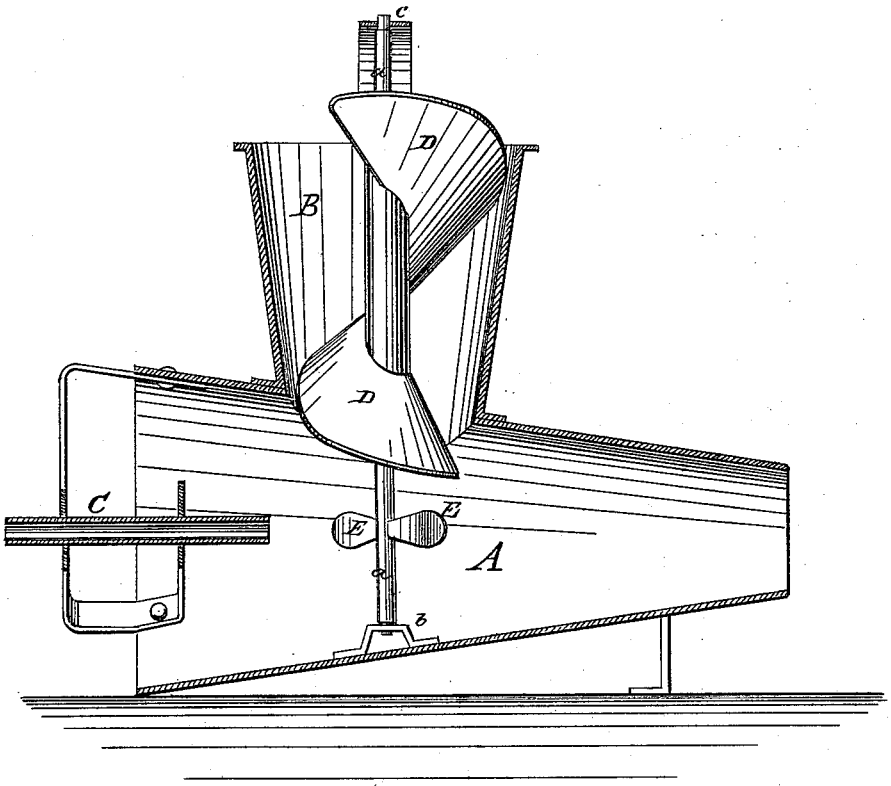
T. J. HICKEY.

STEAM-FURNACE BLOWERS.

No. 192,433. Patented June 26, 1877.



Witnesses:

Chas. Nida

H. C. Wattenberg

Inventor:

Thomas J. Hickey

per Church & Church

Atty.

UNITED STATES PATENT OFFICE.

THOMAS J. HICKEY, OF RONDOUT, NEW YORK.

IMPROVEMENT IN STEAM FURNACE-BLOWERS.

Specification forming part of Letters Patent No. **192,433**, dated June 26, 1877; application filed March 19, 1877.

To all whom it may concern:

Be it known that I, THOMAS J. HICKEY, of Rondout, in the county of Ulster and State of New York, have invented a new and Improved Steam-Jet for Furnaces; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making part of this specification.

This invention is in the nature of an improvement in steam-jets for furnaces; and the invention consists in a device for increasing the draft of furnaces, consisting of a horizontal shell into which is introduced a steam-pipe, and provided with a vertical air-cylinder and a shaft with vanes or wings within the air-cylinder and within the horizontal shell.

In the accompanying drawing is represented a longitudinal section of my improved steam-jet.

The application of steam-jets to furnaces for the purpose of increasing the draft of the furnace by creating a partial vacuum, which is supplied with fresh outer air, is well known.

By my invention not only are all the advantages of the ordinary steam-jet retained, but the efficacy of the contrivance is materially increased.

To that end I construct my steam-jet with a conical shell, A, and with a vertical cylinder, B, surrounding an opening in the upper side of the shell A. The shell A being conical, a steam-pipe, C, is introduced in its outer or larger end, as in steam-jets of ordinary construction, and through the vertical cylinder B is inserted a shaft, *a*, which passes through this cylinder and transversely through the shell A to a seat or bearing, *b*, fixed to the inner lower surface of the shell A, on which the shaft *a* rests, the upper end of the shaft passing through a suitable bearing, *c*, fixed at or near the top of the vertical cylinder B. To the shaft *a* is affixed a helical vane, D, this vane lying within the vertical cylinder B, and to the lower part of the shaft, or that part of it which is transverse to the axis of the shell A, are fixed other vanes or wings E, in the form of the blades of a propeller.

My steam-jet, constructed as above described, is operated by inserting the smaller end of the shell A in any desirable manner beneath the grate-bars of the furnace. A jet of steam is then introduced through the pipe C, which, passing rapidly through the shell A, produces a vacuum or partial vacuum, which is at once filled by the external air rushing through the shell A with considerable force beneath the grate-bars, and facilitating combustion by increased supply of oxygen. This, as before stated, is the construction and operation of the ordinary steam-jet.

Although the steam-jet will create a vacuum in the large end of the shell A, such a vacuum, however, will not be created throughout the entire length of the shell, but the air at its smaller end will be to some extent under pressure. Now, as the steam impinges against the vanes E the shaft to which the helical vane D is affixed will be rapidly rotated, and by the rotation of the helical vane draws the air through the vertical cylinder B, and thereby give an increased supply within the shell A to be forced into the furnace by the steam-jet.

The construction and form of the vanes or wings may be modified and varied from those shown in the drawings accompanying this application without materially affecting the result produced.

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

In a device for increasing the draft of furnaces constructed with a horizontal shell and vertical cylinder, the combination of a helical vane within the vertical cylinder, and vanes within the horizontal shell, arranged to revolve by the force of the steam-jet, and to permit the helical vane to draw the external air through the vertical cylinder into the horizontal shell and to the furnace, substantially as and for the purpose described.

THOMAS J. HICKEY.

Witnesses:
ADOLPH ISRAEL,
GEO. F. STEPHAN.