P. ARBOGAST.
Glass-Furnace.

No. 196,321. Patented Oct. 23, 1877.

Fig. 1

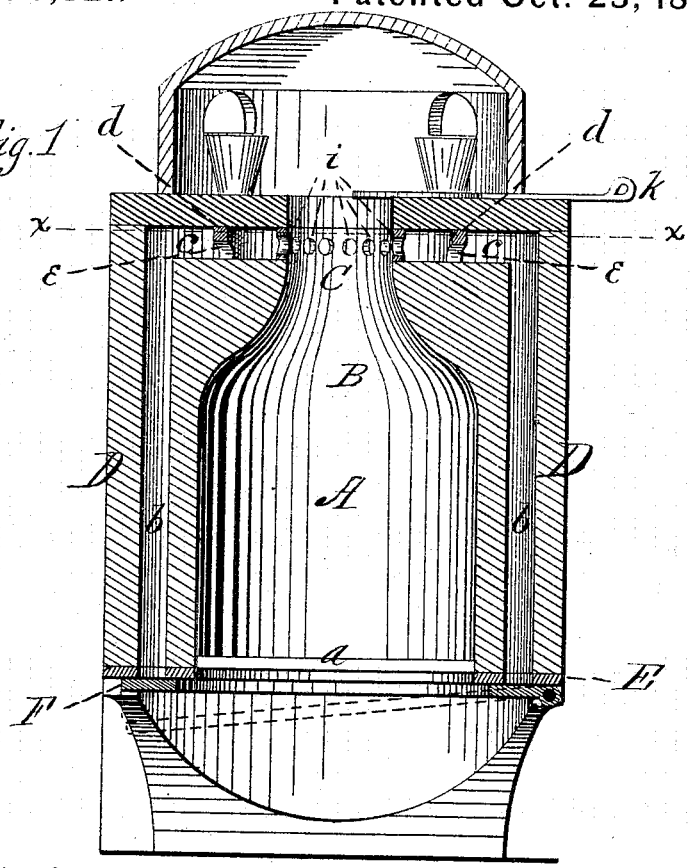


Fig. 2.

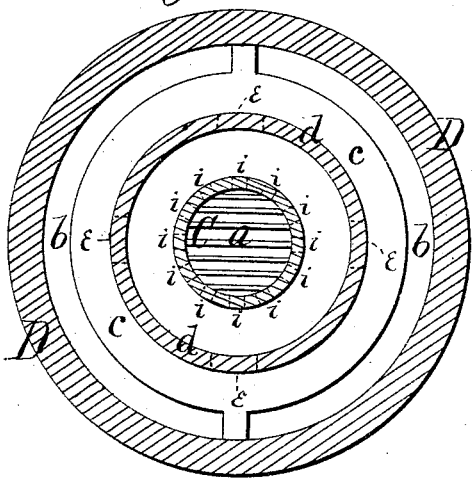
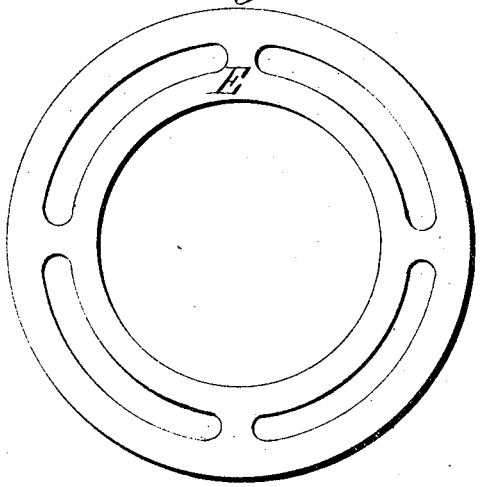


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

PHILIP ARBOGAST, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN GLASS-FURNACES.

Specification forming part of Letters Patent No. **196,321**, dated October 23, 1877; application filed March 20, 1877.

To all whom it may concern:

Be it known that I, PHILIP ARBOGAST, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Glass-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical transverse section. Fig. 2 is a plan section on *x x* of Fig. 1. Fig. 3 is a plan of eye-plate.

This invention relatei to glass-furnaces, and is especially adapted to furnaces for "warming-in" the incomplete articles. These furnaces are generally cylindrical, with the interior narrowing up to a small flue in the center.

My invention consists in constructing the walls of such a furnace with one or more annular air-flues rising from the ash-pit, and converging at the upper part into the narrow throat, and in applying a damper at the top of said throat, a check-wall annularly disposed between the flues and throat, a metallic eye-plate as a foundation for the flue-walls, and an annular hinged damper for the bottom of the flues, all as hereinafter fully described and claimed.

A is the combustion-chamber; *a*, the grate; B, the breast, and C the throat, all surrounded by the cylindrical walls D. These walls D are built upon an annular metallic eye-plate, E, (shown in Fig. 3,) as a foundation, which may be in one or more pieces, and is made with open spaces at intervals. This constitutes a firm base for the walls, and at the same time an entrance to the flue or flues *b b* for air, which are constructed in the cylindrical walls. They may, as one flue, extend all round, with a bond-brick here and there, or they may be in the form of vertical sections of what otherwise would be a complete annulus. Opposite the throat they open into a mixing-chamber, *c*, extending around the throat. This chamber is limited by the annular check-wall *d*, which, at intervals, has openings *e*, the object being to check the current of air, so as to mix it, and gradually distribute it into the interior space inclosed by check-wall *d*. From this it finds exit to the throat through a number of openings, *i*. Chamber *c* and its auxiliaries are covered with tiles with convergent sides, to facilitate construction.

At the highest point of the throat I construct a sliding damper, *k*, by which I can regulate the amount of heat let into the heating or warming-in chamber, or by closing it entirely I can "bank" the fire and prevent waste of fuel.

An air-damper, F, is made in annular form, and hinged to the eye-plate, and by this means the amount of air admitted to the flues *b* is regulated. It can be adjusted by means of a chain or other common device.

The subject of this application differs from that of my patent of August 1, 1876, in regard to the air-flues entering the throat of the combustion-chamber, in this respect, that in the patented furnace the air is not heated before entering, but comes directly from the outside of the furnace, while in the furnace now claimed the flues or air-passages rise through the wall surrounding the fire-space, so that the air is heated before entering the combustion-chamber, and rendered more effective.

I claim as my invention—

1. In a furnace wherein the fuel is converted into gases, and the gases consumed at once, the combination of the fire-chamber A, throat or combustion-chamber C, and annular or annularly-disposed air-heating flues *b b* in the walls, beginning at the bottom of fire-chamber, and rising vertically to about the top of the combustion-chamber, substantially as described.

2. The combination of the air-heating flues *b*, chamber *c*, and spaced check-wall *d*, substantially as described.

3. The combination of flues *b*, throat C, and damper *k*, placed above the exit of the air-flues, as shown.

4. In combination with the walls D, and forming a true base therefor, an open-spaced annular metallic eye-plate in one or more pieces, substantially as specified.

5. In combination with the flues *b*, the annular hinged damper F, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of March, 1877.

PHILIP ARBOGAST.

Witnesses:

A. V. D. WATTERSON,

MARSHALL BROWN.