W. M. KIRBY.

Smoke-Consuming Device for Furnaces.

No. 209,898. Patented Nov. 12, 1878.

Fig. 1.

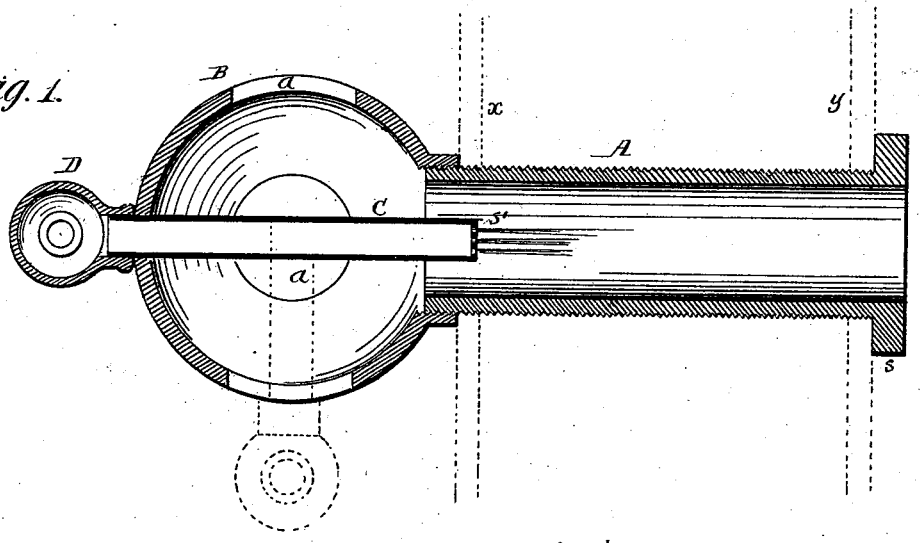
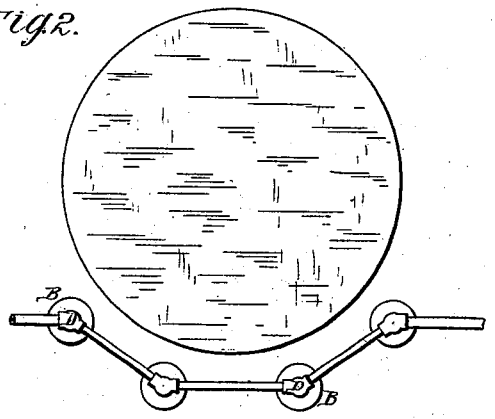


Fig 2.



Attest:
Courtney A. Cooper
William Paxton

Inventor:
W. M. Kirby
By his attorney
Charles E. Foster

UNITED STATES PATENT OFFICE.

WILLIAM M. KIRBY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN SMOKE-CONSUMING DEVICES FOR FURNACES.

Specification forming part of Letters Patent No. **209,898**, dated November 12, 1878; application filed September 12, 1878.

To all whom it may concern:

Be it known that I, WILLIAM M. KIRBY, of Pittsburg, Allegheny county, Pennsylvania, have invented Improvements in Smoke-Consuming Devices for Furnaces, of which the following is a specification:

My invention relates to that class of devices employed for forcing an artificial supply of air among the gases over a fire-place, to facilitate combustion; and consists in constructing the device, as fully described hereinafter, to permit ready attachment to the double walls at any point of the fire-box and furnish the air cold and in uniform quantities.

In the drawing, which forms a part of this specification, Figure 1 is a longitudinal section of my improved device; Fig. 2, a front or end view of a boiler, showing the manner in which a series of air-supply devices may be arranged.

The device consists of the tube A, globular shell or case B, nipple C, and globe-coupling D.

The tube A is threaded exteriorly or otherwise constructed so that it can be screwed into openings in both the plates *x y* of the double casing inclosing the fire-box of a boiler or furnace at any desirable point of the latter, the outer threaded end serving as an attachment for the hollow globe B, as shown.

I prefer to construct the tube A of cast metal, with an inner flange or enlargement or head, *s*, which is polygonal, so as to permit the application of a wrench, by which the tube may be screwed through the walls from the inside, the flange bearing against the inner wall and the neck of the globe B bearing on the outer wall, the boiler being thus strengthened and the attachment firmly secured.

The globe has air-inlet openings *a a a* and a smaller threaded end opening, into which screws the threaded end of the nipple C, a part of which projects for the attachment of the globe-coupling D, with which the steam-pipe E communicates. The inner end of the nipple has a series of fine openings, *s'*, through which the steam escapes in a series of fine jets, which combine more thoroughly and uniformly with the air, and feed the latter into the fire-chamber with greater facility and with less expenditure of steam than when the same issues in a single large jet, as usual.

By the use of the threaded tube A the devices may be applied easily and at slight cost at the precise point where they will be most efficient. No outside air-chambers, which heat the air and must be built in the masonry, are required, while the globe B and its inlets insure a regular supply of air in uniform quantities, which cannot be done where the supply of air for the tubes is drawn from a single heated chamber, as heretofore.

By the use of globe-couplings D the requisite steam-pressure on the nipples is secured without the amount of steam required when the steam-space at the rear of the nipple is equal in diameter to the latter.

I do not claim, broadly, a threaded tube extending through the double fire-walls of a fire-place; but

I claim—

1. An air-supply device for furnaces, &c., consisting of the threaded tube A, having an enlargement, *s*, adapted for attachment to the double walls *x y*, the globe-casing B, steam-nipple C, having fine end perforations *s'* and globe-coupling D, communicating with the nipple and with the steam-pipe, constructed and arranged as set forth.

2. The threaded tube A, having an enlargement, *s*, and combined with the globe-case B, nipple C, coupling D, and adapted for attachment to the walls of a fire-box, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. M. KIRBY.

Witnesses:

A. W. FERREE,

ANDREW HUMBERT.