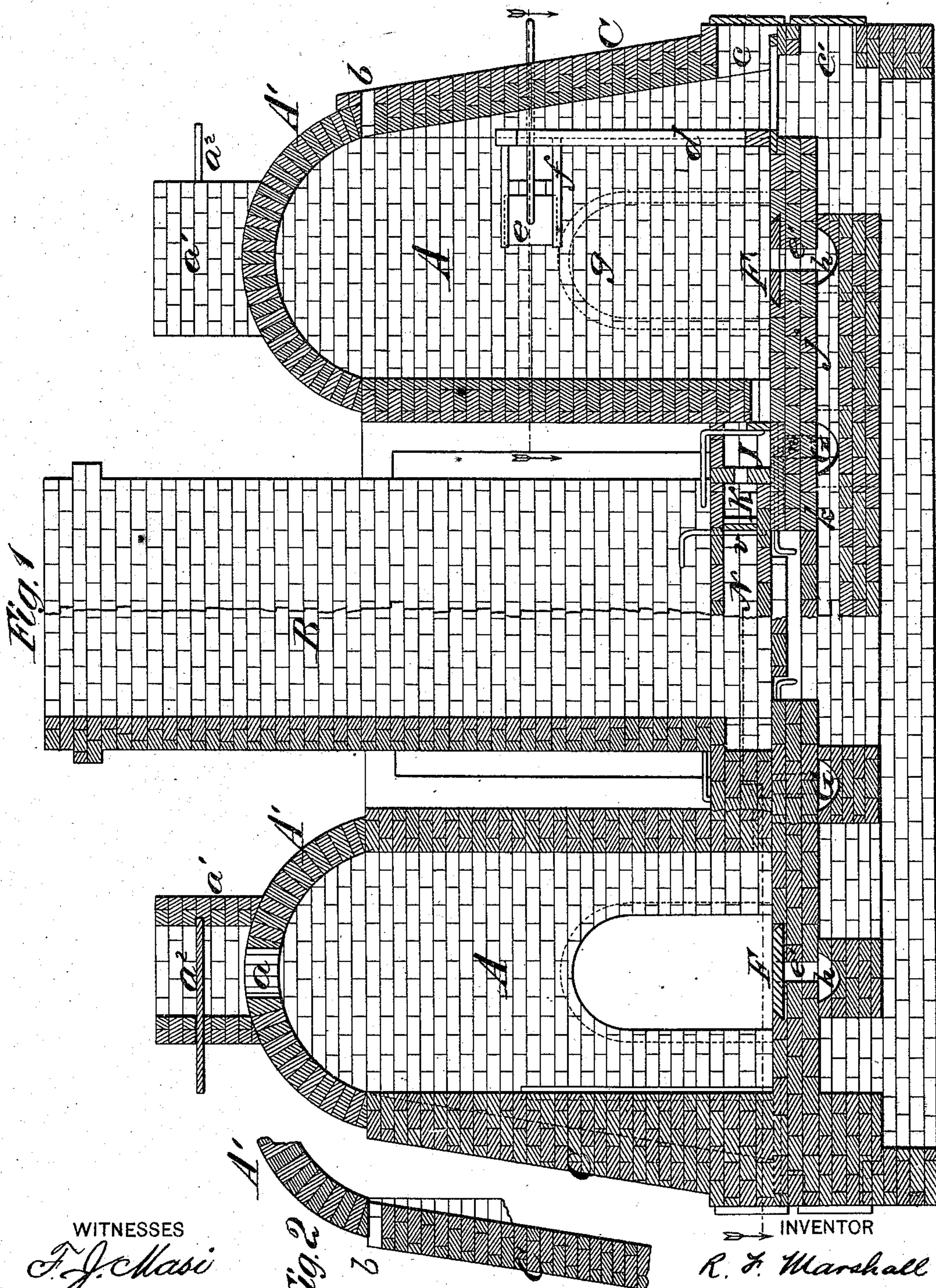


R. F. MARSHALL.  
Brick-Kiln.

No. 160,927.

Patented March 16, 1875.



WITNESSES  
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*Geo. E. Upham*

*Fig. 2*

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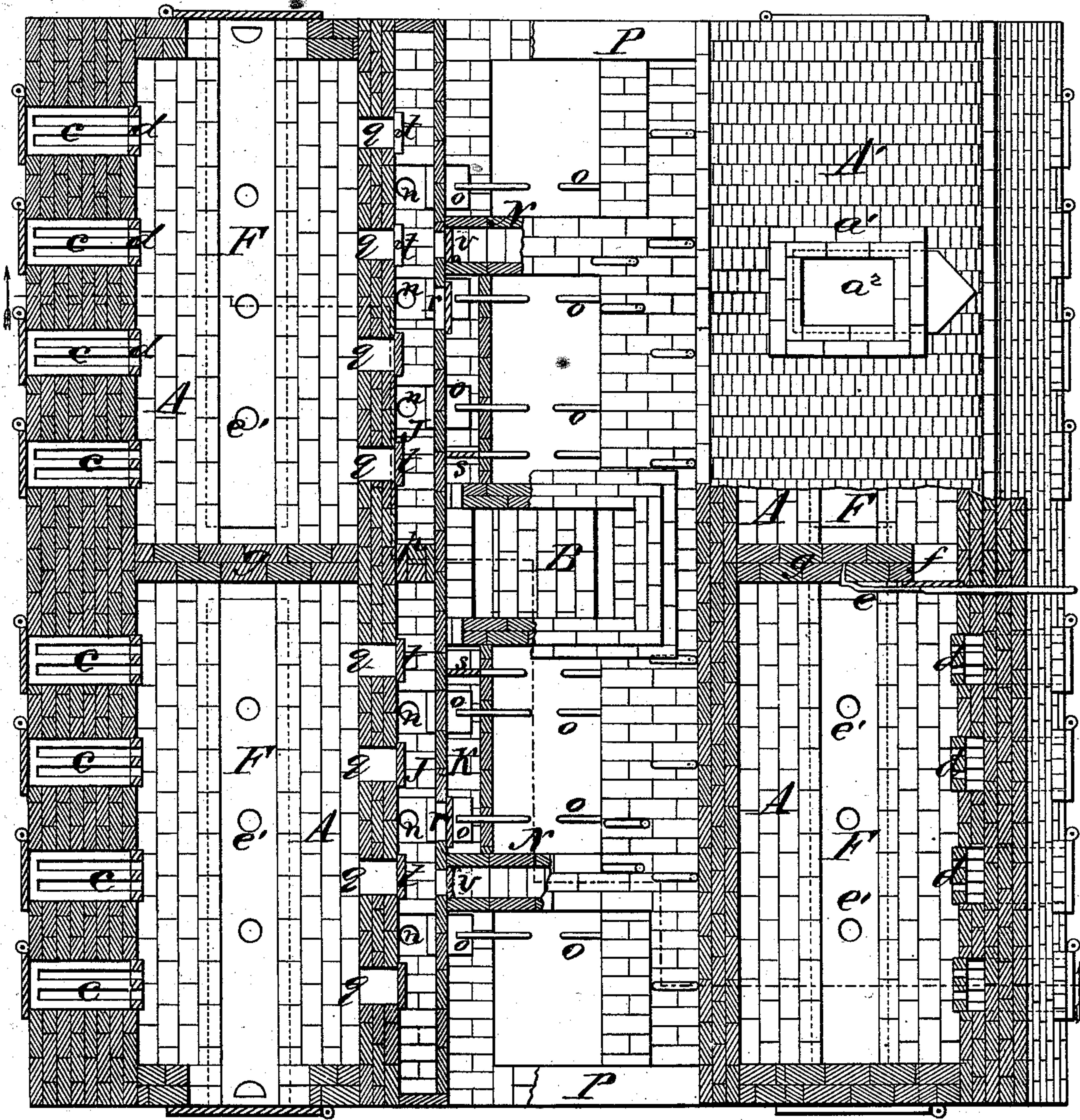


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Fig. 3



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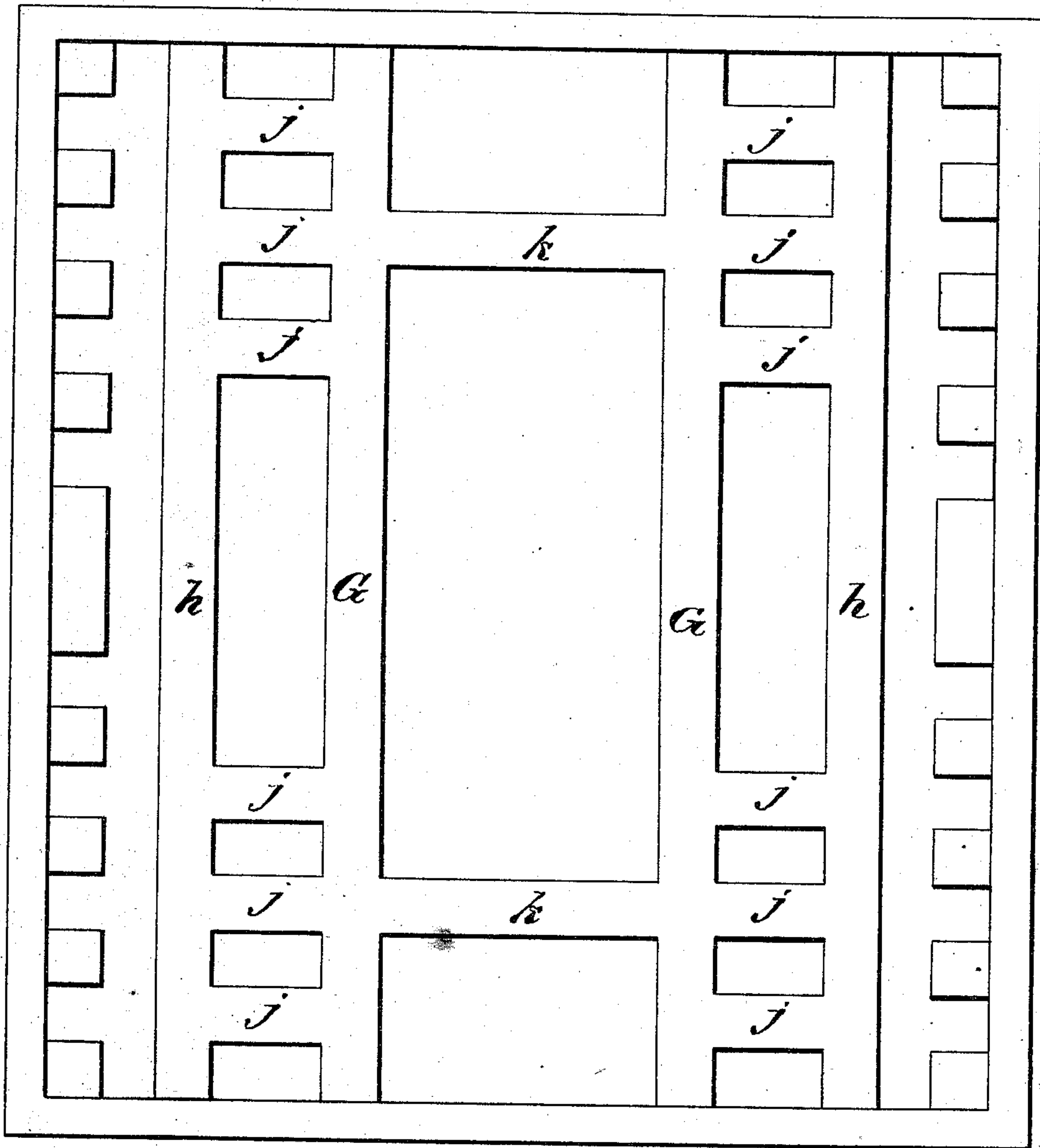


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*Fig. 4*



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Fig. 5

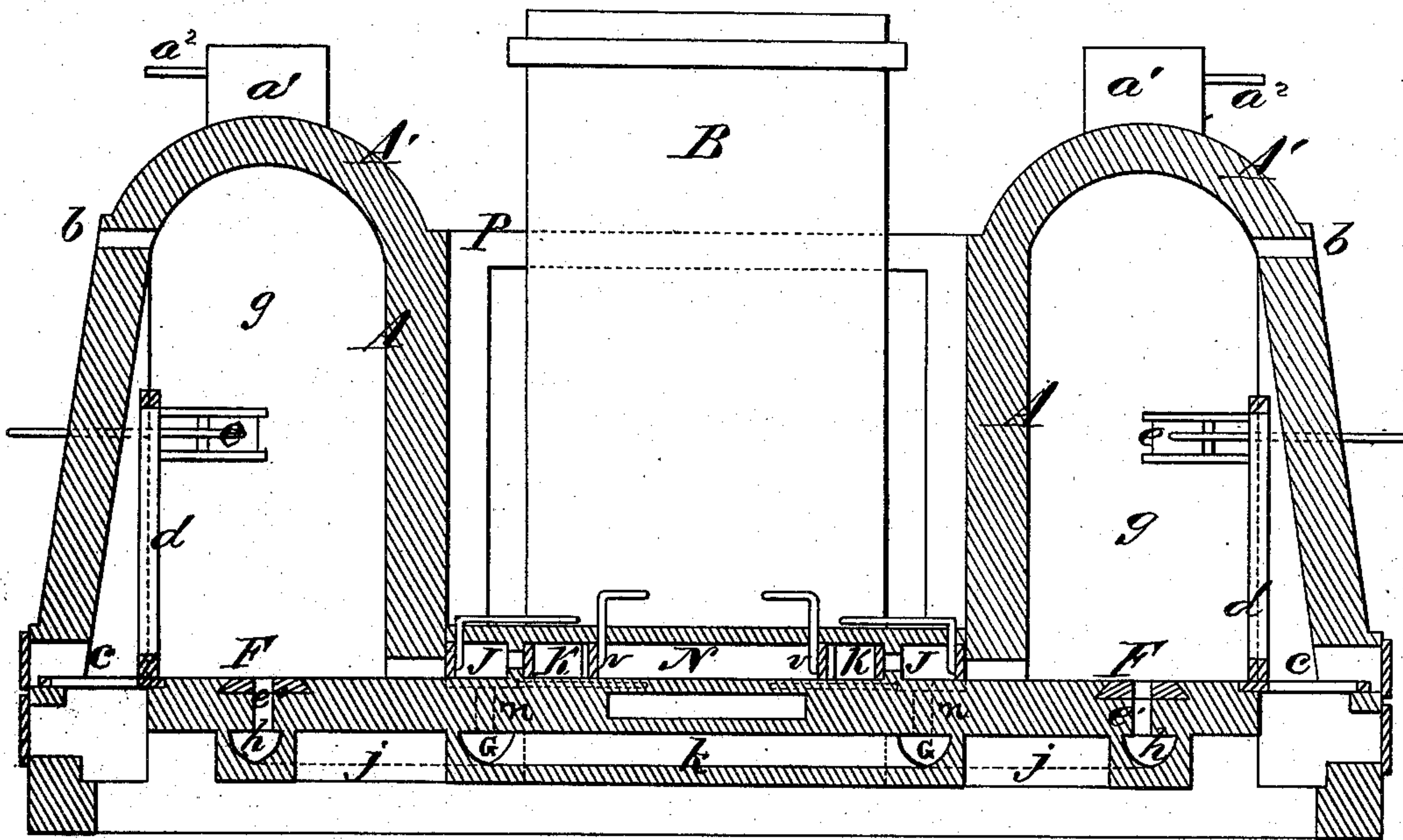
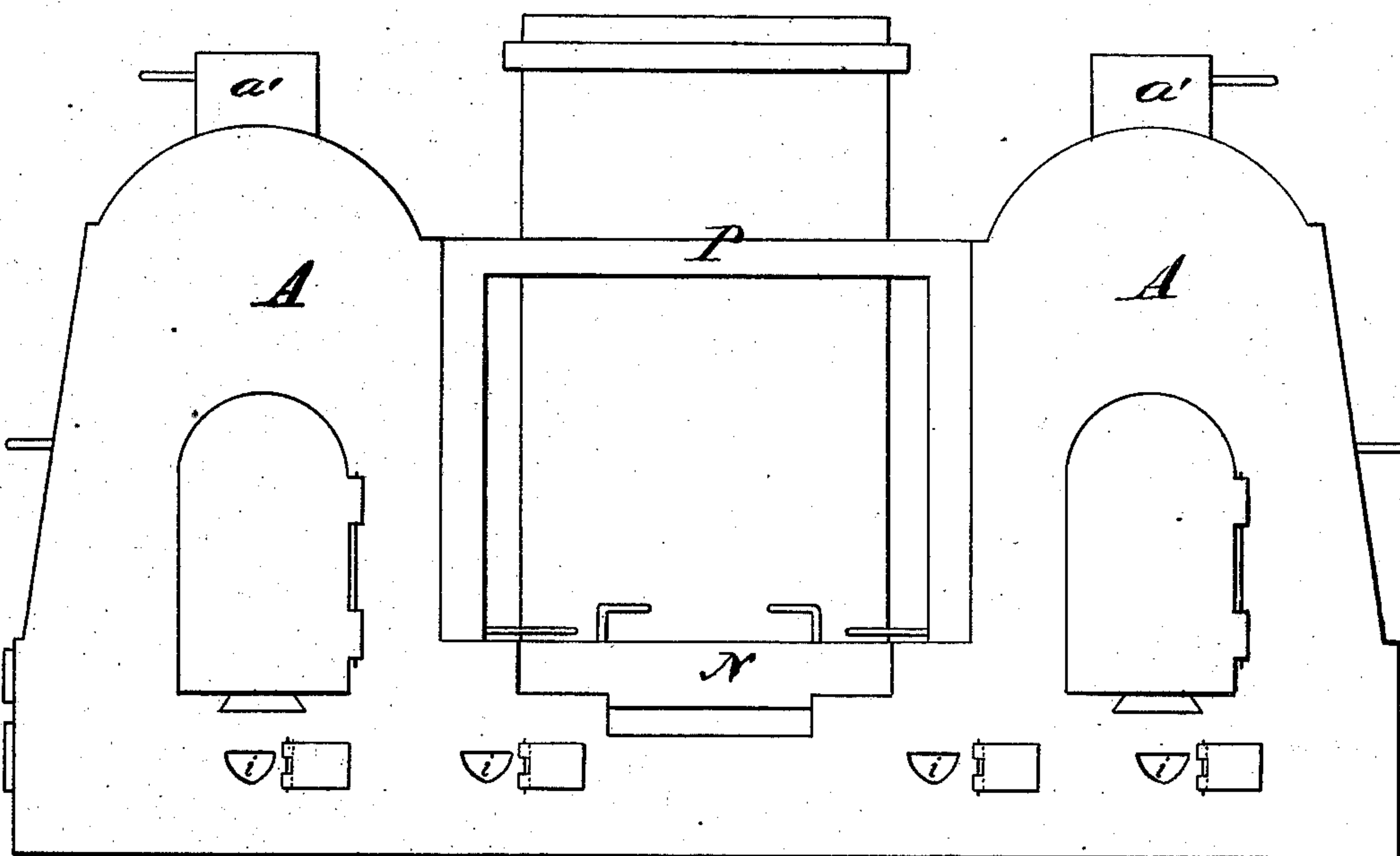


Fig. 6



WITNESSES  
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INVENTOR  
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ATTORNEYS



# UNITED STATES PATENT OFFICE.

RANDOLPH F. MARSHALL, OF LISCOMB, IOWA.

## IMPROVEMENT IN BRICK-KILNS.

Specification forming part of Letters Patent No. 160,927, dated March 16, 1875; application filed February 25, 1875.

*To all whom it may concern:*

Be it known that I, RANDOLPH F. MARSHALL, of Liscomb, in the county of Marshall and the State of Iowa, have invented a new and valuable Improvement in Kilns; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a transverse vertical section of my brick-kiln. Fig. 2 is a sectional detail view of the same; and Fig. 3 is a horizontal sectional view, as indicated by the dotted lines in Fig. 1. Fig. 4 is a plan view of a lower horizontal section; Fig. 5, a sectional detail view, and Fig. 6 a front view.

The object of my invention is to improve the kiln for which Letters Patent of the United States were granted to me bearing date on the 27th day of October, 1874, and numbered 156,364.

My improvement consists, mainly, in a novel arrangement of trunks or flues, in combination with dampers, whereby four kilns can be properly managed and only one chimney used for the same; or, if desired, any number of the kilns less than four can be managed, as will be understood from the following description.

In the annexed drawings, A A A A designate four kilns, which are surmounted by arches A', having openings *a* through them surrounded by chimneys *a*<sup>1</sup>, and provided with dampers *a*<sup>2</sup>. The chimneys *a*<sup>1</sup> afford strong drafts for carrying off smoke and moisture at the commencement of the operation of burning. I also make openings *b* at the upper ends of the kiln-walls, and provide these openings with dampers when necessary. The kilns are constructed in pairs arranged alongside of each other, and on opposite sides of a tall chimney, B, as shown in Figs. 1 and 3.

Like the kilns described in my Letters Patent above referred to, my present kilns are strengthened with buttresses C, provided with large doors in their ends; also provided with furnaces *c* having ash-pits *c*<sup>1</sup> and tall grated backs *d*. These kilns are also provided with openings *f* in their partition-walls *g*, which

openings have sliding dampers *e* for establishing a communication between each pair of kilns, or cutting off such communication. Along the center of the bed of each kiln is a trunk, *h*, which communicates with the interior of the kiln by means of small openings *e*<sup>1</sup> provided with a damper-slide, F, which is flush with the floor of the kiln. By means of the slides the openings *e*<sup>1</sup> can be regulated in size or closed. At the outer end of each trunk *h* I leave an opening, *i*, which is provided with a door for closing it tightly when the kiln is in operation. The openings *i* allow ashes, &c., to be raked out of the trunks *h*. G G designate two trunks arranged outside of the kilns, and parallel to the trunks *h*. The trunks G G communicate with trunks *h* by means of short cross-trunks *j*, and the trunks G G communicate with each other near their ends by means of cross-trunks *k*, at the extremities of which valves *l* are applied. The trunks G communicate with superimposed flues J J by means of passages *n* provided with slide-valves *o*, and at the middle of the length of the flues J, opposite the chimney B, partitions *p* are formed, which give me four flues, J, corresponding to the four kilns. The flues J also communicate with the kilns by means of passages *q* provided with valves *t*. K K are two flues arranged alongside of the flues J, and communicating therewith by means of passages *r* provided with valves. The flues K communicate with each other by means of cross-flues N provided with valves *v*, and these flues J also communicate with the chimney B at its base, and are provided with valves *s*.

It will be seen from the drawings that buttresses C are omitted on the two sides of the kilns next to the chimney, and that these walls are strengthened by means of metal or wood frames P located at the ends of the furnaces, and, if desired, at intermediate points.

When the kilns are filled, and the fires are built in the furnaces *c*, the valves *a*<sup>2</sup> are opened, when the chimneys *a*<sup>1</sup> will cause a strong draft, and rapidly carry off moisture and smoke. Valves *a*<sup>2</sup> are then shut, and slide-valves F opened. Valves *t* are also opened more or less to regulate the escape of heat from the kilns.

It will be seen from the above description that I am able to burn in the four kilns at the

same time, or I can burn in any one of the kilns, and utilize waste heat for drying material in the other kilns. The heat can be cut off from any one of the kilns for filling it while burning, or burning and drying can proceed in the other kilns.

In practice I shall provide doors at the ends of the flues G similar to those at the ends of flues h, for the purpose of removing ashes, &c.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the kiln A, and the chimney B, arranged as described, the trunks or flues h j G J K, and their several valves, substantially as shown and described.

2. The combination of the kilns A, having

the partition-walls g and openings f, with the flues J communicating with the flues K by openings r regulated by valves, and the chimney B regulated by the damper s, substantially as and for the purpose set forth.

3. The combination, with the flues K K, of the cross-flues N provided with valves v, substantially as and for the purpose set forth.

In testimony that I claim the above improvement I have hereto subscribed my name in the presence of two witnesses.

RANDOLPH FOSTER MARSHALL.

Witnesses:

THOMAS WALLACE,  
JOEL S. EDWARDS.