

(No Model.)

4 Sheets—Sheet 1.

C. F. HUBBARD.
BAKING OVEN.

No. 406,910.

Patented July 16, 1889.

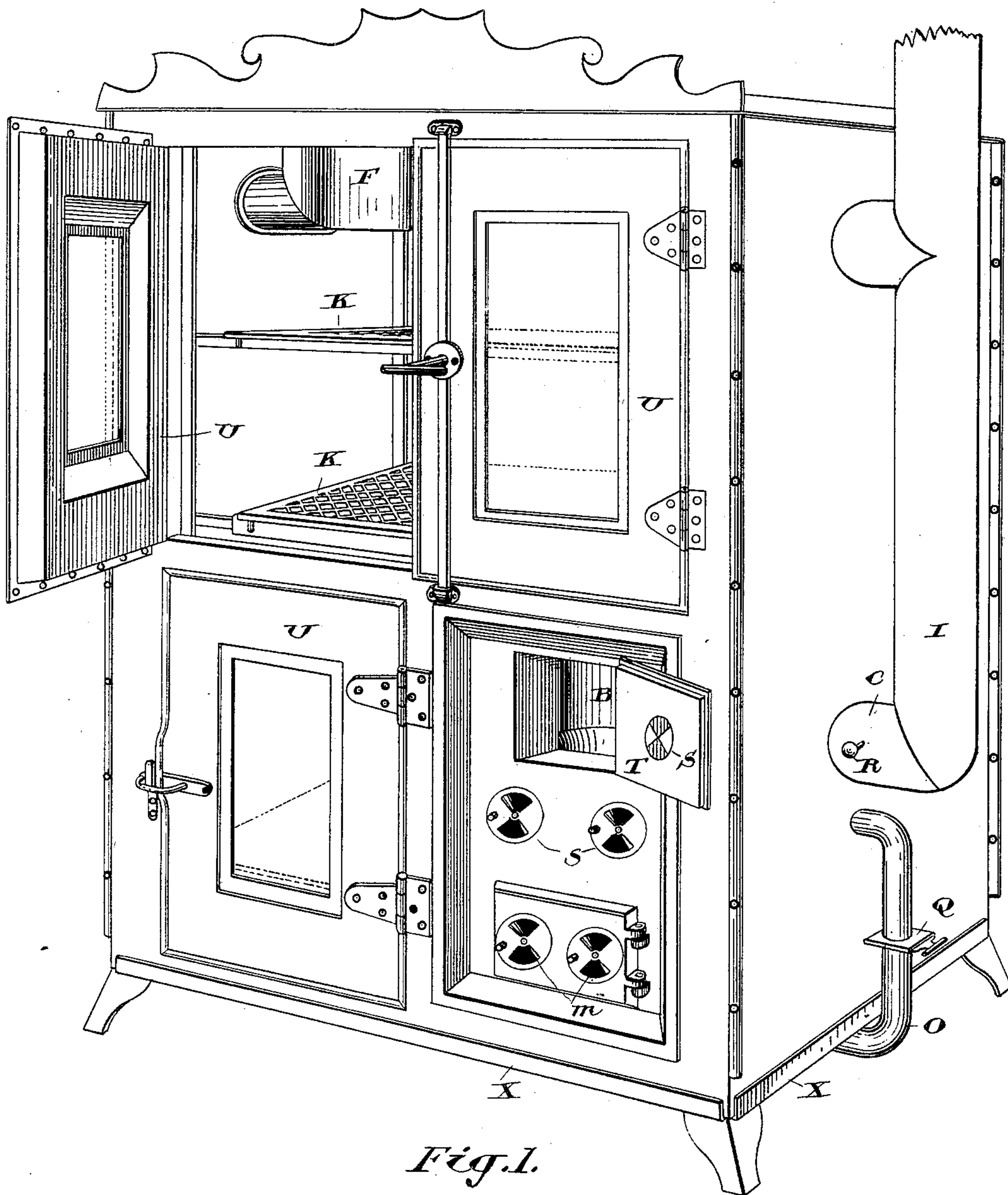


Fig. 1.

Witnesses.
J. B. F. Hutchinson
J. Edw. Mayberry

Inventor:
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By Donald C. Ridout
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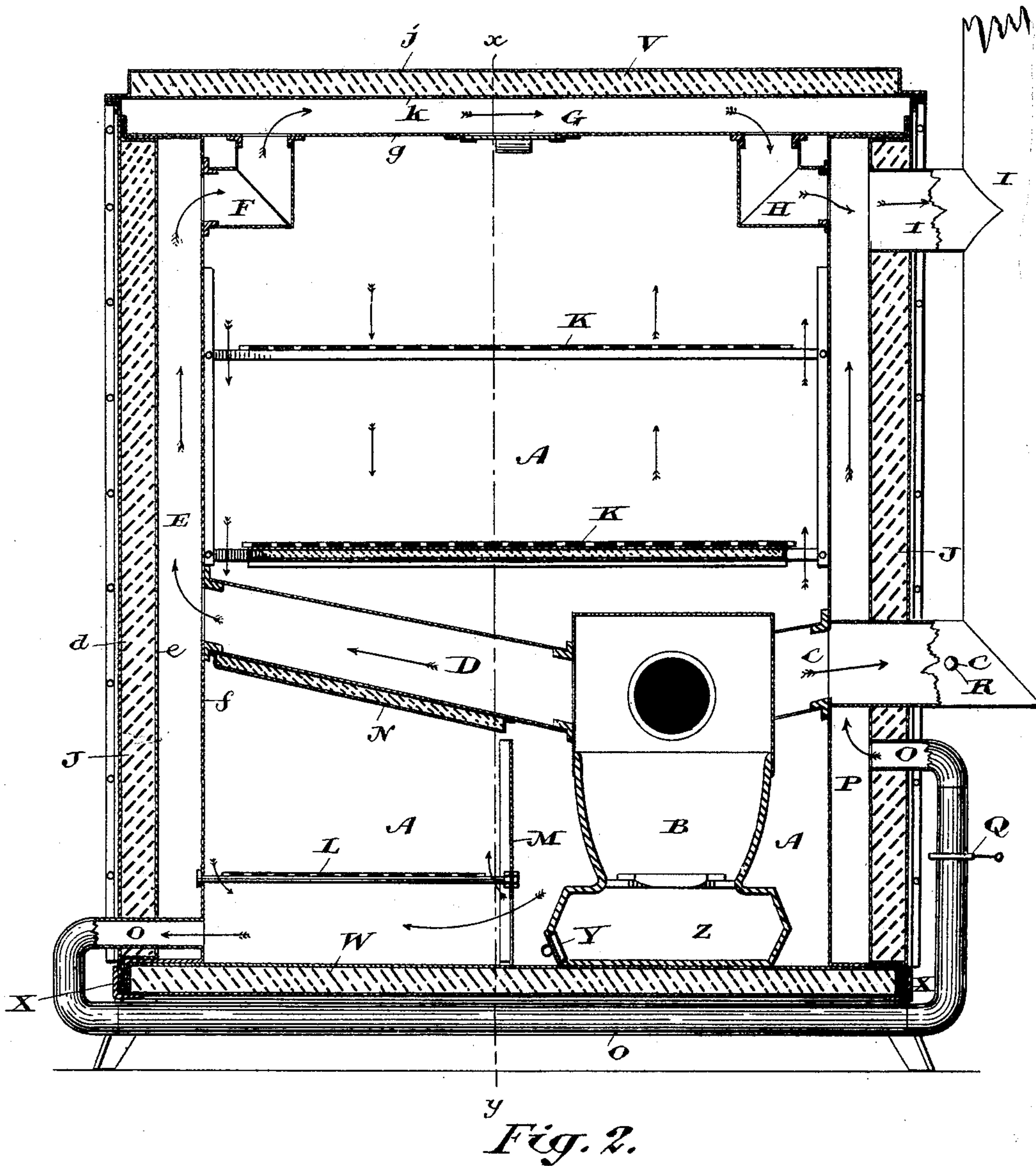
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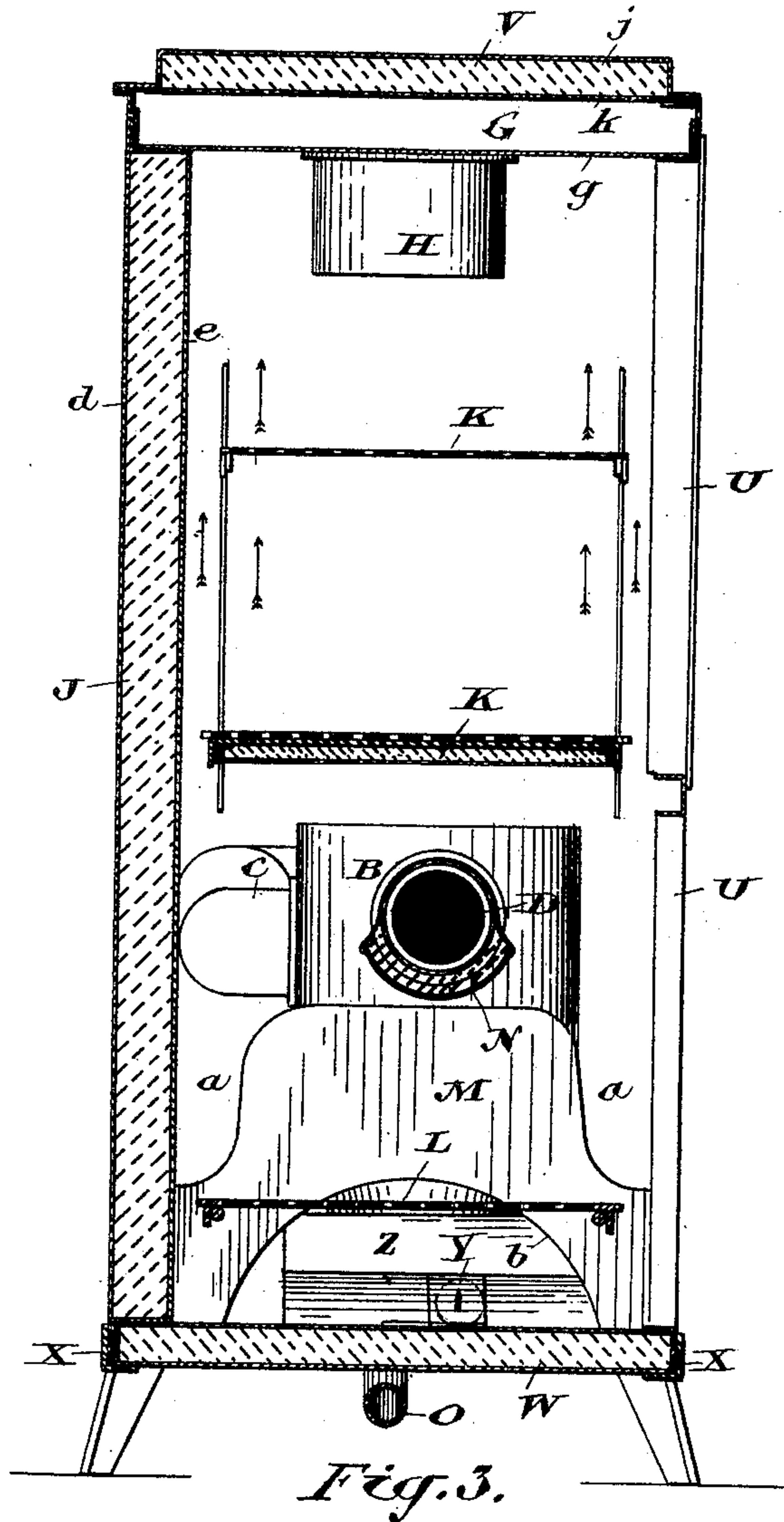
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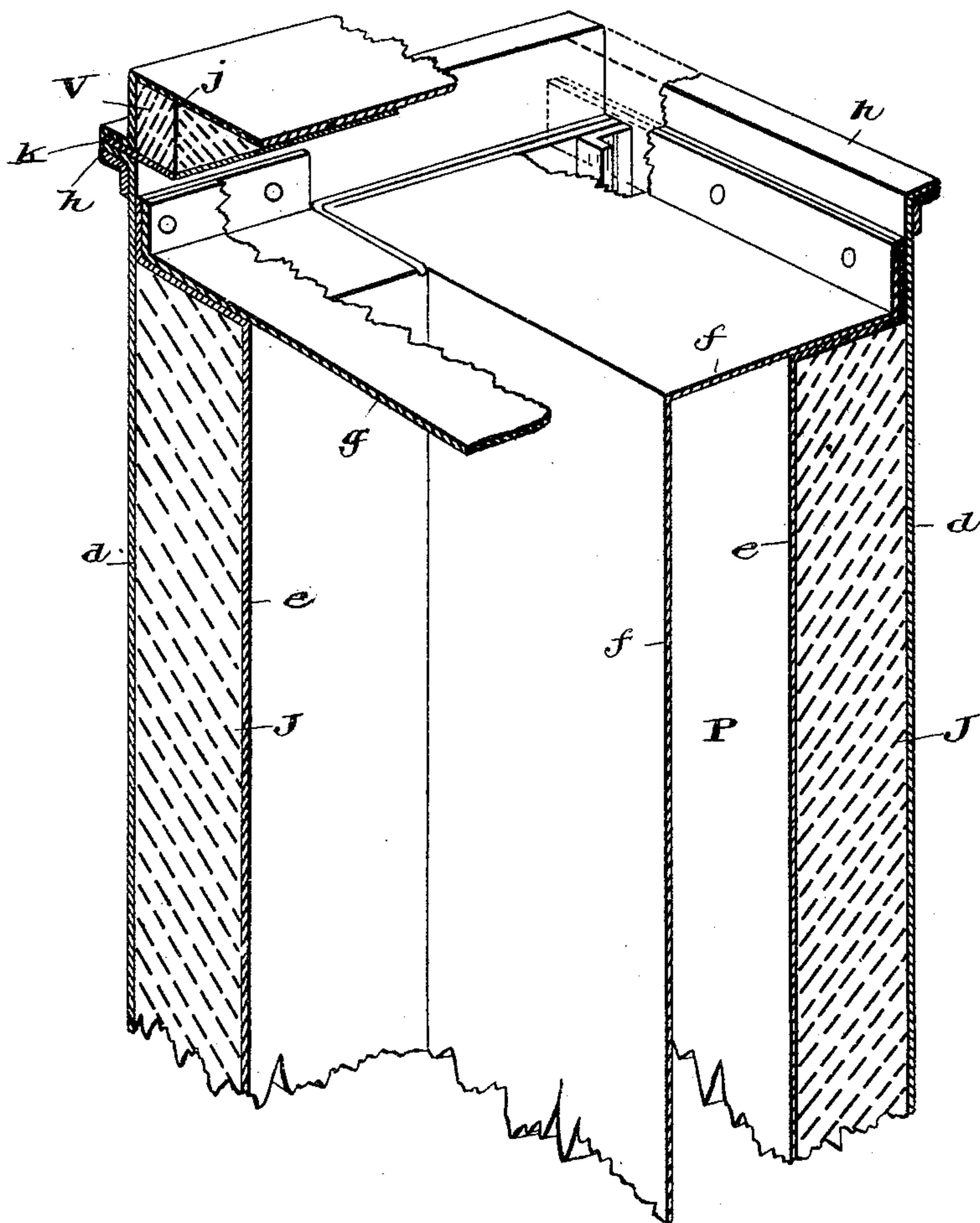


Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES F. HUBBARD, OF TORONTO, ONTARIO, CANADA.

BAKING-OVEN.

SPECIFICATION forming part of Letters Patent No. 406,910, dated July 16, 1889.

Application filed September 12, 1888. Serial No. 285,165. (No model.) Patented in England October 20, 1888, No. 16,867.

To all whom it may concern:

Be it known that I, CHARLES FREDERICK HUBBARD, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented a certain new and useful Improvement in Baking-Ovens, (for which I have obtained provisional patent in Great Britain, No. 16,867, dated October 20, 1888,) of which the following is a specification.

The object of the invention is to design a baking-oven in which a small fire shall be capable of heating a large oven at a uniform temperature, which temperature may be raised or lowered, as occasion requires, without interfering with the fire; and it consists, essentially, of a chamber having a stove or independent furnace located within it and an air-inlet and an air-outlet, the whole being constructed and arranged substantially as hereinafter more particularly explained.

Figure 1 is a perspective outside view of my improved oven. Fig. 2 is a sectional front elevation. Fig. 3 is a cross-section through *xy* in Fig. 2. Fig. 4 is a sectional detail in perspective, showing the manner of connecting the parts together.

In the drawings, A represents a chamber in which I place a stove or independent furnace B, which should be made perfectly gas-tight and provided with suitable smoke-flues. In the drawings I have shown two smoke-flues. The one marked C leads directly from the stove or furnace B into the chimney or main flue leading thereto. The other flue (marked D) leads from the stove or furnace B into the hollow space E, which extends across the chamber on one of its sides. When the draft is turned into the indirect flue D, the smoke and heated gases from the stove or furnace pass into the hollow space E, thence through the elbow F into the hollow space G, which extends across and forms the top of the chamber A. From the space G the smoke and heated gases pass through the elbow H into the chimney or main flue I. An outer space is formed entirely around the chamber A, and is filled with asbestos, so that no heat shall be lost by radiation.

K represents two shelves placed and suit-

ably supported within the chamber A above the stove or furnace B.

L is also a shelf suitably supported within the chamber A and located on one side of the stove or furnace B. This shelf L is protected by the shield M, shaped substantially as shown in Fig. 3, so as to form a protection for the article being cooked from the excessive direct heat from the stove or furnace B, the side spaces *a* and bottom space *b* being sufficient to allow of the free circulation of the heated air through the bottom portion of the chamber A next to the stove or furnace B. A bent shield N is formed around the bottom side of the flue D, so as to form an air-space around the bottom of the flue D to protect the top of the article being cooked on the shelf L from any excessive direct heat from the flue D.

An air-flue O leads from a point remote from the stove or furnace B to a point where it may connect directly with the flue I or indirectly with the said flue through a hollow space P, formed on one side of the chamber A. I place a damper Q on the air-flue O, and I also place a damper R on the flue C, with the view of being able to regulate both the circulation of the air and of the smoke, for the purpose and in the manner hereinafter described. Dampers S, for regulating the admission of fresh air into the chamber A, and a fuel-door T are provided, as indicated. The oven-doors U have glass panels, so that the process of cooking may be watched without opening the doors, which doors are provided with suitable locks, by which they may be hermetically closed, and are preferably lined with asbestos.

On reference to Fig. 4 my manner of constructing the chamber A will be understood. The outer spaces J, which are filled with asbestos, are formed by the outer plate *d*, which forms one side of the outer casing of the chamber A, and the plate *e*, which forms the inner side of the said casing. The inner plate *e* is flanged, so as to form a top to the space J below the flanged top of the plate *d*. The plates *f*, which inclose the air-spaces E and P, form two of the inner sides of the chamber A, and are flanged top and bottom

to close the said air-spaces. (See Fig. 2.) The flanged tops and bottoms of the plates *f* extend over the flanged tops and bottoms of the inner plates *e*, which inclose the ends of the outer spaces *J* next to the hollow spaces *E* and *P*, and the flanged tops and bottoms of the said plates *f* are made flush with the flanged tops and bottoms of the plates *e*, which close the spaces *J* at right angles to the hollow spaces *E* and *P*.

g is a flanged top plate fitted into the recess formed by the flanged ends of the plates *e* and *f* and forming the top of the chamber *A*. A flange *h* is formed on the top of each of the plates *d*, which flanges are designed to form a support for the flanged plate *j*, forming the outer plate of the top space *V*, which is filled with asbestos. The bottom plate *k* of this space rests on the flanges *h* and forms the top of the hollow space *G*. The bottom *W* of the chamber *A* is made of metal plates, forming a hollow space filled with asbestos. This bottom rests, as indicated in Fig. 2, in an angle-plate *X*. All the plates herein specified are suitably riveted or bolted together, as indicated.

Having described the general construction of the parts of my improved oven, I shall refer briefly to a few of the advantages involved in the construction. By placing a stove or furnace *B* within a chamber *A*, constructed substantially as described, and having an air-inlet and an air-outlet for admitting air into the chamber and discharging it from the chamber without reference to or interfering with the flues of the stove or furnace, I am enabled to regulate with accuracy and dispatch the temperature and circulation of the air through the furnace. By surrounding the chamber *A* with asbestos and arranging the smoke and air flues within it in the manner described I am enabled to secure to the fullest extent the effects of combustion within the stove or furnace *B*, and am therefore able to employ a very small stove or furnace for a (comparatively speaking) large chamber or oven.

Owing to the arrangement of the flues described and to the means specified for heating the chamber *A* anything placed in the oven to be baked is evenly affected on all sides by the action of the heated air, and is therefore thoroughly cooked.

With the view of protecting the goods being baked from the direct radiation from the furnace within the chamber, I line the lower shelf *K* with asbestos, and also line the shield *N* with the same material; and, although I consider an outlet from the chamber independent of the furnace preferable, the circulation within my improved oven might be maintained by forming a damper *Y*, leading into the ash-pan *Z*, so that, instead of the air escaping through the tube *O*, it may be directed into the ash-pan, from which it will escape through the fire out of the flues of the furnace.

I may mention here that the ash-pan of the

furnace *B* is provided with an independent air-inlet *m*, so that the draft of the furnace may be regulated entirely independent of the air admitted into the chamber *A*.

Although an inclosed and separate stove or furnace is by far the best means for heating the chamber constituting my improved oven, it is possible to substitute for the stove a gas jet or jets, and consequently when I refer to a "furnace" I wish to include in that term a gas jet or jets arranged for the purposes specified.

Certain features herein shown but not described are also shown in my application filed November 18, 1886, Serial No. 219,289, allowed April 18, 1888, and renewed January 17, 1889, Serial No. 296,671.

What I claim as my invention is—

1. A double-walled chamber combined with a furnace located entirely within the same and surrounded by said double walls and having its combustion-chamber distinct from said double-walled chamber, and provided with two independent smoke-pipes, one leading directly to the chimney or main flue and the other running in the opposite direction and leading to the air-space between the double walls, substantially as described.

2. A double-walled chamber having located within it a stove or independent furnace provided with an independent flue or flues, said chamber having an air-inlet in proximity to the stove or independent furnace, and an air-outlet connecting with the interior of the chamber and entering the hollow space formed in the vertical walls of said chamber and leading to and connecting with the smoke-flue of the stove or independent furnace, substantially as and for the purpose specified.

3. A double-walled chamber having a casing lined with asbestos and arranged to contain a stove or independent furnace provided with a direct flue running in one direction and leading to the chimney or main flue and an independent indirect flue running in another direction and leading to an air-space formed within the walls of the chamber and communicating with the chimney or main flue, substantially as and for the purpose specified.

4. A chamber having a casing lined with asbestos and arranged to contain a stove or independent furnace provided with a direct flue leading to the chimney or main flue and an indirect flue leading to an air-space formed within the walls of the chamber and communicating with the chimney or main flue, in combination with an air-inlet entering the chamber at a point in proximity to the stove or independent furnace, and an air-outlet flue entering the chamber at a point remote from the stove or independent furnace and leading to and connecting with an air-space formed in the wall of the chamber and communicating with the main flue or chimney, substantially as and for the purpose specified.

5 5. A chamber having a casing lined with asbestos and arranged to contain a stove or independent furnace provided with a direct flue leading to the chimney or main flue, in combination with air-spaces formed in the vertical walls of the chamber and connected with a horizontal air-space formed in the top of the chamber by means of elbows projecting into the chamber, the said air-spaces be-

ing connected to a smoke-flue of the stove or independent furnace, substantially as and for the purpose specified.

Toronto, September 8, 1888.

C. F. HUBBARD.

In presence of—

CHARLES C. BALDWIN,
CHAS. H. RICHES.