

S. Richards,

Glass Furnace.

N^o 3,035.

Patented Apr. 6, 1843.

Fig. 2

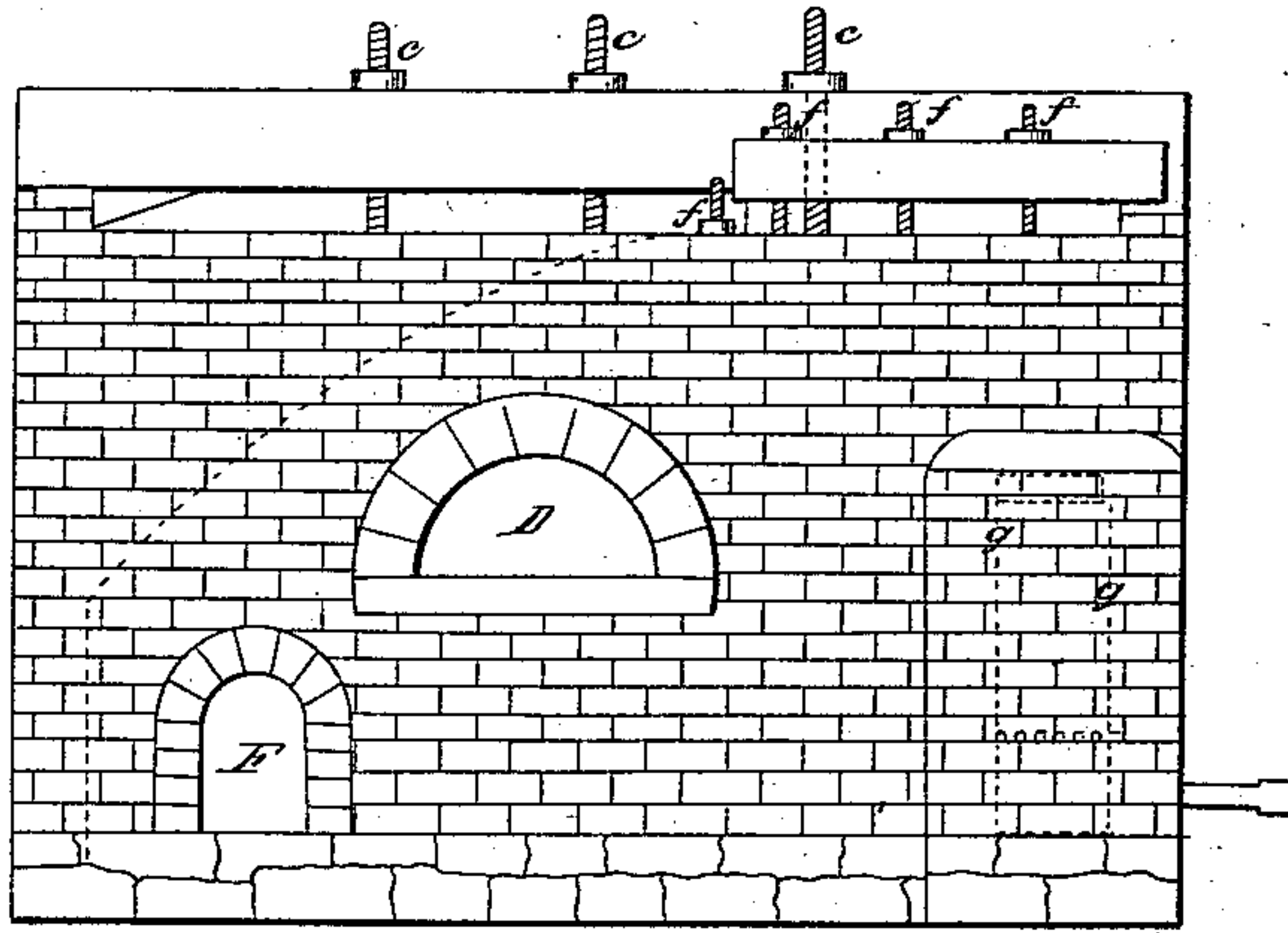


Fig. 1

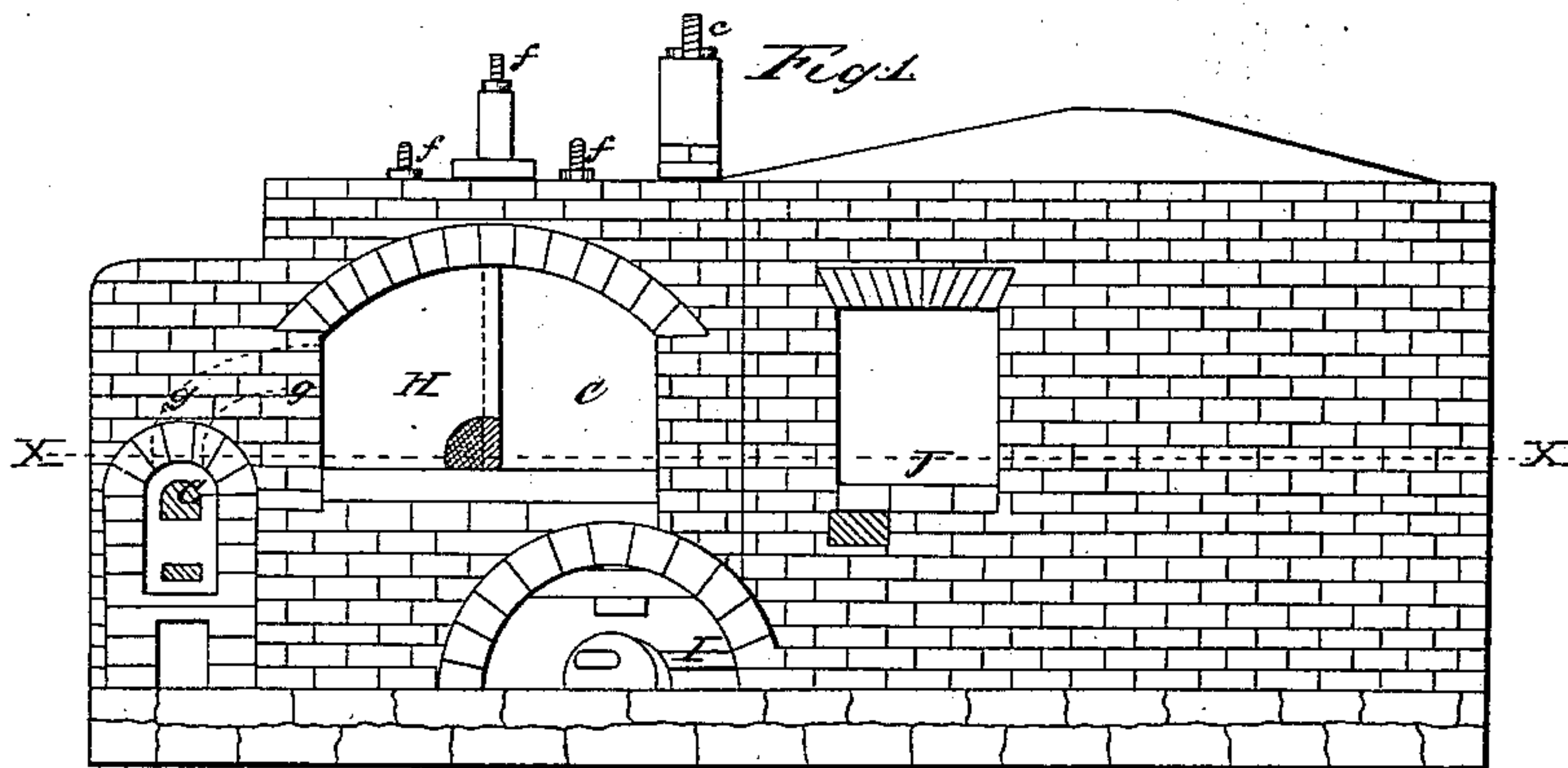
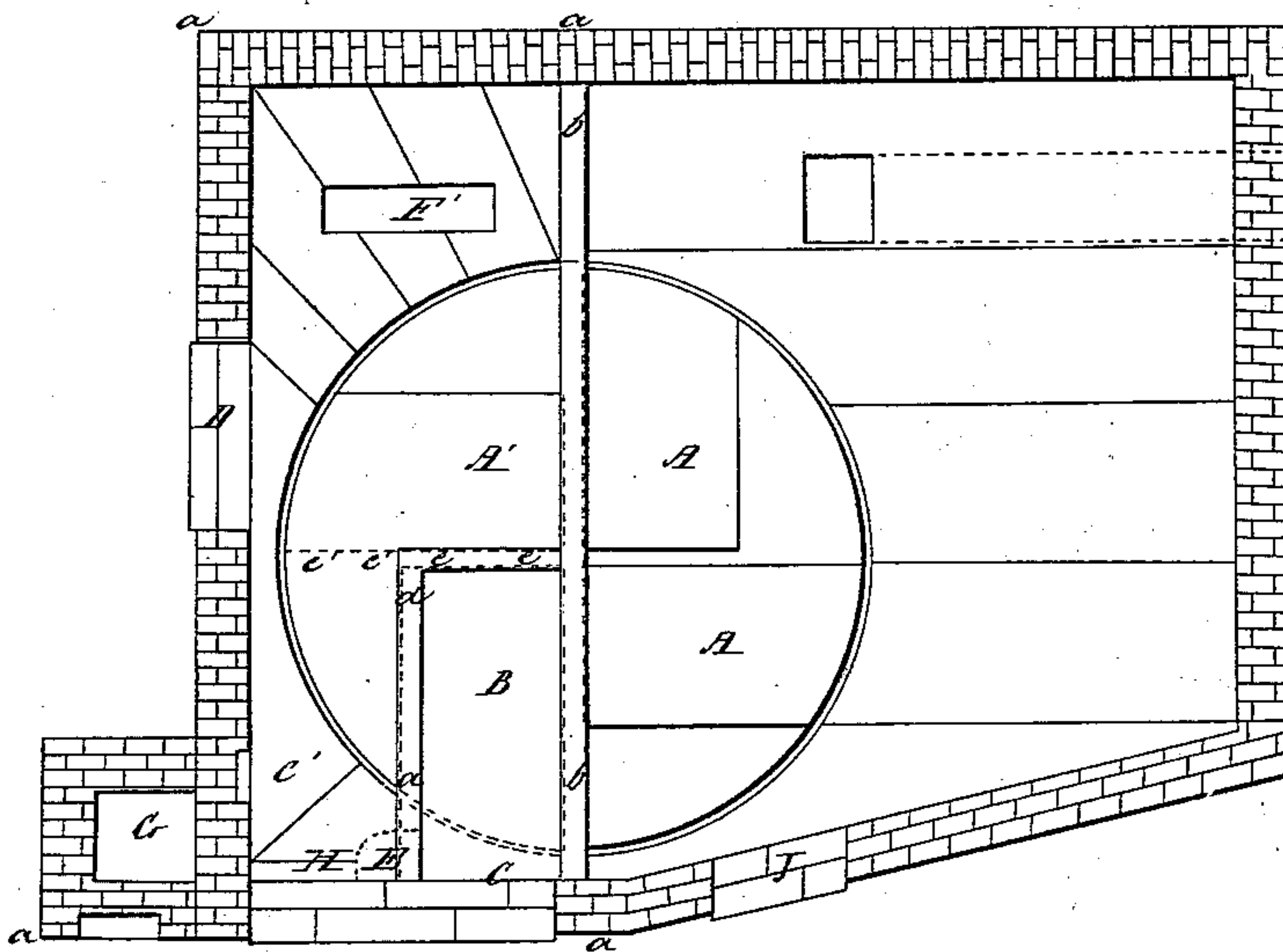


Fig. 3



UNITED STATES PATENT OFFICE.

SAMUEL RICHARDS, OF LONG-A-COMING, NEW JERSEY.

IMPROVEMENT IN FLATTENING AND ANNEALING GLASS.

Specification forming part of Letters Patent No. 3,035, dated April 6, 1843.

To all whom it may concern:

Be it known that I, SAMUEL RICHARDS, of Jackson Glass Works, Long-a-Coming, Gloucester county, New Jersey, have invented certain Improvements in the Manner of Constructing an Oven for the Purpose of Flattening and Annealing Cylinder Window-Glass; and I do hereby declare that the following is a full and exact description thereof.

In my flattening and annealing oven I use the ordinary revolving wheel or table having on it four or any other preferred number of flattening-stones; but I so construct the oven that only one of these stones shall be in the flattening-compartment exposed to the action of the fire at the same time, by which arrangement the flattening-compartment is maintained at the required temperature and the remaining stones are allowed to cool as they pass around, and are thus retained at a temperature the most advantageous for the operation of flattening and cooling the glass. The stones which are not within the flattening-oven are also by my arrangement protected from the dust, ashes, and other injurious matter from the fire, their surfaces being preserved in a clean state. In the oven as ordinarily arranged small fragments of wood and ashes from the fire alight upon the stones, and these, when the glass is flattened upon them, materially injure its surface. I have added an additional flue also to heat the roller or cylinder in the stick-hole, and I usually form the floor of this hole of a stone which covers and is sustained above the revolving flattening-stones under an arrangement to be presently described.

The number of cylinders flattened in an hour in the ovens now in use is about forty; but in one of my improved construction I have been able to flatten a hundred in the same length of time, and that with a diminished consumption of fuel, and giving a greatly-improved surface to the glass, its polish being well preserved.

The respective compartments of the oven—that is to say, the stick-hole and the flattening and cooling ovens—may be variously arranged, while the essential features of my improvement remain unchanged.

In the accompanying drawings, Figure 1 is an elevation of my oven on the side which has

the opening of the stick-hole and into the cooling-oven as I usually construct it. Fig. 2 is an elevation of that side or end which has the opening into the flattening-oven, and Fig. 3 is a horizontal section in the line *xx* of Fig. 1.

A A A are three of the flattening-stones, the fourth being hidden by the stationary stone B, which constitutes the floor of the stick-hole. The outline of the fourth flattening-stone is shown by dotted lines. C is the opening into the stick-hole, and D that into the flattening-oven, within which one stone (marked A') is represented as situated, two of the stones A A being in the annealing-oven and the fourth under the floor B of the stick-hole. The part of the structure which contains my improvements is comprised within the portion designated by the letters *aaa* of Fig. 3. The flattening-oven A' and the stick-hole B are separated from the annealing-oven by a hanging partition-wall *bb*, which is supported by the iron rods *ccc* in a manner well known, so that the revolving table may pass under it. The stick-hole B is in like manner divided off from the flattening-oven by hanging partition-stones *dd* and *ee*, which are sustained by iron rods *ff*, and these also sustain the rear end of the floor-stone B of the stick-hole, allowing the table to pass under it.

E is an opening for passing the cylinder or roller from the stick-hole into the flattening-oven. The hanging stone *ee*, which forms the back of the stick-hole, extends across at *e'e'*, but is arched at its lower edge, so as to allow the cylinder to be passed into the flattening-oven.

J is the opening into the cooling or annealing oven, as usual.

F, Fig. 2, is the ordinary feed-hole for the fuel which is to heat the flattening-oven, which opens into it at F' in the ordinary way, and G, Fig. 1, is the feed-hole of an additional flue that I employ, and that serves also to heat the flattening-oven and the stick-hole.

H is a stone which incloses that part of the flattening-oven into which the additional flue opens, the heat from which keeps the stick-hole B at a proper temperature by its action through the opening E between the stick-hole and the flattening-oven, which opening ex-

tends front to back of the stick-hole below the partition *d d* of Fig. 3 and above the floor-stone of B.

I is the shaft for causing the flattening-stone table to revolve in the ordinary way. The dotted lines *g g*, Figs. 1 and 2, mark the course of the additional flue, of which the feed-hole is seen at G. This flue opens into the upper part of the compartment C' of the flattening-oven. Although an additional flue is thus employed by me, the quantity of fuel required is much diminished, as above stated, the heat being applied immediately in the part required and diffused in such proportion as not to be in any degree wasted.

Having thus fully described the nature of my improvements in the oven for flattening and annealing glass, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The so constructing and combining the various parts thereof as that no more than one of the flattening-stones, whatever may be the number used, shall be exposed to the action of the fire during the operation of flattening, the others being protected from its action by an arrangement of the respective parts substantially the same with that herein set forth—that is to say, two or more of them being in the cooling-oven and one under the floor of the stick-hole.

2. The combining of the additional flue with the flattening-oven, so as to enter said oven in the immediate vicinity of the stick-hole, in the manner herein fully made known.

SAMUEL RICHARDS.

Witnesses:

THOS. P. JONES,
JOHN HITZ.