J. L. STURDY & J. A. MAY.

SMELTING-FURNACE.

No. 192,469. Patented June 26, 1877.

Fig. 1.

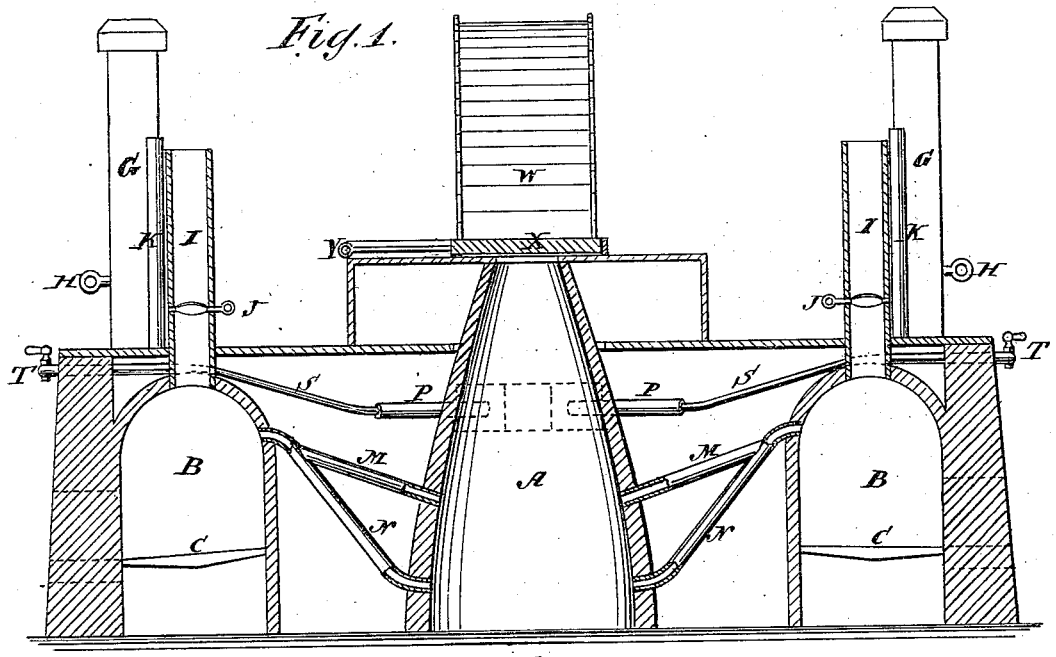
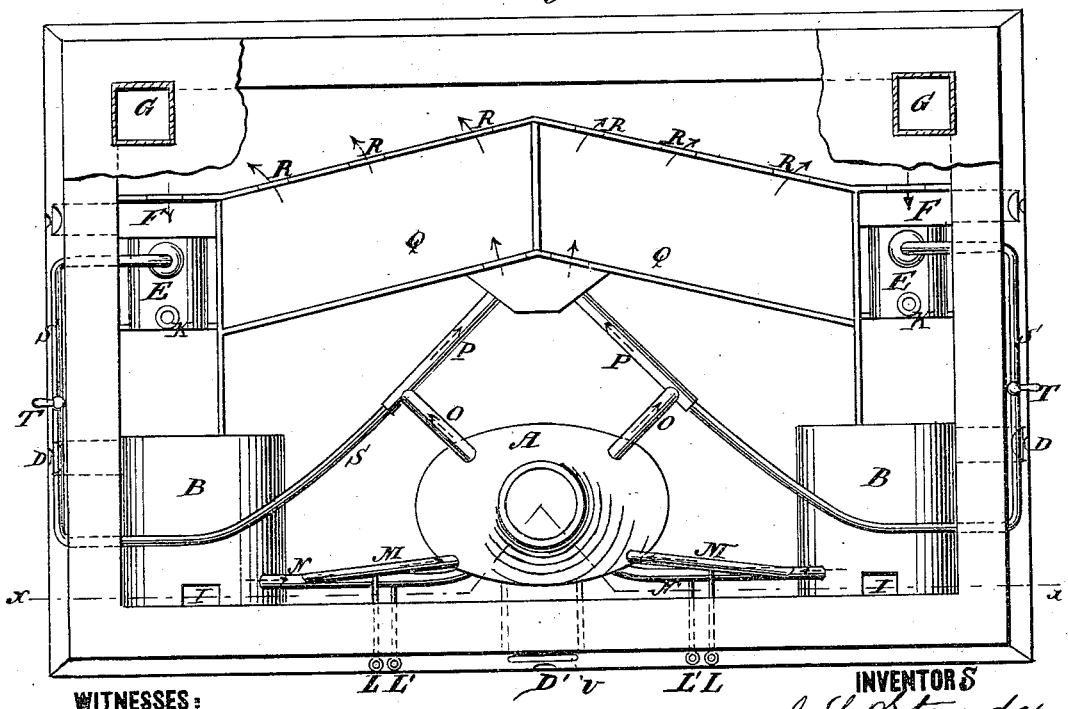


Fig. 2.



WITNESSES:

E. Wolff.

J. H. Scarborough

INVENTORS

J. L. Sturdy

J. A. May

BY

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN L. STURDY AND JOHN A. MAY, OF GODERICH, ONTARIO, CANADA.

IMPROVEMENT IN SMELTING-FURNACES.

Specification forming part of Letters Patent No. **192,469**, dated June 26, 1877; application filed December 4, 1876.

To all whom it may concern:

Be it known that we, JOHN LEITH STURDY and JOHN ALEXANDER MAY, of Goderich, in the county of Huron, Province of Ontario, and Dominion of Canada, have invented a new and Improved Smelting-Furnace, of which the following is a specification:

Figure 1 is an elevation in section on line *x x* in Fig. 2. Fig. 2 is a plan view, with the top partly removed.

Similar letters of reference indicate corresponding parts.

Our invention relates to the combination and arrangement of a cupola, two furnaces, and two steam-boilers, discharging jets of steam into the combustion-passages of the cupola for creating draft in a smelting-furnace, whereby efficiency in operation is secured.

Referring to the drawing, A is the cupola, on opposite sides of which are two furnaces, B, of which C are the grate-bars and D the doors. D′ is the outlet-passage for the smelted ore. E E are steam-boilers, having fire-boxes F, and G are the main stacks of the furnaces B, to be used when the smoke is very dense. The stacks G are provided with dampers H to close the same. I I are damping-chimneys, to be used in cooling the furnace or starting the fire in the same. K K are the smoke-stacks of the steam-furnaces, to be used when needed to create a draft, as hereinafter described. M M are flues leading from the furnaces B to the middle portion of the cupola A, and N N are flues leading from the furnace B to the lower part of the cupola. The upper flues M are provided with dampers L, by which the draft may be changed to pass through the lower flues N, and the lower flues are provided with dampers L′, by means of which the draft may be changed from the lower to the upper flues. O O are the outlet combustion-passages from the cupola, intersecting at an obtuse angle the passages P, which enter the dust-chambers Q, in which is arranged a perforated wall, R, forming one of the longitudinal walls of both divisions. The products of combustion pass from the chambers Q into the stack G.

To create a draft, a jet of steam is injected into the flues P through pipes S from the boilers, said pipes being provided with cocks T, to regulate the draft by increasing or diminishing the volume of the steam-jet.

V is a closed aperture whereby the progress and state of fusion may be viewed. D′ is the outlet for the fused metal.

The cupola is fed through the hopper W at its top, and the bottom of the said hopper is provided with a slab, X, of fire-brick to close the same after the cupola is supplied. Y is the handle of the said slab X, by which it may be removed and adjusted. A framed chute is provided down which the ore is cast into the hopper.

We are aware that two furnaces have been combined with an intermediate cupola, and that steam-pipes have been used for the purpose of increasing the draft in a furnace by discharging steam into the exit thereof. In our invention the cupola is provided with two divergent escape-pipes, and combined with steam blast-pipes, converging discharge-pipes, and a dust-chamber, whereby the furnace-gases are oppositely withdrawn by exhaust and discharged together into a common dust and combustion chamber.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with the cupola A, having the divergent escape-pipes O, of the steam-blast pipes S, converging and discharge pipes P, and dust-chamber Q, the several parts being relatively arranged as described, whereby the furnace-gases are oppositely withdrawn by exhaust and discharged together into a common dust and combustion chamber, as herein set forth.

2. The combination of the dust and combustion chambers Q, having the perforated wall R, with the cupola A and outlet-passages O P, as herein set forth.

JOHN LEITH STURDY.
JOHN ALEXANDER MAY.

Witnesses:
THEO. W. JOHNSTON,
HERBERT HILLIARD.