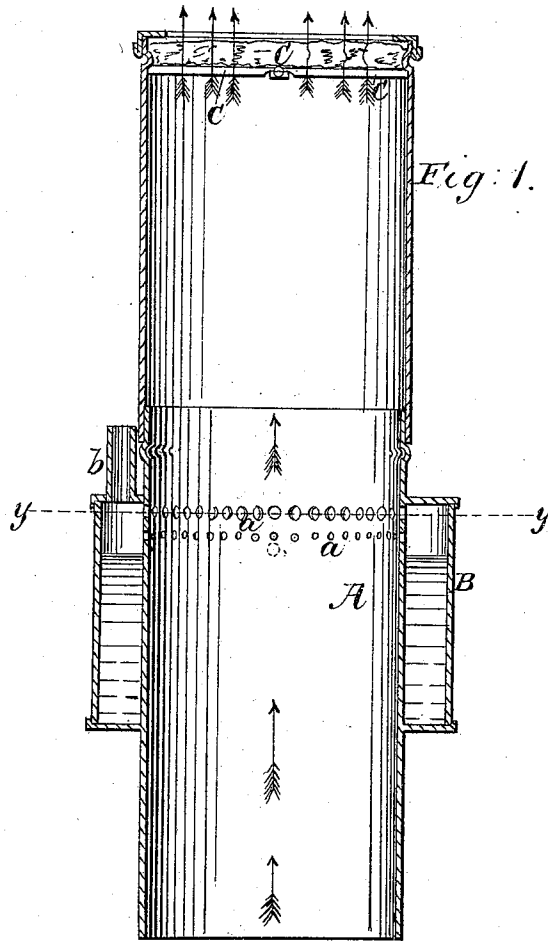


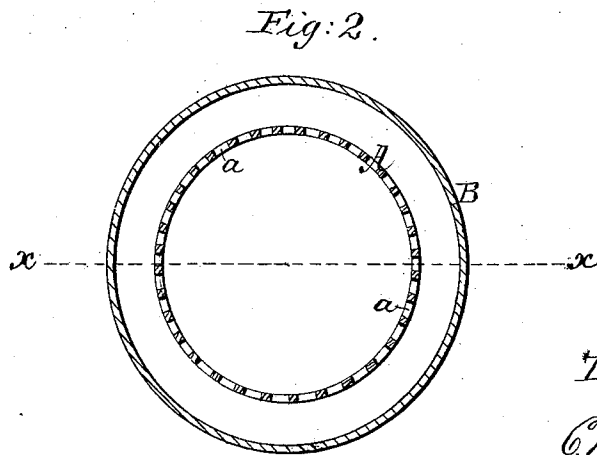
C. B. SAWYER.  
Hot Air Furnace.

No. 34 699.

Patented March 18, 1862.



*Fig: 1.*



*Fig: 2.*

Witnesses.  
James Caird  
R. G. Hawley

Inventor  
C. B. Sawyer

# UNITED STATES PATENT OFFICE.

CHARLES B. SAWYER, OF FITCHBURG, MASSACHUSETTS.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 34,699, dated March 18, 1862.

*To all whom it may concern:*

Be it known that I, CHARLES B. SAWYER, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Moistening and Purifying Air Heated by Hot-Air Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my invention, taken in the line *xx*, Fig. 2; Fig. 2 a transverse section of the same, taken in the line *yy*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in applying a water-chamber either to the hot-air pipe or cold-air induction-pipe of an air-heating furnace in such a manner that the air, when dry or devoid of a sufficiency of water, will be allowed to take up or imbibe moisture, and the water-chamber at the same time not serve in the least degree to obstruct the free passage of the air.

The invention also consists in the employment or use of a sponge or other suitable substance pervious to air, fitted in the hot-air pipe or cold-air induction-pipe, as hereinafter fully shown and described, whereby the air will be separated from dust and other light impurities which are held in suspension in it.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a portion of the hot-air pipe of an air-heating furnace, and B is an annular water-chamber, which is placed on said pipe and secured thereto by any proper means. The water-chamber B may be of any suitable dimensions, and it communicates with the interior of the pipe A by perforations *a*, made in the pipe A at the upper part of the water-chamber, as shown clearly in Fig. 1. The chamber B has a tube *b* at its upper end through which it is supplied with water.

The air in passing through the pipe A will, if dry or devoid of a requisite quantity of moisture, imbibe or take up moisture from the chamber B, and, if necessary, cotton wicks or other suitable conducting material may be

placed in the chamber B, their upper ends projecting through the perforations *a*, so as to be in direct contact with the air passing through A. These conductors, however, are not strictly essential, and may be dispensed with.

The water-chamber B may be attached to the hot-air pipe or to the cold-air induction-pipe, which conducts the cold air to the furnace or to the air-heating chamber in which the furnace is placed, for the air, whether cold or warm, will, if dry, absorb a requisite amount of moisture necessary for health. If the water-chamber, however, be placed on the hot-air pipe, it must be sufficiently far from the heater or furnace to prevent the water reaching the boiling-point, as in this case the air would be loaded with vapor or steam and the apartment would be supplied with air entirely too moist for health.

C is a sponge or other substance which is permeable to air and which will serve to retain or catch dust and other light impurities which may be held in suspension in it. Sponge would probably be as good a material if not the only one that could be used for the purpose. This sponge is secured either in the hot-air pipe A or in the cold-air induction-pipe in any proper way. As simple a way as any would probably be to have cross-bars *c* secured transversely in the pipe for the sponge to rest upon, the latter being equal in diameter to the interior of the pipe, so that no air can pass without penetrating it. The cold-air pipe would, perhaps, be the most preferable place for the sponge, as it would not be liable to become dry and hard by heat as in the hot-air pipe. The sponge, when foul, may be removed and cleansed in a moment of time.

I do not claim, broadly, the application of a water-chamber to an air-heating furnace for the purpose of supplying the heated air or the air to be heated with moisture, for that has been previously done, although the water-chambers hitherto used have, so far as I am aware, been placed within the furnace and the water, therefore, liable to reach the boiling-point, in which case vapor or steam is generated and the air surcharged with moisture; but,

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

1. The employment or use, for the purpose specified, of a water-chamber B, when applied, substantially as described, either to the cold-air induction-pipe or to the hot-air pipe A of an air-heating furnace at a point sufficiently remote from the furnace to prevent the water reaching the boiling-point, as set forth.

2. The employment or use of a sponge c or other suitable material placed in the cold-air induction-pipe or in the hot-air pipe A of

an air-heating-furnace, to serve as a separator to free the hot-air or air to be heated from dust and other light impurities which may be held in suspension in it, substantially as described.

CHARLES B. SAWYER.

Witnesses:

JAMES LAIRD,  
R. GAWLEY.