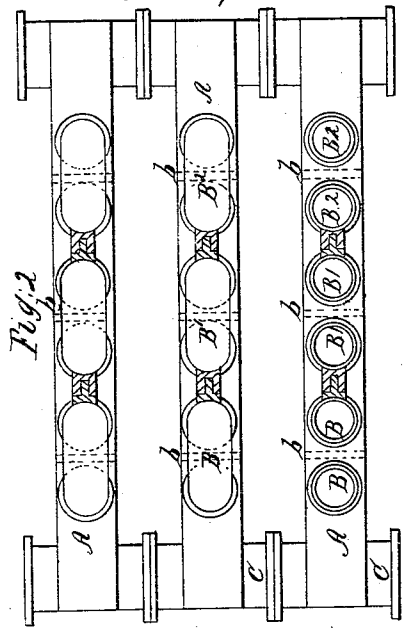
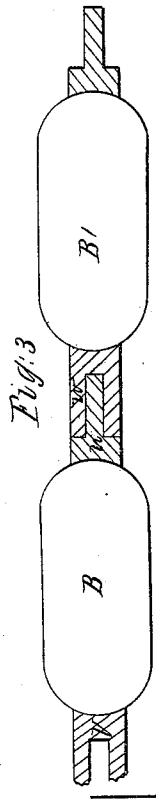
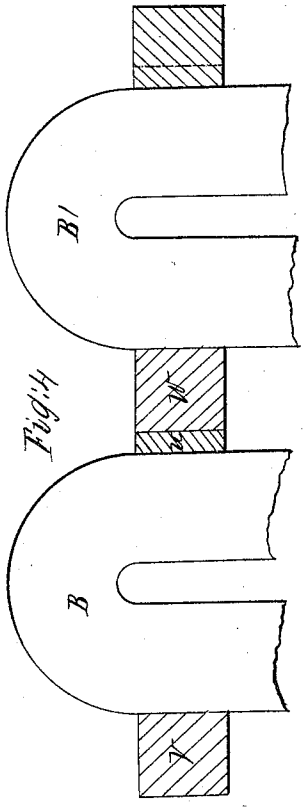
J. C. Kent,

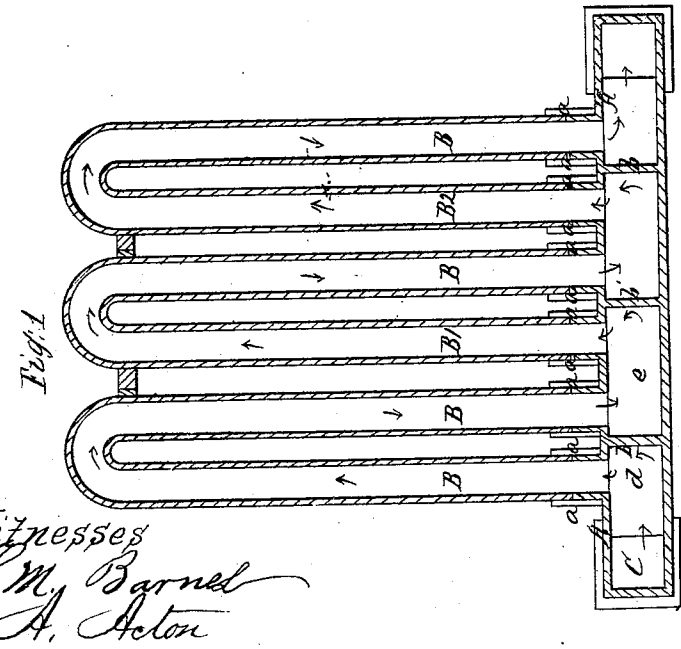
Hot Blast Oven.

No. 88,964. Patented Apr. 13. 1869.









Witnesses
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UNITED STATES PATENT OFFICE.

JOSEPH C. KENT, OF PHILLIPSBURG, NEW JERSEY.

IMPROVED BLAST-HEATING APPARATUS FOR SMELTING-FURNACES.

Specification forming part of Letters Patent No. **88,964**, dated April 13, 1869.

To all whom it may concern:

Be it known that I, JOSEPH C. KENT, of Phillipsburg, in the county of Warren and State of New Jersey, have invented certain Improvements in the Blast-Heating Apparatus of Smelting-Furnaces, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying sheet of drawings, and to the letters of reference marked thereon.

My improvements consist in dividing the bed-pipe into cells or divisions by transverse partitions or diaphragms, and in placing the siphon-pipes longitudinally on the bed-pipes. Both ends of the same siphon communicate with the same bed-pipe, as is hereinafter shown and described.

On reference to the accompanying sheet of drawings, making part of this specification, Figure 1 is a side elevation sectioned. Fig. 2 is a plan view, partly in section. Fig. 3 shows the connection of the siphon-pipes, and Fig. 4 is a plan view of the same.

Similar letters refer to similar parts in the several views.

A is the bed-pipe. B B^1 B^2 are siphon-pipes for heating the blast on its passage from the blowing-cylinder to the furnace. They are carried on necks of the bed-pipe, and cemented in sleeves *a*, so as to be perfectly air-tight.

The bed-pipe is divided by transverse partitions or diaphragms *b* into cells or divisions corresponding to the number of siphon-pipes employed. They are situated between the openings formed for communicating each individual siphon with the interior of the bed-pipe, so that the ends of the same siphon communicate with distinct but adjacent cells, and the contiguous ends of adjacent siphons communicate with one and the same cell or division, the design of the transverse partitions being to divert the blast through each and every siphon of the same bed-pipe.

The bed-pipe and siphons are contained in an oven or heating-chamber, the former communicating with the blowing-cylinder of the blast-engine and the smelting-furnace, respectively.

When the bed-pipe and siphons become sufficiently heated the blast is forced through the inlet-pipe C into the first chamber, *d*, of the bed-pipe. By impinging against the partition or diaphragm *b* it is deflected through the nearest leg of the siphon B. It then turns at the top, as shown by the arrow, Fig. 1, and descends by the other leg into the second cell, *e*, when it is again deflected by the diaphragm or transverse partition *b'* through the siphon B^1, and in the same manner through all the siphons of the bed-pipe, where it is exposed to the action of the heated surfaces of the siphons and bed-pipes, and ultimately escapes by the outlet, at a high degree of temperature, to the furnace.

Any number of ranges of bed-pipes and siphons can be used, as shown in Fig. 2, to increase the heating-surface as much as possible, and to heat the blast to a greater degree.

It will be seen, by referring to the accompanying sheet of drawings, Fig. 2, that the siphon-pipes are placed longitudinally with the bed-pipe instead of transversely from one bed-pipe to another, which obviates any tendency they may have to fracture at the turn by the spreading of the bed-pipes from the expansion of the metal due to the very high temperatures to which they are subjected.

I employ a simple and efficacious method of casting or forming the siphons with any number of square or oblong tenons on one side and a corresponding number of similarly-shaped mortises on the opposite side.

As shown in Figs. 3 and 4 of the accompanying sheet of drawings, the siphon B has a tenon, *u*, cast or formed on one side and a similarly-shaped mortise, *v*, on the other side. The tenon *u* takes into the mortise *w* of the siphon B^1, so that a range of siphons can be firmly secured together, will maintain their relative positions, be prevented from warping and twisting, and be readily adjusted for repairs or other purposes.

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

1. Dividing the bed-pipe A into cells or divisions by transverse partitions or diaphragms, substantially as and for the purpose shown and described.

2. The cellular bed-pipe A, in combination with the siphon-pipes B, placed longitudinally on the said bed-pipe, substantially as and for the purpose specified and described.

In testimony whereof I hereunto sign my name to this specification in presence of two subscribing witnesses.

JOSEPH C. KENT.

Witnesses:
JOHN S. BACH,
WM. M. DAVIS.