No. 688,680. Patented Dec. 10, 1901.

J. D. PENNINGTON.

REFRIGERATOR.

(Application filed Mar. 1, 1901.)

(No Model.) 5 Sheets—Sheet 1.

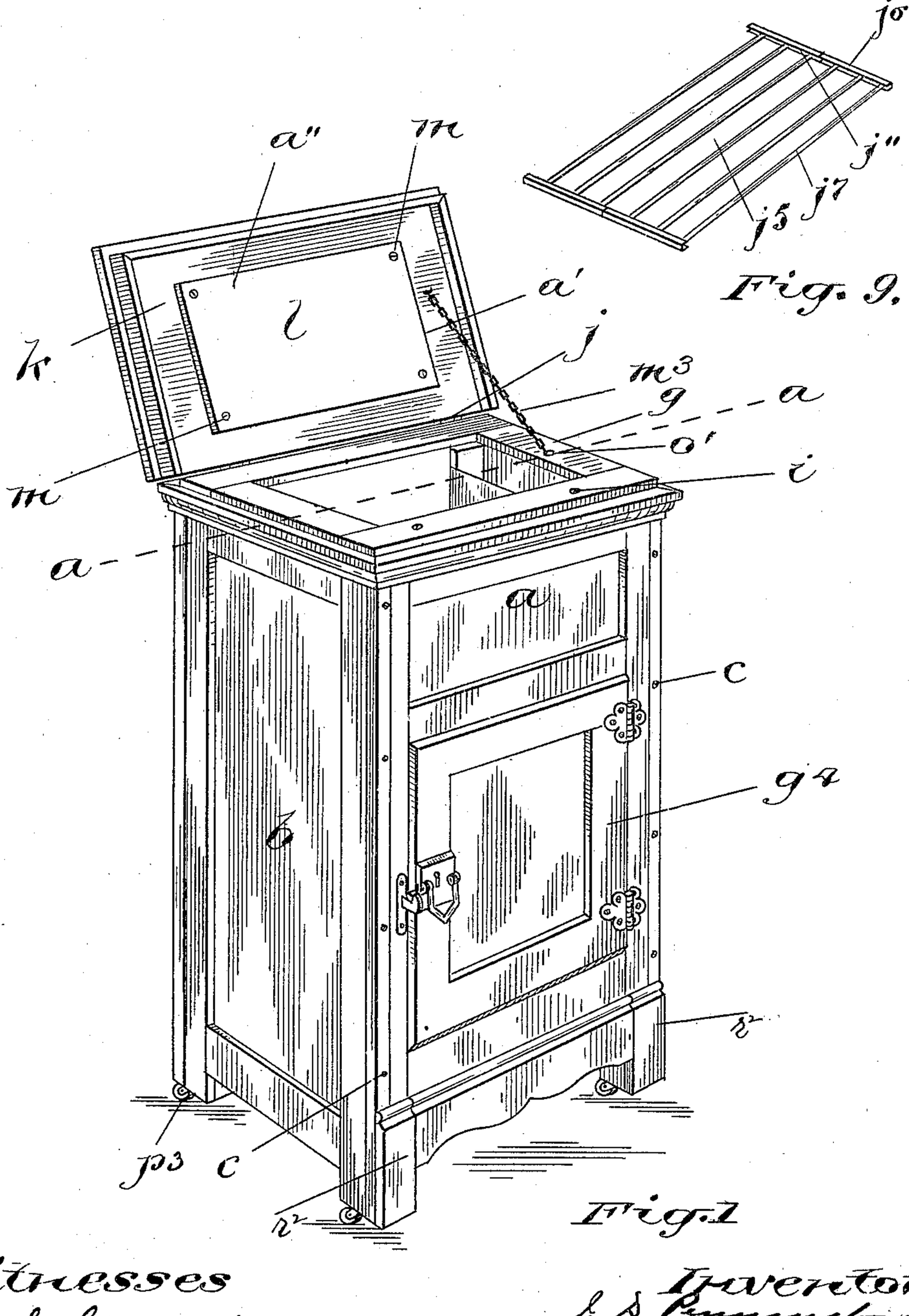

Fig. 9.

Fig. 1.

Witnesses
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his atty

No. 688,680. Patented Dec. 10, 1901.

J. D. PENNINGTON.

REFRIGERATOR.

(Application filed Mar. 1, 1901.)

(No Model.) 5 Sheets—Sheet 2.

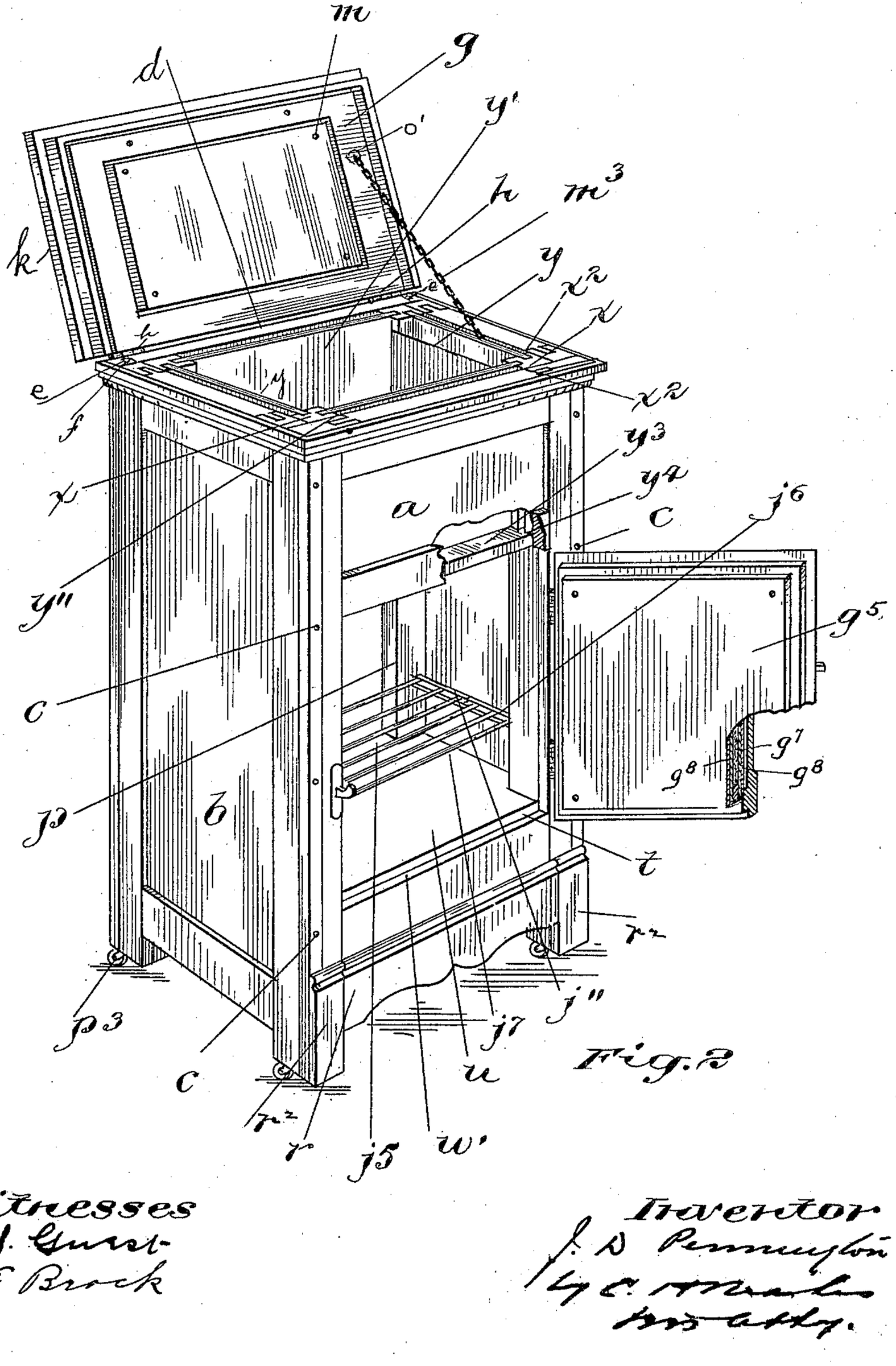

Fig. 2.

Witnesses
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No. 688,680.

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J. D. PENNINGTON.

REFRIGERATOR.

(Application filed Mar. 1, 1901.)

(No Model.)

5 Sheets—Sheet 3.

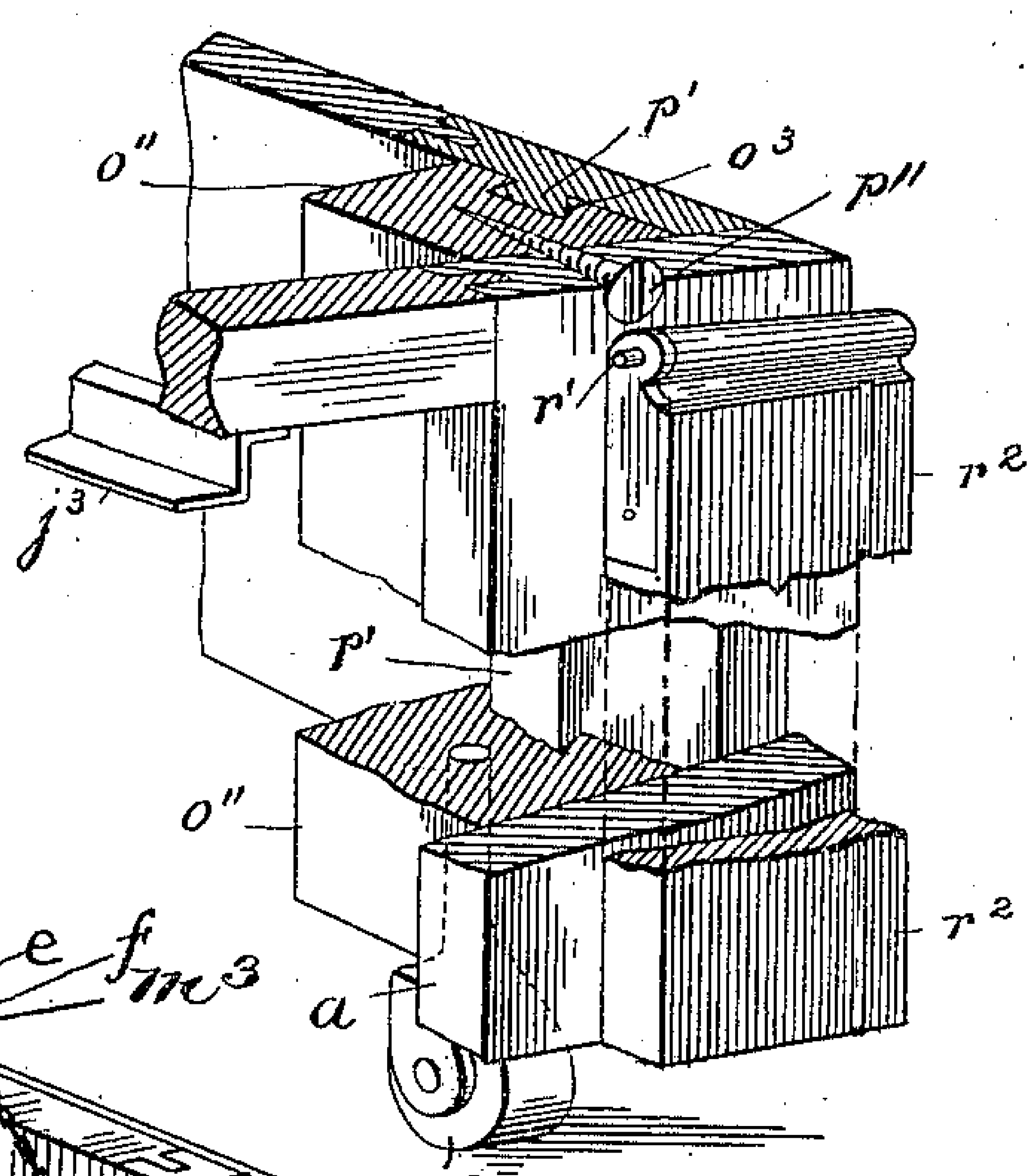

Fig. 8

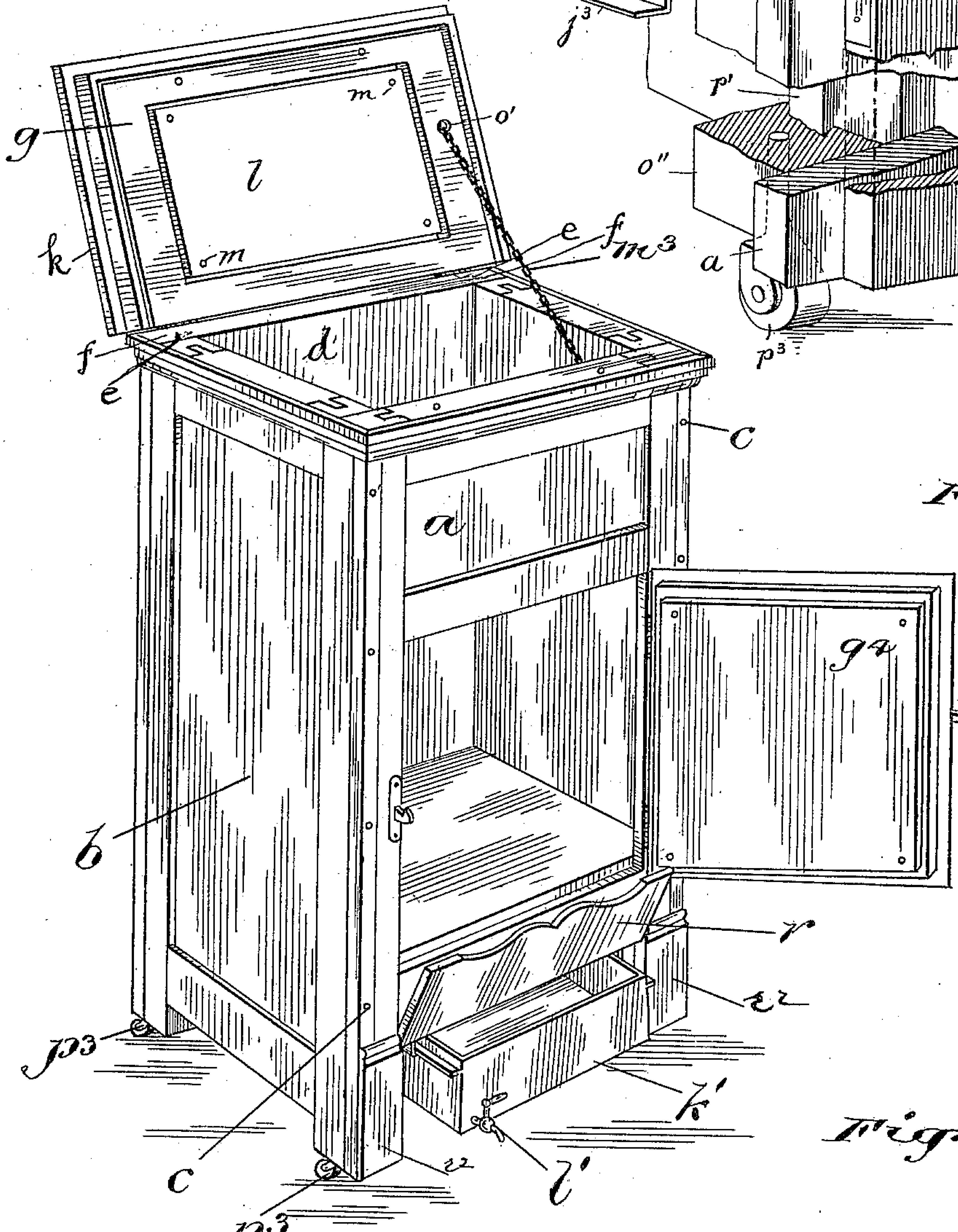

Fig. 3

Witnesses

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L. F. Brock

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by C. H. Miles

his atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 688,680. Patented Dec. 10, 1901.

J. D. PENNINGTON.

REFRIGERATOR.

(Application filed Mar. 1, 1901.)

(No Model.) 5 Sheets—Sheet 4.

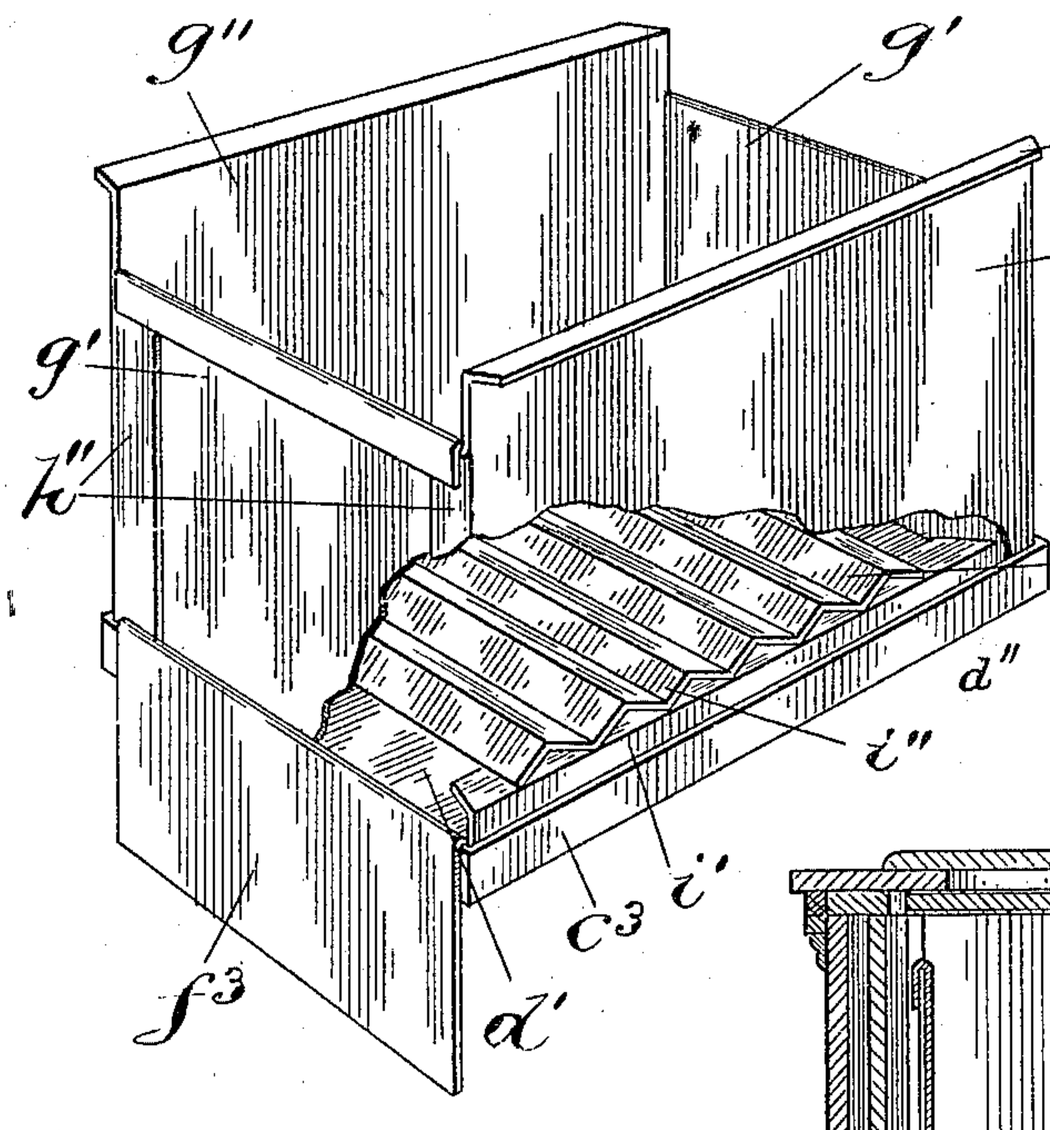

Fig. 5

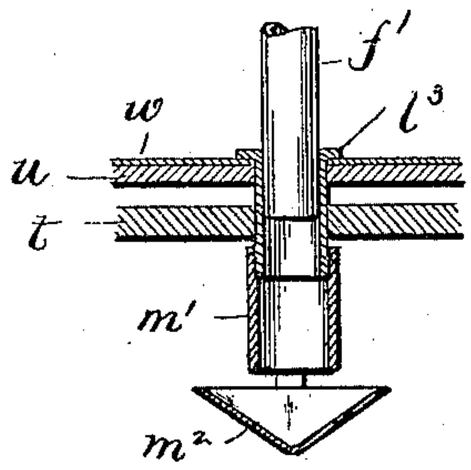

Fig. 4ª

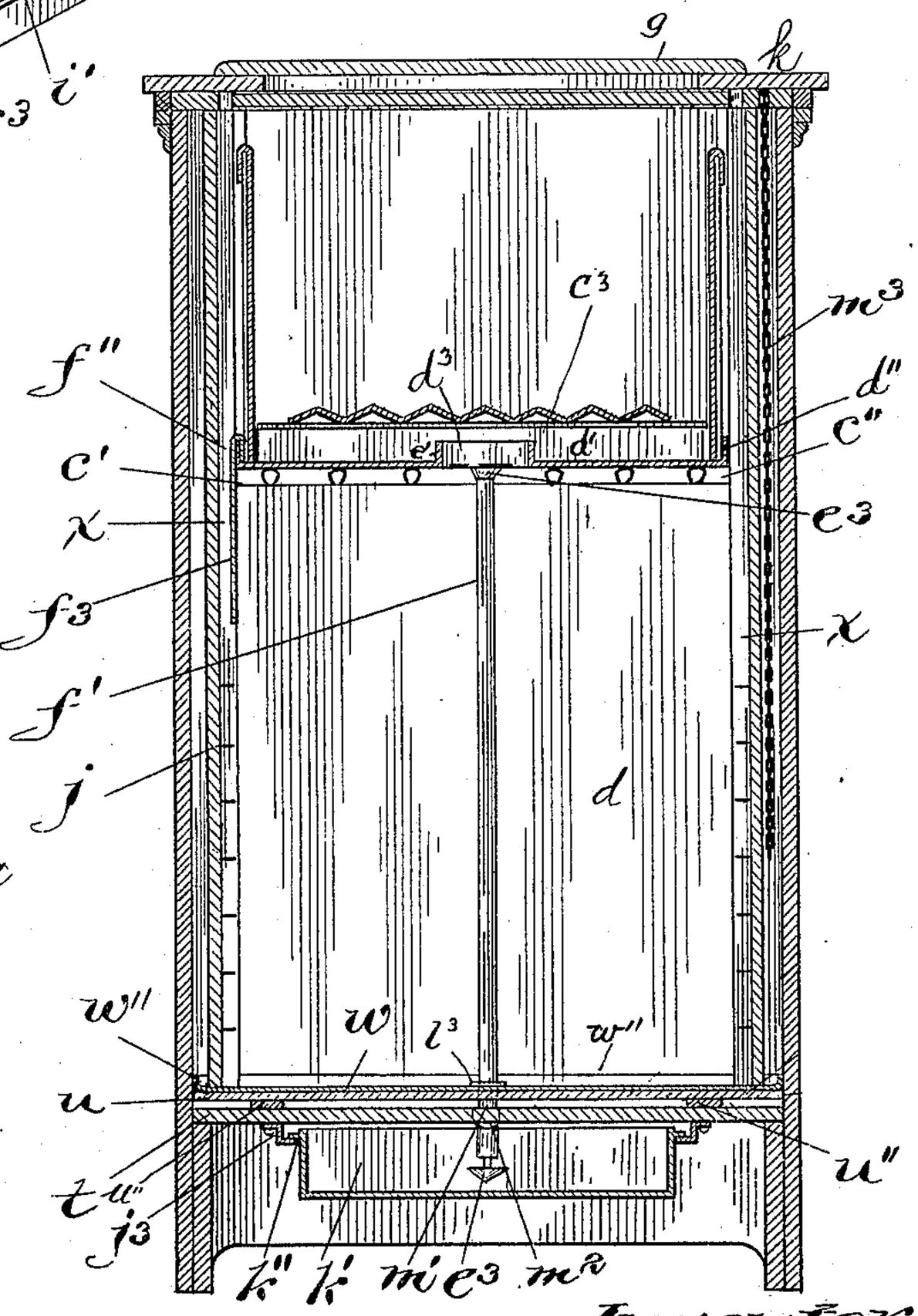

Fig. 4

Witnesses
W. S. Gunst
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No. 688,680.

Patented Dec. 10, 1901.

J. D. PENNINGTON.

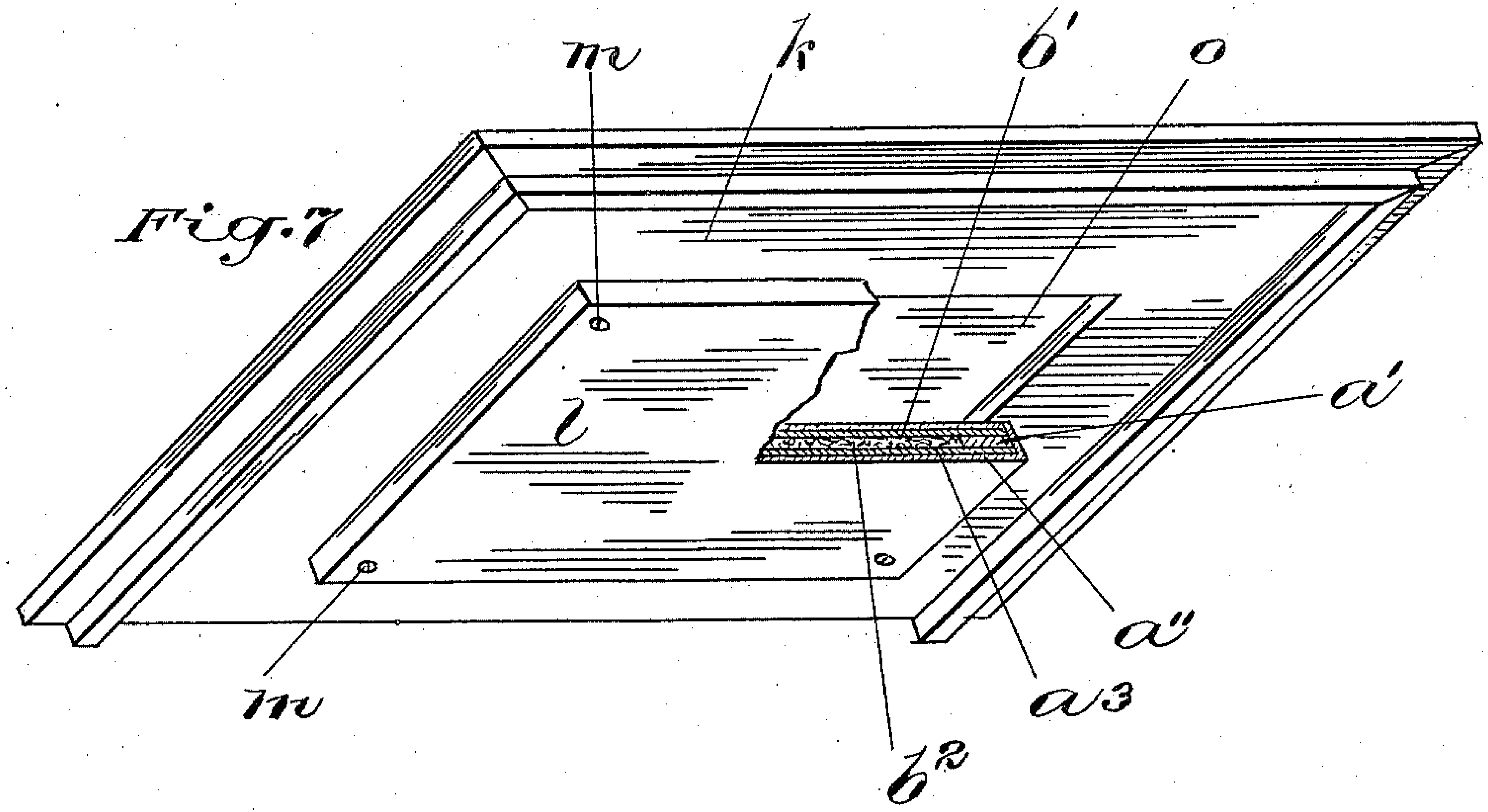
REFRIGERATOR.

(Application filed Mar. 1, 1901.)

(No Model.)

5 Sheets—Sheet 5.

Fig. 7



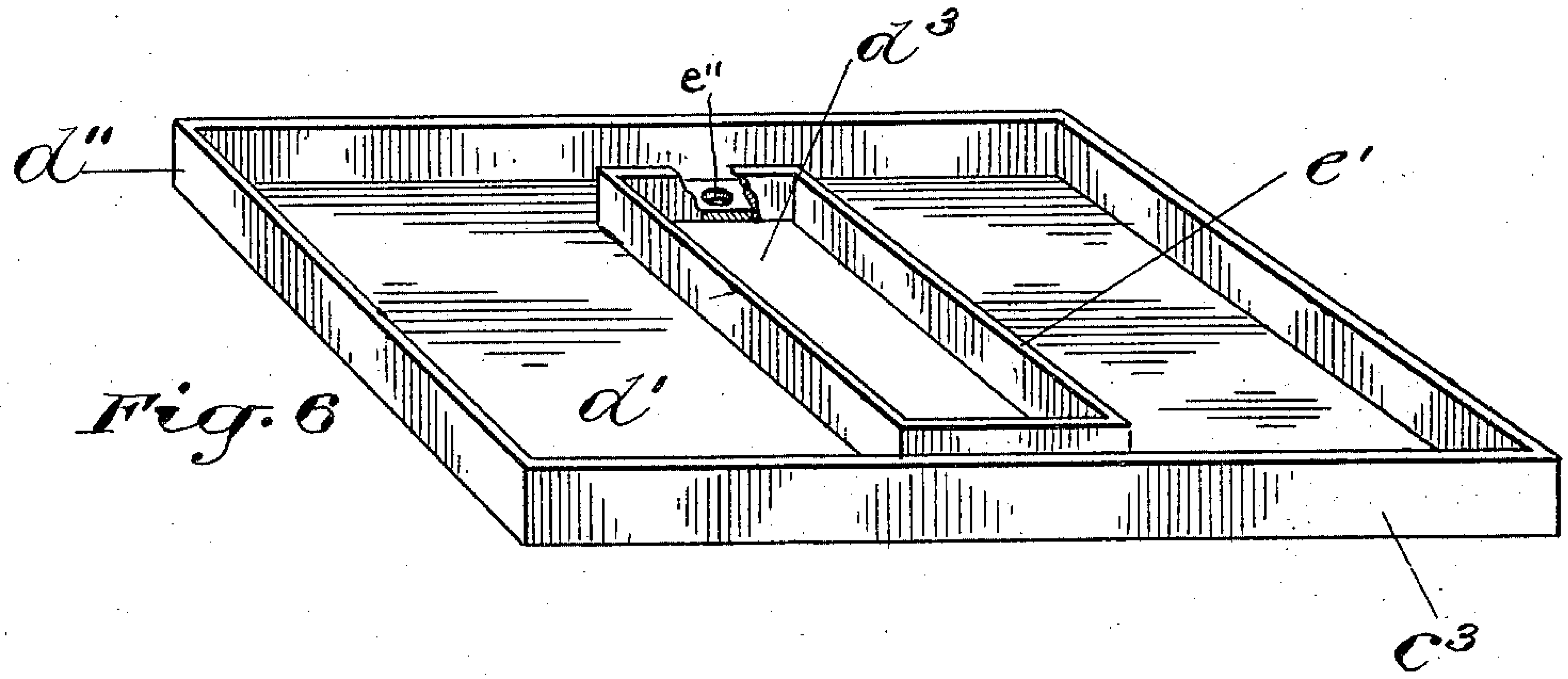


Fig. 6

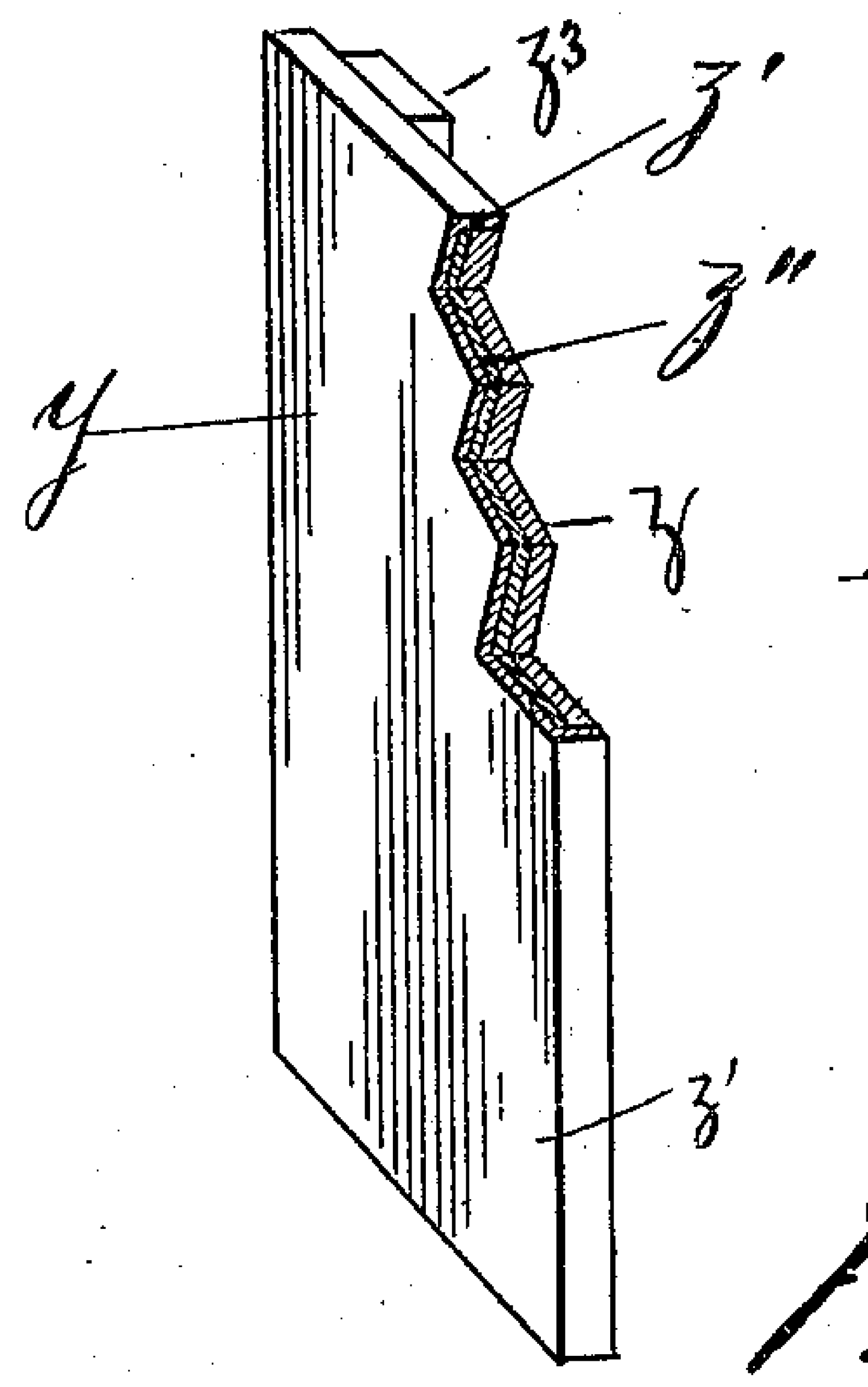


Fig. 5a

Witnesses
W. S. Grant
L. F. Burk

Inventor
J. D. Pennington
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN D. PENNINGTON, OF DUNDAS, CANADA.

REFRIGERATOR.

SPECIFICATION forming part of Letters Patent No. 688,680, dated December 10, 1901.

Application filed March 1, 1901. Serial No. 49,428. (No model.)

To all whom it may concern:

Be it known that I, JOHN DOBERRY PENNINGTON, manufacturer, of Dundas, in the county of Wentworth and Province of Ontario, Canada, have invented certain new and useful Improvements in Refrigerators; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to certain new and useful improvements in refrigerators; and the object of the invention is to produce a sectional refrigerator which can be rapidly and easily taken apart for cleaning, transportation, or storage purposes and as rapidly and easily put together again and to so arrange the air-flues that a free and direct circulation of cool air can be maintained throughout the ice and provision chambers, this object being attained by the device hereinafter more fully set forth, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the complete refrigerator with the lid open. Fig. 2 is a perspective view of the same with the lid and the top of the cabinet open, showing the position of these parts when removing or replacing the linings. Fig. 3 is a similar view to Fig. 2, showing the cabinet with the linings, ice-pan, and shelves removed. Fig. 4 is a vertical section on the lines *a a* of Fig. 1, showing the lid closed. Fig. 4ª is a detail view of the lower portion of the drain-pipe. Fig. 5 is a perspective view of the ice-pan removed from the cabinet. Fig. 5ª is an enlarged perspective view of one of the linings partly broken away to show its construction. Fig. 6 is a perspective view of the tray for the ice-pan. Fig. 7 is a view, partly in section, of the lid looking at it from the under side. Fig. 8 is a detail perspective view of one of the legs. Fig. 9 is a similar view of one of the shelves.

Like letters of reference refer to like parts throughout the specification and drawings.

The front *a* of the cabinet of the refrigerator overlaps the front edges of the sides *b* and is fastened thereto by screw-nails *c*, while the side edges of the back *d* are provided with dovetails *e* to enter the dovetailed grooves *f*, formed in the inner faces of the sides *b*. By means of the dovetails *e* and grooves *f* the back *d* can be united to or separated from the sides *b* in a convenient and expeditious manner.

Covering the top edges of the front, back, and sides of the cabinet is an open top *g*, connected to the back *d* by hinges *h* and fastened to the top of the front *a* by screws *i*, the purpose of which is to normally hold all of the parts in their proper relative positions when assembled. Connected to the back of the top *g* by hinges *j* is the lid *k*, the inner face of which is provided with an insulated lining *l*, corresponding in size and location with the opening through the top *g*. The lining *l* is fastened to the lid *k* by screws *m*, and consists of a rectangular frame *a'*, the front and sides of which are inclosed by a metallic covering *a''*, a sheeting a^3, of insulating material, interposed between the covering and the frame, with sheetings *b'*, of insulating materials, secured to the back of the frame, and a backing b^2, of mineral wool or other suitable non-conducting material, contained in the opening between the sheetings.

In the lid *k*, back of the lining *l*, is a recess *o*, corresponding in size and location with the opening in the frame *a'*, the purpose of which is to provide a dead-air space to assist in the insulation of the ice-chamber.

In the front *a* is an opening *p*, closed by a door g^4, and below the bottom of the door the front is provided with a hinged leaf *r* to conceal the water-pan and to provide a means of access thereto. The leaf *r* is hung on two pintles *r'*, projecting from two blocks r^2 on the lower front corners of the refrigerator. The door g^4 is provided on its inner side with a lining substantially like the lining of the lid *k* and comprising a metal facing g^5, an open rectangular frame g^6, within which is placed a filling of mineral wool g^7, and at opposite sides of this open frame are placed insulating-sheets g^8, as in Fig. 2.

Connected to the corners of the cabinet, at the lower end of the same, are four legs *o''*, and supported upon the legs *o''* is the bottom *t* of the refrigerator. Mounted upon the bottom *t* is a removable lining *u*, of wood or similar material covered with a loose metal facing *w*. The front edges of the facing *w* are fitted with a downturned flange *w'* to protect the front edges of the backing and sheeting, while the sides and back edges of the facing

w are provided with upturned flanges w'' for the purpose hereinafter set forth. In order that a dead-air space can exist between the bottom t and lining u, the under side of the lining is provided with cleats u'', which rest upon the bottom t.

Located within the cabinet are four standards $x\,x$, the inner or opposite faces of which are provided with vertical grooves x^2, respectively, to receive the edges of the side, back, and front linings $y\,y'\,y''$, respectively. The linings for the back and sides of the cabinet extend from the top of the same to the metal facing w, while the lining y'' for the front extends from the top of the cabinet to a metal-faced beam y^3, the ends of which are provided with tongues y^4, contained in the grooves in the inner faces of the standards x and supported above the level of the door. Each of the linings for the front, back, and sides consists of a rectangular backing z, of wood, and a facing z', of metal, with sheeting or sheetings z'', of insulating material, interposed between the facing and backing. At the back of each lining is a cleat z^3 for the purpose of holding it away from the inner face of the cabinet to form a dead-air space to assist in the insulation of the refrigerator. The side, back, and front linings are free to be moved vertically in the grooves in the standards, so that the whole or any one of them can be easily and conveniently removed and replaced. Connected to the inner face of the lining y' is a ledge c', the top of which is at a slightly-lower level than the top of the beam y^3. The beam y^3 projects slightly beyond the inner face of the front lining y'', and supported upon the beam y^3 and ledge c' is a rack c'' for the ice-pan c^3. The ice-pan c^3 consists of a substantially-rectangular-shaped tray d', having upturned flanges d'' at the front, sides, and back, and a central opening d^3, surrounded by an upturned flange e'. At the back of the tray d' is an opening e'', having a downwardly-projecting screw-threaded collar e^3, to which is connected the drain-pipe f'. Between the side edges of the tray d' and the side linings are spaces f'', forming the flues for the circulation of the air, as hereinafter specified.

Depending from one side of the tray d' is a baffle-plate f^3, which extends downwardly into the upper part of the provision-chamber, and supported upon the tray d' are the sides of the back g'' and front g^3 of the ice-pan. The back and front of the ice-pan each consist of a flat metal plate, the top edge of which is provided with an outturned flange h' to overlap, respectively, the back and front linings of the refrigerator and the side edges of which below the level of the top are provided with inturned flanges h''. The sides g' of the ice-pan each consist of a flat metal plate, the top of which is folded over to engage the top of the flanges h'' and lock together at the top the sides and ends, while the upturned bottom flanges of the tray overlap the back of the sides g', back g'', and front g^3 and prevent the outward displacement at the bottom of the sides and ends of the ice-pan, the inward displacement of the ends being prevented by the sides g' holding them asunder. Within the ice-pan is a corrugated ice-holder h^3, consisting of a corrugated plate i'' and two sleepers i', connected to the under side of the plate i'' for the purpose of holding it away from the tray d'. The purpose of this ice-holder is to keep the ice away from the opening d^3 in order that the cold air can descend through it into the provision-chamber. The opposite faces of the standards $x\,x$ are provided with supports j' for the removable racks j'' of the provision-chamber.

Connected to the under side of the bottom t are slides j^3 for the water-pan k', the top of which is fitted with outturned flanges k'' to engage the slides j^3 and support the water-pan therein. The front of the water-pan k' is provided with a faucet l', by means of which the whole or any portion of the water can be drained off.

Formed through the bottom t and lining u is a hole fitted with a screw-threaded collar l^3, to which is connected the bottom section m' of the drain-pipe f', which extends to the water-pan and is fitted with a trap m^2. The drain-pipe f' extends from the ice-pan and connects with the bottom section m' of the drain-pipe in order that the water can drain from the ice-pan into the water-pan. By making the drain-pipe sectional it is possible to remove it from the refrigerator without disconnecting it from the ice-pan.

In manufacturing the refrigerator all the parts are made to a templet, the inner faces of the sides having dovetailed grooves and the edges of the back having dovetails to be inserted into the dovetailed grooves to detachably and at the same time rigidly connect the back to the sides, the front being fastened by means of screw-nails to the sides and the bottom of the refrigerator removably supported upon the top of the legs. The linings are connected to the lid and doors by means of screw-nails in order that when it is necessary to clean them the screw-nails can be withdrawn and linings taken off. In assembling the linings for the interior of the cabinet the standards are placed in position, the side and back linings are pressed to the bottom of the grooves in the standards, so that their lower edges will be in contact with the top of the bottom lining, and the upturned flanges of the bottom lining will overlap their lower edges. The beam is then placed in position and the front lining is pressed down until it is in contact with the top of the beam. After this has been done the rack for the ice-pan is placed in position and the front lining is pressed down until it is in contact with the top of the beam. After this has been done the rack for the ice-pan is placed in position on the beam and on the ledge of the back lining. The tray is then placed on the rack and the baffle-plate suspended from the tray. The front,

back, and sides of the ice-pan are then placed in position, with the ice-holder of the ice-pan covering the central opening through the same. The upper section of the drain-pipe is fitted to the collar of the tray and extends into the hole through the lining and bottom and connects with the bottom section of the drain-pipe. After the linings are all in position the open top of the cabinet is lowered and fastened by screw-nails to the front. In taking the refrigerator apart the operation is simply reversed.

Connected to the inner face of the sides *b* is the lower end of a chain m^3, which extends through the hole o' in the open top *g*, and the upper end of which is connected to the under side of the lid *k*.

Each of the legs consists of a standard o'', one of the side faces of which is provided with a dovetailed groove o^3, into which is adapted to enter a dovetail p', connected to the lower end of the adjacent side *b*. In assembling the parts the dovetails p' enter grooves in their respective legs, which are pressed home and locked in position by means of screw-nails p'', passing through the front and back, respectively, of the cabinet. The lower end of each leg is provided with a caster p^3. By connecting the legs in this manner to the cabinet the use of glue can be entirely dispensed with, which is of considerable advantage in the construction of this class of furniture, inasmuch as the refrigerator is frequently placed in a damp atmosphere, which has a tendency to rot the glue and cause separation of the parts. Then, again, it is possible by fitting the legs to the cabinet in the above-described manner to make a detachable and practically rigid connection between the legs and cabinet in order that when it is desired to take the refrigerator apart the legs can be separated from the other parts in a simple and convenient manner.

In removing the linings the lid *k* is opened, the screw-nails *i* withdrawn, and the open top *g* is raised into an elevated position, being held in such position by the chain m^3. Access can now be had to the linings and these linings can be removed, commencing, preferably, with the ice-box, which is taken apart and lifted out of the refrigerator, after which the side, back, and front linings and standards can be withdrawn together with the linings for the bottom. The cabinet is now stripped and can be thoroughly cleaned; so also can the linings before being replaced in the cabinet. By this means it is possible to clean the refrigerator at predetermined times and keep it pure and sweet.

By having the water-pan connected to the bottom of the refrigerator and above the floor it is possible when the water-pan becomes filled to overflowing to draw off, by means of a faucet, a portion of its contents. By this means the spilling of the water on the floor can be avoided, which is a matter of considerable importance, as heretofore the water-pan has stood upon the floor, and when it is filled to overflowing its contents have spilled upon the floor, and not only has the overflow run upon the floor, but its contents have also been spilled during its removal.

Supported upon the racks j'' are shelves j^5 of the provision-chamber. Each shelf consists of two separable sections, each embracing in its construction end bars j^6 and connecting-bars j^7, the end bars j^6 being supported upon the racks j''. By making the shelves sectional it is possible to remove either one of the sections without displacing the other when it is found convenient to do so to increase the height of the interval between itself and the lower shelf or shelves.

By providing the ice-pan with an opening and also with a downwardly-directed flange or baffle-plate f^3 a free and direct circulation of air is maintained throughout the provision and ice chambers, with the consequent result that the air within the refrigerator is for all practical purposes dry. The baffle-plate f^3 prevents the warmer air rising through the flue intended for the descent of the colder air and causes a perfect circulation of air.

The facings for the ice-pan, linings, and standards are preferably of galvanized iron or steel, which is found to be the most durable and serviceable material for this purpose.

I do not lay any stress upon the peculiar construction of the linings and sections, as it may be necessary to vary the construction of the sections from time to time to meet the improvements and exigencies of the times.

In order that a support may be provided for the chain m^3, a stud m^4 is attached to the inner face of the adjacent side, so that the chain will rest against it when the top and lid are open.

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

1. A refrigerator embracing in its construction a cabinet having back and side sections separably dovetailed together at the corners, a front section overlapping the side sections and separably fastened thereto, a bottom section separably connected to the back front and side sections, an open top section hinged to the back section and separably connected to the front section and a lid hinged to the open top section, substantially as specified.

2. A refrigerator embracing in its construction a cabinet, a lining for the cabinet consisting of removable corner-posts, and back, front and side sections removably held by the corner-posts, an open top hinged to the back and separably fastened to the front section and a lid hinged to the open top, substantially as specified.

3. A refrigerator embracing in its construction a cabinet, a lining for the cabinet consisting of a removable bottom section, removable corner-posts upon the bottom section, and back, front and side sections removably held by the corner-posts, an open top hinged to the

back and separably fastened to the front section and a lid hinged to the open top, substantially as specified.

4. A refrigerator embracing in its construction a cabinet, a lining for the cabinet consisting of a removable bottom section, vertically-grooved corner-posts standing on the bottom section, removable back, front and side sections held by the grooves in the corner-posts, an open top hinged to the back and separably fastened to the front section, and a lid hinged to the open top, substantially as specified.

5. A refrigerator embracing in its construction a cabinet, a lining for the cabinet consisting of a removable bottom section, vertically-grooved corner-posts standing on the bottom section, removable back, front and side sections held by the grooves in the corner-posts, an open top hinged to the back and separably fastened to the front section, a lid hinged to the open top, a lining removably connected to the lid, a doorway for the cabinet, a door to close the doorway and a lining removably connected to the door, substantially as specified.

6. A refrigerator embracing in its construction a cabinet, a lining for the cabinet consisting of a removable bottom section, vertically-grooved corner-posts standing on the bottom section, removable back, front and side sections held by the grooves in the corner-posts, an open top hinged to the back and separably fastened to the front section, a lid hinged to the open top, a beam removably connected to the standards upon which is supported the front lining, a lid hinged to the open top, a lining removably connected to the lid, a doorway for the cabinet, a door to close such doorway and a lining removably connected to the door, substantially as specified.

7. A refrigerator embracing in its construction a cabinet, a lining for the cabinet consisting of a removable bottom section, vertically-grooved corner-posts standing on the bottom section, removable back, front and side sections held by the grooves in the corner-posts, an open top hinged to the back and separably fastened to the front section, a lid hinged to the open top, a beam removably connected to the standards upon which is supported the front lining, a lid hinged to the open top, a lining removably connected to the lid, a doorway for the cabinet, a door to close such doorway, a lining removably connected to the door, a ledge connected to the back lining, a rack supported upon the ledge and beam, and an ice-pan sustained by the rack, substantially as specified.

8. A removable ice-pan for a refrigerator consisting of a tray having an upturned flange surrounding its outer edges, a separable back and front supported upon the tray each having inturned flanges at its side edges, and sides having a fold along their top edges to register with the inturned side flanges of the front and back, substantially as specified.

9. A removable ice-pan for a refrigerator consisting of a tray having an upturned flange surrounding its outer edges, a separable back and front supported upon the tray each having inturned flanges at its side edges, sides having a fold along their top edges to register with the inturned side flanges of the front and back, and outturned flanges for the top of the back and front to overlap the top of the back and front of the cabinet-linings, substantially as specified.

10. A removable ice-pan for a refrigerator consisting of a tray having an upturned flange surrounding its outer edges, a separable back and front supported upon the tray each having inturned flanges at its side edges, sides having a fold along their top edges to register with the inturned side flanges of the front and back, an opening in the ice-pan, inturned flanges surrounding the opening, an ice-holder within the ice-pan covering the opening, consisting of a plate and cleats at the under side of the plate to hold it away from the tray, substantially as specified.

11. A removable ice-pan for a refrigerator consisting of a tray having an upturned flange surrounding its outer edges, a separable back and front supported upon the tray, each having inturned flanges at its side edges, sides having a fold along their top edges to register with the inturned side flanges of the front and back, an opening in the ice-pan, inturned flanges surrounding the opening, an ice-holder within the ice-pan covering the opening consisting of a plate, cleats at the under side of the plate to hold it away from the tray and outturned flanges for the top of the back and sides to overlap the top of the front and back of the cabinet-lining, substantially as specified.

12. A removable ice-pan for a refrigerator consisting of a tray having an upturned flange surrounding its outer edges a separable back and front supported upon the tray each having inturned flanges at its side edges, sides having a fold along their top edges to register with the inturned side flanges of the front and back, an opening consisting of a plate, cleats at the under side of the plate to hold it away from the tray, outturned flanges for the top of the back and sides to overlap the top of the front and back of the cabinet-lining, a drain-opening for the tray fitted with a screw-threaded collar and a sectional drain-pipe fitted to the collar extending to the water-pan, substantially as specified.

13. A removable ice-pan for a refrigerator consisting of a tray having an upturned flange surrounding its outer edges, a separable back and front supported upon the tray each having inturned flanges at its side edges, sides having a fold along their top edges to register with the inturned side flanges of the front and back, a baffle-plate suspended from the upturned flange at one side of the tray and extending downwardly into the provision-chamber, substantially as specified.

14. A refrigerator embracing in its construction a cabinet, having the back and side sec-

tions separably dovetailed together at the corners, a front section overlapping the side sections and separably fastened thereto, a bottom section separably connected to the back, front and side sections, an open-top section hinged to the back section and separably connected to the front section, a lid hinged to the open-top section, a chain passing through a hole in the open-top section one end of which is connected to the lid and the other end connected to the inner face of the cabinet, substantially as specified.

Dundas, January 4, 1901.

J. D. PENNINGTON.

In presence of—
W. E. S. KNOWLES,
ANNIE C. BROWN.