L. BRADLEY.

Blast Furnace.

No. 3,834. Patented Nov. 18. 1844.

Fig. 2.

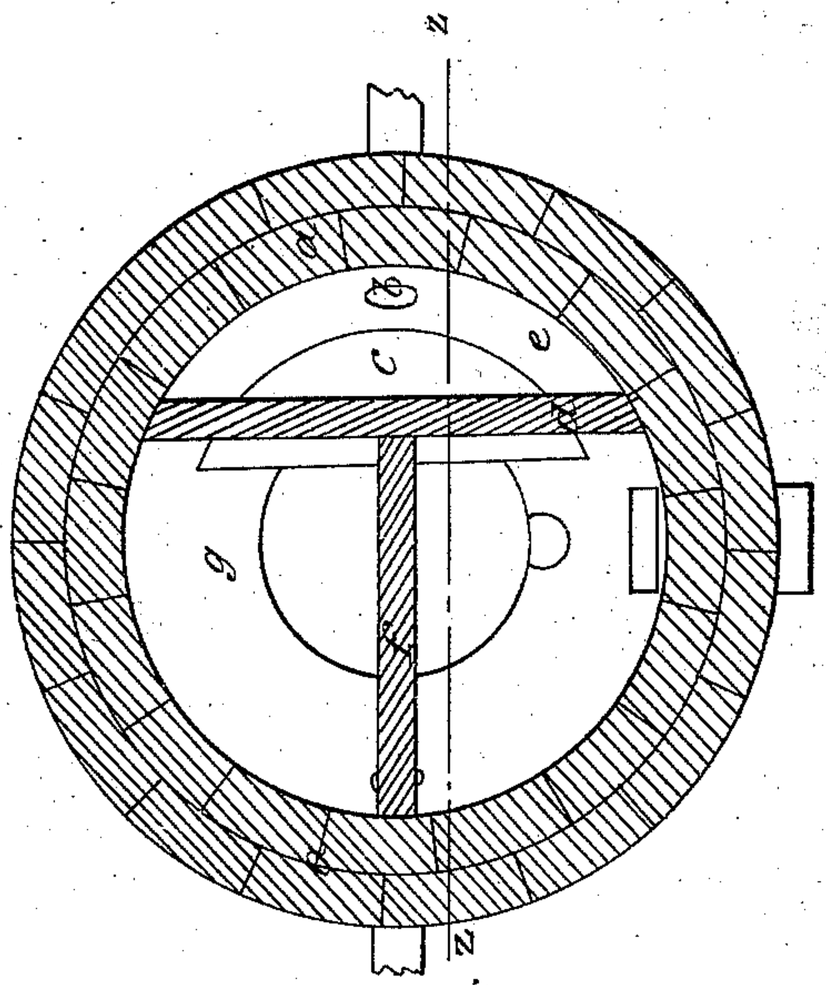
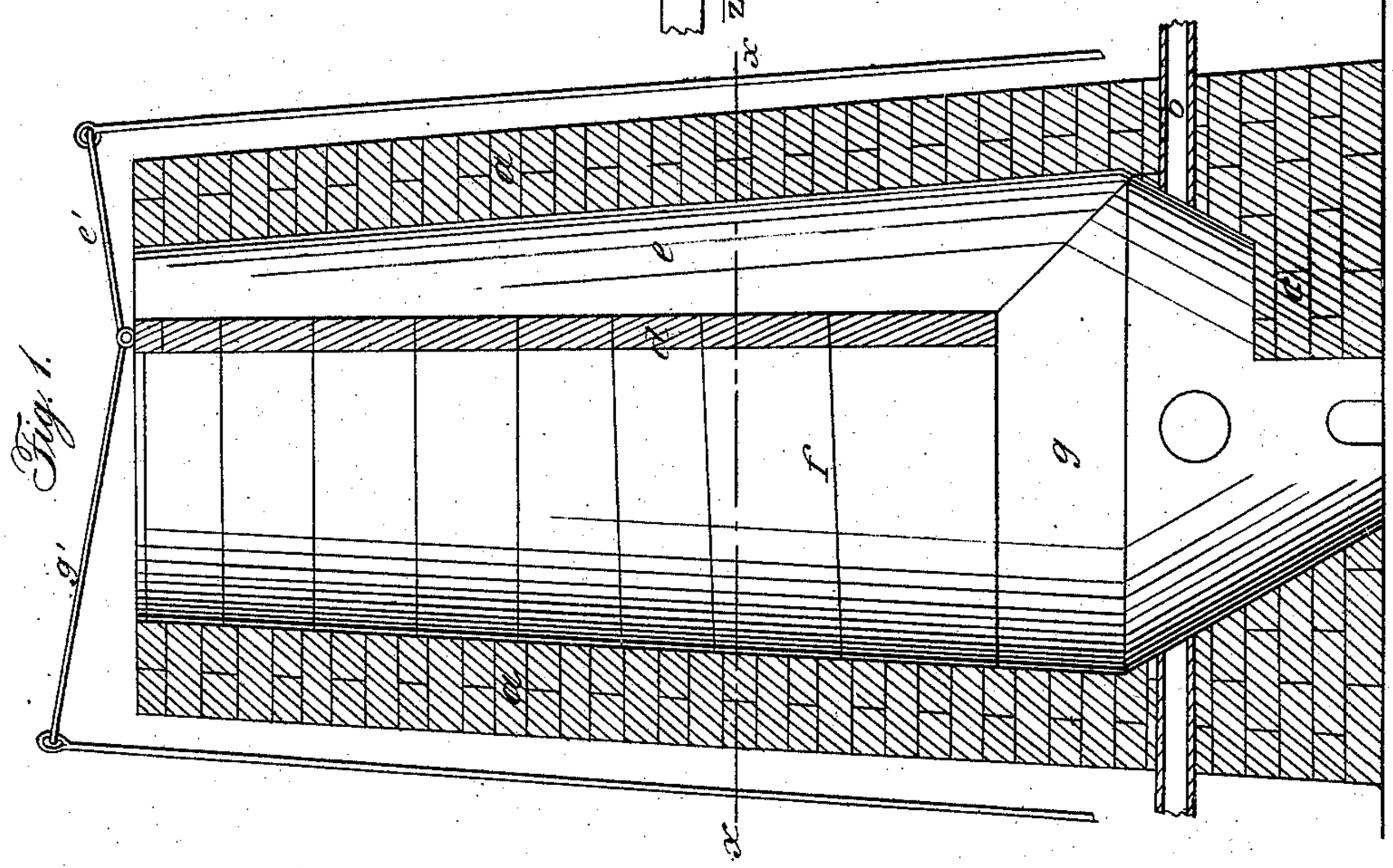


Fig. 1.



UNITED STATES PATENT OFFICE.

LEMAN BRADLEY, OF SHARON, CONNECTICUT.

IMPROVEMENT IN FURNACES FOR SMELTING IRON.

Specification forming part of Letters Patent No. **3,834,** dated November 18, 1844.

To all whom it may concern:

Be it known that I, LEMAN BRADLEY, of Sharon, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in the Ordinary Furnace for Smelting Iron Ore; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section through the line *z z* of Fig. 2, the latter figure being a horizontal section at the line *x x* of Fig. 1.

The nature of my invention consists in dividing the furnace into three chambers by partitions that extend from the top of the furnace to near the largest diameter of the interior, for the purposes hereinafter described, and in placing dampers over said divisions of the furnace.

I construct my furnace in any of the ordinary forms in the exterior and interior surfaces, as at *a*, Figs. 1 and 2. At the bottom, on one side, just under the point where tuyere *b* is situated, for admitting the principal blast, there is a flat hearth, *c*, built out in the bosh of the furnace, and occupying a little more than one-third of the diameter of the interior at that point and coming out nearly to the head-stone. In building the furnace I also add a partition-wall, *d*, from a point above the bosh to the top, dividing the furnace and forming a chamber, *e*, about one-third the circumference of the interior. I also divide the other part of the interior into equal parts *g* by a partition, *f*, extending from the center of that first named, *d*, and at right angles thereto. The chamber *e*, I cover with a damper, *e'*, at the top, and the other two chambers, *g*, are covered by a single damper, *g'*.

In charging this furnace, I fill the compartment *e* with coal, and the two other compartments, *g*, are charged with ore and fuel mixed, the greatest part of charge being put in the compartment *g* next to the head-stone, which metal will rest on the boshes, and will not come down faster than it is melted by the blast, the principal part of which comes in through the body of coal in the chamber *e* from the blow-pipe *b*. The combustion being thereby rendered perfect before the blast reaches the metal, a great saving of fuel is effected and a better quality of iron produced. The damper over chamber *e* is kept down during the operation, and the gases are allowed to escape through the chambers on the opposite side of the partition *d* by raising the damper *g'*. The fuel in the chamber *e* rests on the hearth *c*, and cannot fall much below the blast. A small blast can also be thrown in on the opposite side of the furnace to the main blast, which is regulated at pleasure.

It will be obvious that the furnace can be divided into more or less chambers without altering the principle.

Having thus fully described my improvements, what I claim therein as my invention, and desire to secure by Letters Patent, is—

1. Dividing the interior of the furnace-stack into two or more compartments by partitions which descend nearly to the bosh of the furnace, the bosh being the same as that of the common blast-furnace, (except the elevated hearth,) the whole being constructed, arranged, and combined in the manner and for the purpose herein set forth.

2. The hearth *c*, raised above the common hearth and within the bosh, so that the melted metal will fall below the blast and the fuel be retained up to the blast, as set forth.

LEMAN BRADLEY.

Witnesses:

NATHANIEL E. BRADLEY,

J. J. GREENOUGH.