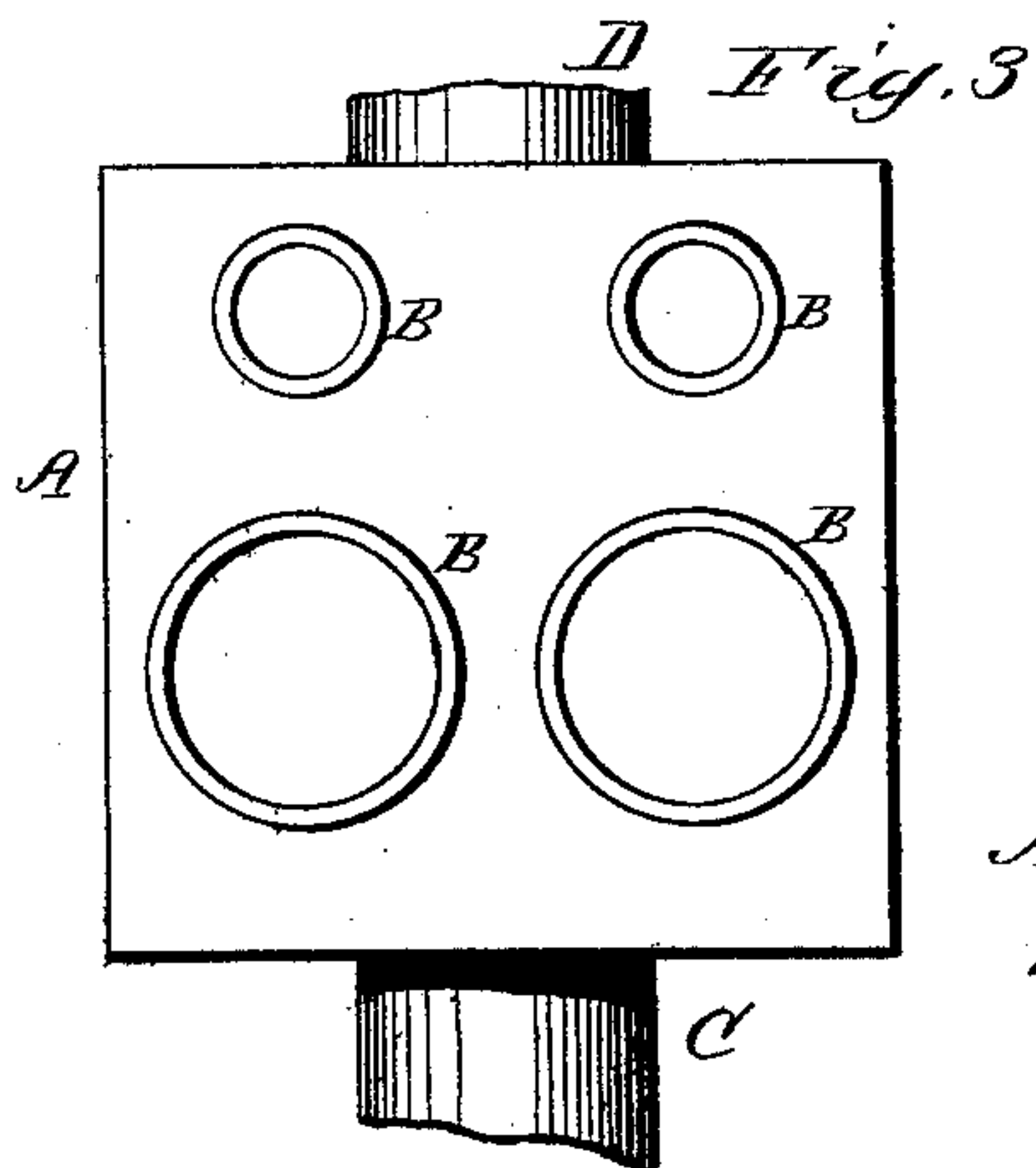
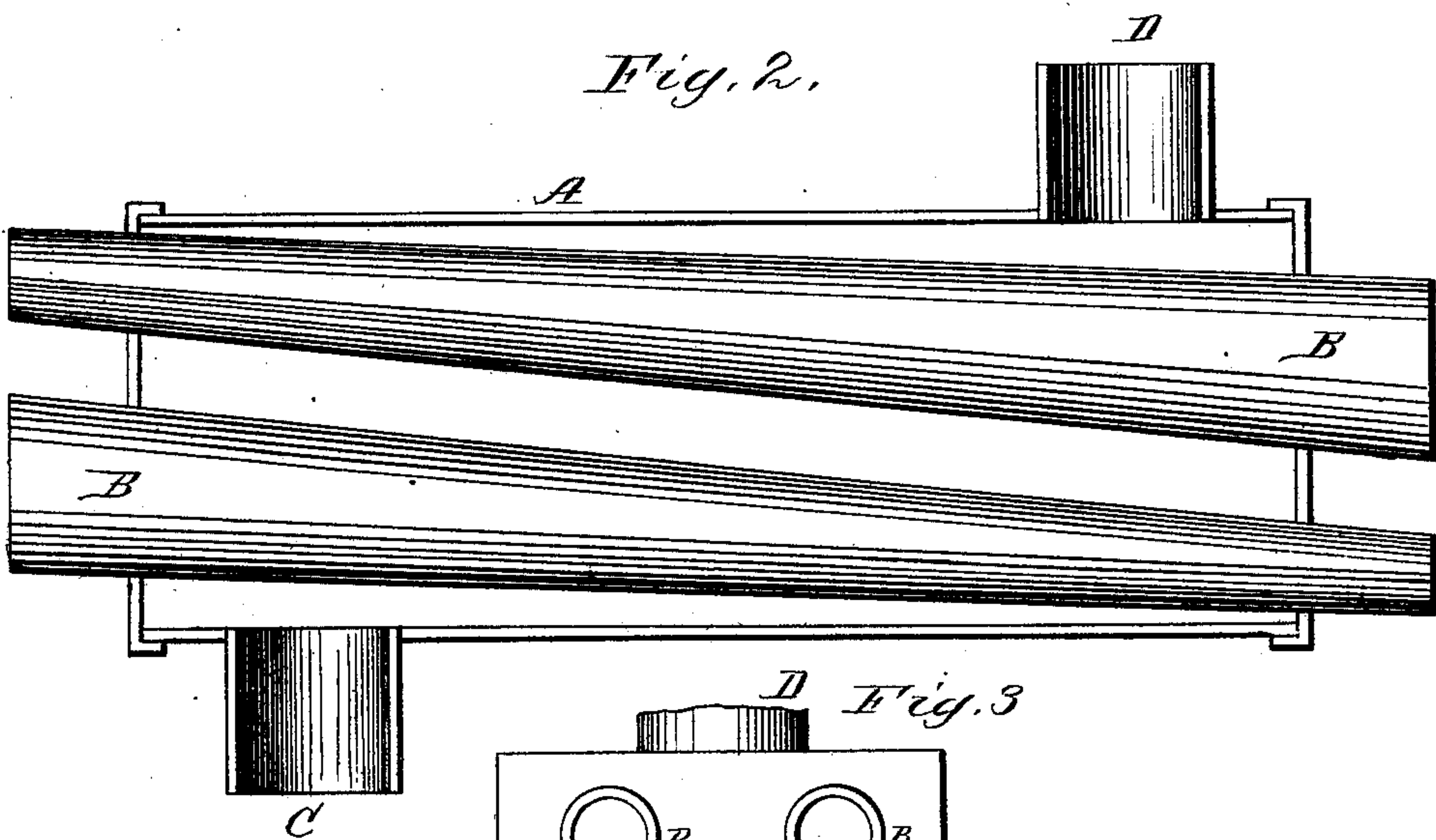
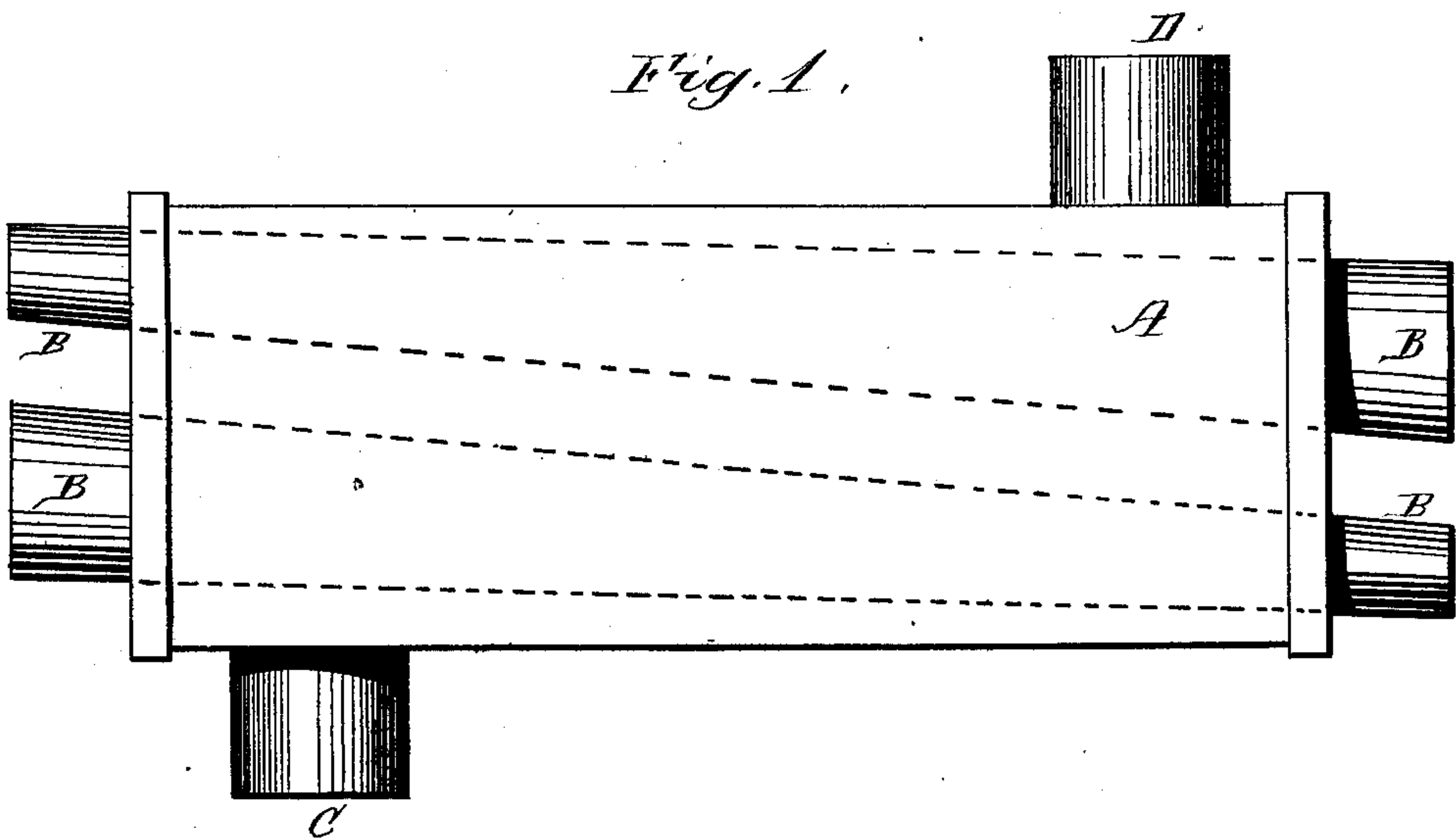


A. T. WINCHELL.  
HEATING APPARATUS.

No. 195,320.

Patented Sept. 18, 1977.



WITNESSES

*Nat E. Oliphant*  
*Geo. R. Porter*

INVENTOR

*Alvin T. Winchell*  
*per Char. H. Fowler*  
*Att'y.*

# UNITED STATES PATENT OFFICE.

ALVIN T. WINCHELL, OF ALBION, MICHIGAN.

## IMPROVEMENT IN HEATING APPARATUS.

Specification forming part of Letters Patent No. **195,320**, dated September 18, 1877; application filed May 12, 1877.

*To all whom it may concern:*

Be it known that I, ALVIN T. WINCHELL, of Albion, in the county of Calhoun and State of Michigan, have invented a new and valuable Improvement in Heating Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a side elevation of my invention. Fig. 2 is a similar view, with a portion of the chamber in section. Fig. 3 is an end view.

This invention has relation to heating apparatus; and the object and purpose thereof are to construct a device by which the escaping heat contained in the smoke may be used for heating the cold air, which, when thus heated, may be used for heating, warming, or evaporating purposes, the arrangement and construction of the several parts of the apparatus being hereinafter described, and subsequently pointed out in the claim.

In the accompanying drawings, A represents a chamber of any suitable form, which may be made of metal or other suitable material, such as brick or clay, as circumstances may require. The chamber A has a suitable number of flues, B, for the passage of cold air, which are made tapering to cause a draft of the smoke within its chamber from the larger to the smaller end of the flues B, this tapering form also admitting of the ready removal of the flues when required for cleaning, repairing, or for other purposes. The chamber A also has inlet and outlet pipes C D for the smoke.

It will be seen that, as the cold-air flues are surrounded by the heated smoke as it passes

into the chamber, the air in the flues will become heated during its passage through them, and the air thus heated may be conducted to any desired point, each flue being independent of the other, thereby allowing the hot air to be conveyed to different apartments; or they may be connected together according to the amount of heat required.

The flues, as will be noticed, are placed in sections, one above the other horizontally, and with their ends reversed alternately, which arrangement, together with the tapering form of the flues, will cause a return draft of the smoke within its chamber, which draft will have a free passage through and between the air-flues at their smaller ends, causing the smoke to pass from the larger to the smaller end of the flues between the sections thereof, whereby a smoke-flue is formed within the chamber, which at its bottom is largest at the inlet end, and at its top is smallest at its outlet end, producing a zigzag current.

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

The chamber A, having pipes C D and removable tapering flues B, arranged in sections, one above the other, with their ends reversed alternately, as shown, whereby a smoke-flue is formed within the chamber, which at its bottom is largest at its inlet end, and at its top is smallest at its outlet end, producing a zigzag current, substantially as and for the purposes set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ALVIN T. WINCHELL.

Witnesses:

J. M. PEABODY,  
M. D. WEEKS.