

G. M. Copeland,
Steam-Boiler Furnace.
N^o 62,397. Patented Feb. 26, 1867.

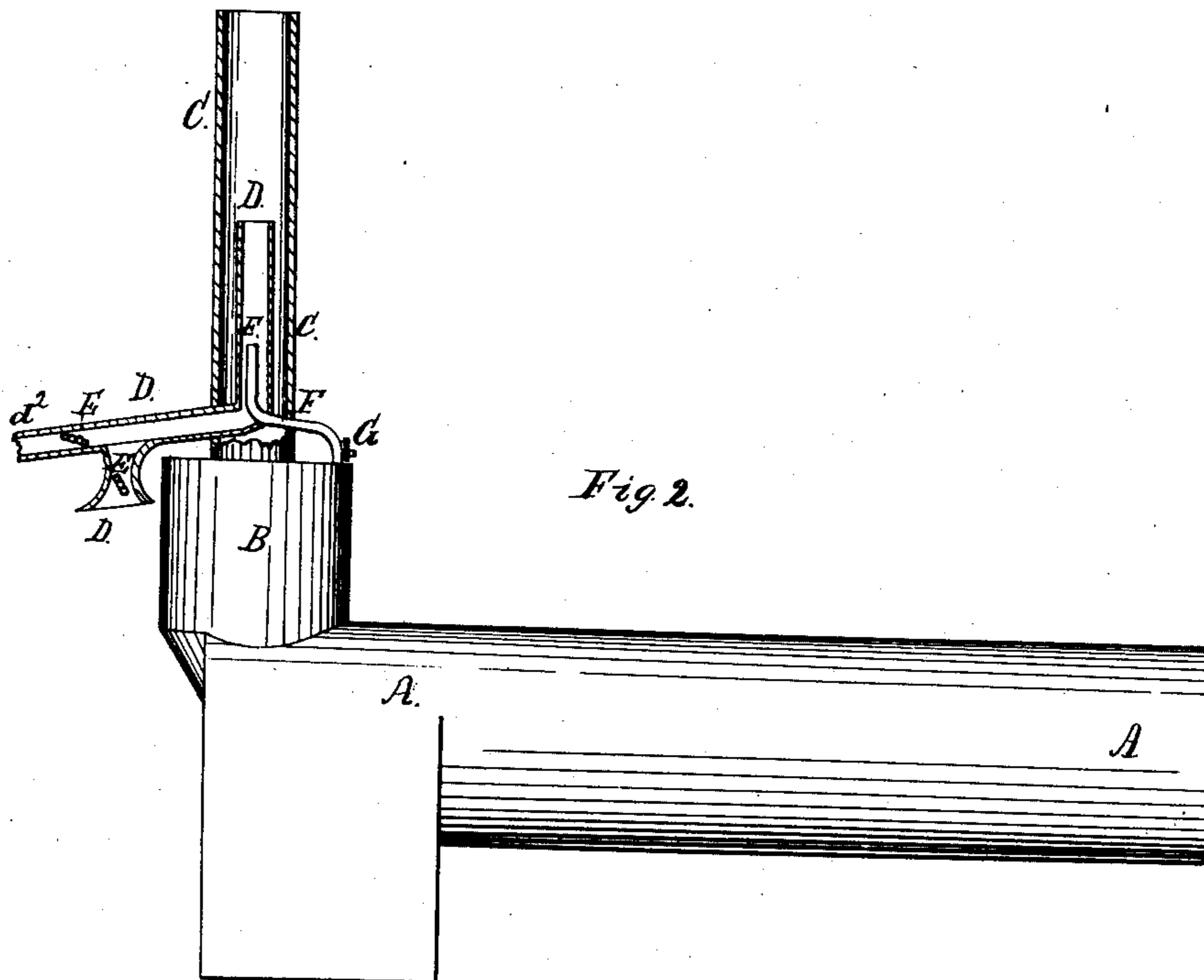


Fig 2.

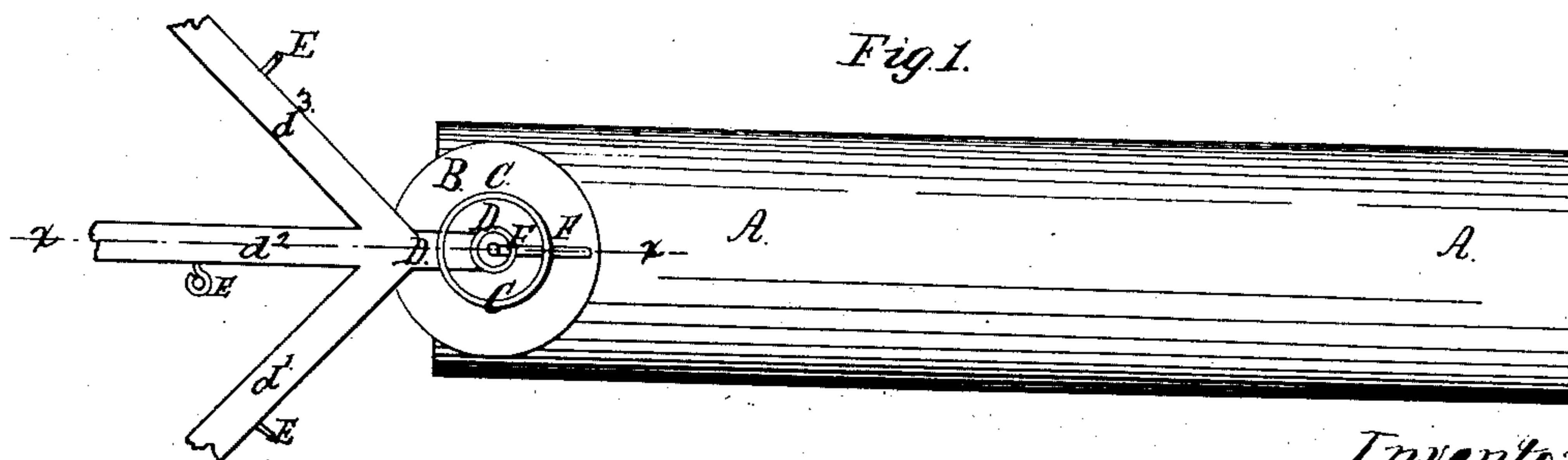


Fig 1.

Witnesses:

J. A. Jackson
Wm. Brown

Inventor,

G. M. Copeland
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United States Patent Office.

GEORGE M. COPELAND, OF BROOKLYN, NEW YORK.

Letters Patent No. 62,397, dated February 26, 1867

COMBINATION OF AIR AND STEAM JETS TO PROMOTE COMBUSTION.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE M. COPELAND, of Brooklyn, Kings county, State of New York, have invented a new and useful Combination of Air and Steam Jets for the more Rapid and Perfect Combustion of Fuel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a top view of a steam boiler with my improved apparatus attached.

Figure 2 is a side view of the same partly in section through the line *x x*, fig. 1.

Similar letters of reference indicate like parts.

My invention has for its object to furnish an improved means for increasing the draught of a boiler, furnace, or other fire-place, making the combustion of the fuel more rapid and perfect, and thus increasing the effectiveness of the fire. And it consists, first, in the combination of an air and steam jet or jets with each other, and their introduction into a smoke flue, chimney, or other passage; second, in the combination of an air pipe, single or branched, and a steam pipe or pipes with each other and with the smoke flue or chimney, or other passage way in which they are placed.

A is the boiler, about the construction of which there is nothing new; B is the smoke box, and C the smoke flue; D is the air pipe passing up in the interior of the flue C, and parallel therewith. This pipe I prefer to place in the middle of the flue C, so that the jet therefrom may affect the smoke or air in all parts of the flue equally. The pipe D is bent and passes out through the side of the flue C, and may be a single pipe terminating in the room in which the boiler is placed, or in any other place, or it may be made with branches *d¹ d² d³*, leading to other rooms, or one of them may lead out of doors, so that the air to supply the jet may be taken from any desired place. These pipes or branches are all furnished with dampers, E, which may be all closed except the one leading to the place from which it is desired to take the air to supply the jet. F is a steam pipe, leading from the steam chest of the boiler A, passing in through the wall of the flue C, and through the wall of the air pipe D, and up in a direction parallel therewith. The pipe F is furnished with a valve, G, by means of which the passage of steam through it may be checked or regulated as desired. Several steam pipes may be introduced into the air pipe D, so as to distribute the steam jets through the said pipe. In using the apparatus, the damper in the pipe D, or in the branch of the pipe D, leading to the place from which it is desired to take the air, is opened, allowing a stream of air to pass through the said pipe into the flue C. The valve in the steam pipe F is then opened, allowing a jet of steam to be projected into the pipe D, in the direction of its length. This tends to produce a vacuum in the part of the pipe D immediately below the point at which the jet of steam is introduced, which causes a strong current of air to flow in to supply its place. The combined air and steam jet projected into the flue C produces the same effect therein, producing a strong draught through the fire-chamber, causing a more rapid and more perfect combustion of the fuel, and thereby greatly increasing the effective force of the fire.

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

1. The combination of an air and steam jet or jets with each other, and their introduction into a chimney, smoke flue, or other passage way, substantially as herein described and for the purpose set forth.

2. The combination of an air pipe D, single or branched, and the steam pipe or pipes F, with each other, and with the smoke flue, chimney, or other passage way in which they are placed, substantially as herein described and for the purpose set forth.

GEO. M. COPELAND.

Witnesses:

WM. F. McNAMARA,
JAMES T. GRAHAM.