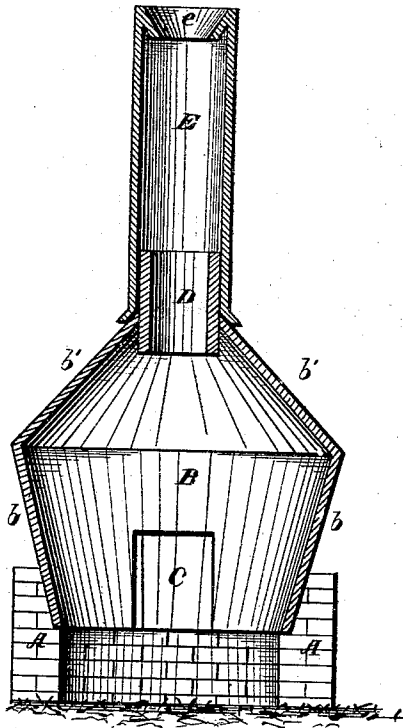


T. J. TAYLOR.

DUST-TRAPS FOR SMELTING-FURNACES.

No. 178,254.

Patented June 6, 1876.



WITNESSES

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# UNITED STATES PATENT OFFICE

THOMAS JEFFERSON TAYLOR, OF EUREKA, NEVADA.

## IMPROVEMENT IN DUST-TRAPS FOR SMELTING-FURNACES.

Specification forming part of Letters Patent No. 178,254, dated June 6, 1876; application filed March 29, 1876.

*To all whom it may concern:*

Be it known that I, THOMAS JEFFERSON TAYLOR, of Eureka, in the county of Eureka and State of Nevada, have invented certain new and useful Improvements in Smoke-Stacks for Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to smoke-stacks of smelting or other furnaces; and consists in an angular chamber constructed with deflecting sides, interposed between the furnace and the exit-pipe, in combination with such exit-pipe extending slightly down into said chamber, whereby waste products of the furnace are arrested and again subjected to its action.

The drawing represents a vertical cross-section of my improvement as attached to any furnace, in which A A are the walls of the furnace, in which seats the arresting-chamber B of the hexagonal form, and having its lower sides *b b* inclining upward and outward at any suitable angular degree till they meet the upper sides *b' b'* projecting upward and inward in a degree approximately greater than that of said lower sides, and forming therewith an obtuse angle, such as may be desirable.

C is the feed-hole, through which the ore to be subjected to the smelting treatment is introduced, and is situated preferably in the central lower portion of the chamber B.

The opening of the furnace into this chamber may be of any desired size, as is thought suitable, while the upper extremities of the sides *b' b'* engage with the short exit-pipe D in such a connection as to firmly support it in position. This exit-pipe leads down into the chamber a slight distance, approximately eighteen inches, more or less, sufficient to form on either side of it, as thus introduced, an acute angle with the upper sides of such chamber. It runs upward from the collar so as to give capable support to any final pipe, E, which may be attached thereto, and which furnishes draft. This last-named pipe may slide within the former pipe D, or by any suitable mechanism find engagement therewith.

The operation of the foregoing is at once apparent. Any furnace being equipped with such a smoke-stack, and in blast, the products of combustion, both by reason of their comparative lightness and the ascending draft, are carried upward from out of the furnace, and have a strong tendency to escape. So, also, much of the more volatile substance, dust, &c., which is not as yet consumed, or only partially under the action of the flame, but valuable in its composition, as containing metal which is not treated, is thus hurried from out of the smelting process along with this current. In this way much subject-matter for the action of the furnace is taken therefrom and prematurely drafted into the smoke-stack.

My object is to obviate the loss of metallic material thus caused, and to provide a means whereby all such dust and partially consumed matter may be arrested in their transit and returned anew to the process of the furnace.

It will be observed that, by the intervention of my improvement, all such otherwise waste products are in their flight introduced into an enlarged chamber where the draft is of necessity less direct, and, following such conformation, the current becomes diffused and indefinite in its progress.

The gases, spreading out laterally and horizontally as they flow up either lower side *b b*, come in contact with the converging upper walls *b' b'*, and thereby suffer an opposition, resistance, and deflection, which react strongly upon all the dust, &c., in their current; so much so that the latter's gravity overcomes the upward tendency, and all such matter falls back and is saved from final escape and waste.

The construction of the exit-pipe D, extending down into the chamber for but a slight distance, has this decided advantage—the products of combustion have to traverse a much greater space than if said pipe were extended far down. Also, dead air accumulates in the angles on either side of the pipe in its conjunction with the upper deflecting walls of the chamber, so that as the draft arises from out of the furnace it strikes against the same, and is repelled as though by a foreign body. The volatile products are thus obliged to take the only open course and escape through the smoke-pipe.

The smoke-stack E is provided at its mouth with an annular deflecting piece, *e*, which serves again to interrupt the ascending particles and cast them down a second time; so that the purpose of my arresting-chamber is supplemented by such constructed smoke-stack *D. e.*

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

The combination of the arresting-chamber

B, short smoke-pipe D, and final-exit pipe E, the latter provided with the arresting-flange *e*, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of March, 1876.

THOMAS J. TAYLOR.

Witnesses:

A. D. ROCK,

F. H. HARMON.