

D. AGNEW.
Glass-Furnace.

No. 213,858.

Patented April 1, 1879.

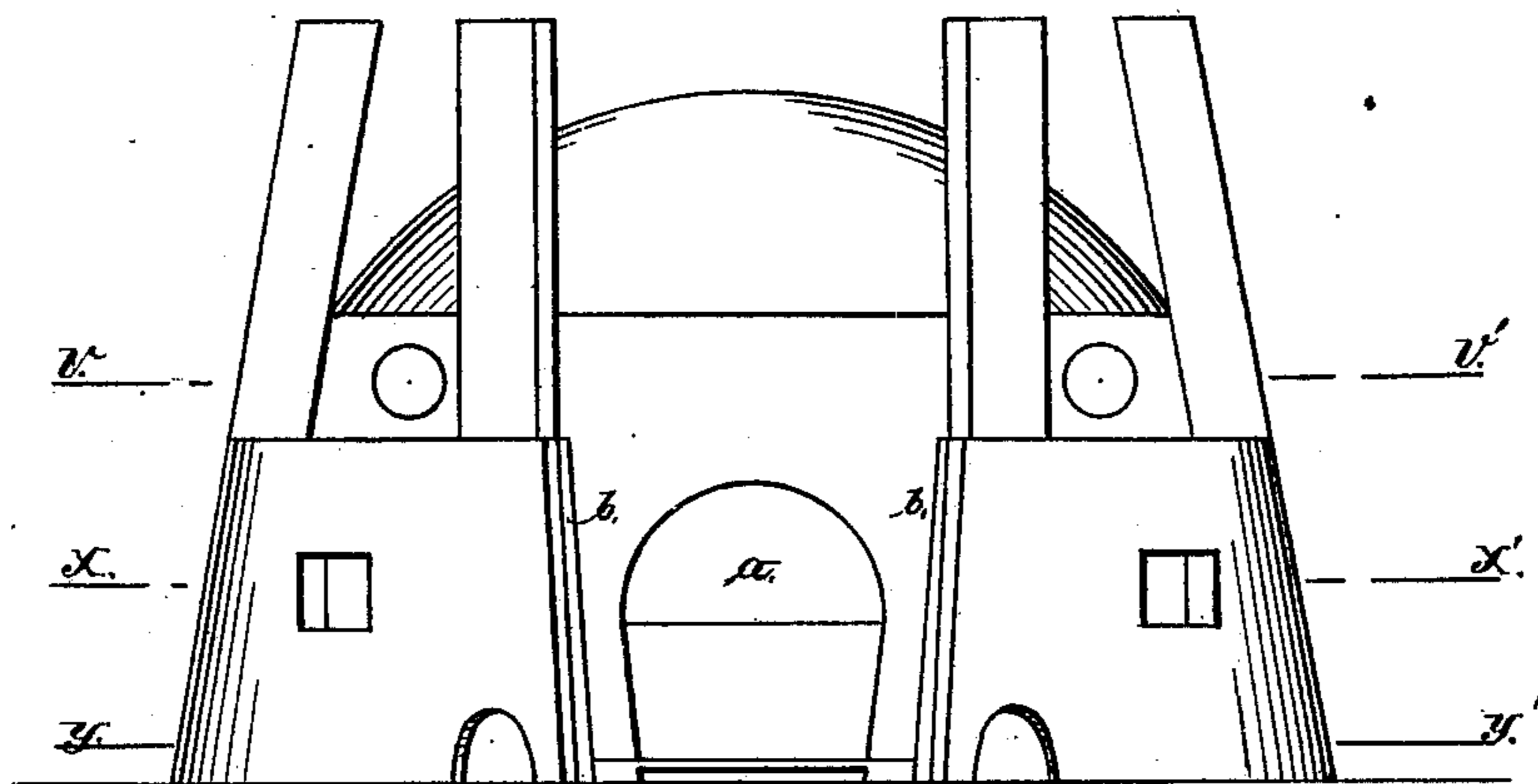


Fig. 1

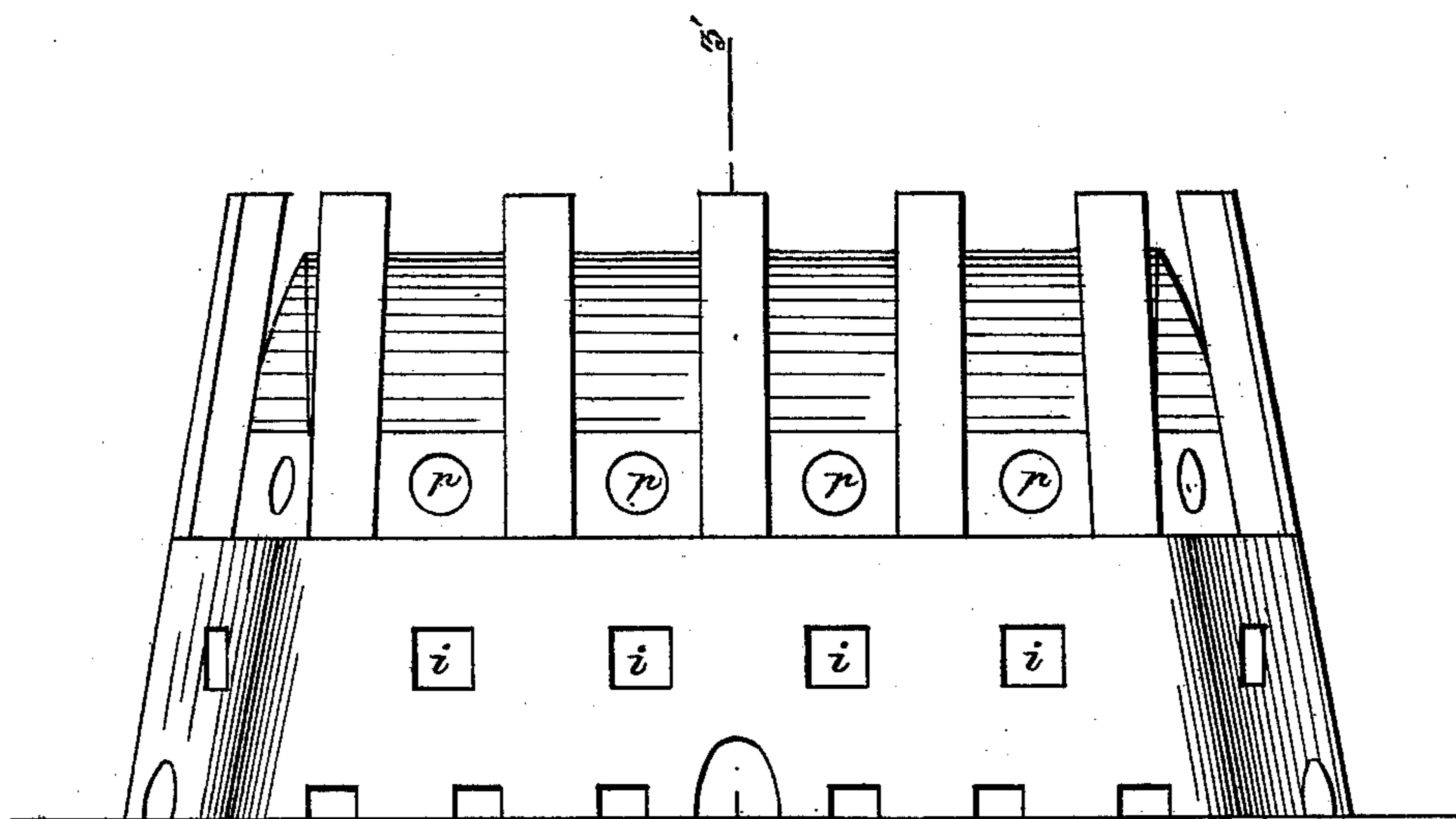


Fig. 2

WITNESSES:

Joseph A. Corliss
W. G. Boyles

INVENTOR

Daniel Agnew
per Lewis & Bickel ATTORNEYS

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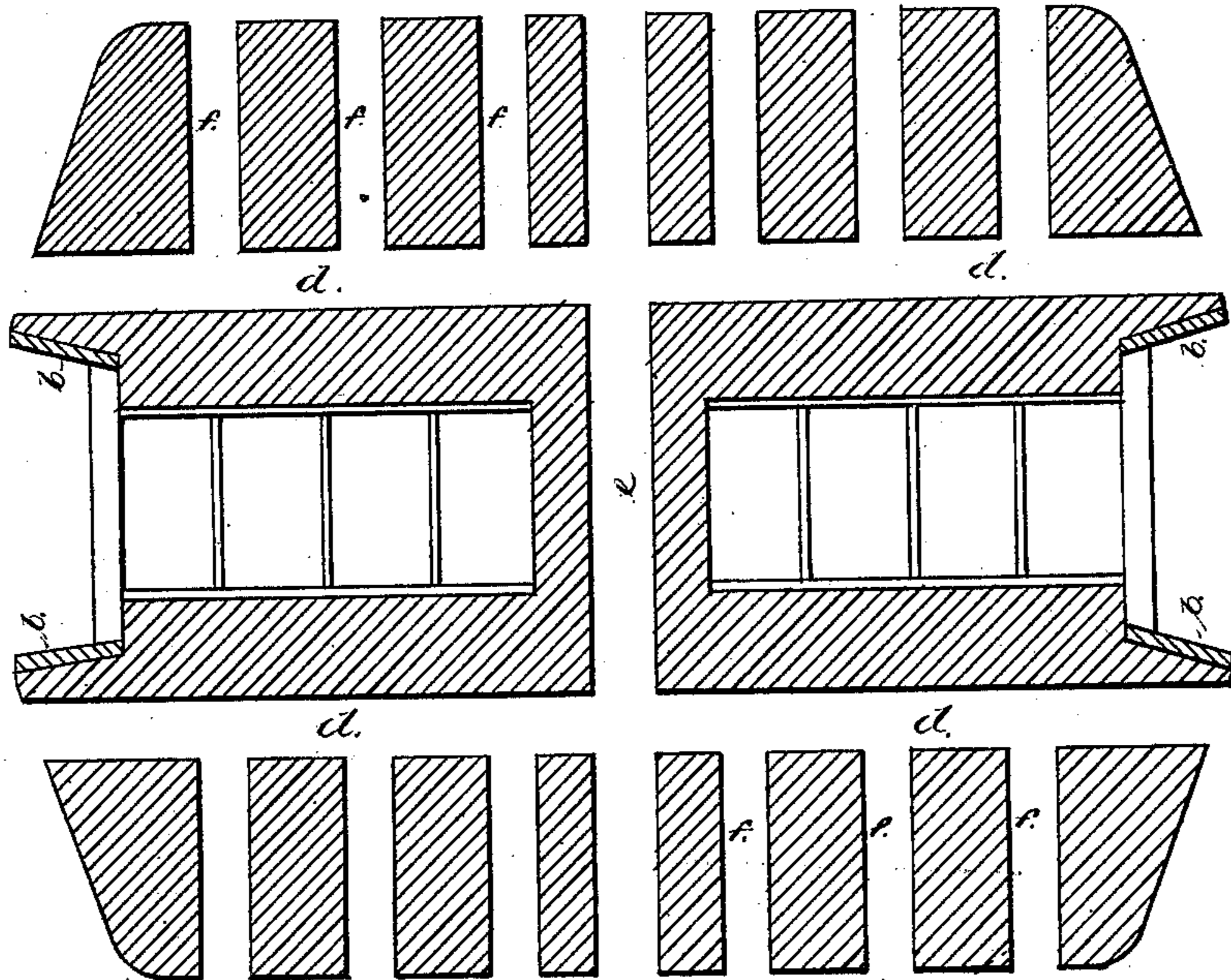


Fig.—3

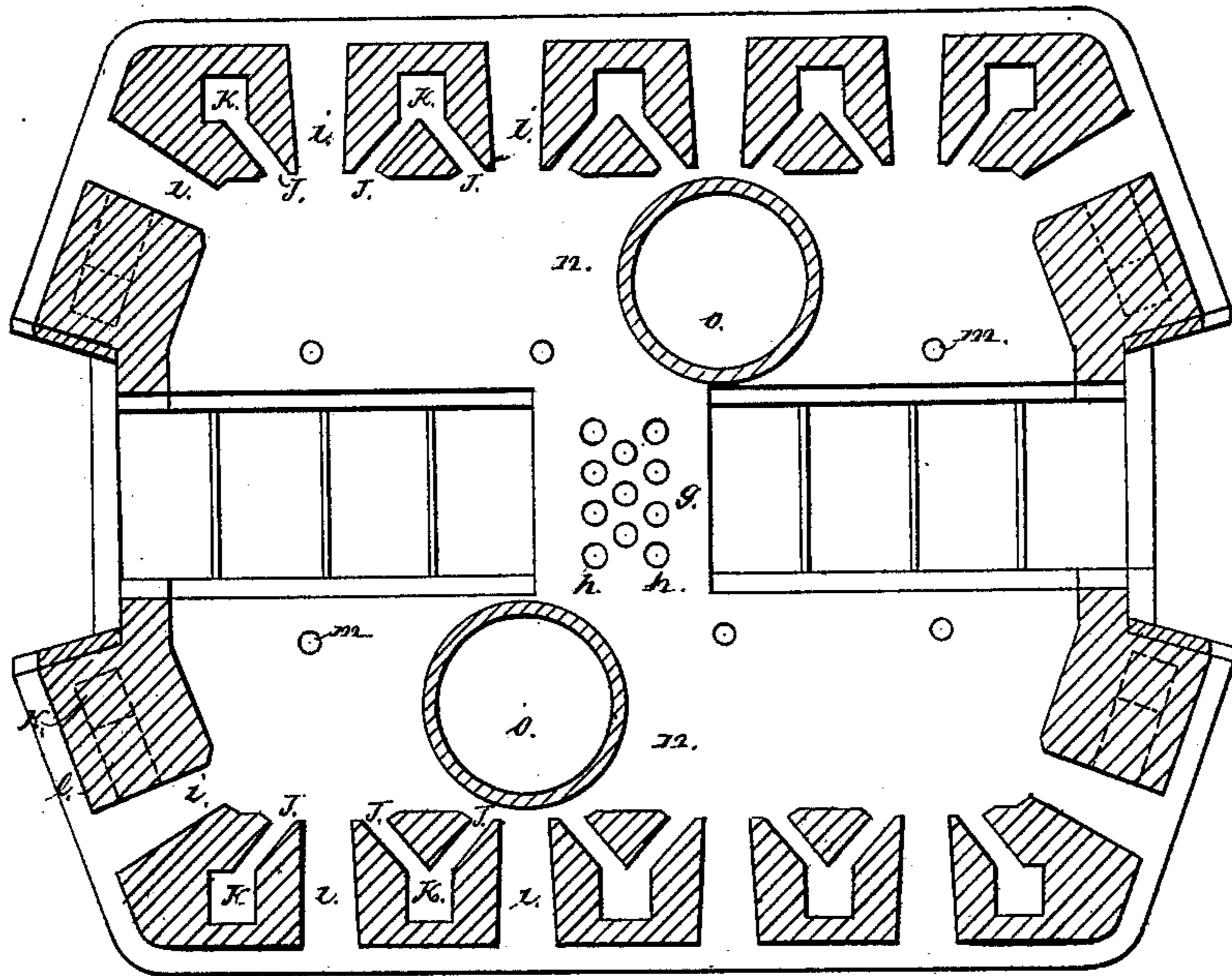


Fig.—4

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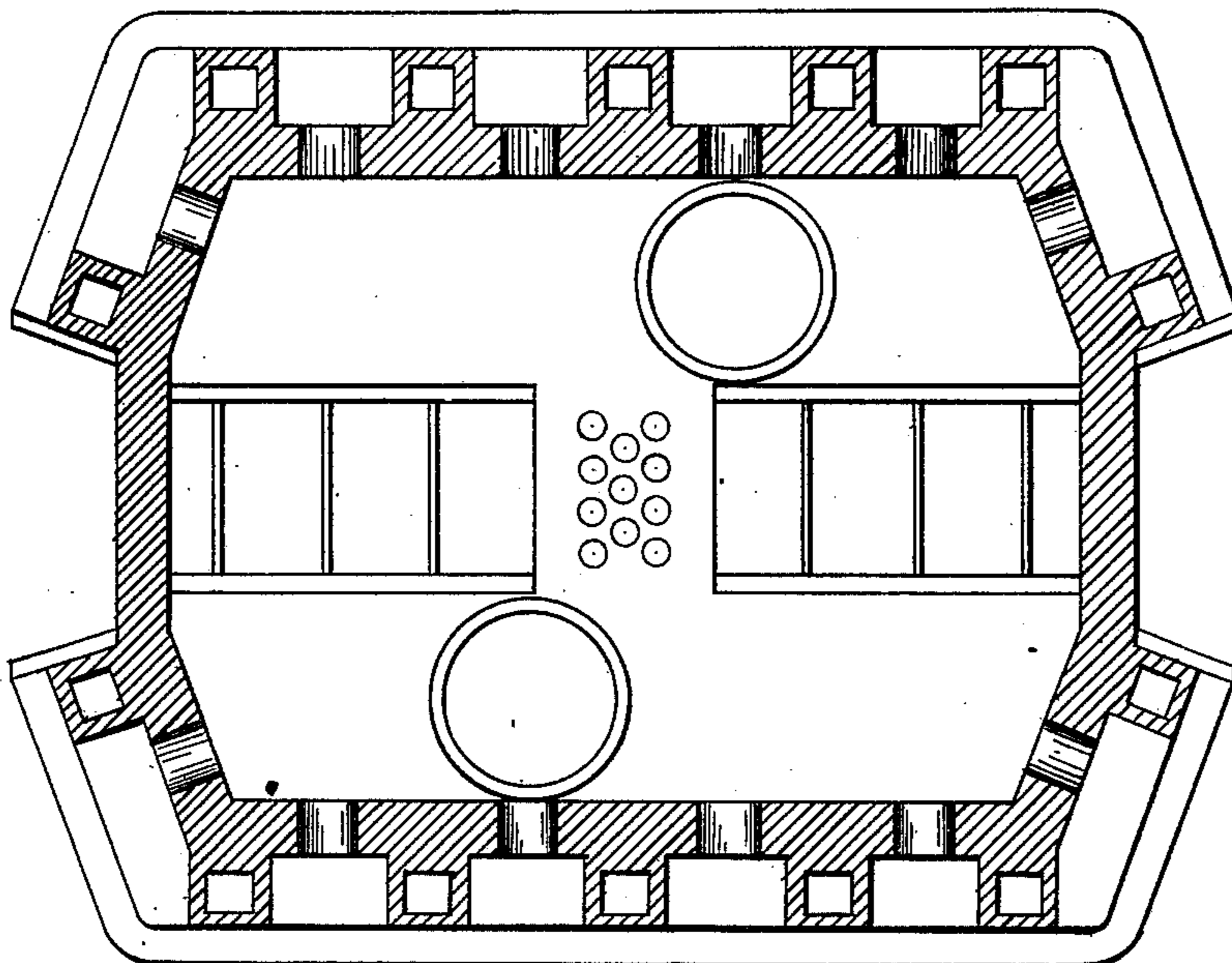


Fig. 5

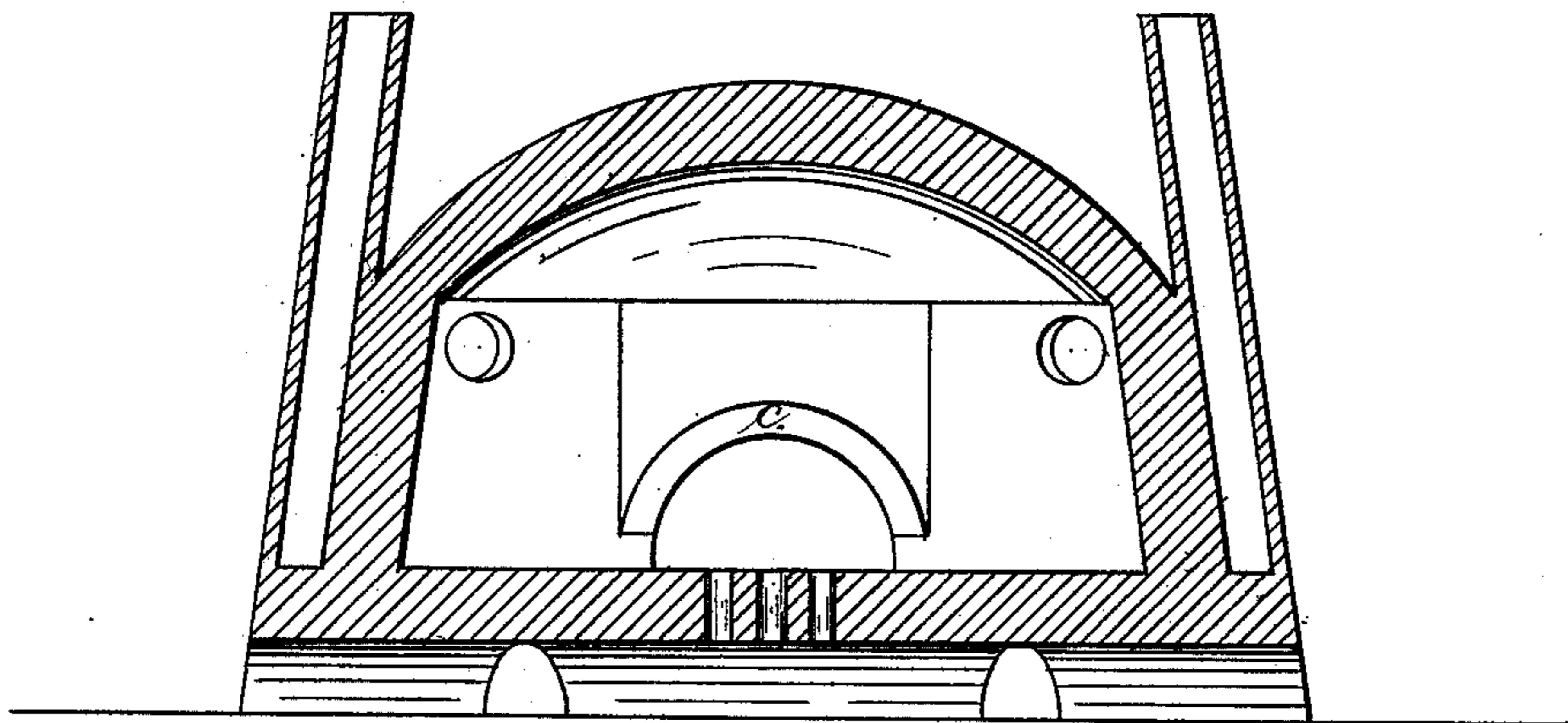


Fig. 6

WITNESSES:

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UNITED STATES PATENT OFFICE.

DANIEL AGNEW, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO SAMUEL C. BROWN, OF SAME PLACE.

IMPROVEMENT IN GLASS-FURNACES.

Specification forming part of Letters Patent No. **213,858**, dated April 1, 1879; application filed January 22, 1879.

To all whom it may concern:

Be it known that I, DANIEL AGNEW, of Pittsburg, Pennsylvania, have invented an Improved Furnace for Melting Glass, of which the following is a specification:

This invention relates to certain improvements in the construction of glass-furnaces, its object being to bring the flames from the burning fuel more thoroughly in contact with the whole exterior of the glass-pots, for the purpose of economizing the fuel and more regularly and uniformly heating said pots.

In the accompanying drawings, Figure 1 is a front elevation of my improved furnace. Fig. 2 is a side elevation of the same. Fig. 3 is a horizontal section on line *y y'*. Fig. 4 is a horizontal section on line *x x'*. Fig. 5 is a section on line *v v'*. Fig. 6 is a section on line *z z'*.

The letter *a* indicates the mouth of my furnace. *b b* are the metal jambs supporting the exterior lower wall of the furnace, and protecting the mouth. The mouth *a* is beveled on its inner side, as shown at *c* in Fig. 6.

A hot-air chamber runs the entire length of the furnace, immediately under each bench, as shown at *d d d d* in Fig. 3. Opening from these chambers out through the walls of the furnace are air-ducts *f f*, to feed the chambers and equalize the temperature more thoroughly. These chambers *d d d d* are intersected by a cross-chamber running from side to side of the furnace, and passing under the bridge *g*. (Shown in Fig. 4.) This bridge is amply perforated, as shown at *h h*, to allow the air from the chambers to pass into the oven.

By means of the communicating chambers and ducts and the perforated bridge the entire under surface of the benches is heated, and through the same channels the hot air is introduced into the oven, and continues its work.

n n in Fig. 4 indicate the benches, which are underlaid with air-chambers, as before described. These benches are provided with holes *m m*, to carry off the molten glass. Upon these benches are intended to rest the glass-pots, as shown at *o o*, Fig. 4.

Above the benches, and through the outer

walls of the furnace, pass the cloot-holes *i i*, to complete the circulation of hot air and afford means of moving the pots. Near the inner openings of these cloot-holes are the horizontal flues *j j*, the two branches of which converge in *V* shape, and terminate in the vertical flues *k*.

Below the benches, and about as far above them as the glass-pots reach, the walls of the furnace are thick. From this point up they are thinner, an abrupt depression being made from the outside. Upon the enlargement thus produced rest the chimneys or flues. In the thinner portion of the walls, between the chimneys, are provided a set of holes, *p p*.

The walls of the furnace slant inwardly, and the roof is concave. The ends are either rounded or have obtuse angles, as shown in the drawings. The idea of this construction is to aid the currents in passing through the oven, and to deflect the heat and flames from every part, and give a uniform and even temperature to every portion of the pots.

The mouth *a* is, of course, intended for the entrance of the pots, and is beveled, as shown, in order to facilitate their introduction.

It will be noticed that a complete circulation is afforded by the devices shown in this furnace—first under the benches by means of the communicating chambers and ducts, and thence into the oven through the perforated bridge. The cloot-holes then add their quota, and the walls and roof help on and deflect all the currents that come in contact with them.

The peculiar shape of the horizontal flues has this advantage: beginning in numerous small openings, the draft is not great at any one place, but is distributed as thoroughly as the admission of the hot air.

I claim—

1. In a glass-furnace, the benches *n n*, underlaid with the communicating air-chambers *d d d d* and *e*, and the feeding-ducts *f f*, as shown and described.

2. The benches *n n*, underlaid with air chambers and ducts, in combination with the perforated bridge *g*, for the purpose of making a continuous passage for the air into the oven.

3. The benches *n n*, underlaid with cham-

bers and ducts, and provided with the holes *mm*, in combination with the perforated bridge *g*, as shown, and for the purpose set forth.

4. The walls of the furnace, provided with V-shaped horizontal flues *jj*, connecting with the vertical flues *k*, and the clout-holes *ii*, substantially as set forth.

5. The inwardly-sloping walls of the fur-

nace, provided with the V-shaped horizontal flues, the clout-holes *ii*, and the openings *pp*, as shown and described.

DANIEL AGNEW.

Witnesses:

J. C. REILLY,
JOSEPH A. CARLINE.