

No. 671,741.

Patented Apr. 9, 1901.

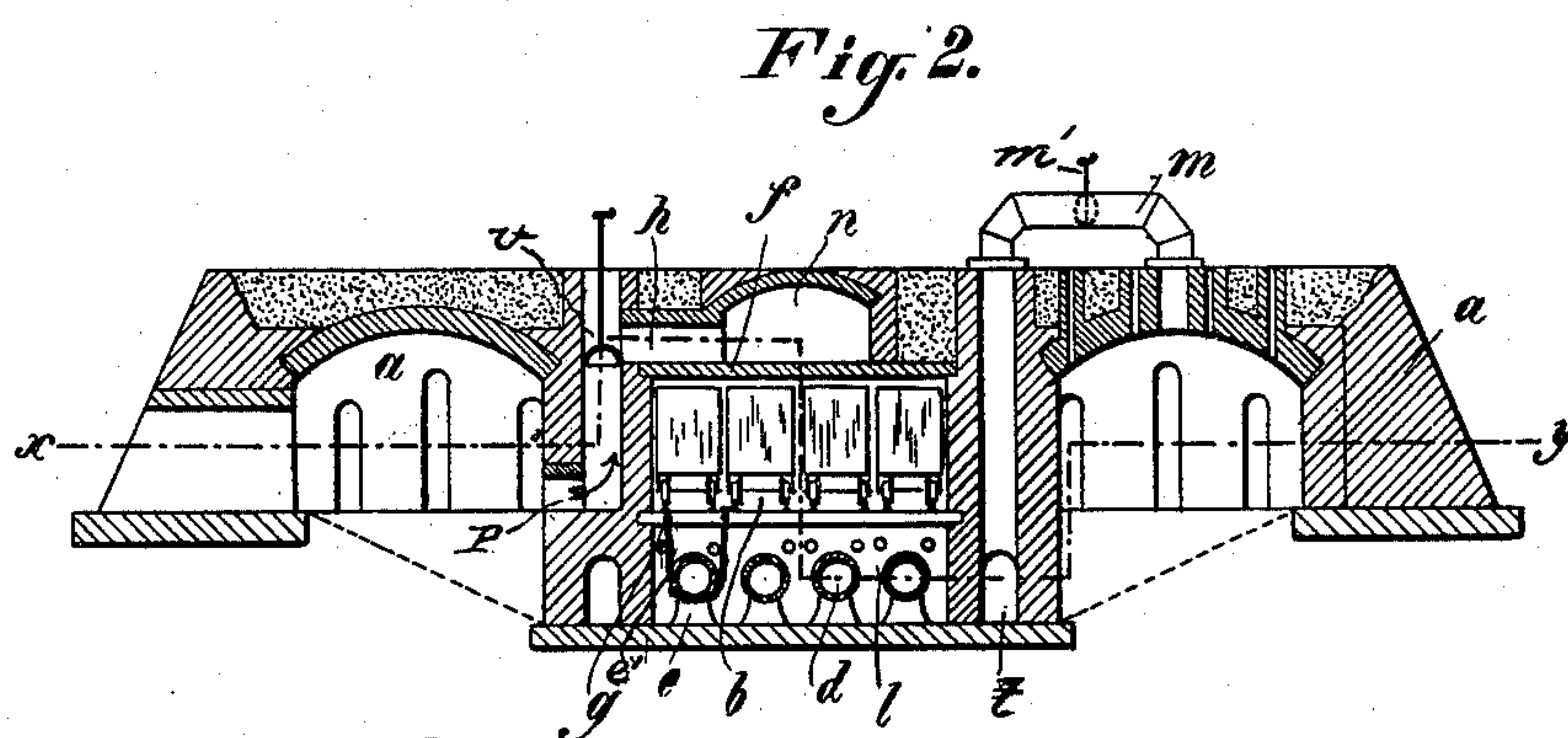
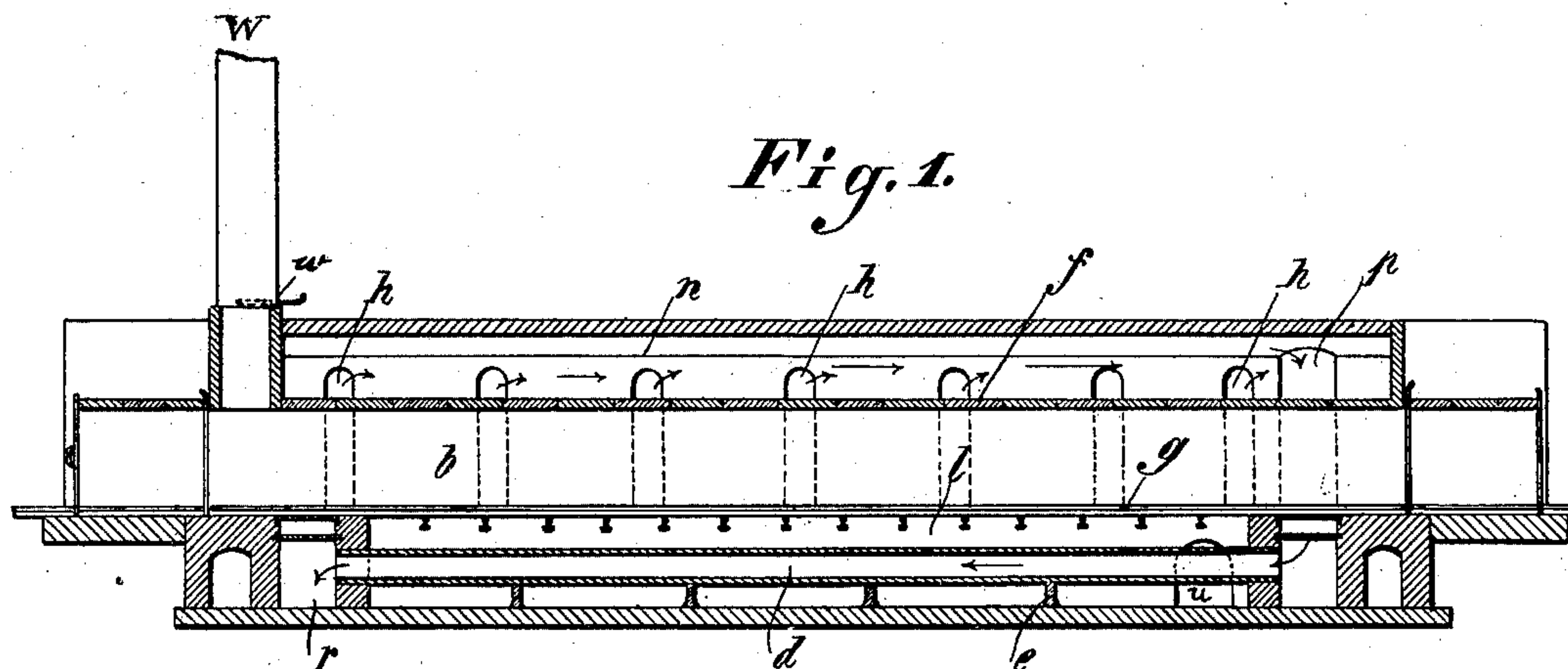
H. F. J. WEIJERS.

DRYING OVEN.

(Application filed July 12, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
M. Wheddon
P. H. Sommet.

Inventor
Henri F. J. Weijers
By *Knights*
Atty

No. 671,741.

Patented Apr. 9, 1901.

H. F. J. WEIJERS.

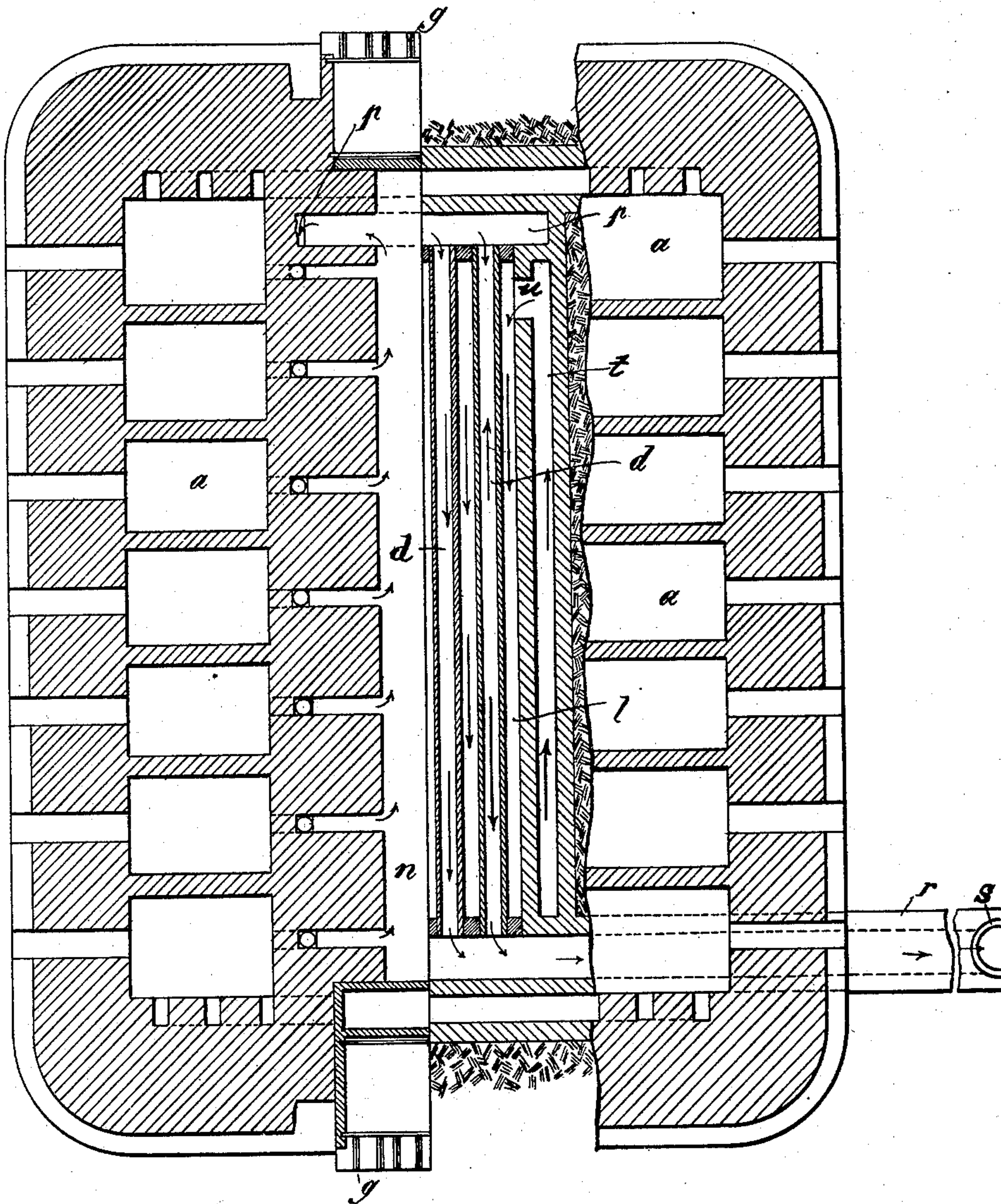
DRYING OVEN.

(Application filed July 12, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 3.



Witnesses
M. Wheddon
C. F. Somich.

Inventor
H. F. J. Weijers.
By Knight Bros.
Attys.

UNITED STATES PATENT OFFICE.

HENRI FRANS JOSEPH WEIJERS, OF TILBURG, NETHERLANDS.

DRYING-OVEN.

SPECIFICATION forming part of Letters Patent No. 671,741, dated April 9, 1901.

Application filed July 12, 1899. Serial No. 723,554. (No model.)

To all whom it may concern:

Be it known that I, HENRI FRANS JOSEPH WEIJERS, a subject of the Queen of the Netherlands, residing at Tilburg, Netherlands, have invented certain new and useful Improvements in Drying-Ovens, (for which I have applied for patent in Germany, dated June 6, 1899,) of which the following is a specification.

The present invention relates to a kiln or drying-oven in which a drying-channel arranged between the rows of kiln-chambers is bounded throughout its entire length at the top and bottom by spaces which lead off the hot gases or gases of combustion from the burning-chambers. The space above the drying-room is the collecting-space for the hot gases and is separated from the drying-channel by an arch or roof. The space below the drying-channel is provided with a number of tubes extending the entire length and breadth of the drying-channel. These tubes rest on standards or are suspended from the top. The object of these tubes is to conduct the smoke from the burning-chambers, and they are surrounded by the hot air coming out of the chambers where the burning is completed. By using these tubes a large heating-surface is obtained, inasmuch as the suspended or supported tubes provide a good opportunity for the air underneath, which is not very warm, to become heated. The heat of the gases of combustion is utilized in the most rational manner for drying the materials, because the circulating heat at the bottom of the channel is given off and has the tendency to rise in the drying-space through the material to be dried.

One example of the subject-matter of this application is represented in the accompanying drawings, in which—

Figure 1 is a longitudinal section; Fig. 2, a cross-section; Fig. 3, a horizontal section on line $y x$ of Fig. 2.

The kiln or drying-oven consists, as in the constructions hitherto existing, of burning-chambers a , arranged in two rows, between which the drying-channel b is situated. The drying-channel b is bounded by a space n at the top, which is used as a collector for the gases of combustion, whereas the space l beneath the drying-channel contains the tubes

d , which serve for leading off the smoke or gases of combustion. The space n above the drying-channel is separated from the drying-channel by the arch or roof f . This space n is connected by downdraft-flues p with the tubes d , arranged underneath the bottom of the drying-channel, so that the gases of combustion collecting in the space n are conducted by channels p into the tubes d . The bottom of the drying-channel consists properly only of the rails g , carried by beams and upon which the drying-carriages run, so that an actual separation of the drying-channel and space l is not effected, and the heat radiating from the tubes, entering directly into the drying-channel, comes into contact with the bricks or articles to be dried and baked. By this means the end is obtained that the air introduced at the exit ends of the drying-channel loses heat on its way through the bricks or articles to be dried and baked. It then passes downward, surrounds the tubes containing the gases of combustion, thus being continuously heated, and becomes able to vaporize more water. The tubes d in the space l underneath the bottom of the drying-channel are, as already mentioned, either supported by standards e or suspended from the beams carrying the rails, as by wires e . The gases of combustion from the chambers a are led off into the collector n through the channels h . The passage of the gases can be regulated by valves v , situated in the channel h . From the collector n the gases are conducted through the channels p into the tubes d below the bottom of the drying-channel, from whence after passing through the same they arrive in the flue r and escape through the chimney S . (Indicated diagrammatically in plan in Fig. 3.) In passing through the tubes the heat of the gases of combustion is given off to the drying-channels throughout the entire length and in such a manner that the most heat is given off where the material comes out of the drying-channel, inasmuch as the gases cool in passing from this point through the drying-channel.

The course of the gases is as follows: They pass out of the chamber a in the direction of the arrow P through channels h into the collector n , from whence they pass through the channels p into the tubes, after passing which

they escape into the flue *r* or chimney. The gases issuing from the finished chambers, which have to cool, together with air admitted thereto to cool them, pass through the holes in the roof of the chamber into the tube *m* in order to pass into the air-collector through a channel *t*, and from thence by an opening *u* into the space *l* below the drying-channel, which contains the tubes *d*, so as to be utilized in the drying-chamber. The gases surround the tubes *d*, containing the gases of combustion, and are caused to move from below between the material to be dried toward the roof of the drying-chamber in order to be drawn off by artificial means, such as a chimney or exhauster *W*, communicating with the drying-channel *b*, as shown in Fig. 1, and which may be controlled by a damper *w*. The tube *m* may be controlled by a damper *m'*.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of the drying-channel *b*, rows of kiln-chambers *a* on either side thereof air-space *l* beneath the drying-channel, in communication therewith, gas-flues *d* passing through the air-space *l* and suitable ducts as *h*, *p*, *r*, conveying gaseous products of combustion from the kiln-chambers *a* to the flues *d* and from these, to the exit, substantially as described.

2. The combination of the kiln-chambers

a drying-channel *b*, between the rows of kiln-chambers gas-chambers *n* above the drying-channel, separated therefrom by a ceiling *f* flues *d* beneath the drying-channel and suitable ducts conveying gases of combustion from the kiln-chambers *a* to the gas-chamber *n* and from said chamber to the flues *d* as explained.

3. The combination of the kiln-chamber *a*, drying-channel *b*, air-chamber *l* beneath said drying-channel and in communication therewith and valve-controlled tubes *m* and suitable passages as *t* *u* conveying air from the respective kiln-chambers *a*, to the air-space *l* during the operation of cooling said kiln-chambers as explained.

4. The combination of kiln-chambers *a* drying-channel *b* air-chamber *l*, beneath the drying-channel and in communication therewith gas-flues *d* passing through the air-chambers *l* and suitable valve-controlled tubes *m*, and passages *t*, *u* for conducting air from the respective kiln-chambers to the air-chamber and drying-channel, during the operation of cooling the kiln-chambers, as explained.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

HENRI FRANS JOSEPH WEIJERS.

Witnesses:

E. H. L. MUMMENHOFF,
AUGUST LÜHRS.