

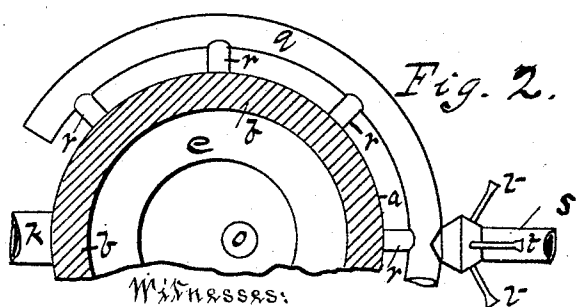
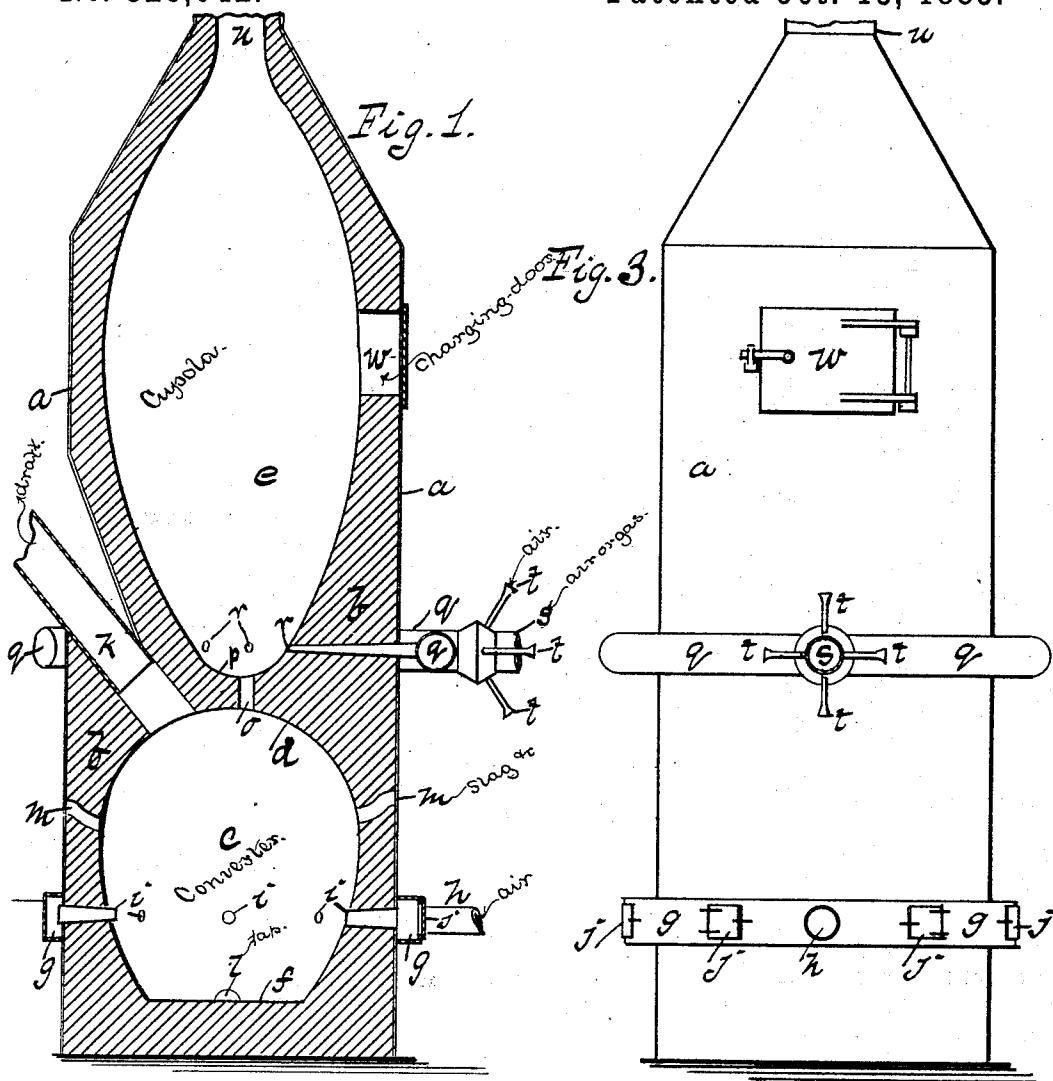
(No Model.)

M. LYSETT.

COMBINED CUPOLA FURNACE AND CONVERTER.

No. 328,042.

Patented Oct. 13, 1885.



WITNESSES:
M. E. Harrison.
H. M. Lewis

Inventor.
Martin Lysett
 P&V. *C. D. Lewis*
 atty.

UNITED STATES PATENT OFFICE.

MARTIN LYSETT, OF HOMESTEAD, PENNSYLVANIA.

COMBINED CUPOLA-FURNACE AND CONVERTER.

SPECIFICATION forming part of Letters Patent No. 328,042, dated October 13, 1885.

Application filed July 15, 1885. Serial No. 171,721. (No model.)

To all whom it may concern:

Be it known that I, MARTIN LYSETT, of Homestead, in the county of Allegheny and State of Pennsylvania, have invented certain
5 new and useful Improvements in Combined Cupola-Furnace and Converter for the Manufacture of Bessemer Steel; and I do hereby declare the following to be a full, clear, and exact description of the same, such as will enable
10 others skilled in the art to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in combined cupola and converter, the objects being to provide a cupola and converter
15 that will be strong and durable in structure and of comparative small initial cost, and by blowing the metal in the converter without exposure to the atmosphere, the saving of
20 labor and fuel; and with this end in view my invention consists in certain details of construction and combination of parts, as will be more fully explained, and pointed out in the claims.

25 In the accompanying drawings, Figure 1 is a sectional elevation of my improved cupola and converter combined, the one placed above the other, together with all its working parts. Fig. 2 is a sectional plan of the same some
30 distance above the tuyeres of the cupola. Fig. 3 is an external elevation.

To put my invention into practice and give it bodily form, I construct an outside cylindrical shell or jacket, *a*, lined with fire-brick
35 or other refractory material, *b*. A converting-vessel, *c*, is formed in the base of the stack, having an arched roof, *d*, the better to support the cupola *e* placed above. A short distance above the hearth *f* of the converter *c*
40 is placed a bustle-pipe, *g*, connected by a pipe, *h*, with a blowing-engine, and having a number of tuyeres, *i*, that may be removed through the openings *j* and replaced at will. From the top of the converter *c* an inclined
45 passage, *k*, leads to the outside, and provides means whereby the waste products may escape, and the condition of the metal in the converter *c* immediately known. A semicircular opening, *l*, through the wall of the converter *c*, is placed at the lowest point of the
50 hearth *f*, for tapping or running off the metal. The openings *m*, placed in the sides, may be used for various purposes in the art, and for slag to pass off.

A short distance above the converter *c* is 55 placed a cupola, *e*, having a circular opening, *o*, at the lowest point, and communicating with the converter *c* beneath. Near or at the center of the cupola *e* is placed a large door, *w*, used to charge the same with fuel and stock. 60 At any distance above the hearth *p* of the cupola *e* is placed an external bustle-pipe, *q*, with a number of tuyeres, *r*, communicating with the interior of the cupola *e*, and having a pipe, *s*, connected thereto leading from 65 a series of fans, or if desired, may be attached to a gas-main under great pressure, which assures the double purpose of a blast and fuel.

The enlarged portion of the pipe *s*, having a number of small bell-mouthed pipes, *t*, 70 connected thereto, regulates the supply of air to complete combustion. The upper part of the cupola *e* tapers to a narrow draft-stack, *u*, and is provided with a damper on the top.

The metal in the cupola *e*, when in a molten 75 condition, drops to the converter *c* beneath, and is converted to steel by the blast of air through the tuyeres *i*, and is tapped from the semi-circular opening *l*. The different changes in the metal can be seen by the waste products 80 passing out of the opening *k* at the top.

I am aware that a cupola has been mounted upon a converter in direct communication therewith, and that the same has been provided with bustle-pipes and tuyeres, and the 85 cupola with feed-door and draft-stack, and I do not claim such.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is— 90

The combination of a combined cupola, *e*, and converter *c*, in direct communication with each other, and placed the one above the other, and each having a bustle-pipe, one *g* and the other *q*, placed above the hearths, 95 and provided with a number of tuyeres, an opening, *l*, at the base of the converter *c* for tapping the same, and another, *k*, inclined toward the center at the top to allow the waste products means of escape, a door, *w*, 100 in the cupola *e* for charging the same, and draft-stack *u*, substantially as and for the purpose described.

MARTIN LYSETT.

Witnesses:

H. T. MORRIS,
M. E. HARRISON.