

CHARLES J. HARRIS.

Improvement in Return-Flue Boiler-Furnaces.

No. 114,437.

Patented May 2, 1871.

Fig. 1.

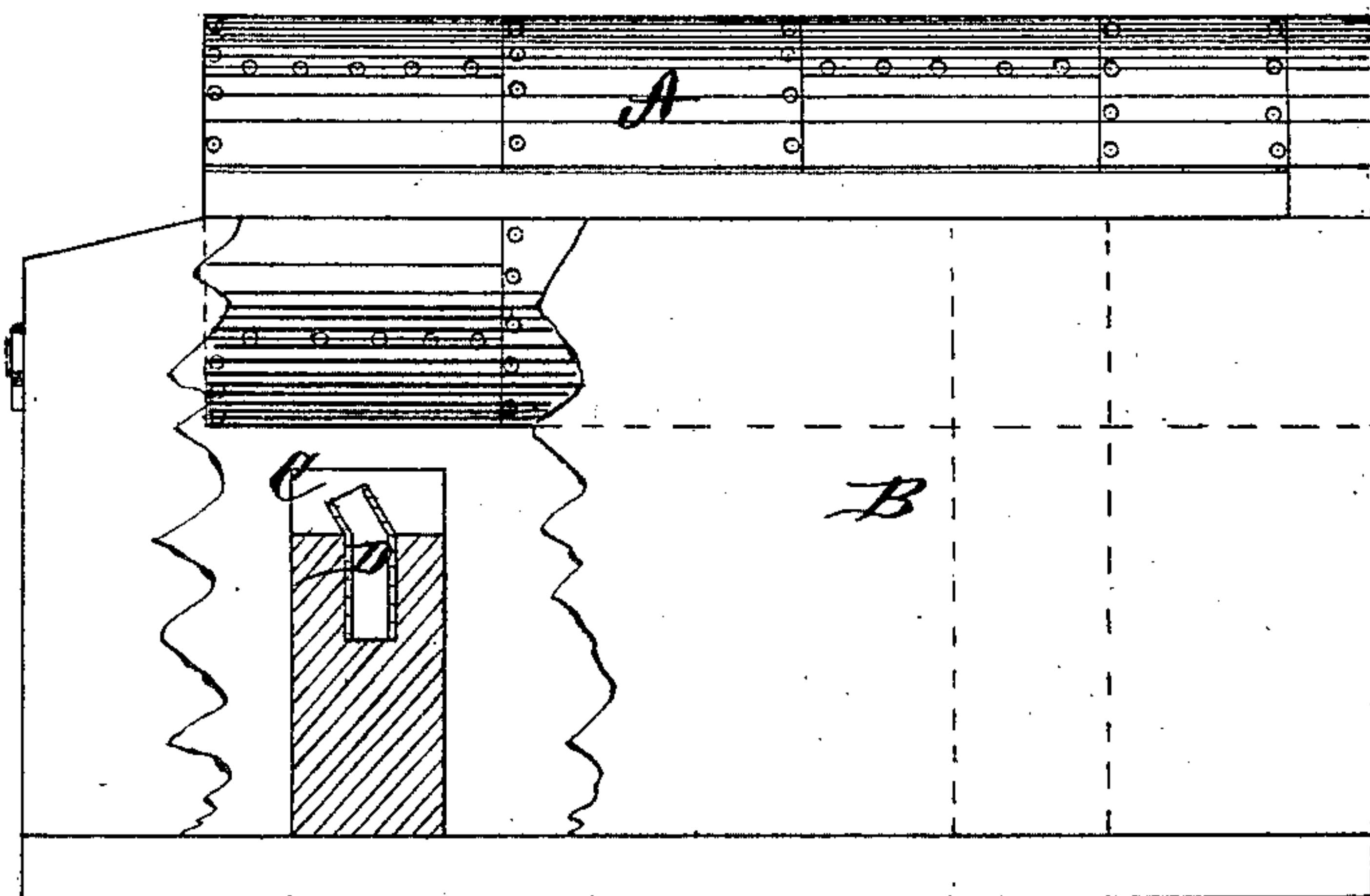
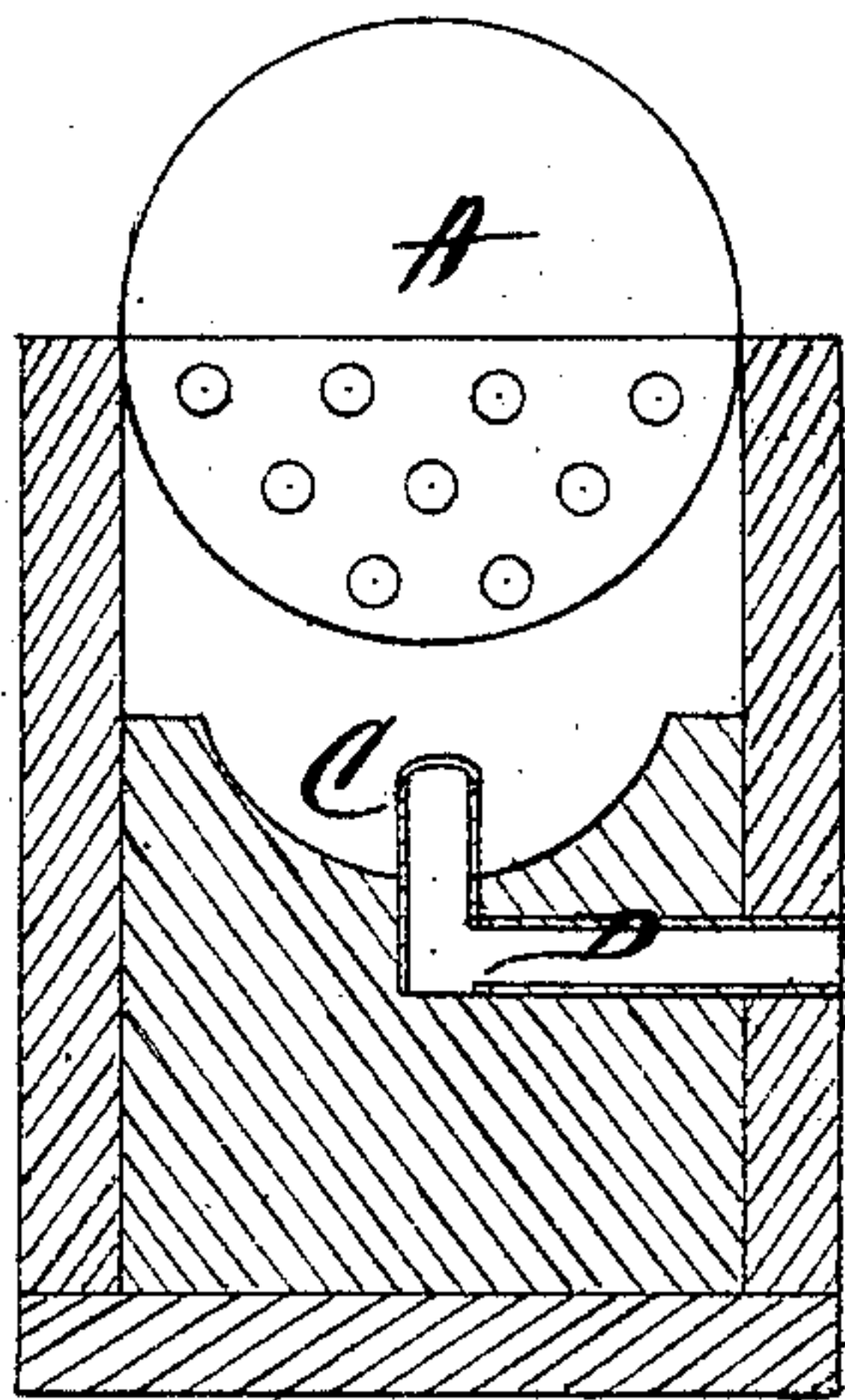


Fig. 2.



Witnesses.

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Inventor.

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# United States Patent Office.

CHARLES J. HARRIS, OF BLOOMINGTON, ILLINOIS.

Letters Patent No. 114,437, dated May 2, 1871.

## IMPROVEMENT IN RETURN-FLUE BOILER-FURNACES.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, CHARLES J. HARRIS, of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in the Mode of Heating Steam-Boilers; and do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in the construction of stationary steam-boilers so as to use the exhaust steam for the purpose of heating the boiler and keeping the flues clean and assist in creating a draught, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing which forms a part of this specification, and in which—

Figure 1 is a side elevation, part in section, and

Figure 2 is a transverse vertical section.

A represents the boiler;

B, the fire-box; and

C, the smoke-flue.

D is a tube which enters the smoke-flue under the boiler, near the point where the smoke and heat from

the fire-box enters the tubes in a tubular boiler, or the flues in a two-flued boiler.

Instead of allowing the exhaust steam to escape in the air, as is common, it is conducted through the tube D into the smoke-flue; whence, with the smoke and heat from the fire, it passes through the tubes or flues, through the smoke-stack, and into the open air.

In passing the exhaust steam out in this manner it assists in heating the boiler and creating a draught, thus causing a saving in fuel, and it also keeps the tubes and flues of the boiler clean.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

The arrangement, in a horizontal return-flue boiler, of an exhaust steam-pipe at or near the rear end of said boiler to deliver a jet of exhaust steam for the purpose of cleaning the rear end and flues of same, and assisting in creating a draught for the same, substantially as set forth.

In witness whereof I have hereunto set my hand this 21st day of February, 1871.

CHARLES J. HARRIS.

Witnesses:

THOS. SLADE,

W. M. HATCH.