

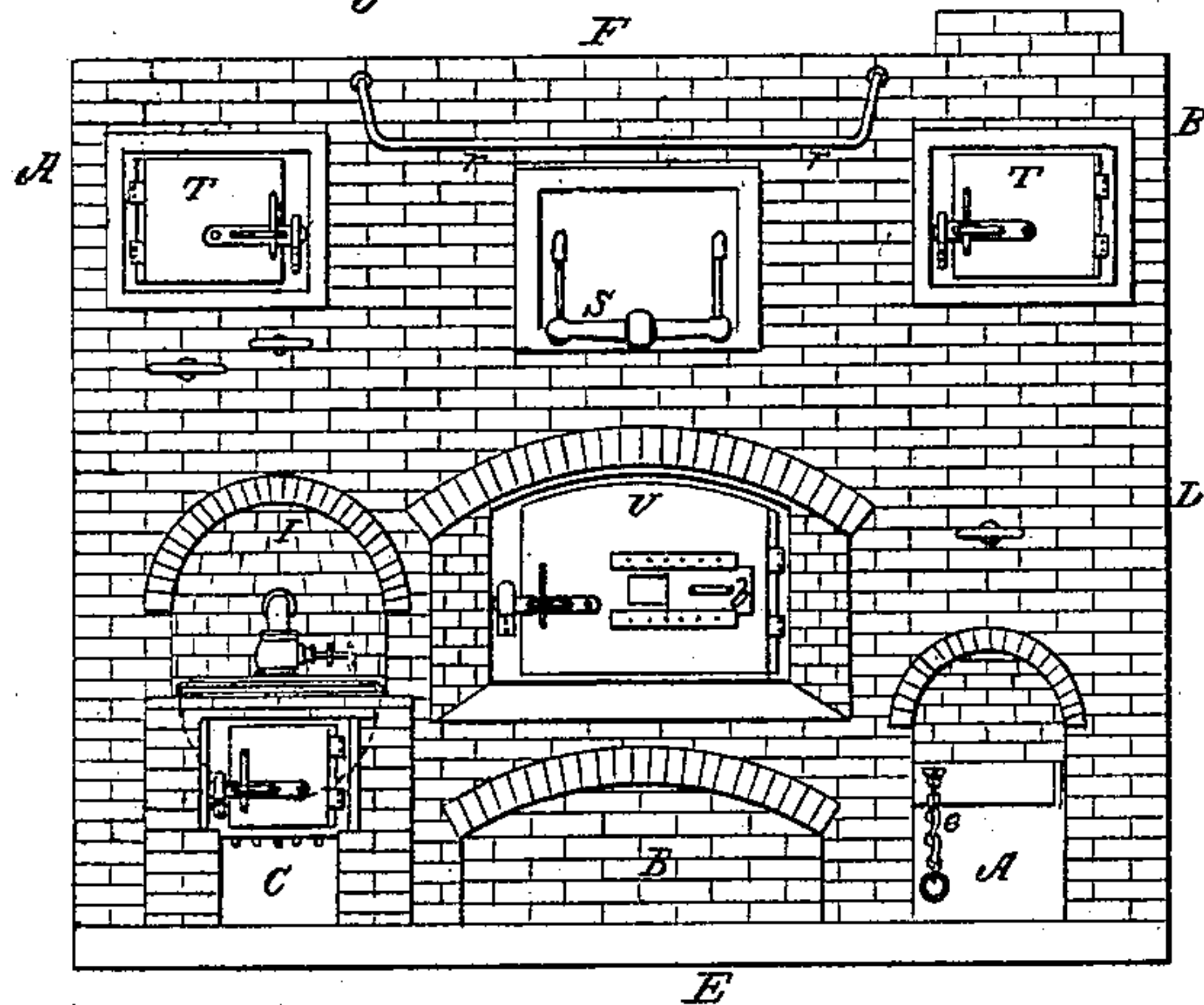
T. P. MAHON.

Bake Oven.

No. 102,415.

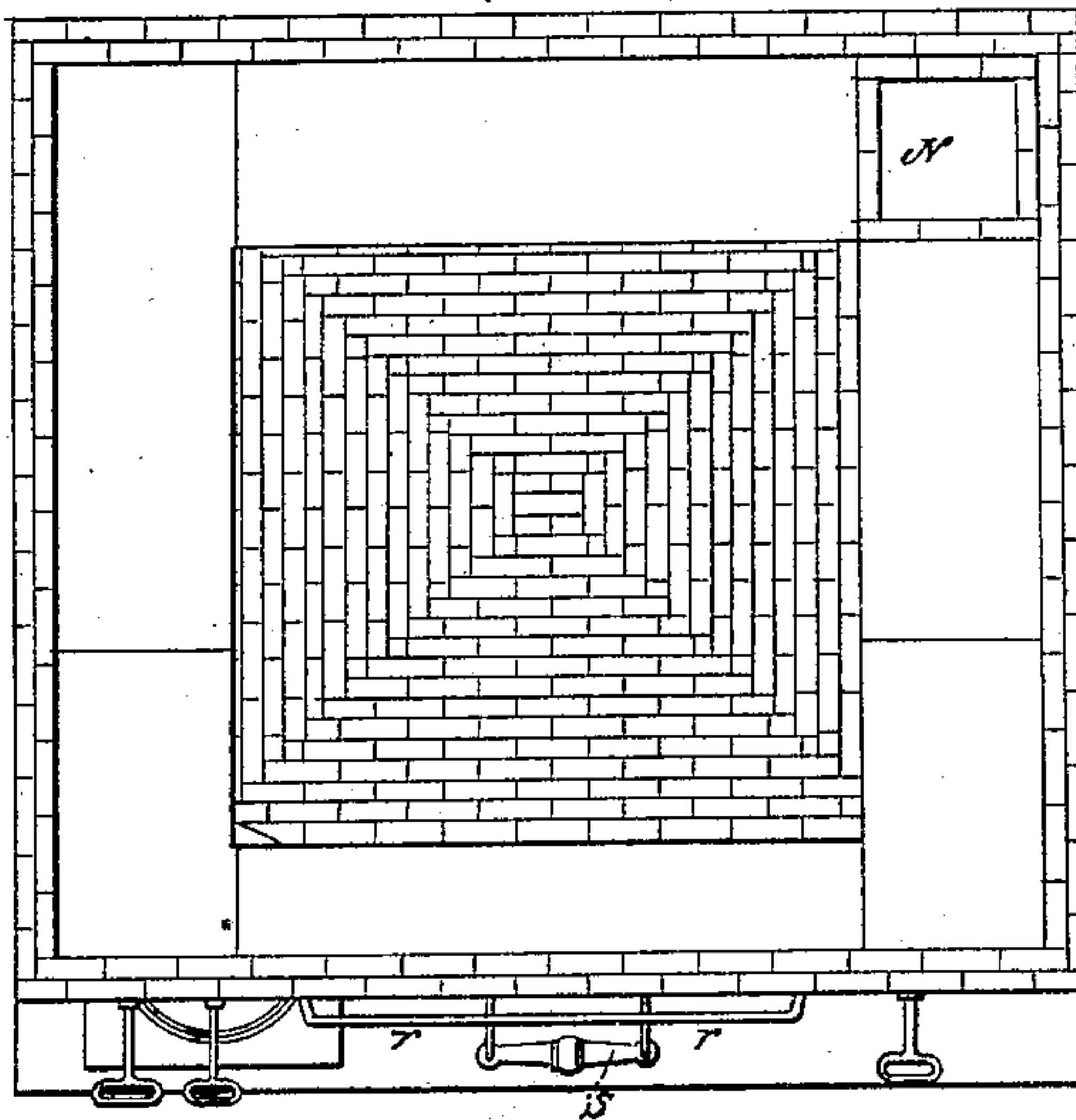
Patented April 26, 1870.

Fig. 1.



Section through A. B.

Fig. 2.



Section through C. D.

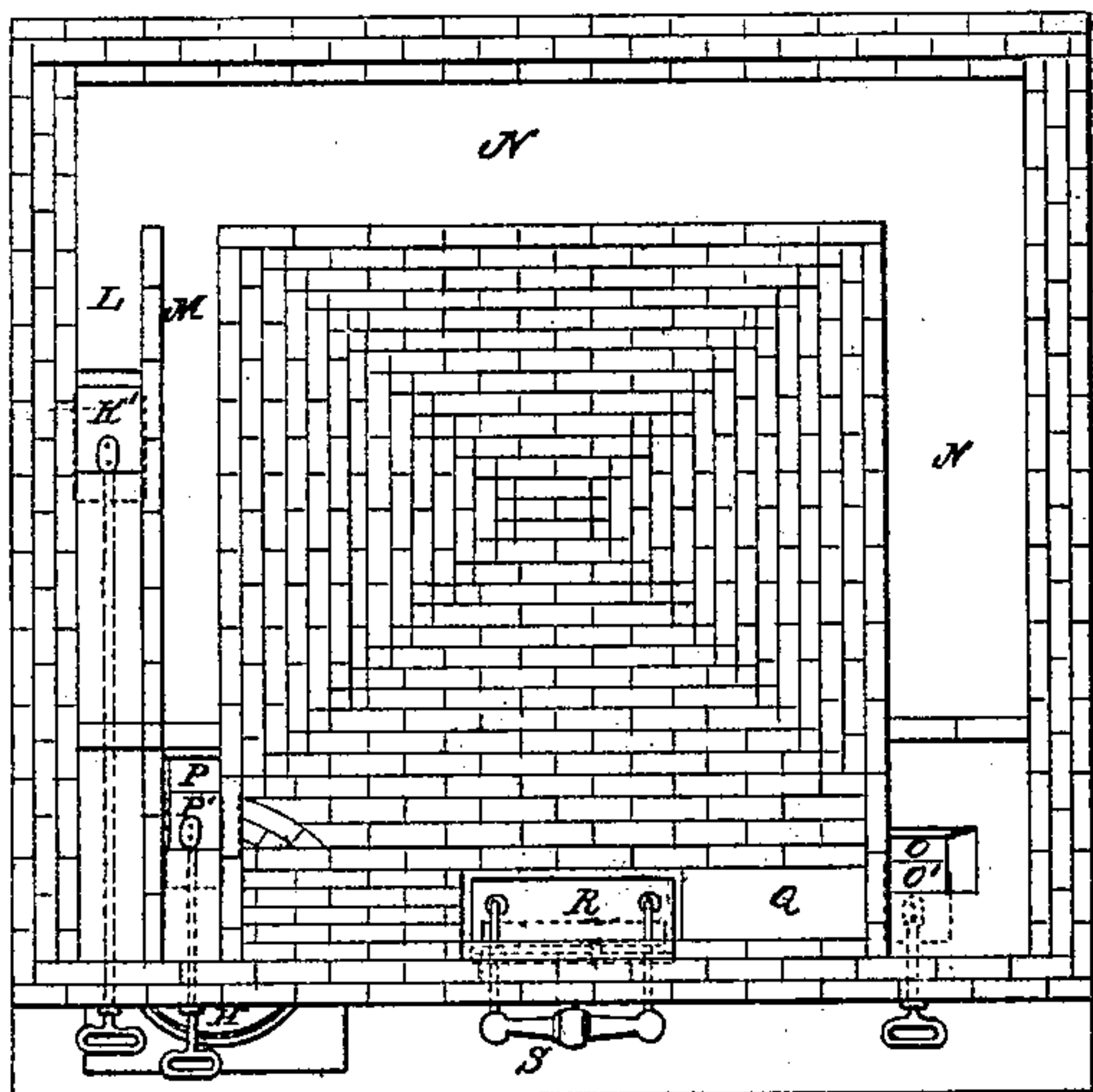


Fig. 3.

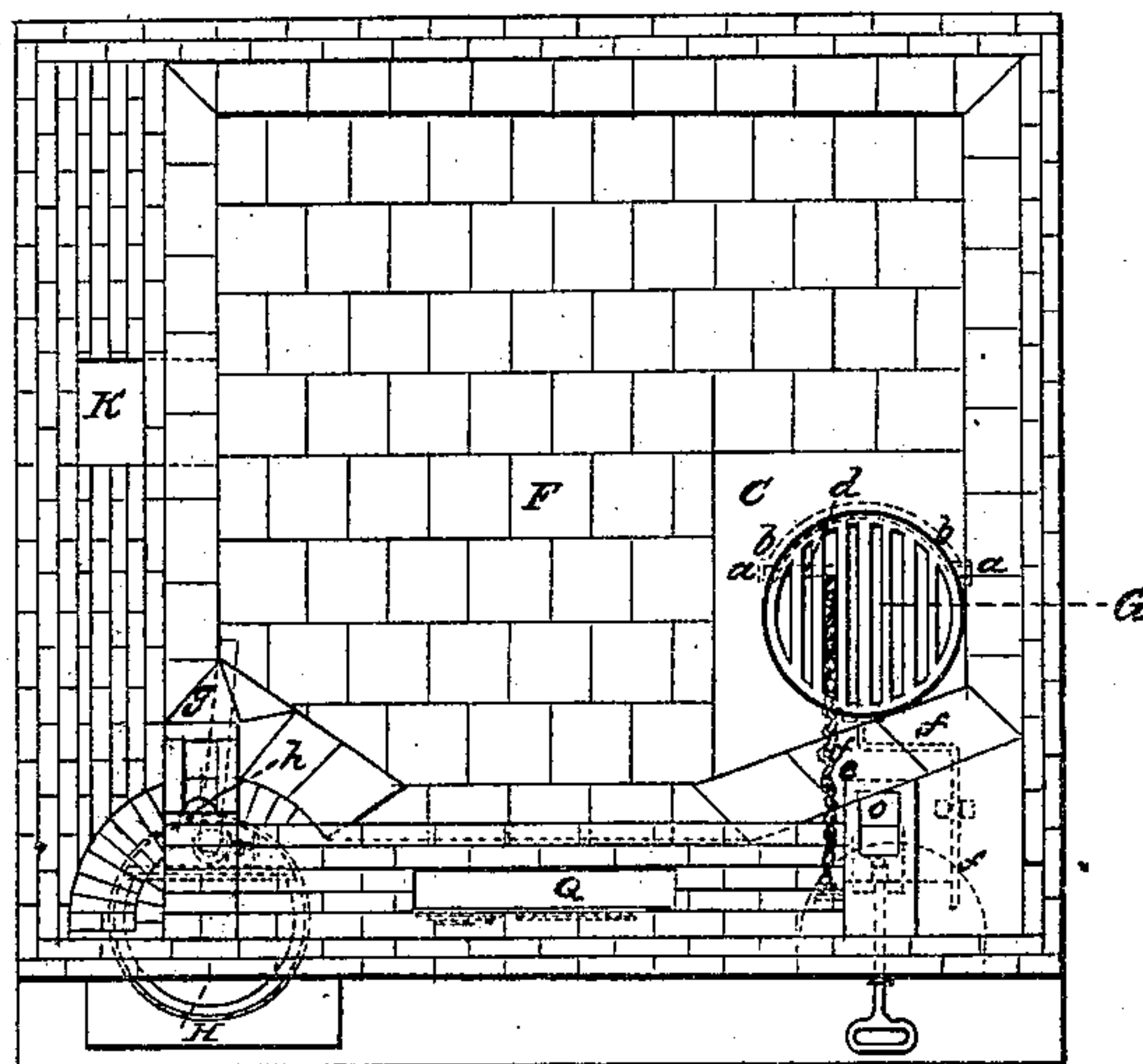
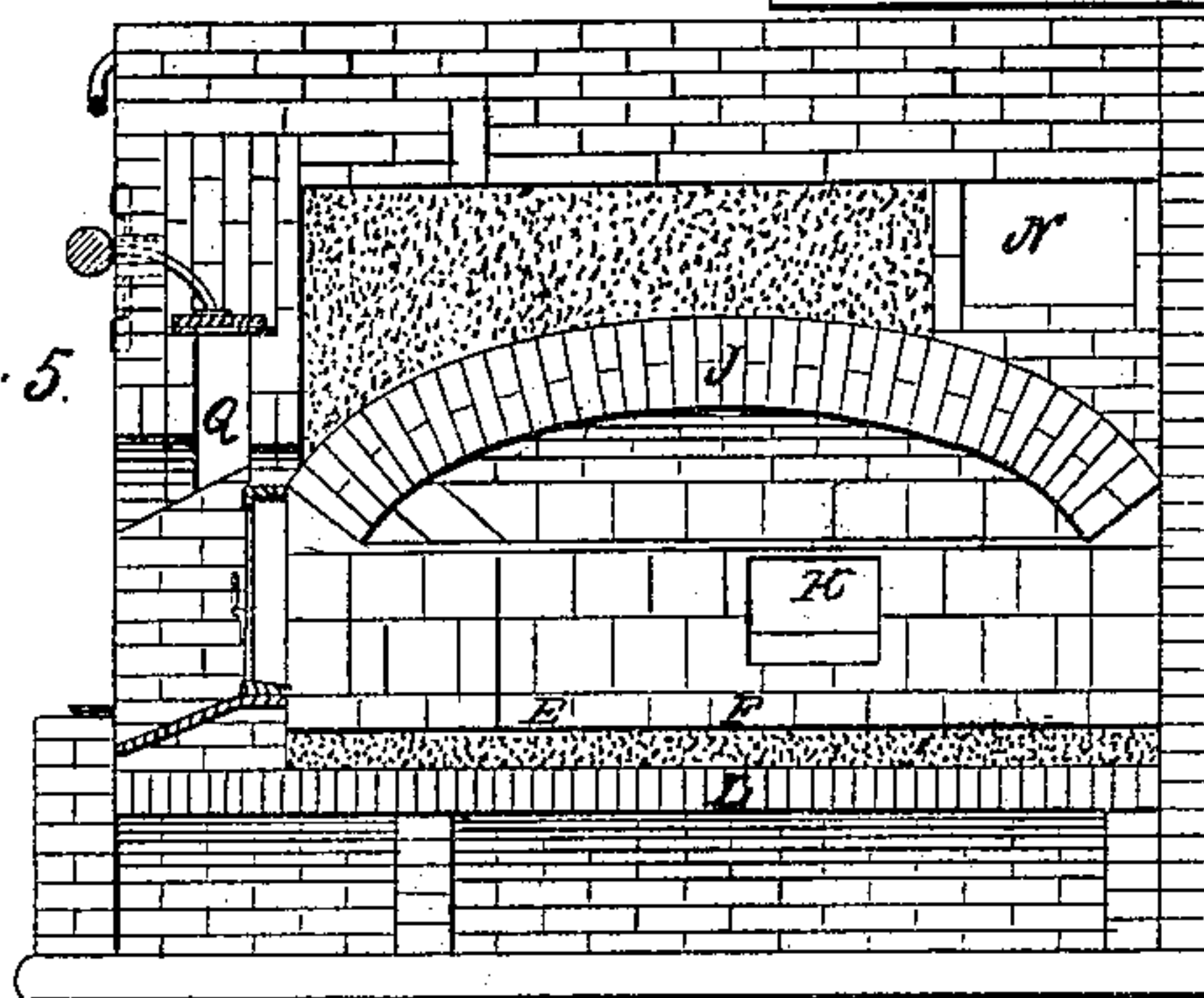


Fig. 4.

Fig. 5.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

TERRENCE P. MAHON, OF NEW YORK, N. Y.

## BAKER'S OVEN.

Specification forming part of Letters Patent No. 102,415, dated April 26, 1870.

*To all whom it may concern:*

Be it known that I, TERRENCE P. MAHON, of the city, county, and State of New York, have invented certain new and useful Improvements in Bake-Ovens; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation of my said improved oven; Fig. 2, a top view thereof; Fig. 3, a horizontal section at A B; Fig. 4, a horizontal section at C D, and Fig. 5 a vertical section at E F of Fig. 1.

My invention consists of a novel construction of bake-ovens; in a novel arrangement of the flues and furnace in combination therewith; in a novel arrangement and adjustment of the furnace-grate in combination with said oven, and also in combining with a bake-oven a water-boiler arranged to throw a jet of steam or water vapor in said oven during the process of baking.

To enable others skilled in the art to which my invention appertains to make and use the same, I will proceed to describe the construction and operation of the various parts thereof.

Similar letters of reference represent corresponding parts of the different figures of the said drawings, making part of this specification.

I construct my oven as follows—that is to say: After the construction of a suitable foundation, I proceed and build the outside wall of brick as high as the under side of the oven-bottom, leaving the opening A for the ash-pit, the recess B to receive coal or wood, and the opening C for the ash-pit under the water-boiler, in the manner shown in Fig. 1. I then proceed to form the bottom of the oven. This I do by carrying a line of brick-work—that is, the counter-sole—of suitable thickness, over the entire space inclosed by the outside walls, as shown by D, Fig. 5, leaving, however, a suitable opening for the furnace, as shown by c, Fig. 4. I then cover this line of brick-work D (the counter-sole) with a layer of sand, as shown by E. This layer of sand I make from three to four inches thick, and in it I bed the fire-brick or tile F, forming the bottom or top sole of the oven. While thus constructing the bottom of the oven I set the bed plate or frame of the grate G. This grate-frame con-

sists of a cast-iron plate, the outside of which may be made circular or rectangular, as the case may require, but the inside must be made circular or of the form of the grate, and large enough to allow the grate to dump freely, and to work without danger of being jammed by the coal or cinders of the fire. To save this grate-plate from leaning out, and to insure the more perfect operation of the grate, I cast on the upper side of the plate two projections. (Shown by *a a*, Fig. 4.) In these projections a suitable bearing is formed to receive the pivots *b b*, cast on the periphery of the grate, and on which it is supported in the frame. Now, to work this grate, there is a lever, *d*, applied to one of the pivots or to the lower side of the grate itself, and to this lever there is a chain, *e*, attached, leading forward to the outside of the furnace or ash-pit door, so as to bring the out end within convenient reach of the baker or attendant. By means of this lever and chain the grate can be dumped and raised at pleasure, and by means of a lock-rod, *f*, the said grate is held in position when raised up to the position shown in the drawings—that is, to the position it occupies when the furnace is charged with fire. This lock-rod is made substantially as shown in the drawings. It is supported in suitable bearing, and reaches forward in the mouth of the ash-pit or furnace, so as to be within easy reach of the attendant. In constructing the walls for the lower part of the oven, as aforesaid, I also form the furnace and set the grate therein for the water-boiler H, which is made substantially in the form shown in the drawings. It is provided with a cover, which, when closed, is made to form a steam-tight joint on the top of the boiler against a nominal pressure, which is all it is usually intended to carry in the boiler. The cover of this boiler is also fitted with a pipe, *g*, leading directly in the oven, and which pipe is fitted with a cock by which the flow of steam to the oven can be regulated or excluded altogether.

In the top of the niche or cove I, over the boiler, there is a flue or hole, *h*, made, leading to the flue of the furnace under it. The object of this flue is to carry off the vapor or steam escaping from the boiler in case of leak or when the steam is shut out of the oven. The boiler-cover, in fact, should be fitted with a pipe provided with a cock by which the waste steam



could be conducted to the flue in the top of the cove I. After having thus constructed the bottom of my oven and set the grates and appurtenances, as aforesaid, I proceed to form the oven itself and the flues by which the heat is regulated. To do this I carry up the inside wall of the oven with fire-brick to the desired height, and then turn the cover with a fire-brick lining, substantially in the ordinary form, as shown by J; but before turning the cover, as aforesaid, I make a flue in the side wall of the oven opposite the heating-furnace, as shown by K. This flue is carried from the oven directly up to the horizontal flue, L, leading to the chimney, where it is fitted with a sliding damper, K', which is operated by means of a rod leading to the front of the oven, where it terminates with a handle in the manner shown. Now, when the fire is started to heat the oven the damper K' is opened, so that the whole product of combustion is diffused in the oven, the smoke passing up said flue K to flue L, and thence through flue N to the chimney; but after the oven has been heated the damper K' is closed and the damper O' opened, by which the draft, instead of being from the ash-pit up through the grate-bars into the oven, is down from the oven into the ash-pit, from which there is a flue, O, leading directly up to the horizontal flue N to the chimney, the ash-pit being fitted with a door, which is now shut, and the cock in the steam-pipe being opened, by which the steam and gas are drawn out of the oven into the chimney. The object of throwing steam into the oven and drawing it out over the bread in the manner described is to equalize the heat in the oven and carry off a portion of the caloric, to keep the bread from burning or forming a thick crust before it is baked through. Bread baked in this way will have a light-brown crust, will be thoroughly baked through without burning, and will retain its moisture longer than bread baked in a dry oven, and will, moreover, have a purer and sweeter taste.

The smoke-flue leading from the furnace under the water-boiler is shown by P. It rises directly from the back part of the furnace into the horizontal flue, M, where it is fitted with a damper, P', whereby the draft of the furnace is regulated. The horizontal flues above referred to are formed over the top of the oven-cover and next to the outside walls. They run along the two sides and back of the oven, and about two-thirds of the way along the front thereof, so that all the smoke, gas, and vapor from the furnace and oven flow into what may be styled one common flue, the flues L and M being separated by a partition put in the main flue. By this arrangement of flues the top of the oven is heated by the escaping smoke, gas, and heat from the furnace, which would otherwise be wasted.

The chimney N, Fig. 2, may be located either on the opposite corner back or at the opposite corner front in case it should be de-

sirable to thoroughly abstract and utilize the heat from the escaping gases.

The object of carrying this flue along a portion of the front of the oven, as shown by Q, is to obtain an escape for the heat, gas, and steam from the oven to the chimney when the oven-door is opened. This is accomplished by means of a flue, Q, Fig. 4, made in the top of the cove outside of the oven-door, leading directly to the horizontal flue Q, Fig. 3, into the main flue N. This flue Q is also covered with a damper, R, which is attached, by means of connecting-rods, as shown, to the handle S in front of the oven, so as to bring it within easy reach of the attendant. By these means the escape of steam, gas, and heat into the bake-shop is prevented, and a ready means is afforded of ventilating the shop.

To clean the horizontal flues L, M, and N, I make doors, T T, in the front wall of the oven directly opposite the flues; and if need be I make a similar door in the side wall of the oven opposite the end of the back flue, N. By these means I am enabled to sweep the flues without difficulty.

The door of the oven is shown in the drawings by U. This door is made with a sliding damper, as shown by v, to enable the baker to watch the baking, and, to a certain extent, regulate the heat in the oven by the introduction of a current of fresh air.

To provide the baker with a convenient place for his "peals" and other tools, I fix in the front wall of the oven, near the top thereof, a peal-bar—that is, a staple-bar—rr, upon which one end of the baker's tools are supported, the other end being supported in a similar bar fixed in any suitable place overhead, within convenient reach of the baker.

After the oven has been constructed as aforesaid, the recess over the oven-cover between the flues is covered with sand, as shown in Fig. 5. The whole top of the oven is then covered with brick or flagging, laid in cement, or is otherwise covered in such manner as to protect the oven from water.

To insure a circulation of the steam and air in the oven, I propose, in case I find it desirable, to introduce an air-pipe from the front of the oven at one side of the boiler and carry it in on the bottom of the oven along one side and the back thereof, perforating it, and connecting it to the vapor or steam pipe, by which a portion of fresh air can be introduced along with the steam in the oven, the air-pipe being fitted with a valve in the front of the oven, so that the amount of air necessary to insure the circulation can be exactly regulated.

Having now described the construction and operation of my improved oven, I claim as new herein and desire to secure by Letters Patent—

1. The water-boiler H, in combination with the oven, when the said water-boiler and oven are constructed and arranged in relation to



each other substantially as described, for the purpose specified.

2. The grate G, arranged in the floor of the oven, as described, on pivots *b*, supported in projection *a*, above the bed-plate, and operated by means of the chain *e*, and locked by the rod *f*, the whole being arranged in relation to each other in the manner substantially as described.

3. The flues K, L, M, N, O, P, and Q, arranged in relation to the oven and fitted with dampers, substantially as described, for the purpose specified.

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Witnesses:

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