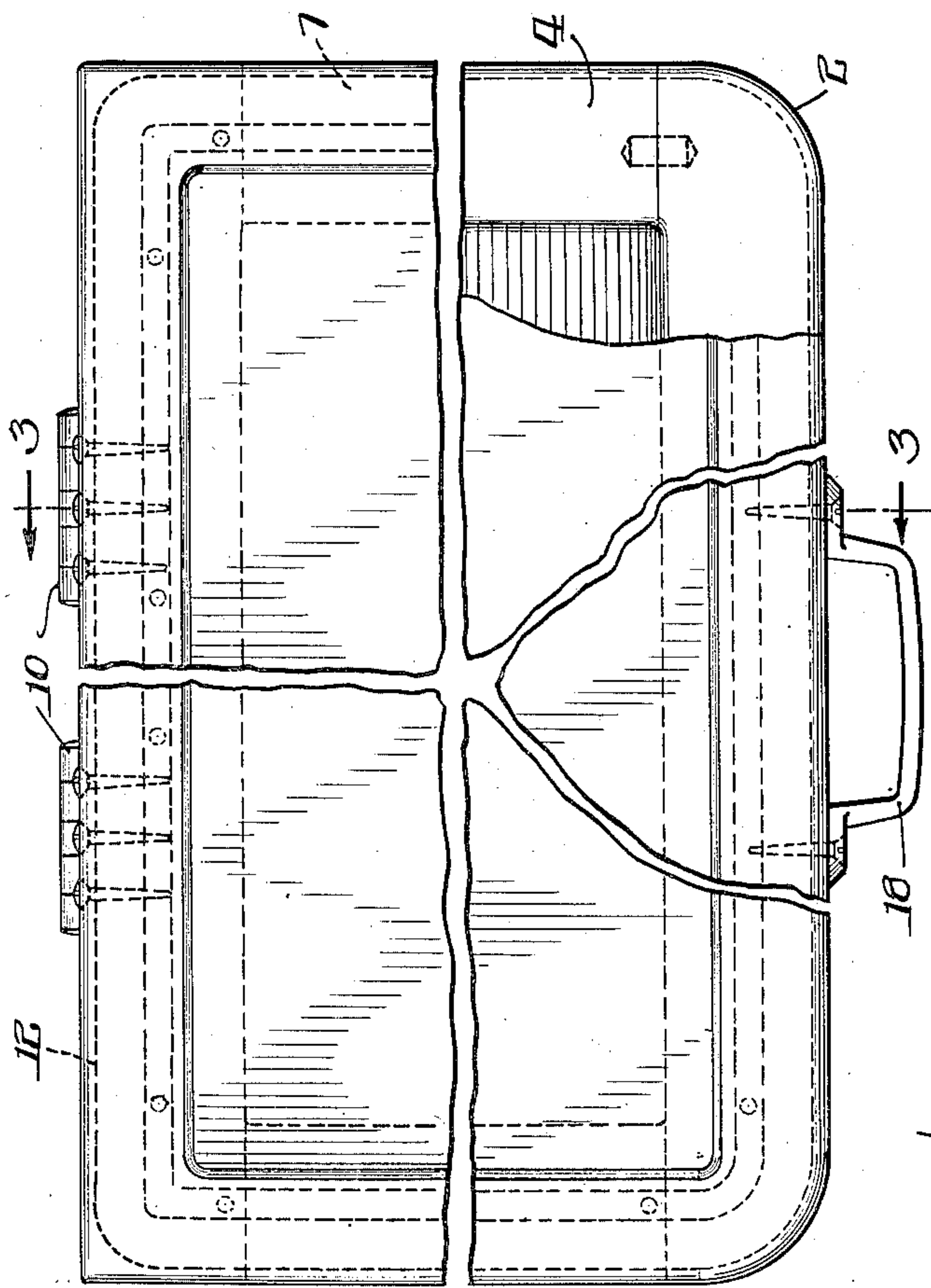


FIG. 1.

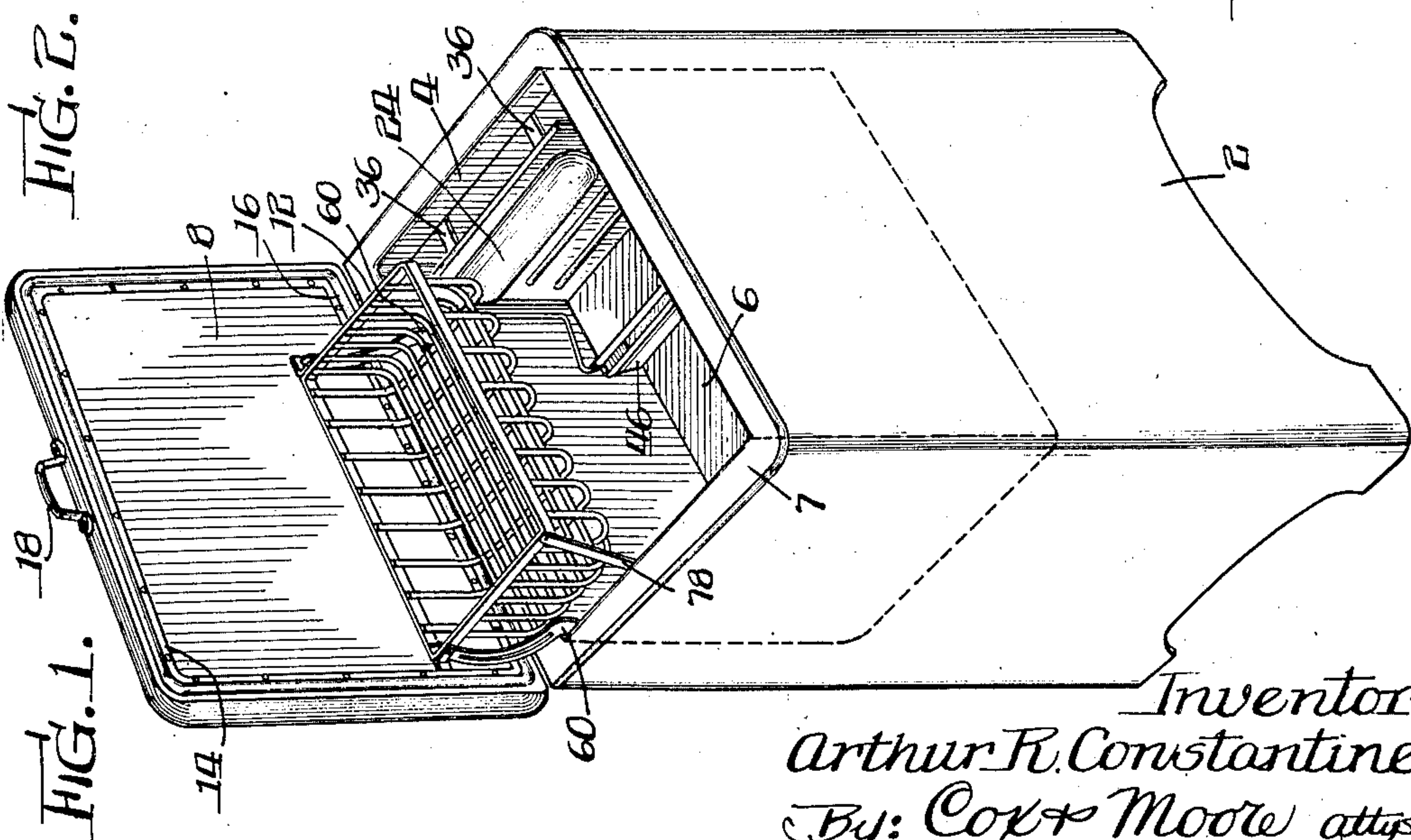


FIG. 2.

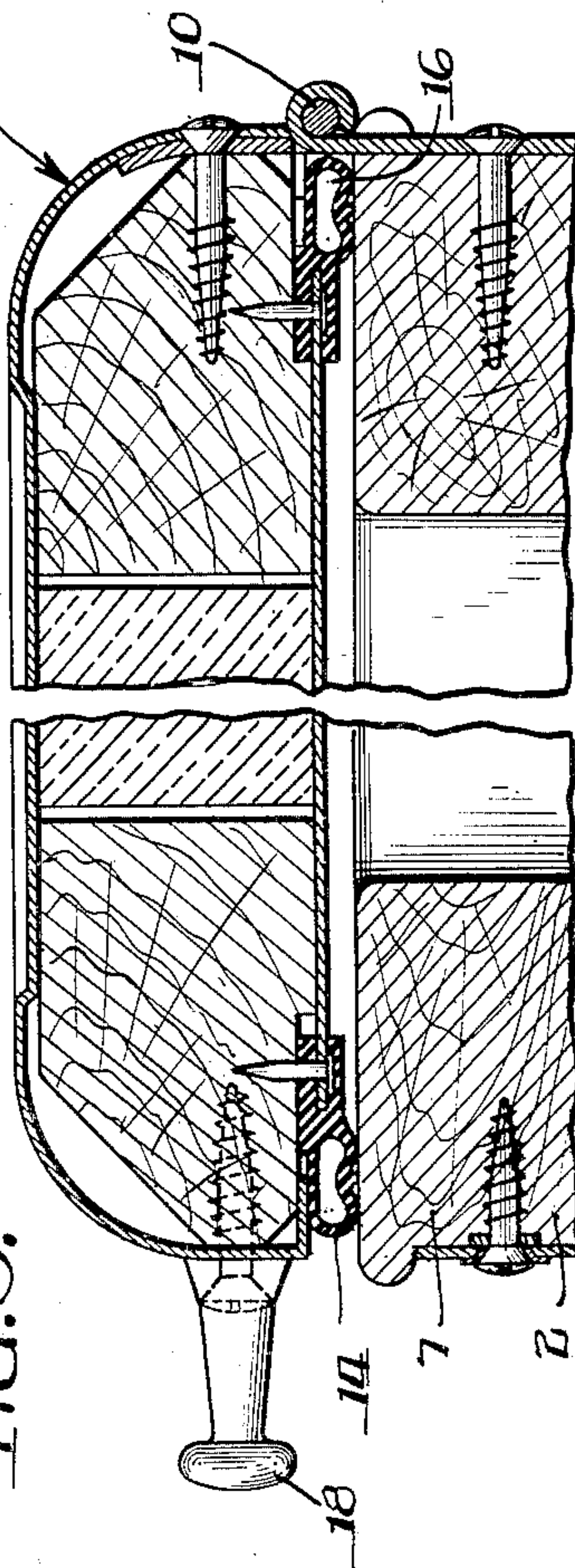


FIG. 3.

Inventor:
Arthur R. Constantine
By: Cox & Moore attys.

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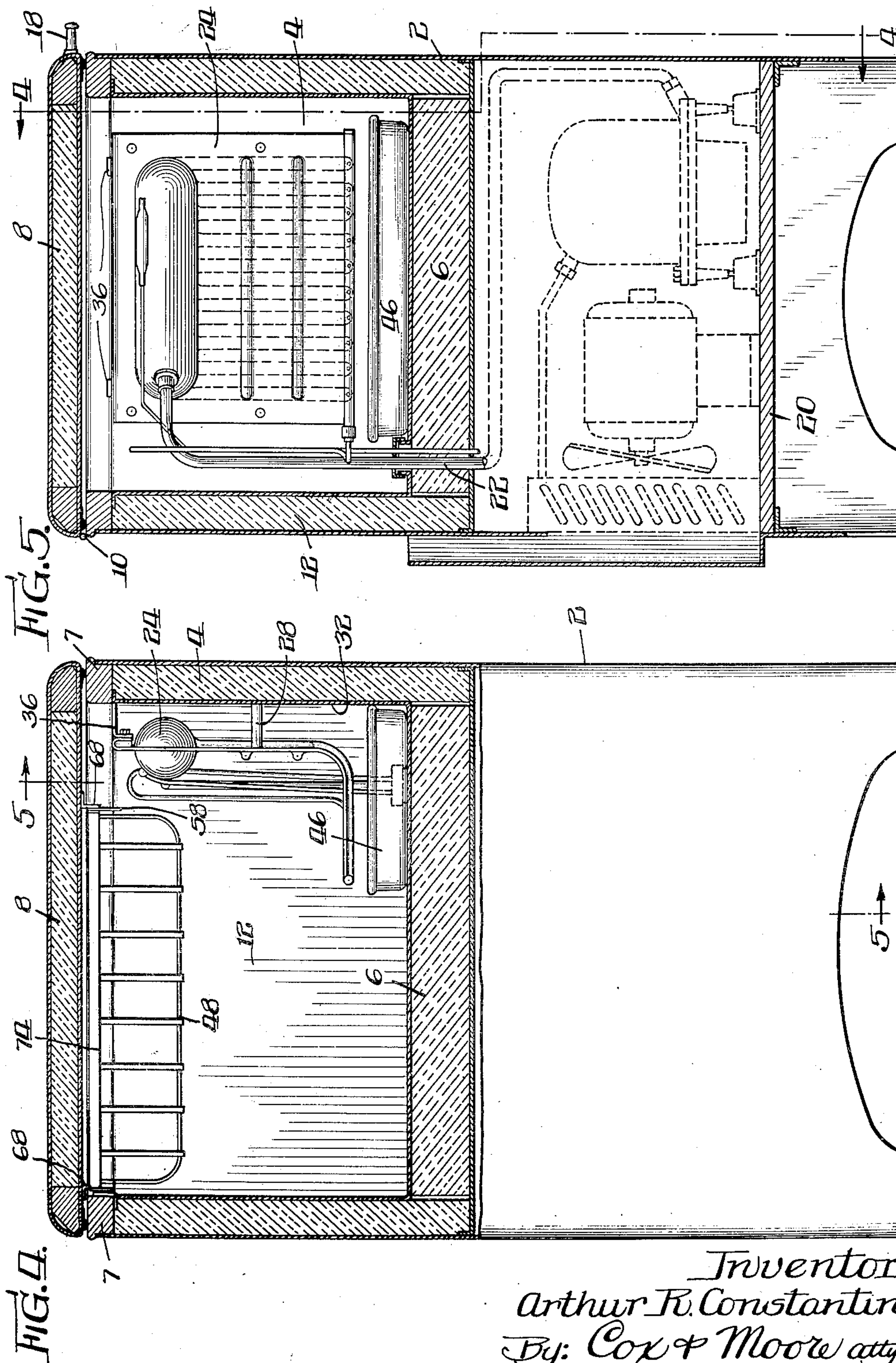
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4 Sheets-Sheet 2



Inventor:
Arthur R. Constantine
By: Cox & Moore attys.

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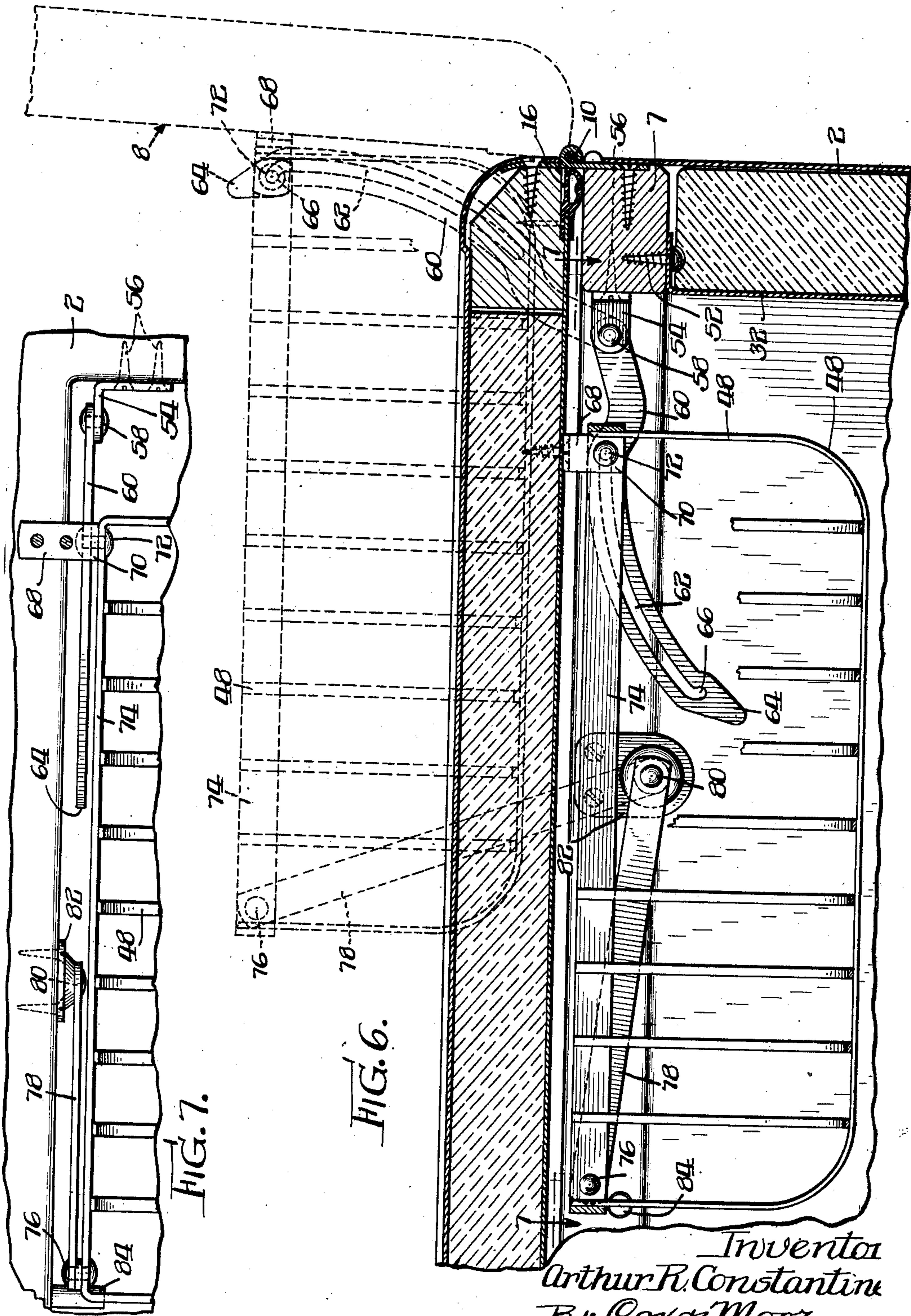
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4 Sheets-Sheet 3



Inventor
Arthur R. Constantine
By: Cox & Moore attys.

UNITED STATES PATENT OFFICE

2,149,114

REFRIGERATOR

Arthur R. Constantine, River Forest, Ill., assignor, by mesne assignments, to Reconstruction Finance Corporation, Chicago, Ill., a corporation

Application April 25, 1935, Serial No. 18,097

10 Claims. (Cl. 62—89)

My invention relates to ice chests, electric refrigerators or other cooling cabinets.

One of the objects of my invention is to provide a refrigerator or the like of the type having a hinged top, with a basket or container associated with the top in such a way that when the top is swung upwardly to open position the wire basket or container, which normally is positioned within the refrigerator and in the cooling zone, is automatically swung upwardly not only to permit more facile access to the contents, but also to permit easier access to the interior of the box or refrigerator.

Additional objects of my invention are to provide a mounting for the evaporator, such mounting to be detachably installed to the side walls of a refrigerator of the open top type.

These and other objects of my invention will be apparent from a perusal of the following specification when taken in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view of a refrigerator equipped with one form of my basket or container;

Fig. 2 is a top view of the cover in closed position;

Fig. 3 is a detail section on line 3—3 of Fig. 2;

Fig. 4 is a vertical section of the cabinet taken on line 4—4 of Fig. 5;

Fig. 5 is a vertical section of cabinet taken on line 5—5 of Fig. 4;

Fig. 6 is a sectional view of the upper portion of the cabinet showing the basket portion and a dotted line position showing the lid in raised position;

Fig. 7 is a sectional view taken on line 7—7 of Fig. 6;

Fig. 8 is a plan view of the evaporator in the right-hand side of the cabinet, and

Fig. 9 is a sectional view taken on line 9—9 of Fig. 8, showing the evaporator mounting.

Referring now to the drawings in detail, the type of ice box or refrigerator to which my invention pertains is a type wherein the box is provided with a swingable cover or lid hinged so that the top of the box forming the cover swings upwardly to a substantially vertical position and thereby exposing the interior of the box. In this type of box the evaporator is generally formed as a substantially L-shaped unit, and is disposed at one side adjacent one of the vertical side walls of the box, the horizontal leg of the L-shaped evaporator being disposed to receive ice trays thereon for a quick-freeze operation. The remainder of the box is devoted to the storage of various commodities, including a basket or container generally of perforate construction, for receiving vegetables, fruits and the like. Heretofore it has been customary to mount these containers in a stationary manner with the upper

edges of the container substantially flush with the top of the box, so that they immediately underlie the top or cover when the latter is in closed position. Such an arrangement of basket or container mechanism is objectionable because, to have access to the storage compartment of the box immediately beneath the basket, it is necessary to lift the basket or otherwise remove it.

In my present invention I mount the basket in such a manner that when the cover or lid is swung to open position the basket is automatically shifted upwardly not only to give easy access to the storage space within the box beneath it, but also to bring the basket and the commodity carried therein upwardly, where it is readily accessible.

In general, the box comprises a cabinet 2 of any desired construction herein preferably shown as of rectangular construction, having front, back and side walls. The walls are preferably formed of two spaced-apart sheet metal members, an outer member 3, and an inner sheet metal member 5, between which are disposed slabs of insulating material 4. The top portion of the wall is formed as a separate frame, preferably of wood or, if desired, other insulating material adapted to receive screws for purposes hereinafter set forth. The sheet metal inner and outer members 3 and 5 are adapted to be secured to the frame member 7 in the manner set forth in Figs. 3 and 6, as by means of screws. By forming the frame member 7 of a separate wooden strip I am enabled to fasten thereto the brackets and also the hinge members hereinafter referred to. In addition, there is a bottom wall 6. The top 8 is suitably hinged as at 10, to the rearmost wall 12, and is adapted to swing to open position, as shown in Fig. 1. The top is provided with the usual gaskets 14 and 16 to make a sealed joint between the top and the bottom body of the box. A lifting handle 18 is applied to the front of the cover. The space within the cabinet 2 between the bottom 6 and partition or shelf 20 is provided to house the condenser, compressor and piping for the mechanical refrigerating apparatus. The piping 22 for this purpose passes upwardly through a suitably located opening in the bottom 6, where it connects with the evaporator 24, to form a closed circuit, as is well known in the art. The evaporator 24 is formed of sheet metal preferably of two halves suitably welded together and providing suitable headers and interconnected evaporant spaces. In the present instance, the header is formed in a substantially L-shape, the horizontal leg of the evaporator providing a shelf upon which ice trays 26 are adapted to be placed in super-imposed position, as shown in the dotted lines in Fig. 9. The evaporator is rigidly mounted to the side wall 4 of the box by means of spacing sleeves 28 of non-conductive material. One end of the sleeves is fastened to a screw 30

which passes through the sheet metal interliner 32 of the side wall. The opposite end of the spacing sleeve threadedly connects with a screw or other threaded fastener 34, the head of which 5 rigidly connects with an opening in the sheet metal evaporator. The upper end of the sheet metal evaporator is of substantial hook shape and is adapted to have passed therethrough at spaced apart portions, an angle support 36, one 10 end of which is fastened by means of screws 38 to the side wall 4 of the refrigerator. The opposite end of the angle supports are provided with a bolt 40, which passes through the free hooked end of the upper portion of the evaporator. A 15 felt washer 42 is interposed between the free inner end of the angle support and the free hooked end of the evaporator to prevent the transmission of heat through the support. In addition a filler block 44 is disposed under the free hooked end of the evaporator sleeve to lend rigidity to the 20 mounting. Any desired number of angle supports and spacing sleeves may be provided, but I prefer to use two of each, whereby to provide a detachable yet rugged mounting for the evaporator whereby it is substantially and rigidly hung 25 from the side wall of the cabinet. By spacing the bottom leg of the evaporator slightly above the bottom wall 6 of the cabinet, room is provided for a water pan 46 adapted to catch the drippings from the evaporator.

Means is provided for supporting a basket or other container within the cooling chamber of the refrigerator when the top is closed, and in a manner such that when the top is opened the 35 basket or container is automatically shifted to a position affording easy and unobstructed access to that part of the cooling chamber below the normal position of the basket when the top is closed, and in such a manner that the basket is maintained horizontal.

In the present embodiment, I provide means associated with the hinged top for faciliely mounting a basket so that it shifts from a position shown in full lines in Figs. 4 and 6 to the position approximately shown in full lines in Fig. 1 and 45 dotted lines in Fig. 6. It will be noted that with lid 8 closed, the basket is positioned immediately under the closed lid and to one side of the evaporator, and at the top of the cooling chamber. It 50 will likewise be noted that in the open position of the lid, the basket is raised substantially outside and above the cooling chamber, that is, to a position wherein the bottom of the basket is in the plane of the top or lid when the latter is in closed 55 position and in which raised position, by reference to Fig. 1, a relatively large space is provided between the front edge of the basket and the front edge of the box, which permits easy access to the entire contents of the cooling chamber beneath 60 the basket and at the same time permits easy access to the basket by moving the same upwardly above the level of the top wall of the refrigerator proper.

In one form of carrying out this invention, I 65 provide a basket or other container 48 which may be of any desirable form, but preferably is formed of cross wires to provide perforations or openings so that a circulation of air is afforded for the contents of the basket.

70 As before stated, the walls of the refrigerator are provided with an upper square frame 7, preferably of wood, the outer sheet metal facing of the box being secured to this top frame member 7. The inside sheet metal lining is provided with 75 an angle bend which fits in between the insula-

tion of the box and the frame 7, being secured thereto by means of a screw 52. The frame member 7 is provided with a bracket 54 secured thereto by means of a screw 56 and this bracket has 5 pivoted by a pin 58 a link 60, which link is provided with a curved, slotted track 62. The end of the link is provided with a nose 64 of the general shape shown in Fig. 6 of the drawings. The end of slot 62 is provided with a stop member 66 for the purpose of locking the refrigerator door 10 in an open position, as shown by dotted lines in Fig. 6.

Fast to the under side of the top is a bracket 68 secured by screws or otherwise. This bracket has a downwardly depending flange 70 in which is 15 provided a pivot in the form of a headed pin 72. This pin 72 rides in the slot 62 of the arm 60. Also pivoted on the pin 72 is the upper framework 74 of the basket. When the door or top 8, which pivots on the hinge 10, is raised the arm 60 is 20 likewise raised due to the pin 72 riding in the slot 62 and, therefore, the pin 72 will ride down the slot 62 until it reaches the offset 66. This pulls the rearward end of the basket upwardly into the dotted line position.

Also pivoted on the frame 74, as at 76, is a link 78 having its opposite end pivoted as at 80, which 25 is formed as a pin secured to the side wall of the frame member 7 as by means of an ear 82, whereby when the lid 80 is raised the link 78 and its 30 pivoted side to the bracket will likewise shift the pivoted end of the basket, as shown in dotted line in Fig. 6. This linkage arrangement maintains the basket in a horizontal position as it is automatically raised by the opening of the door or 35 lid 8. There is only one of the link 78 but there is a pair of the links 60, one at each side of the basket, whereby efficiently to guide the basket in its automatically raising and lowering position while maintaining it always in a horizontal level. 40

A stop pin 84 is so positioned in the frame 7 to engage the forward end of the basket frame 74 and limit the downward movement of the basket when the lid is closed.

In certain embodiments of the invention I con- 45 template the provision of a refrigerator wherein a closure member, be it the top of the lid or be it a door adapted to swing on pivots, is provided with mechanism whereby a basket or container is dis- 50 posed within the cooling chamber of the refrigerator and operatively connected with the mechanism of the door whereby when the door is opened the basket, which is normally positioned within the cooling chamber of the refrigerator, is auto- 55 matically shifted either outside of or substantially outside or partially outside of the cooling chamber for the purpose of easy access and/or for giving more substantial access to the cooling chamber.

Having thus described my invention, what I 60 claim as new and desire to secure by Letters Patent is:

1. In a refrigerator, means providing a cabinet having a cooling space, a lid normally to close 65 said cooling space and forming a door for the cabinet, a basket or other container, means for shiftably mounting said basket with respect to the cooling space and the door including a device for causing the basket to be positioned within the cooling space when the lid is closed and for caus- 70 ing the basket to be shifted to a raised position to afford access to the cooling space when the lid is open, means for refrigerating said cooling space comprising an evaporator mounted on said refrigerator within said cooling chamber, said evap- 75

orator being formed and arranged and located in position to avoid interference with said basket during the shifting movement thereof.

2. In a refrigerator, means providing a cabinet having a cooling space, means comprising a door for closing said cooling space, an open top container, a mounting for shiftably supporting said container with respect to the cooling space and said door comprising an arm pivoted at one end on the walls of said cabinet and pivotally connected at the other end to said container, another arm pivoted on the walls of said cabinet and having a sliding connection with said container, said container being tiltingly secured on said door whereby to cause the container to be positioned within the cooling space when the lid is closed and to cause the container to be shifted to projected position outwardly of said cooling space to afford access to the cooling space when the lid is open, and means for refrigerating said cooling space comprising an evaporator mounted on said refrigerator within said cooling chamber, said evaporator being formed and arranged and located in position to avoid interference with said container during the shifting movement thereof.

3. A refrigerator comprising a cabinet forming a cooling chamber, a lid or top for said cabinet, means to hinge the lid to the cabinet to permit the lid to be swung to a closed position or raised to an open position, a basket, means for normally mounting the basket within the cooling chamber immediately below the lid and in spaced relation above the bottom of the cooling chamber, said means including devices for causing an upward movement of the basket when the lid is opened, means for refrigerating said cooling space comprising an evaporator mounted on said refrigerator within said cooling chamber, said evaporator being formed and arranged and located in position to avoid interference with said basket during the shifting movement thereof.

4. In a device of the class described the combination of a cabinet and means forming a cooling chamber, a top for the cabinet, a hinge for the top to permit the same to be swung from a normal horizontal closed position to an open position, a bracket mounted on the inner wall of said cabinet, a basket pivotally mounted with respect to said bracket to be normally positioned immediately beneath the top when the latter is in closed position, and connections from said basket to said top for causing the basket to be substantially projected outside of the cooling chamber when the top is in open position.

5. In a refrigerator, means forming a closed cabinet the walls of which provide a chamber adapted to be cooled, a lid for said cabinet adapted to be closed to normal horizontal position and adapted to be raised to open position, a basket, means for mounting said basket within the cooling chamber, said means including connections to said cabinet and to said lid for causing the basket to be raised in a horizontal position as the lid is opened, means for refrigerating said cooling space comprising an evaporator mounted on said refrigerator within said cooling chamber, said evaporator being formed and arranged and located in position to avoid interference with said basket during the shifting movement thereof.

6. A refrigerator comprising walls forming a cooling chamber, a top hinged to said walls to close the chamber, said top being swung upwardly to open position, a bracket pivotally mounted on said walls and providing a slotted track, a basket having a portion mounted to move in said track

and having a portion connected to the top, and means forming a connection between another portion of said basket and a wall of said cabinet whereby to cause the basket to be raised in a level horizontal position as the top is opened.

7. In a refrigerator, means forming a cabinet of the open top type, the walls of said cabinet forming a cooling chamber, a mechanical refrigerating means for said cabinet including an evaporator positioned in said cooling chamber, a basket, means for mounting said basket with respect to the walls of said cooling chamber and with respect to said top whereby when said top is closed said basket is positioned in the upper portion of said cooling chamber immediately beneath said top, said basket mounting means including shiftable connections for causing said basket to be raised as the top is opened.

8. In a refrigerator, the combination of an outer sheet metal wall, an inner lining of sheet metal, insulating members between said walls forming the side walls and front and back walls of the refrigerator, means forming a bottom wall for the refrigerator including insulation material, a top forming a shiftable closure for said refrigerator, insulating means for said top, said refrigerator walls including a separate frame member rigidly secured to said walls, said top being hinged to said frame member, a basket and connections for mounting said basket in said cooling chamber, certain of said connections for said basket being fastened to said frame member.

9. In a refrigerator including means forming a cabinet, a door hinged to the cabinet and adapted to swing from a closed position to an open position, a container, means for shiftably mounting the container with respect to the door and to the wall of the cabinet, including means causing the container to lie within the cooling chamber when the door is closed and to be shifted by the opening of the door to a different position with respect to the position it occupies when the door is closed, means for refrigerating said cooling space comprising an evaporator mounted on said refrigerator within said cooling chamber, said evaporator being formed and arranged and located in position to avoid interference with said basket during the shifting movement thereof.

10. In a refrigerator, a cabinet comprising side walls and an open top, a cover for said open top and hinged to the upper edge of one of said side walls, partition means in said cabinet defining a cooling chamber within the upper portions of said side walls, to which cooling chamber access may be had through said open top when said cover is raised, a mechanism compartment within the lower portions of said side walls, said cover, partition means and at least the upper portions of said side walls enclosing said cooling chamber comprising insulation, mechanical refrigerating means in said cabinet comprising a compressor and a condenser in said mechanism compartment and an evaporator in said cooling chamber, said compressor, condenser and evaporator being connected together in a refrigerant circulating system, means forming a basket in said cooling chamber, means for shiftably mounting said basket on a wall of the cabinet and on the cover, whereby the basket may normally lie within the cooling chamber when the cover is in closed position and may be raised to an elevated position upwardly of the top of said cabinet when said cover is open.

ARTHUR R. CONSTANTINE.