

S. & J. Thomas,
Blast Furnace.

No. 26.212.

Patented Nov. 22, 1859

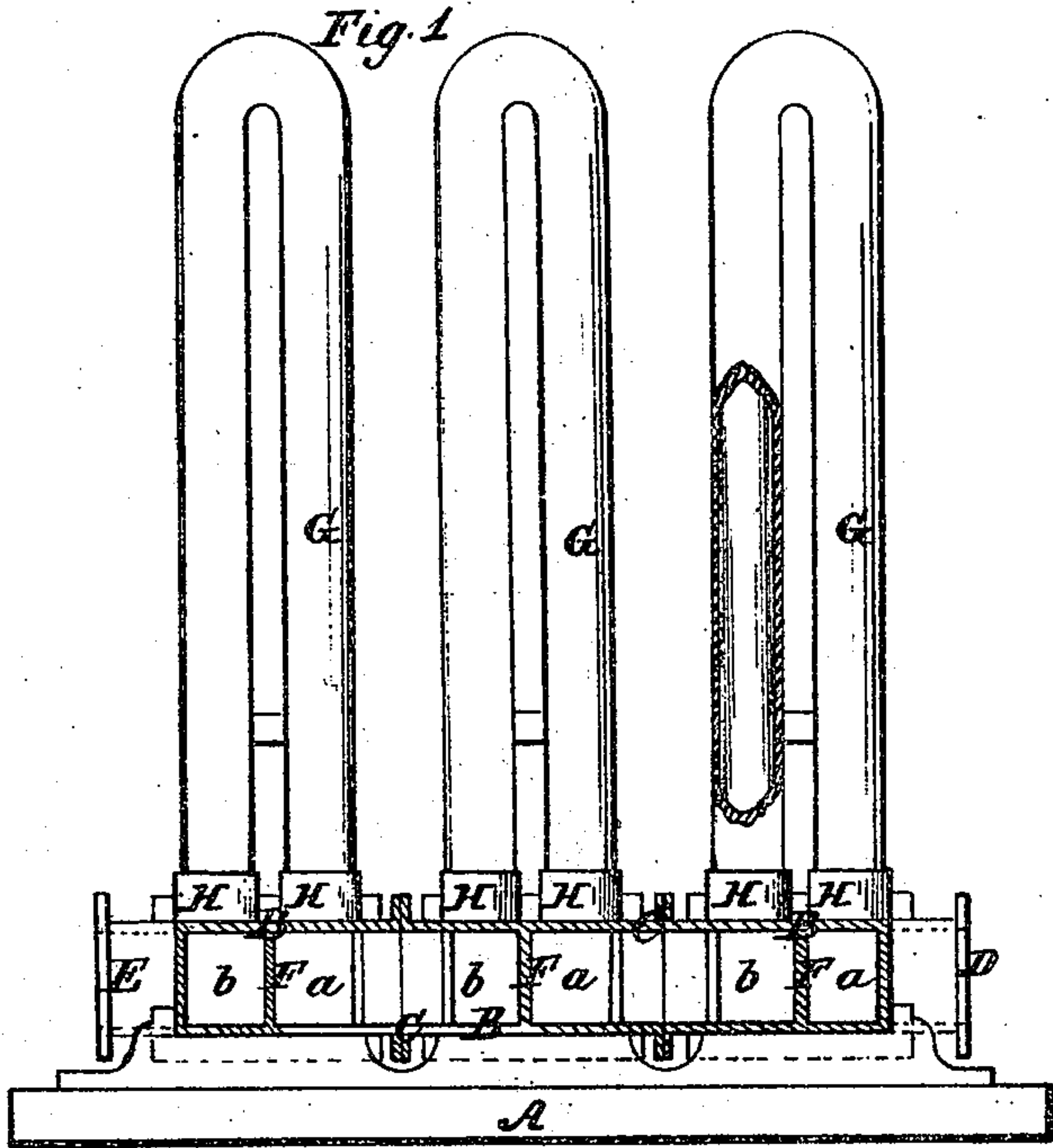
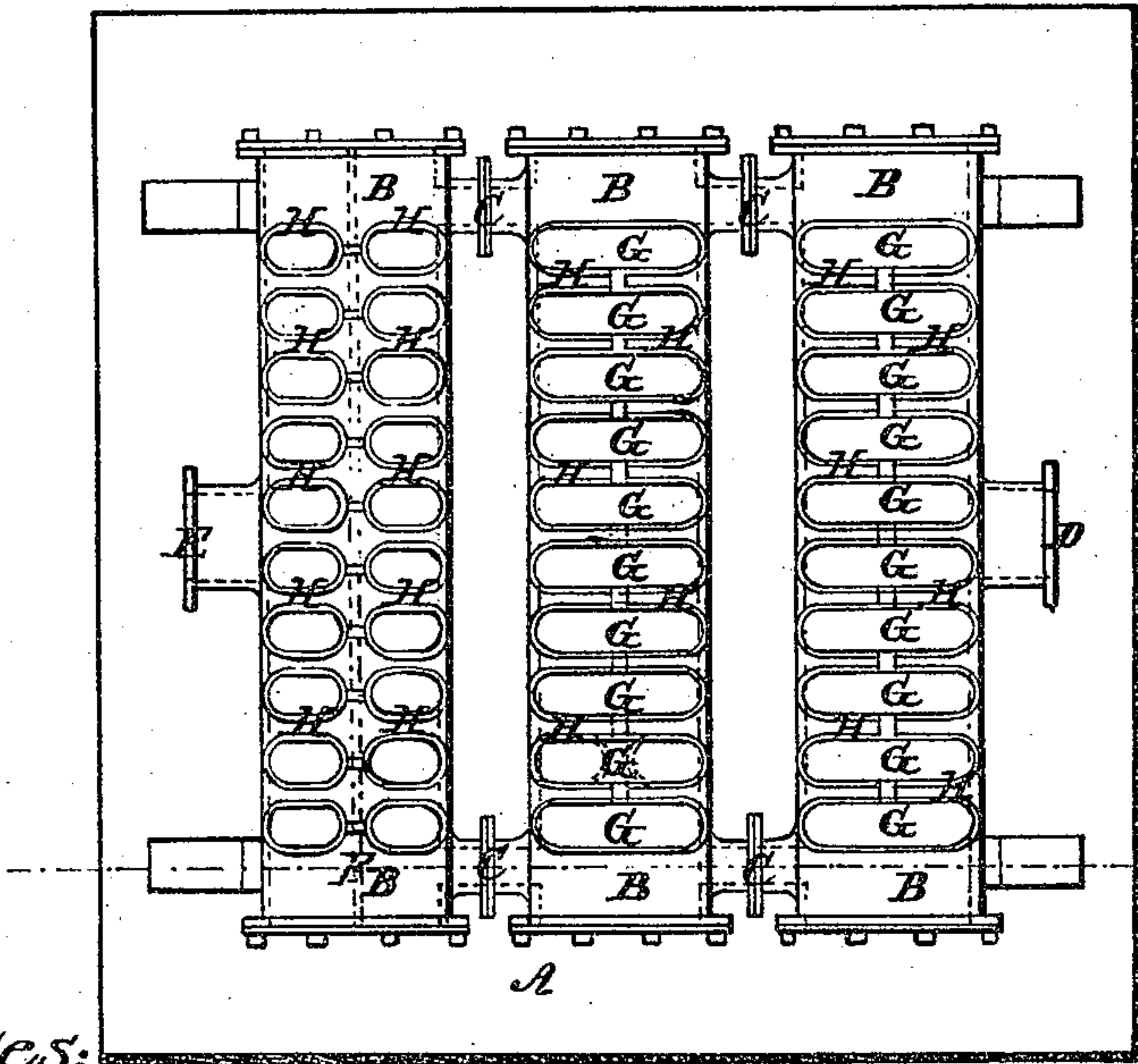


Fig: 2.



Witnesses;

Amicales
L. J. Chapman

Inventor;
Samuel Thomas
John Thomas and.

UNITED STATES PATENT OFFICE.

SAMUEL THOMAS AND JOHN THOMAS, OF CATASAUQUA, PENNSYLVANIA.

IMPROVEMENT IN AIR-HEATING PIPES FOR BLAST-FURNACES.

Specification forming part of Letters Patent No. 26,212, dated November 22, 1859.

To all whom it may concern:

Be it known that we, S. THOMAS and J. THOMAS, of Catasauqua, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Blast-Furnaces; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a vertical longitudinal section of our improvements, the line *xx* in Fig. 2 indicating the plane of section. Fig. 2 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in both figures.

The object of our invention is to arrange the tubes which serve to heat the air for blast-furnaces in such a manner that the same are less liable to break and become deranged than the pipes as now arranged. The usual arrangement for this purpose is to place in the flue of the blast-furnace a series of horizontal or bottom tubes side by side, and all of them closed at both ends and connected by a series of arched pipes, which emanate from one of the bottom tubes and end in the next succeeding one, and these pipes are very liable to crack at their arched parts, for whenever the foundation of the bottom tubes gives way in the least, so that the same change their relative position, the arched pipes have to sustain the whole strain.

To enable those skilled in the art to fully understand, use, and construct our invention, we will proceed to describe it.

A represents the foundation on which the heating-tubes are arranged in the flue of a blast-furnace, and this foundation supports a series of horizontal or bottom tubes, B, which are all closed at both ends, and which connect one with the next succeeding one by means of short flanged channels C. The blast-pipe connects with the openings D and E in the middle of the outside bottom tubes, and the air passes in by the opening D and out by the opening E. Each of the bottom tubes is divided in two compartments, *a* and *b*, by a partition, F, which extends in a longitudinal direction from one end of each of these tubes to the other,

and these two compartments connect by a series of arched pipes, G, which are firmly secured in sockets H, which are cast with or otherwise rigidly attached to the upper side of the bottom tubes, as plainly represented in Fig. 2, where the arched pipes from one of the bottom tubes are removed. The number of these tubes or pipes and their size is entirely optional, and depends altogether on the size of the furnace or of the flue; but the arched pipes are thus connected each to one and the same bottom tube, and any derangement which takes place, should the brick-work crack from the heat or the foundation of the bottom tubes be otherwise displaced, causes no strain whatever on the arched pipes.

The operation is as follows: The air enters through the opening D and fills the compartment *a* of the first bottom tube, and from this it escapes through the arched pipes to the compartment *b*, which in its turn, by the channels C, connects with the compartment *a* of the next following bottom tube, from which the air passes through the arched pipes to the adjoining compartment *b* of the same tube, and so on, and the air is heated quite as effectually as with any other arrangement, while the heat in the flue and any displacement of the brick-work have no serious influence on our tubes; and in case any difficulty should be experienced with the connecting branches of the bottom tubes, wrought-iron branches could be substituted for the cast-iron ones.

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

Supporting both of the legs of the arched pipes G upon one bottom tube, constructed substantially as described, so that injury to said pipes by the displacement of the bottom tubes will be prevented, and so that each bottom tube, with its connected arched pipes, may be removed and replaced without disturbing any of the remaining arched pipes or bottom tubes, all as set forth.

SAMUEL THOMAS.
JOHN THOMAS.

Witnesses:

J. W. MICKLEY,
L. F. CHAPMAN.