

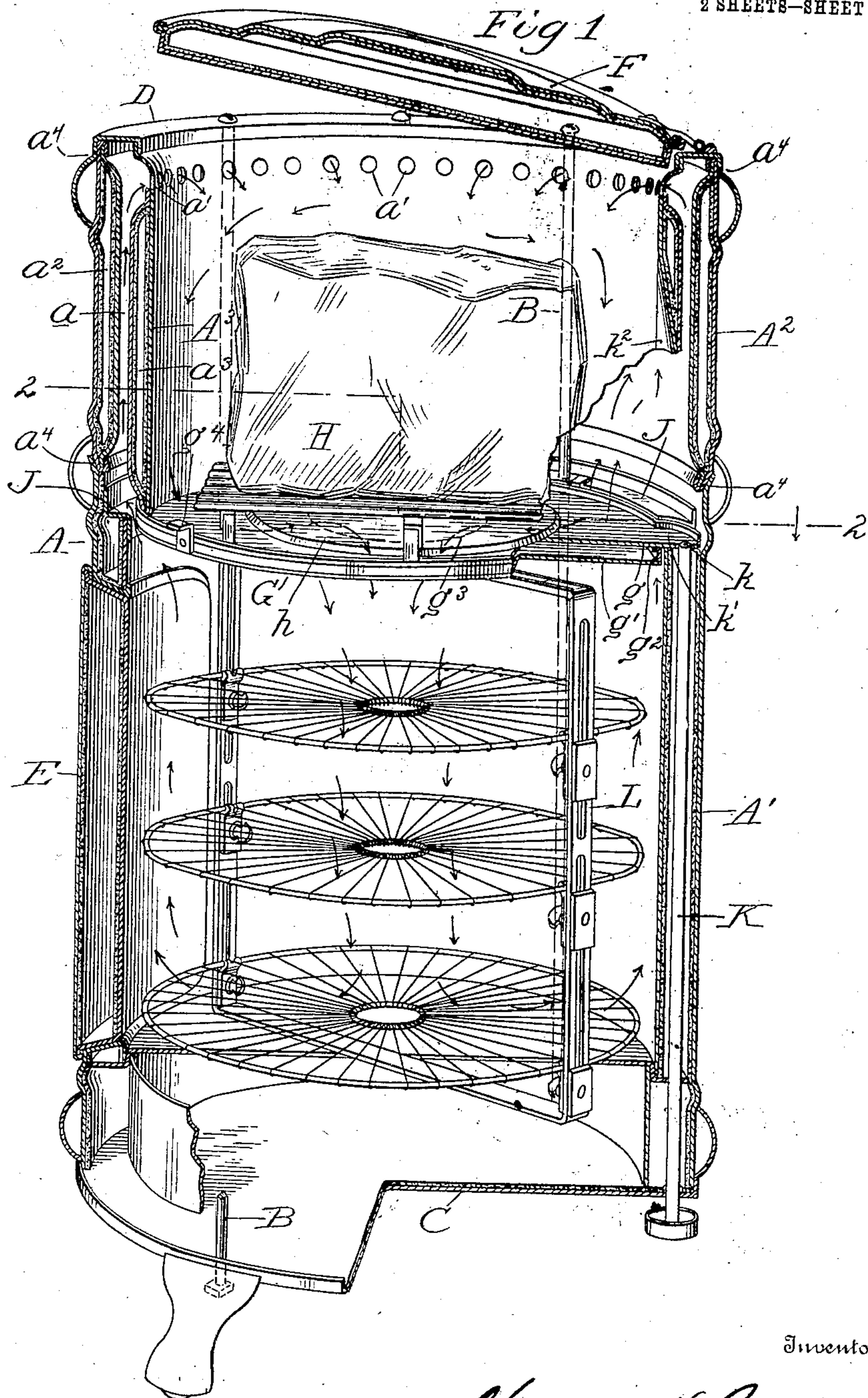
No. 891,659.

PATENTED JUNE 23, 1908

C. H. BOECK.
REFRIGERATOR.

APPLICATION FILED JAN. 10, 1907.

2 SHEETS—SHEET 1.



Inventor

Witnesses

W. B. Bendine
C. R. Metman

Charles H. Boeck

By *Julian C. Howell* For
his Attorney

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Fig. 2.

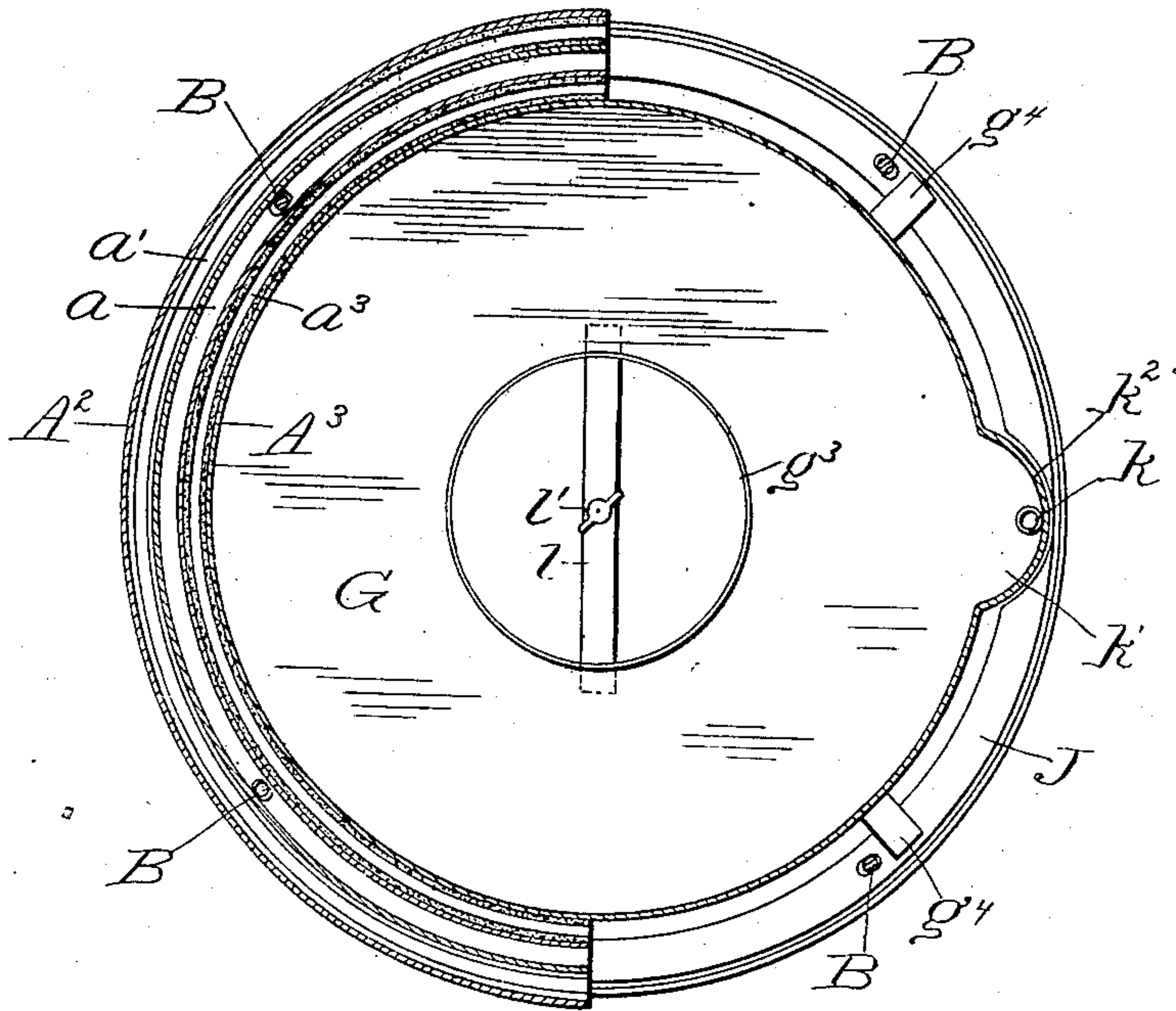
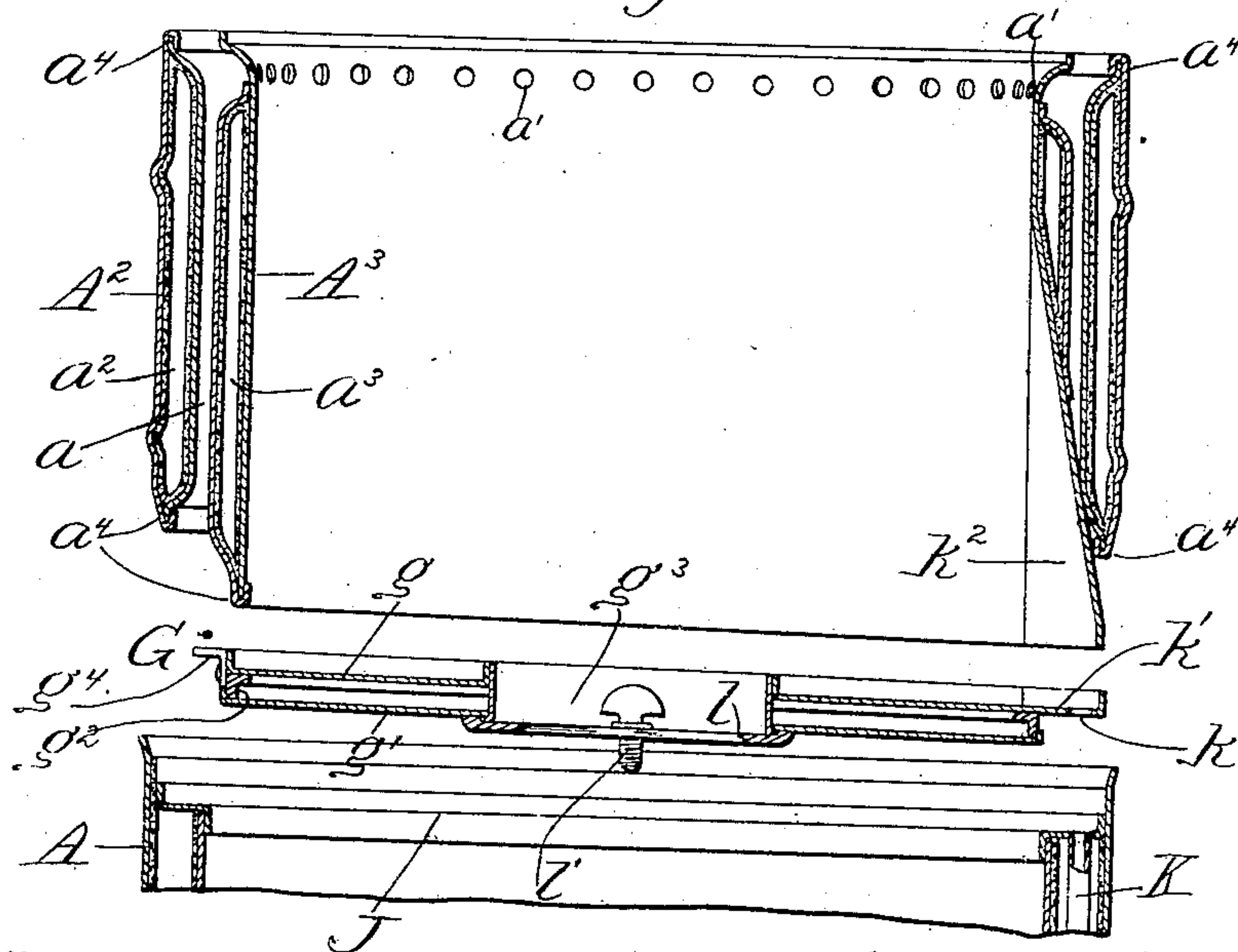


Fig. 3.



Inventor

Witnesses

W. B. Bredine
J. R. M. M. M.

By

Charles H. Boeck
William C. Howell
His Attorney

UNITED STATES PATENT OFFICE.

CHARLES H. BOECK, OF JACKSON, MICHIGAN, ASSIGNOR TO METAL STAMPING COMPANY, OF JACKSON, MICHIGAN, A CORPORATION OF MICHIGAN.

REFRIGERATOR.

No. 891,659.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed January 10, 1907. Serial No. 351,706.

To all whom it may concern:

Be it known that I, CHARLES H. BOECK, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, 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.

The main object of my invention is to improve the general construction and mechanical appointments of refrigerators of the generic type or style shown and described in my prior U. S. Patent No. 835,095, dated Nov. 6, 1906.

The invention will hereinafter be fully described with reference to the accompanying drawings, which form a part of this specification, and then more particularly pointed out and defined in the claims following this description.

It will be understood that the illustrated embodiment of my invention is or may be susceptible of modifications in various details, and that my improvements may be incorporated in different species of refrigerators of the general class represented, so that I do not intend or desire to restrict the scope of my invention to the specific construction herein shown and described.

Figure 1 of said drawings is a sectional perspective view of a refrigerator embodying my improvements. Fig. 2 is a horizontal section on line 2—2 of Fig. 1. Fig. 3 is a central vertical cross-section of the following parts unassembled, namely, the upper section of the refrigerator-body, the adjacent part of the lower section of said body, and the intermediate partition which divides these sections and constitutes the ceiling of the provision-chamber and the floor or bottom of the ice-chest or ice-chamber above said provision-chamber.

The drawings show an all-around metal refrigerator, constructed principally of sheet-metal, preferably sheet-steel; my improvements being more particularly intended for and applicable to sheet-metal refrigerator constructions, though they may also be incorporated in refrigerators built wholly or in part of other materials.

As shown, the refrigerator has a double-walled body A, mounted upright upon a suitable base, and comprising concentric casings

or cylinders, hereinafter referred to as the outer and inner refrigerator-walls. The general shape of the body may be cylindrical, or it may be polygonal. The body is made in superimposed sections A¹ and A² (though its outer wall or casing might be a single cylinder), the provision-chamber being in the lower section and the ice-chamber in the upper section. The structure is bolted together by long bolts or rods B, which are arranged in the annular space between the outer and inner refrigerator-walls, and which connect the base-plate C on which the refrigerator-walls are supported with a top-ring D fitted over the upper ends of the refrigerator-walls.

The double refrigerator-walls provide the usual dead-air space around the provision-chamber, and a bottom dead-air space is also provided below the floor of the provision-chamber. The refrigerator-body has a front door E, for access to the provision-chamber, and a hinged or otherwise removable top cover F for access to the ice-chamber above the provision-chamber. Said door E and top cover F are also made as double-walled members, to provide dead-air spaces therein. The several dead-air spaces of the refrigerator are shown lined with asbestos sheets, for increasing the non-conductivity of the refrigerator-walls and insuring the interior of the refrigerator from the influence of outside temperature.

The ice-chamber or ice-chest, comprising the inner wall or casing A³ of the upper section A² of the refrigerator-body, has a double bottom G, thereby providing a dead-air space under the floor of the ice-chest to prevent condensation of air and formation of moisture on the ceiling of the subjacent provision-chamber. Said double bottom G comprises an upper plate *g*, a lower plate *g*¹, and a ring of angle-iron *g*² arranged between them; the upper plate *g* being supported on said ring, and the under plate *g*¹ being flanged to embrace the same from the bottom, as shown more clearly in Fig. 3. The said double bottom G of the ice-chamber is provided with suitable opening or openings for descent of cold air, preferably a large central opening *g*³; the upper plate *g* being flanged upwardly around said opening, and also around its outer edge or periphery, to prevent drippings of water from the ice from flowing off from the bottom of the ice-

chest into the provision-chamber; and the lower plate g^1 having a central boss or flange fitted within the flanged central opening of the upper plate g . Preferably the said double bottom of the ice-chamber, or at least the upper plate g thereof, slants slightly downward toward one side of the refrigerator, to direct the flow of water or drippings from the ice into the drip-pipe, hereinafter referred to.

The ice may be supported in the ice-chamber upon any suitable rack or tray, designated by the letter H; it being desirable to employ an ice-tray of the character described in the specification of my aforesaid patent. The legs of the ice-tray may rest upon the peripheral portion of the double bottom G, or the upper plate g thereof, so as to be supported on or by the stiff angle-iron ring g^2 . A raised shield h under the ice-tray will prevent any drippings from the ice from falling down into the provision-chamber through the large central opening g^3 in the bottom of the ice-chamber.

To support the ice-chest, the angle-iron ring g^2 is provided with lugs g^4 which rest upon a ring J arranged approximately between the superimposed sections of the refrigerator-body. Said ring J is shown fitted within the outer refrigerator-wall, and supported upon the top of the inner refrigerator-wall of the lower section A^1 , thereby closing at the top the dead-air space between the double walls of the lower section of the refrigerator-body, surrounding the provision-chamber. The inner wall or casing A^3 of the upper section A^2 of the refrigerator-body, constituting the ice-chest is supported upon the aforesaid double bottom G, being fitted within the peripheral flange of the upper plate g thereof. An annular space being left between the ring J and the bottom G of the ice-chamber A^3 , circulation of air ensues, as indicated by the arrows in Fig. 1; the cold air from the ice-chamber passing downwardly through the central opening g^3 in the bottom thereof into the provision-chamber, and the warm air from the provision-chamber passing upwardly through an annular air-flue a between the outer and inner walls or casings of the upper section A^2 of the refrigerator-body, and through a series of apertures a^1 at or in the upper part of the inner casing A^3 into the ice-chamber. The outer wall of the upper section A^2 of the refrigerator-body is itself made double to provide a dead-air space a^2 around the air-flue a ; while the inner wall or casing A^3 is likewise made double to provide a dead-air space a^3 around the wall of the ice-chamber, to prevent condensation and formation of moisture in the walls of the air-flue a . Said double walls may be made by soldering the upper and lower edges of concentrically arranged cylinders, or, as indicated at a^4 , each doubled wall may be

made by flanging or doubling the upper ends of one cylinder so as to embrace the upper edge of the associated cylinder.

Instead of passing a drain-pipe down through the center of the provision-chamber, as usual in refrigerators of the present character, the drain-pipe K is arranged concealed in the space between the outer and inner refrigerator-walls, thus leaving the provision-chamber free from obstruction. The upper end of the drain-pipe communicates with or may be coupled to an opening k in a projection k^1 of the upper plate g of the ice-chest bottom G, which, as before stated, slants downward toward said opening to direct the flow of water or drippings thereinto. There is a depression in the side of the ice-chamber above the drain-pipe, as indicated at k^2 , made by forming the wall or casing A^3 substantially in the form of a nose, to overlie the aforesaid projection k^1 of the plate g . This construction permits running a straight wire or rod down through the drain-pipe K for cleansing purposes, in case the pipe should become clogged up; it being important that a straight wire be used for cleaning the drain-pipe, so that it can be forced through from the top of said drain-pipe to the bottom without kinks.

Within the provision-chamber, there is arranged a revolving rack L supporting one or more provision-shelves, which are preferably adjustable up and down. The rack is shown in the form of a rectangular frame pivotally supported at the center of the floor of the provision-chamber and at the center of the ceiling of the provision-chamber. In this instance, the upper pivotal-support for the rack is provided by the end of a thumb-screw l^1 tapped through a spider or cross-bar l arranged across the central opening g^3 of the partition G which divides the ice-chamber from the provision-chamber below. The shelves are arranged in the rack and supported at their opposite sides by clamps adjustably-engaging the sides of the rack and detachably-engaging the rims of the shelves, permitting the shelves to be adjusted vertically and to be detached for cleansing or other purposes. The shelves are formed to allow the free circulation of air throughout the provision-chamber; in this instance they comprise wheel-like structures consisting of outer and inner rings rigidly connected by radiating wires or rods. I make no specific claim herein to the rack L and its shelves *per se*, since the same constitutes the subject-matter of another application filed concurrently herewith. Serial No. 351,707.

There being no central drip-pipe or other obstruction in the provision-chamber, the shelves can be laden with articles of any size which can be accommodated upon the area of the shelves. The rack revolves with its sides close to the interior sides of the refrig-

erator-walls, and, in a cylindrical refrigerator, as herein illustrated, the shelves being circular occupy practically the full cross-sectional area capacity of the provision-chamber. The shelves may, however, be polygonal; and also the refrigerator-body, while desirably round or cylindrical, may be polygonal or square in cross-section.

Upon opening the refrigerator door, the rack can be conveniently revolved to bring any part of the provision-shelves foremost, so as to facilitate the placing of food or other articles thereon or the removal of the same, without the need of reaching across the shelves.

I claim as my invention and desire to secure by Letters Patent:

1. In a refrigerator, the combination of a body having an ice-chest therein with a double bottom comprising upper and lower plates and a ring of angle-iron arranged between said plates, and means for supporting said ice-chest by said ring.

2. In a refrigerator, the combination of a body having an ice-chest therein comprising a casing and a double bottom therefor; said bottom having an upper plate with a peripheral flange fitted to the lower end of said casing, a lower plate, and an interposed ring of angle-iron, the lower plate having a flange fitted to said ring, and supporting lugs for said bottom attached to said ring.

3. In a refrigerator, a body having a provision-chamber therein, ice-chamber above, and interposed double partition constituting the bottom of said ice-chamber and ceiling of the provision-chamber, said bottom comprising spaced upper and lower plates, there being an air-opening in said double bottom, the upper plate having a flange rising around said opening, and the lower plate having a boss around said opening fitted within said flange.

4. In a refrigerator, the combination of an upright body having an outside wall or casing and an inside casing not as high as the body, providing between said casings a dead-air space surrounding the provision-chamber of the refrigerator, a ring (as J) seated upon the upper end of said inside casing, and an ice-chest in the upper part of said body having its bottom provided with lugs supported on said ring, there being an air-flue around the outside of said ice-chest, and a space between said ring and bottom of the ice-chest for ascent of air into said flue, and the upper part of said ice-chest being in communication with said flue.

5. In a refrigerator, the combination of a double-walled upright body, and a double-walled ice-chest supported in the upper part thereof, a top-ring closing the annular space between them, and a cover adapted to fit within said ring and close the top of the ice-chest, there being an air-flue between the

double-walled ice-chest and the double-walled body in communication with the provision-chamber below the ice-chest and in communication with the interior of the ice-chest at its upper part, the latter being provided with openings for such communication.

6. In a refrigerator, the combination of an outside wall, an inside concentric wall of lesser height, a ring fitted within said outside wall and seated upon the top of said inside wall, and an ice-chest supported upon said ring, said ice-chest being surrounded by an air-circulating flue having an open bottom between said ring and lower end of the ice-chest, the upper portion of said flue being in communication with the ice-chest.

7. An upright refrigerator body comprising concentric walls, the inner one being in superimposed sections with an intervening partition dividing the interior of the body into an upper ice-chamber and subjacent provision-chamber, there being an air-circulating flue between the outside wall and upper section of the inside wall, which flue at its upper end communicates with the ice-chamber and at its lower end with the provision-chamber, and both the said upper section of the inner wall and the surrounding portion of the outer wall being double-walled.

8. An upright refrigerator body made in superimposed sections, the lower section comprising concentric walls and a top ring seated on the inner wall within the outer casing, and the upper section being mounted upon the lower section and comprising concentric walls, the inner one of which is provided with a bottom and constitutes an ice-chest, there being an annular space between said ring and bottom affording communication from the provision-chamber below into an air-flue surrounding the ice-chest and communicating therewith.

9. In a refrigerator, the combination of an upright body made in superposed sections (as A^1 , A^2), the lower section comprising concentric walls, and the upper section comprising concentric casings each made double-walled, thereby providing an intermediate air-flue a and outer and inner dead-air spaces a^2 and a^3 , a ring J seated upon the upper end of the inner wall of the lower section of the body, the inner casing of the upper section constituting the ice-chest and having its bottom provided with supporting-lugs resting on said ring.

10. In a refrigerator, the combination of a double-walled body, an ice-chest therein and a vertical drain-pipe extending from the bottom of the ice-chest down in the space between the outside and inside refrigerator-walls, the ice-chest having a nose-like indentation in its side covering the upper end of said drain-pipe, to permit running a straight wire

or rod down through said drain-pipe for cleansing purposes.

11. In a refrigerator, the combination of an upright body having a provision-chamber and an ice-chamber above the same, a partition between said ice-chamber and the provision-chamber having a central opening for descent of air, and a revoluble rack in the provision-chamber having provision-shelves supported thereby, the rack being pivotally-mounted at the center of the floor of the pro-

vision-chamber, and a bar or spider arranged across the said opening in the said partition, and a thumb-screw tapped therethrough engaging the upper part of said rack and constituting the upper pivotal bearing therefor. 15

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

CHARLES H. BOECK.

Witnesses:

D. R. TARBELL,

WM. P. HANNAFORD.