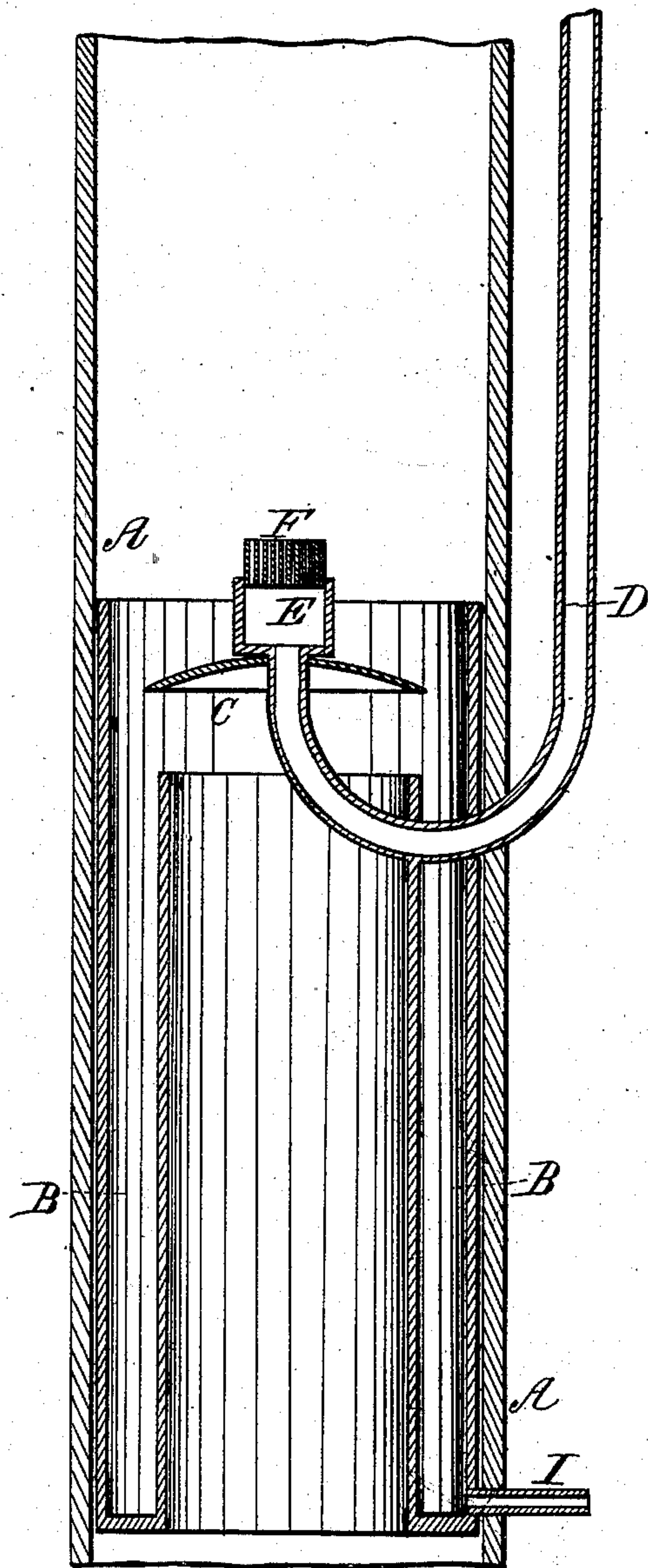


H. CHASE.

Arresting Carbon in Chimneys.

No. 15,645.

Patented Sept. 2, 1856.



UNITED STATES PATENT OFFICE.

HEZEKIAH CHASE, OF LYNN, MASSACHUSETTS.

APPARATUS FOR ARRESTING CARBON IN CHIMNEYS.

Specification of Letters Patent No. 15,645, dated September 2, 1856.

To all whom it may concern:

Be it known that I, HEZEKIAH CHASE, of Lynn, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Arresting Carbon in a Chimney or Separating it from Volatile Products of Combustion Passing Through Said Chimney; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawing, letters, figures, and references thereof.

Said drawing exhibits a vertical sectional view of a portion of a chimney or flue having my apparatus applied thereto.

In such drawing A, denotes the chimney within which is placed an annular cylindric vessel or water receiver B, B, which water receiver is made to surround a cylindric or tubular smoke passage or flue, constituting the lower part of the chimney. The smoke from the fireplace is led into the bottom of this and made to pass up through it and impinge against a concave surface or meniscus or dome plate, C, placed on and above it and within the upper part of the chimney.

A pipe D, from a water tank or cistern or from a force pump leads through the chimney and supports the meniscus or dome deflector, and has on its top and communicates with a cylindrical box, E, in the top of which a series of jet pipes are arranged as seen at, F, and so as to throw water from said box up into the chimney in numerous jets or streams, and so that some if not all of said jets shall fall down on the top of the deflector plate or dome, where uniting together they are made to pass in a sheet or nearly in a sheet over its edge, and down into the receiving cistern or reservoir.

By making the water to pass from the top of the deflector plate in a very thin sheet, the smoke and volatile products of combustion striking against the underside of this deflector plate are compelled to pierce and pass through this sheet of water before they can enter that part of the chimney which is above the deflector plate. On entering such part of the chimney, these volatile products of combustion will be subject to contact with the numerous jets of water playing therein, and a large portion of all of that carbon remaining in them and not abstracted by the circular sheet of water passing over the edge of the disk, will be abstracted by the jets

and carried down into the reservoir in the lower part of the chimney.

The meniscus disk or deflector performs two functions, the principal one being that of producing a sheet of water from its edge as above specified. Second, that of deflecting the smoke into the sheet close to the edge of the plate, where it is formed, for after the sheet has passed down a short distance from the edge it is liable to become more or less broken up into streams, and this liability to be so broken up will be facilitated by the action of the current of smoke against the dripping water. Most of the carbon and heavier matters in the volatile products of combustion will be separated from the lighter matters thereof, by such means and will be carried down into the water reservoir. The surplus water of such reservoir and carbon being allowed to pass off through the pipe I, leading out of the reservoir.

By the above apparatus applied to a chimney of various kinds of furnaces, I am enabled not only to effect a saving of carbon, which may be employed for various useful purposes in the arts, but to deprive the volatile products of combustion of that which often proves a great nuisance to cities, towns, and other places; for it is well known, where large furnaces are used for manufacturing purposes, the carbon of their smoke and volatile products of combustion being received into the surrounding atmosphere is not only disagreeable, but injurious to persons or surrounding objects.

I do not claim the introduction of jets of water into a chimney for the purpose of arresting sparks or carbonaceous matter, as I am aware that such has been accomplished before on the chimneys of locomotive engines.

My invention is more properly an improvement on that, for which Letters Patent were granted June 19th, 1847, to James A. Cutting and George Butterfield, of Boston, in the State of Massachusetts.

The most essential feature of my improvement and that which differs from anything in the apparatus of Cutting and Butterfield, being that part of my device whose office is to produce a thin sheet of water, close to and surrounding the edge of a meniscus deflector placed over the mouth of the discharge flue within the chimney. Nothing of this kind is found in the invention of Cut-

ting and Butterfield, wherein streams of water only are employed.

In my improved smoke consuming apparatus, I use streams and a deflector, as do
5 Cutting and Butterfield, but in addition to the principle common to both, I so arrange the jet pipes, that the jets of water may fall on the top of the deflector, and be discharged over its edge in a thin sheet.

10 What therefore I claim as my improvement is—

Arranging the jet pipes, the deflector, and discharge flue, so that the water may first fall on the top of the deflector, and be
15 discharged in a thin sheet over its edge, and around the mouth of the discharge flue as set forth, and this whether the streams fall directly downward from the jet pipes

and upon the deflector, or whether they may be first discharged upward, and next be 20 caused to fall back and upon the top of the deflector, and so that such streams may serve not only to arrest carbonaceous matters which may escape or pass by and rise above the deflector, but to return them, and 25 cause them to be thrown into the receiver, B, after they have fallen with the streams upon the said deflector.

In testimony whereof I have hereunto set my signature this seventh day of August, 30 A. D. 1856.

H. CHASE.

Witnesses:

R. H. EDDY,
ARTHUR NEILL.