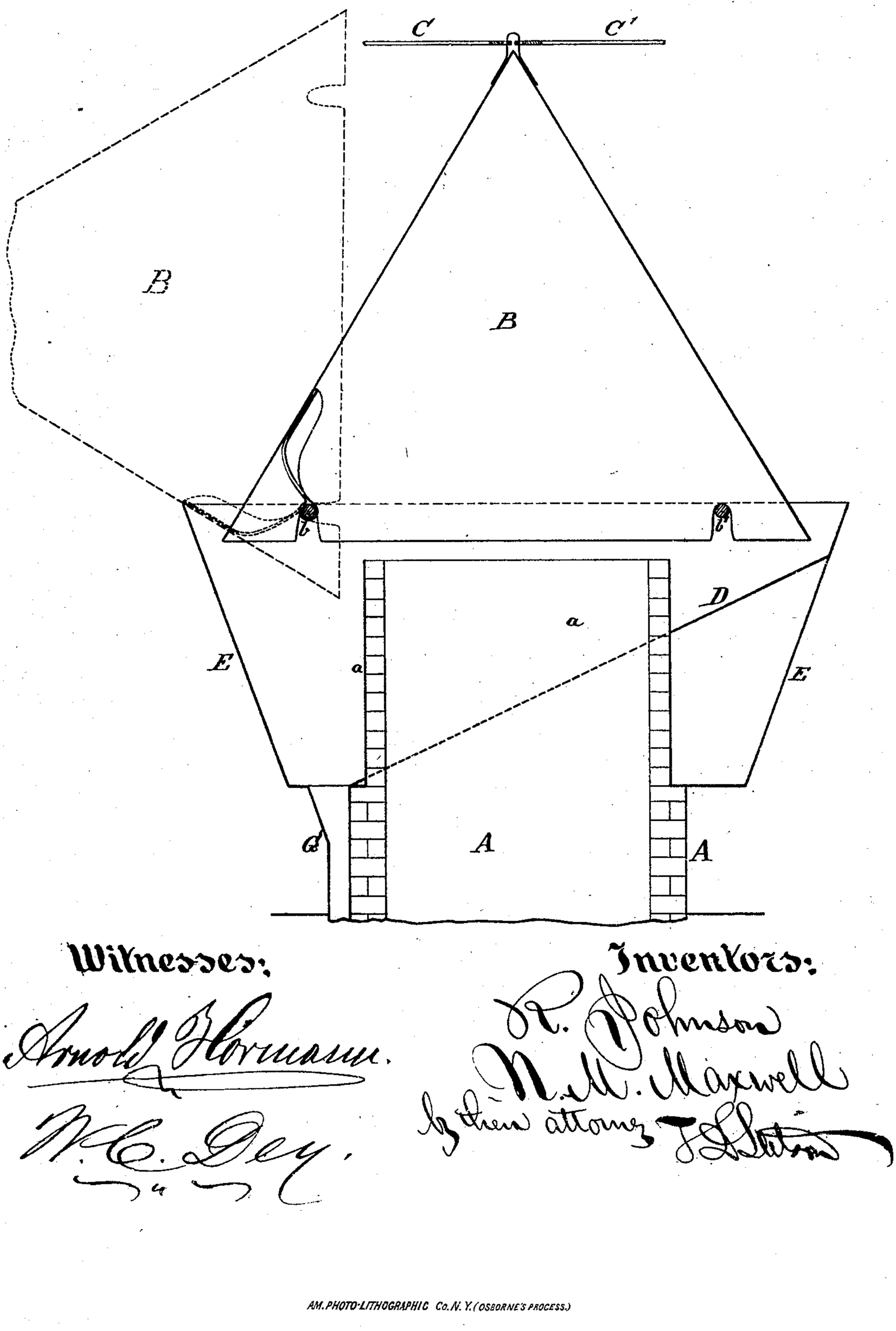
R. JOHNSON & N. M. MAXWELL.

Furnaces for Smelting Lead and other Ores.

No. 149,131. Patented March 31, 1874.



Witnesses:

Arnold Hornaman.

W. C. Dey.

Inventors:

R. Johnson

N. M. Maxwell

by their attorneys T. L. Watson

UNITED STATES PATENT OFFICE.

ROBERT JOHNSON AND NIELS M. MAXWELL, OF SALT LAKE CITY, UTAH TERRITORY.

IMPROVEMENT IN FURNACES FOR SMELTING LEAD AND OTHER ORES.

Specification forming part of Letters Patent No. **149,131**, dated March 31, 1874; application filed December 2, 1873.

To all whom it may concern:

Be it known that we, R. JOHNSON and N. M. MAXWELL, of Salt Lake City, in the Territory of Utah, have invented certain Improvements relating to Furnaces, of which the following is a specification:

The invention is intended more particularly for smelting ores of lead and other metals, but may be used with advantage in any case where fine dust is liable to be blown out from the furnace by the mechanical action of the blast, whether in the form of fine particles, as dust, or of flakes or scales, whether of the ore or metal, or of the fuel.

The invention provides for recovering much of the fine material without serious expense or inconvenience, and without materially retarding the draft or otherwise embarrassing the operations of the furnace.

The following is a description of what we consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification, and is a central vertical section through the apparatus.

Referring to the letters of reference, A is the upper portion of the furnace proper, and *a* an extension of the same upward, which may be done with a casing of stout rolled iron lined with brick. B is a conical cap, hinged at *b* to a stout cross-shaft, and capable of being turned thereon when pulled by the rod C. The dotted lines represent this cap in an open or removed position, which it may be made to assume when desired. D is an inclined or diagonal plate, of cast-iron or other suitable material, mounted in the position represented, around the casing *a*, and within the exterior shell E. G is a spout leading downward from the lower edge of the diagonal plate D, and conducting the fine dust into a suitable bin, or into a pile on the feeding-floor, from which it may be removed to be wetted and again returned to the furnace, as required. The casing *a* being bricked up inside, the action of the fire in blowing off cannot affect the iron, and the dome-cap being easily removed to allow the flame to escape, it cannot be injured by heat unless through culpable carelessness. C′ is a rod in a convenient position to allow the replacing of the cap B, after it has been pulled on one side. It may be supported in the proper position for use over the casing *a* by means of the shaft *b* and the supporting-bar *b′*.

If it is not practicable to give a sufficient inclination to the plate D when it extends quite across the top of the furnace, as shown, we can use two plates, D, inclined in opposite directions like the sides of the letter A, and thus conduct the dust, flakes, &c., to two spouts, G, leading down on opposite sides of the furnace.

We claim as our invention—

The oblique plate D, cases *a* E, and removable cap B, combined and arranged to serve, relatively to the furnace A, as and for the purposes herein specified.

In testimony whereof we have hereunto set our hands this 10th day of October, 1873, in the presence of two subscribing witnesses.

ROBERT JOHNSON.
NIELS M. MAXWELL.

Witnesses:
F. H. MEYER,
JNO. B. WALKER.