

C. Fisher,

Steam-Boiler Furnace,

N^o 58,239.

Patented Sep. 25, 1866.

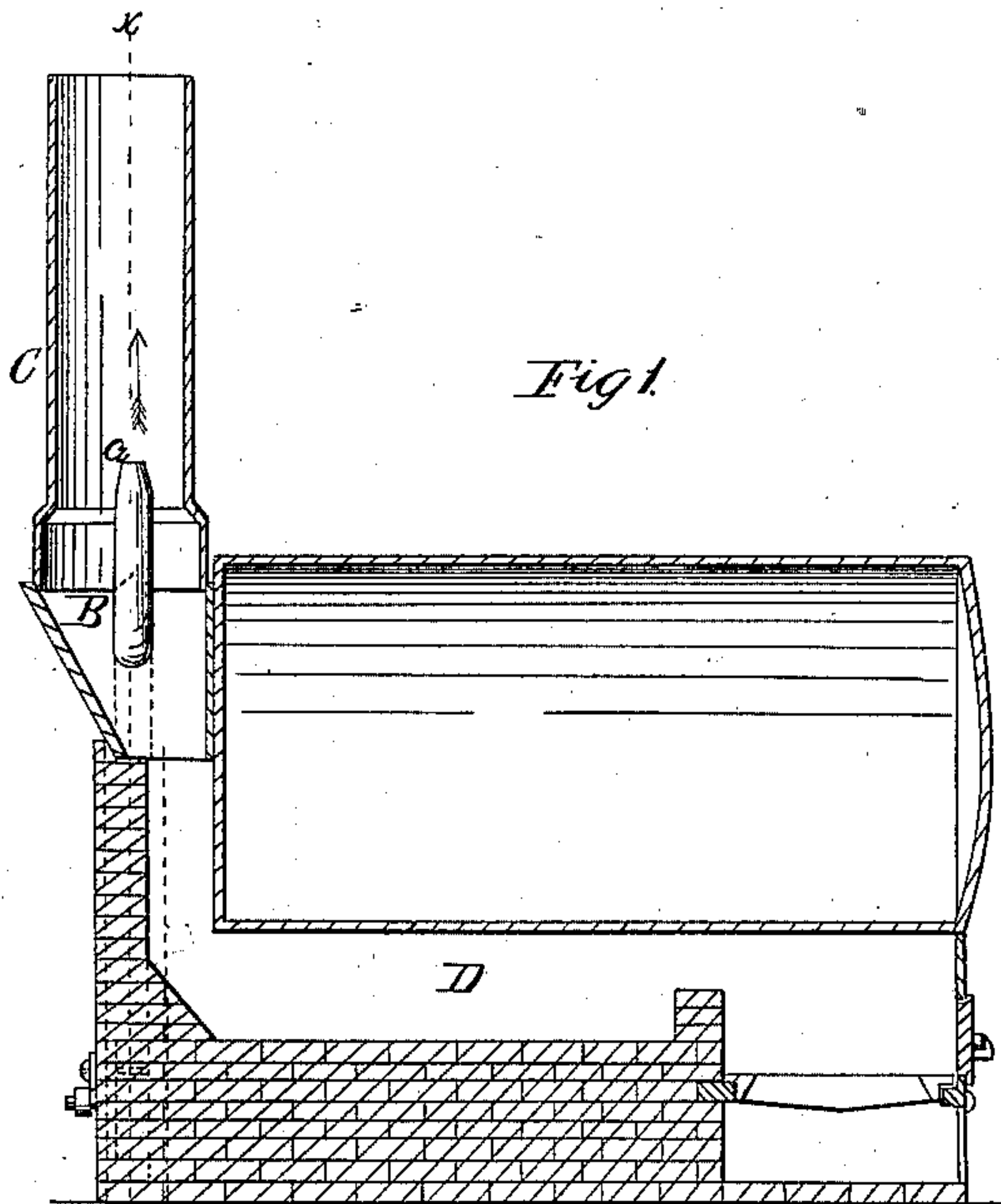


Fig. 1.

Fig. 2.

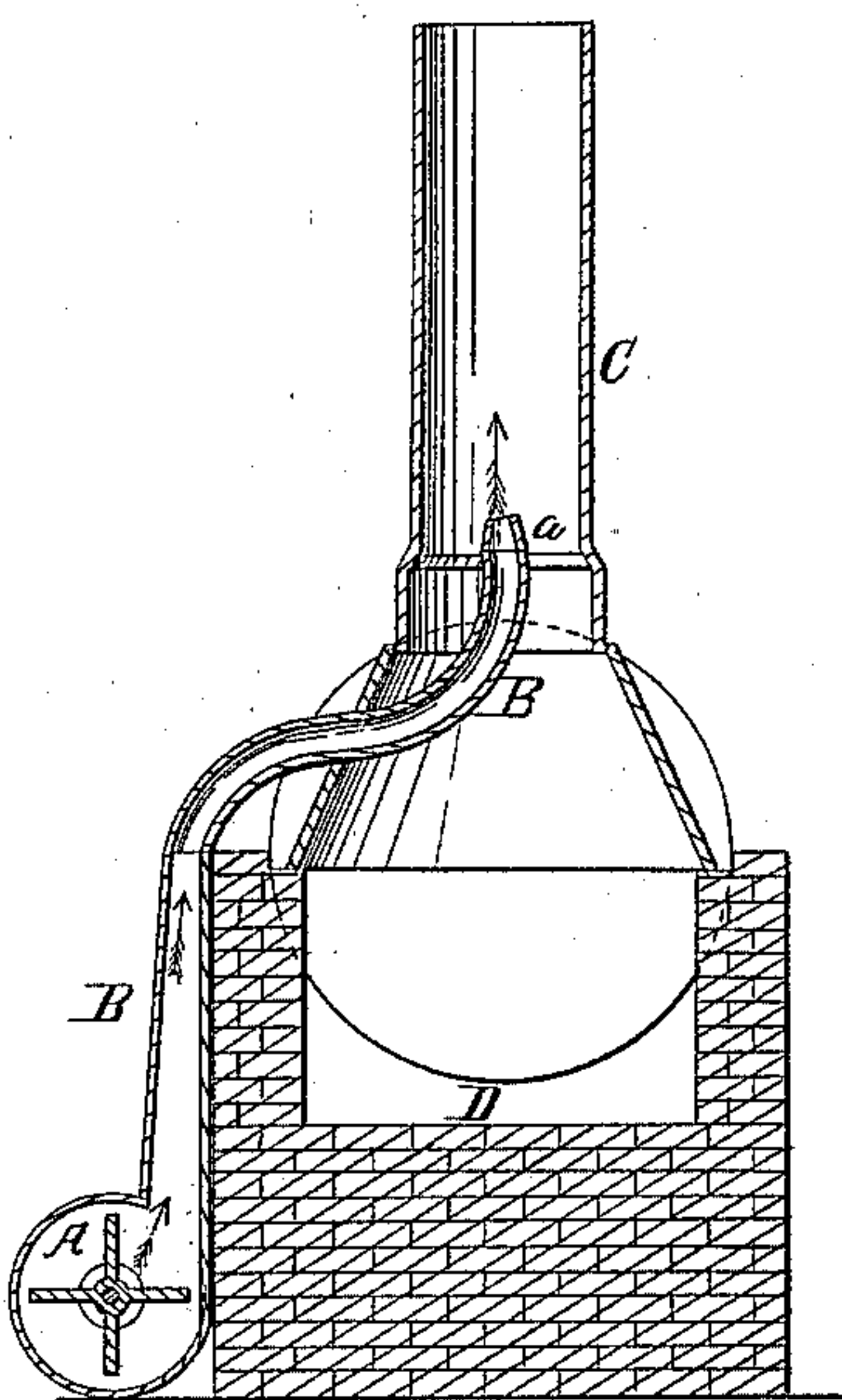
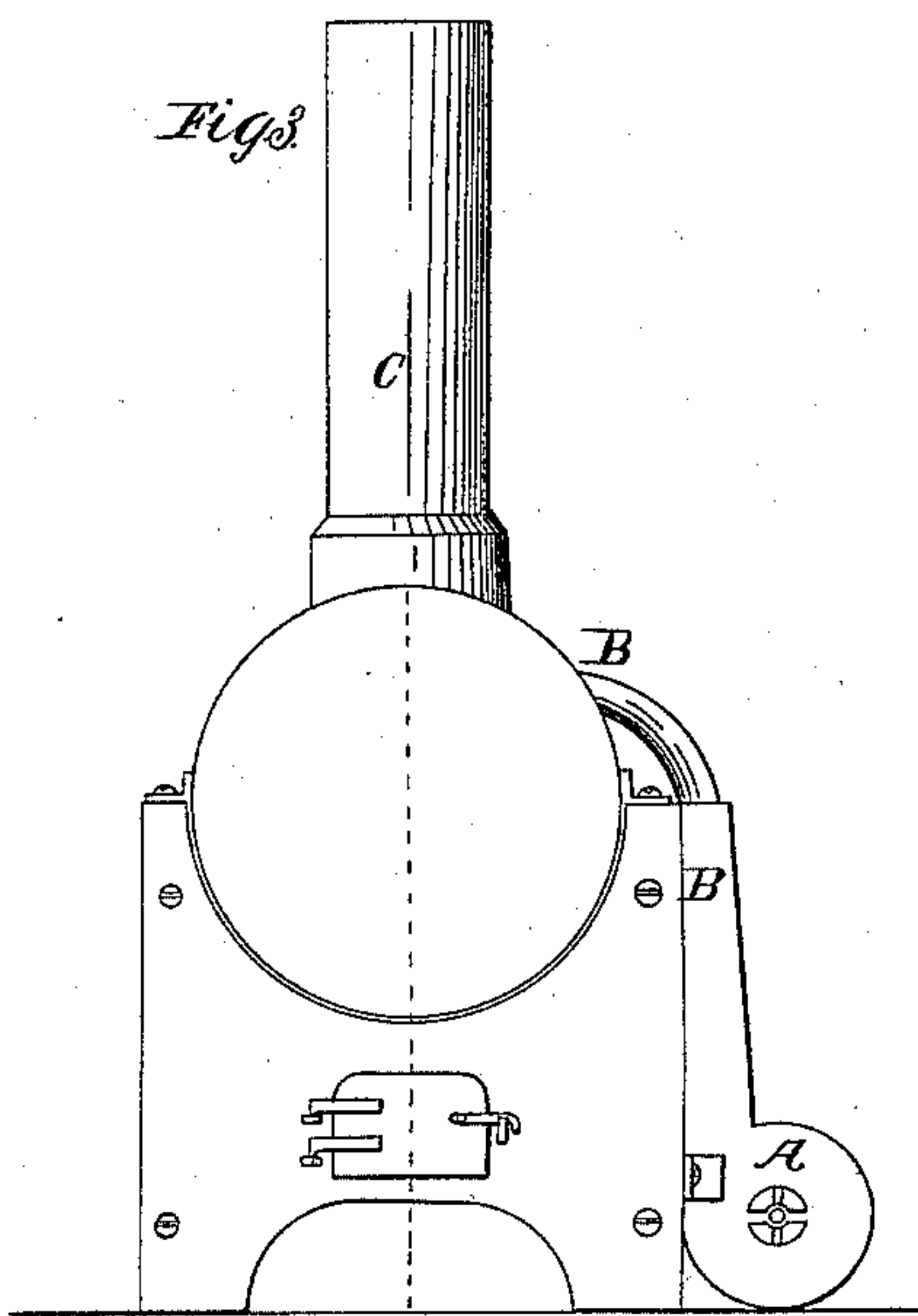


Fig. 3.



Witnesses.
R. I. Campbell.
Henry H. Foster.

Inventor.
Clark Fisher
by Atty-
Wm. Linnick. Law.

UNITED STATES PATENT OFFICE.

CLARK FISHER, OF TRENTON, NEW JERSEY.

IMPROVED METHOD OF PROMOTING COMBUSTION IN FURNACES.

Specification forming part of Letters Patent No. 58,239, dated September 25, 1866.

To all whom it may concern:

Be it known that I, CLARK FISHER, of Trenton, in the county of Mercer and State of New Jersey, have invented a new and Improved Method of Promoting the Combustion of Coal for Steam and other purposes; and I do hereby declare that the following is a full, clear and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical longitudinal section through one form of steam-boiler and furnace having my invention applied. Fig. 2 is a transverse section through Fig. 1, taken in the vertical plane indicated by red lines *x x*. Fig. 3 is a front elevation.

The object of this invention is to effect a rapid and at the same time an economical combustion of coal in steam-boiler and other furnaces; also, to effect the consumption of smoke and gas in the furnace in a more perfect manner than hitherto accomplished.

It consists in forcing upward one or more jets of cold air into the chimney or smoke-pipe of a furnace, by introducing the air under pressure into the chimney at a point which is above the heating-surface, and thus creating a partial vacuum in the fire-chamber and cause the air from the fire-room to circulate through every part of said chamber, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The principle of my invention consists in forcing air into a smoke-pipe or chimney above the furnace or heating-chamber at a velocity which is considerably greater than that which would be obtained by a natural draft, thus obtaining, not only the required velocity or force of air, but also obtaining air in such quantity as will, by its friction on the surrounding column of air in the chimney, induce an accelerated upward current, and thus draw into the furnace-chamber a sufficient supply of air to promote a free and perfect combustion of the coal and smoke therein.

To effect this object I employ a fan, A, which is inclosed within a case, and which receives a rapid rotary motion. From the fan-case a pipe or conduit, B, is carried upward and through the chimney or smoke-pipe C of the furnace D, and its upper end terminates in a contracted nozzle, *a*, which is directed up-

ward in or parallel with the axis of the chimney, and which is located above the furnace-chamber, so that the air shall not, by its cooling effect, carry off the heat below. This pipe B is contracted at its discharge end for the purpose of obtaining greater velocity of air, which, combined with quantity of air, produces the beneficial results above set forth.

By thus forcing air in jets into the chimney of a furnace the chimney will be kept at a comparatively low temperature above a certain point; and hence I secure safety from fire where chimneys or smoke-pipes pass up through the decks of vessels or through roofs of buildings.

It is not only found, by forcing air under pressure into chimneys, that the combustion in the furnace is more complete, but it is also found that bituminous coal can be burned very successfully and economically, with little or no escape of smoke and gas.

I am aware that attempts have been made to promote combustion in furnaces by a contrivance which would draw the heated air out of the lower part of the chimney and force it in again at a point higher up, with a damper between. Smoke jacks or fans have also been placed in chimneys and driven by engines.

I am also aware that steam has been directed into chimneys through nozzles, as in the case of locomotive and other engines; but none of these plans do I lay any claim to.

What I do claim as new, and desire to secure by Letters Patent, is—

The employment of fans or other suitable air-engines, having pipes leading from them into the chimneys and directed upward, for the purpose of promoting the combustion of fuel in furnaces by forcing cold air directly into the chimneys at points which are above the heating-surfaces, but near the base of the chimneys, at a greater velocity than that which would result from natural draft, substantially as described.

Witness my hand in matter of my application for a patent for an improved mode of promoting the combustion of coal for steam or other purposes.

CLARK FISHER.

Witnesses:

T. W. LEACH,
HENRY M. RICKETT,
W. L. NICOLL.