

(No Model.)

J. T. SANDS.
SMOKE BLEACHING CAP FOR CHIMNEYS.

No. 565,036.

Patented Aug. 4, 1896.

Fig. 1.

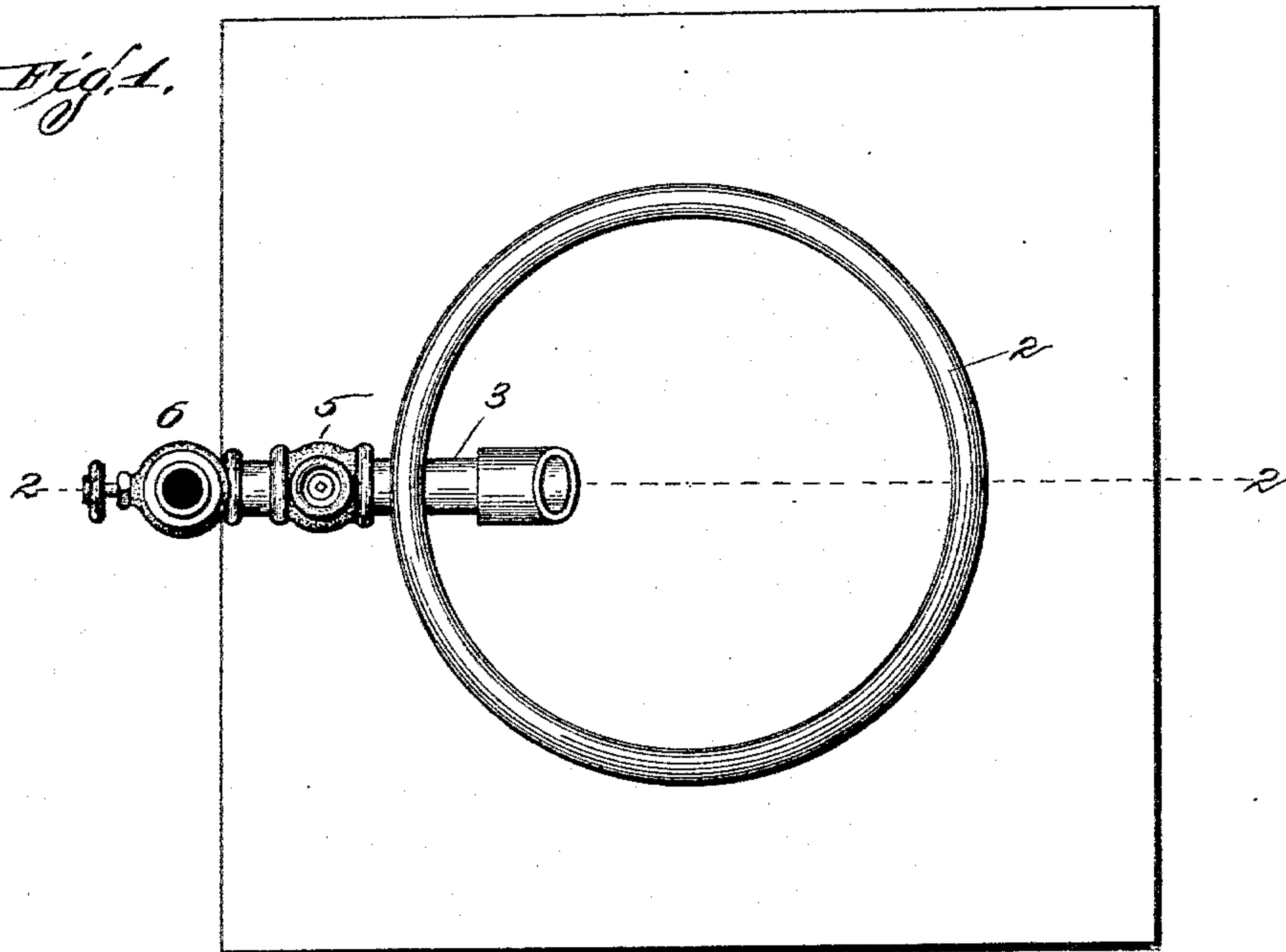


Fig. 2.

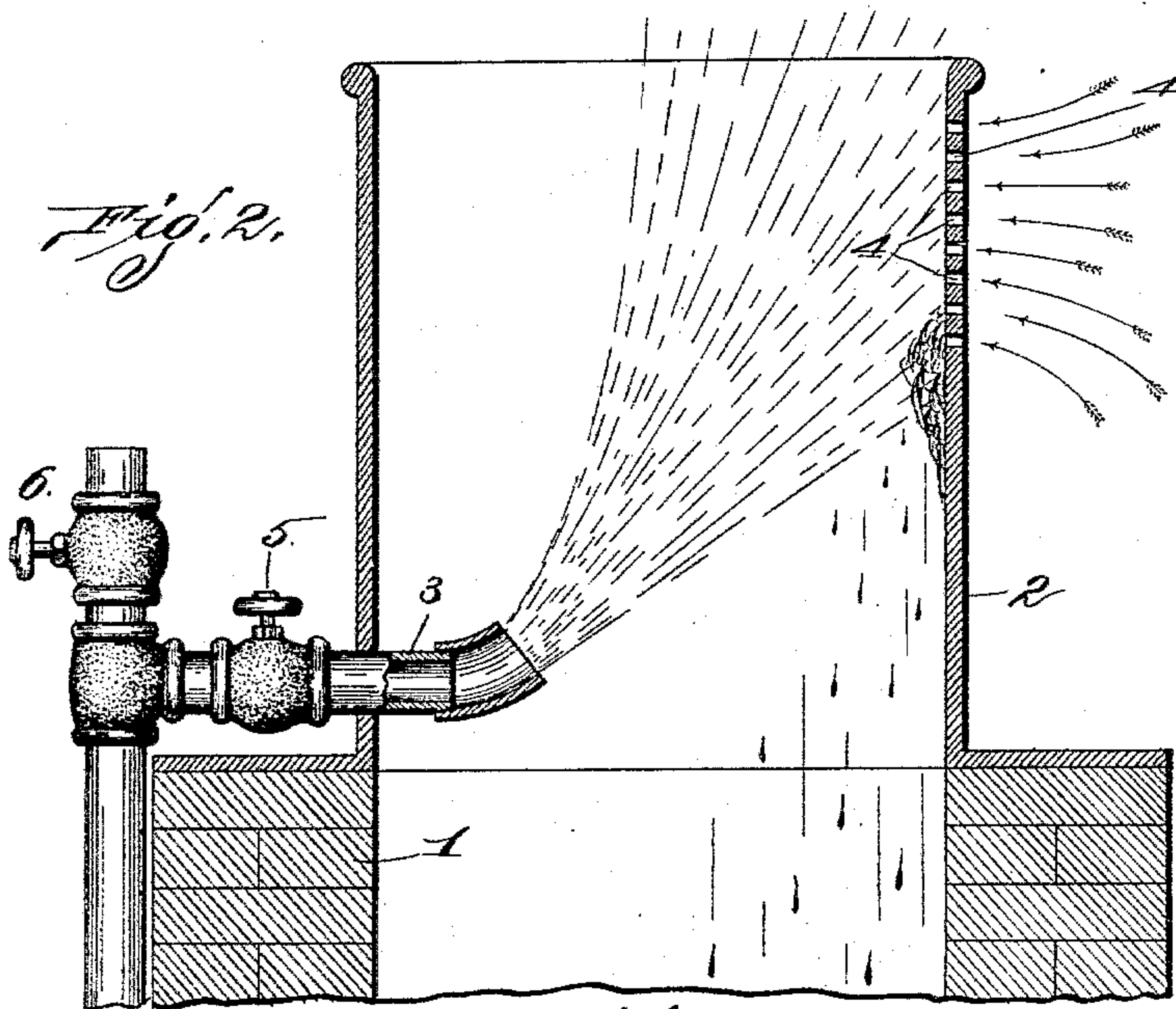
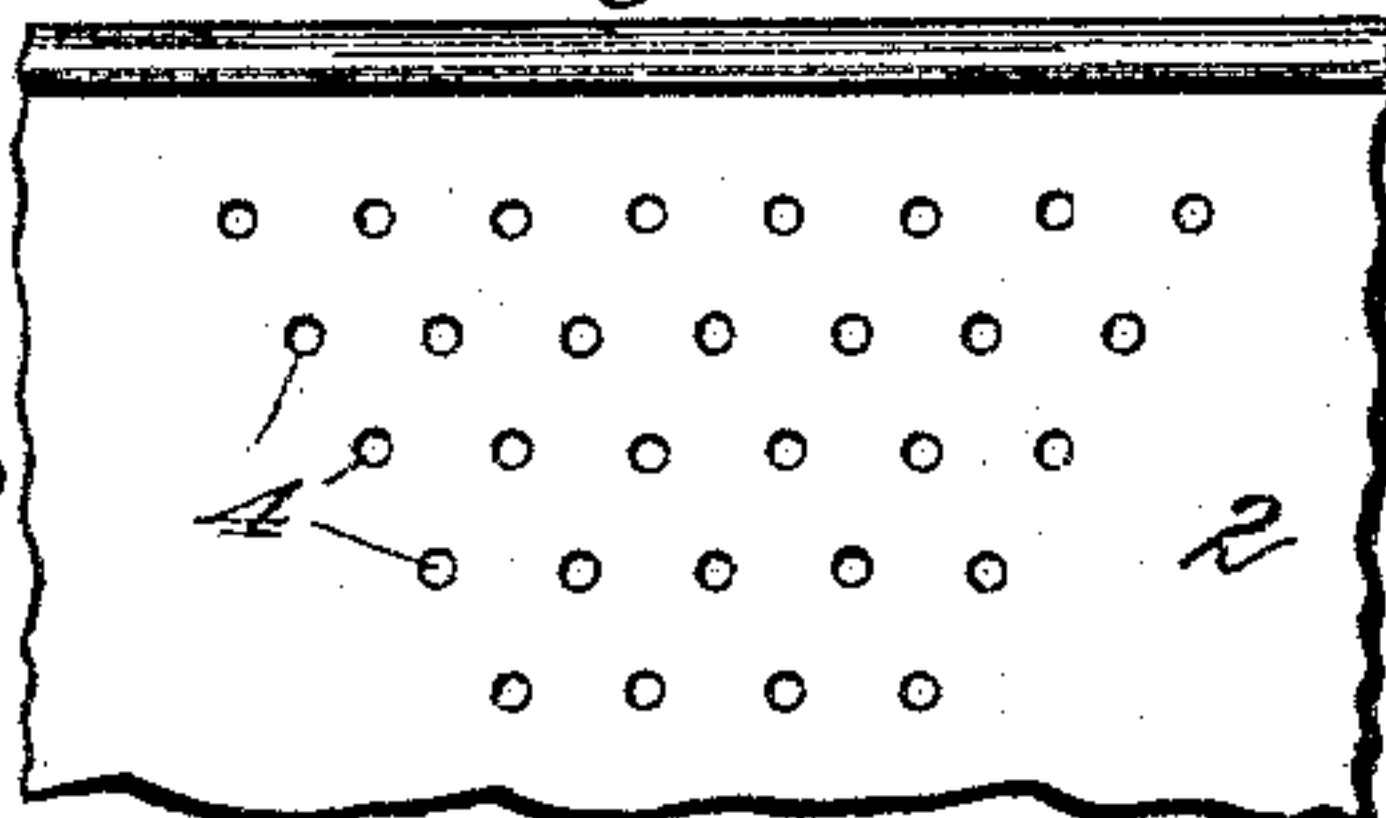


Fig. 3.



Attest
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UNITED STATES PATENT OFFICE.

JAMES T. SANDS, OF ST. LOUIS, MISSOURI.

SMOKE-BLEACHING CAP FOR CHIMNEYS.

SPECIFICATION forming part of Letters Patent No. 565,036, dated August 4, 1896.

Application filed March 10, 1896. Serial No. 582,674. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. SANDS, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Smoke-Bleaching Caps for Chimneys, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved smoke-bleaching cap for chimneys; and it consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

My present invention is an improvement on and supplementary to my prior inventions relating to smoke-bleaching and covered by United States Patent No. 526,542, dated September 25, 1894, and by a pending application filed October 22, 1894, Serial No. 526,551.

In the drawings, Figure 1 is a top plan view of my improved smoke-bleaching cap for chimneys. Fig. 2 is a vertical sectional view on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of a piece of the cap, showing the perforations.

Referring by numerals to the drawings, 1 is the masonry of the chimney.

2 is my improved smoke-bleaching cap, and 3 is a steam-pipe leading through the wall of the cap 2. In the upper wall of the cap opposite the steam-injector is a series of apertures 4.

The cap 2 is designed to be located on top of the chimney for the purpose of lengthening the flue of the chimney.

The cap may be made of any suitable material, such as metal, wood, earthenware, or wire.

The extent to which the cap 2 should be ventilated depends largely upon the conditions under which it is to be used. The nearer the cap is to the furnace and the larger the volume of smoke the larger the amount of ventilation required.

At present I prefer a cap, either round or square, substantially the size of the chimney-flue and about four feet high on ordinary smoke-stacks, with the steam-injector located near the lower edge of one side and with the perforations located near the upper edge of the opposite side, as shown in Fig. 2. All that is absolutely necessary is that the steam be

injected through the wall of the cap and that air be forced through apertures in the wall of the cap, but I prefer to place an elbow on the steam-pipe inside of the wall of the cap and thus turn the steam upwardly at an angle of about forty-five degrees and directly toward the air-holes in the upper part of the opposite wall, as shown in Fig. 2.

In the practical operation of my improved smoke-bleaching cap for chimneys, in the form shown, the steam is injected through the pipe 3 in the lower edge of one side of the cap. An elbow is located on the inner end of the pipe 3, just inside of the wall, and directs the steam toward the apertures 4. The coldness of the air surrounding the cap and the draft into the cap through the apertures 4 reduces a part of the steam to the dew-point, and in condensing the moisture is precipitated upon the particles of carbon, and said carbon is precipitated partly to the bottom of the chimney and partly against the wall of the cap surrounding and near the apertures 4 and eventually goes to the bottom of the chimney. This process of bleaching smoke is more fully set up in my former applications herein referred to.

In the pipe 3 outside of the wall of the cap 2 is a cut-off valve 5 for regulating the flow of steam. Below the valve 5 in the pipe 3 is a vent controlled by the valve 6. When the steam-pressure in the pipe becomes too great, thus injecting too much steam into the cap, the valve 5 is partly closed and the valve 6 opened to allow the surplus steam to escape into the open air.

In practical operation the amount of steam required to produce the best results depends upon the temperature and amount of air admitted through the apertures 4 and also upon the temperature of the smoke. If the temperature inside of the cap 2 is too high, the required condensation and precipitation will not take place and the result will be unsatisfactory.

I claim—

1. A device for bleaching smoke, consisting of a cap mounted upon top of the chimney, the opening in said cap being in alinement with the opening in the chimney and there being a series of air-passages in one side of said cap and near the upper end thereof, and

a steam-pipe leading from the source of supply up the outside of the chimney and into the lower end of said cap at the side opposite said air-passages and arranged to discharge steam toward said air-passages, substantially as specified.

2. A smoke-bleaching attachment for chimneys, comprising the cap 2, the steam-pipe 3 leading through the wall of said cap near its lower end, the air-passages 4 near the upper end of said cap and at the opposite side from

the pipe 3, the cut-off valve 5 in said pipe 3 and outside of said cap 2, and the valve 6 in the vent projecting upwardly from said pipe 3, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES T. SANDS.

Witnesses:

E. E. LONGAN,

MAUD GRIFFIN.