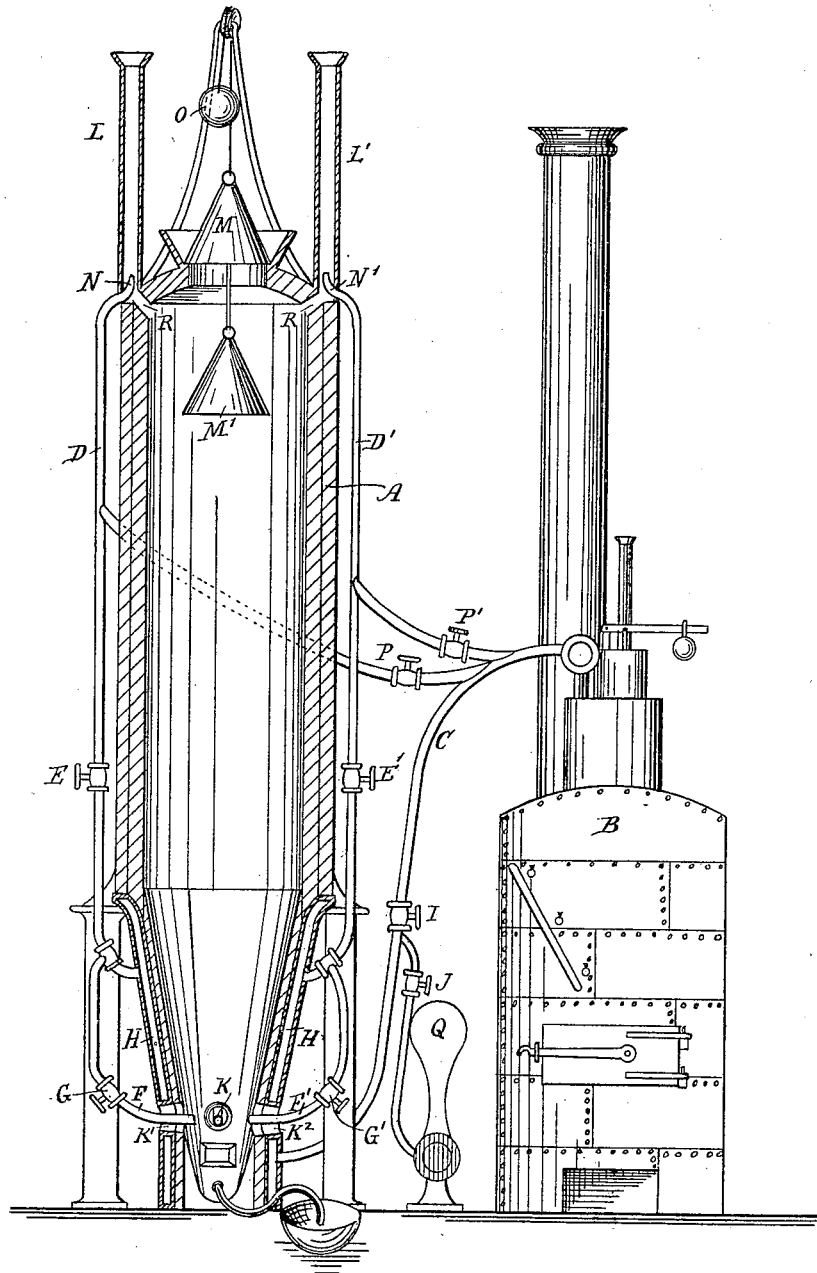


D. W. HENDRICKSON.

BLAST CUPOLA FURNACE.

No. 263,405.

Patented Aug. 29, 1882.



WITNESSES

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UNITED STATES PATENT OFFICE.

DAVID W. HENDRICKSON, OF RED BANK, N. J., ASSIGNOR TO THE ACME
BULLION FURNACE COMPANY, OF NEW YORK.

BLAST CUPOLA-FURNACE.

SPECIFICATION forming part of Letters Patent No. 263,405, dated August 29, 1882.

Application filed July 10, 1879.

To all whom it may concern:

Be it known that I, DAVID W. HENDRICKSON, of the city of Red Bank, county of Monmouth, State of New Jersey, have invented certain Improvements in Blast Cupola-Furnaces, of which the following is a specification.

This invention relates to certain improvements in steam-jet blast cupola-furnaces; and it consists in the peculiar construction, arrangement, and combination of parts, as more fully hereinafter described and claimed.

In the accompanying drawing, which represents the furnace in vertical section, A represents the furnace, which is made of wrought-iron in cylindrical shape, forming a cylinder entirely air-tight excepting at the points at which the necessary openings are made for the tuyeres for feeding and for discharging. The furnace may be lined with fire-brick in the ordinary manner.

B represents a steam-generator from which steam is conducted by a pipe, C, to the jacket H at the lower part of the furnace, where the steam is superheated by the heat from the furnace before passing through the pipes F F' to the furnace-tuyeres at K K' K², at which point air also enters the tuyere-openings for the purpose of insuring complete combustion in the furnace.

The flow of steam to the jacket is controlled by the cocks G G', which, when closed and the cocks E E' opened, causes the superheated steam to pass up the pipes D D' to the ejectors N N' in the flues L L' at the tunnel-head, thereby causing a partial vacuum in the furnace, so as to create a powerful draft through the openings R R'. Ordinarily the pipes D D' and the ejectors are supplied with steam direct from the boiler by pipes at P P', which are supplied with cocks, so that they may be closed when it is desired to use superheated steam from the jacket H. The pipe C also conveys steam to the pump P, which is used to supply the generator B with water. This pipe C is supplied with a cock, I, so that all the steam can be directed from the boiler to the pipes D D' and the ejectors N N', when desired.

In order to preserve the vacuum in the tunnel-head as perfect as possible when feeding, I use the bells M M', the upper of which ordinarily rests on a flanged seat, except when charging the furnace, when the lower one is drawn upward against the lower part of the opening by pulling the ball O, which serves to counterbalance the bells, to which it is connected by a chain running over a suitable pulley. The advantage in the use of these bells in connection with my furnace will readily be seen when it is considered that the successful working of the furnace depends mainly on the degree of vacuum maintained in the tunnel-head.

By the construction and arrangement of parts above described it will be seen that a furnace is produced which is perfectly air-tight from the tuyere-holes to the feed-hopper, owing to the use of the wrought-iron cylinder, while by the use of the jacket H and the pipes C F F', I am enabled to introduce superheated steam into the furnace without the use of an additional superheating-furnace, and also by means of the pipes D D' P P' and cocks I E E' G G' to supply the ejectors N N' with steam direct from the boiler or with superheated steam from the jacket at will.

I am aware that it is not new to provide furnaces with wrought-iron casings and with double feeding-bells, and that it is also old to introduce superheated steam into blast-furnaces; and therefore I do not broadly claim such devices, my invention being limited to the peculiar construction, arrangement, and combination of the furnace, jacket, pipes, cocks, feeding-bells, and ejectors, as described and shown.

What I claim is—

The combination of the wrought-iron furnace A, the jacket H, the pipes C, D D', P P', and F F', the cocks E E', G G', and I, the openings R, the ejectors N N', the flues L L', and the feeding-bells M M', substantially as described, and for the purposes specified.

D. W. HENDRICKSON.

Witnesses:

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