

No. 786,726.

PATENTED APR. 4, 1905.

M. E. CASEY.

AIR FEEDING DEVICE FOR FURNACES.

APPLICATION FILED JUNE 17, 1904.

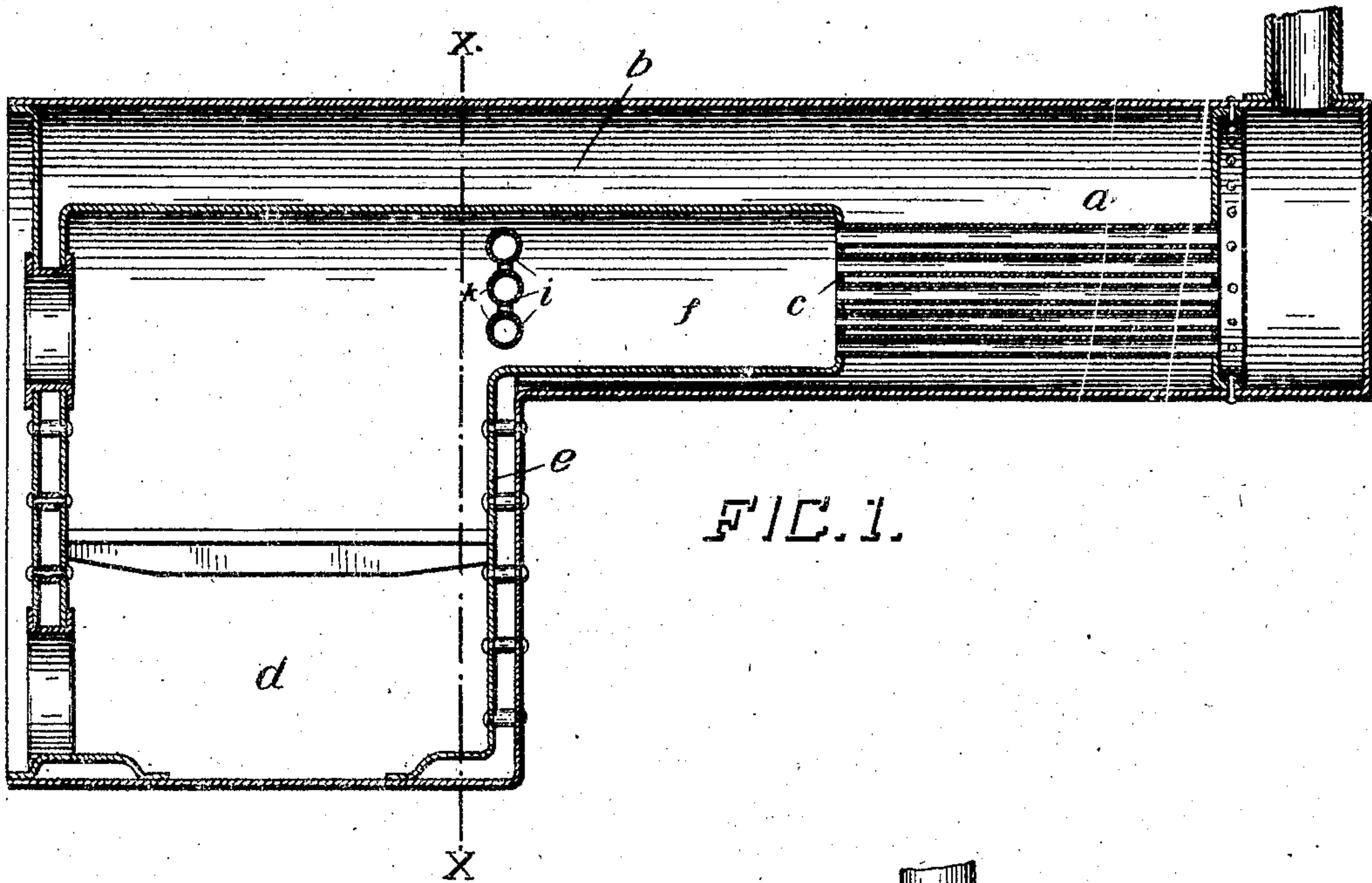


FIG. 1.

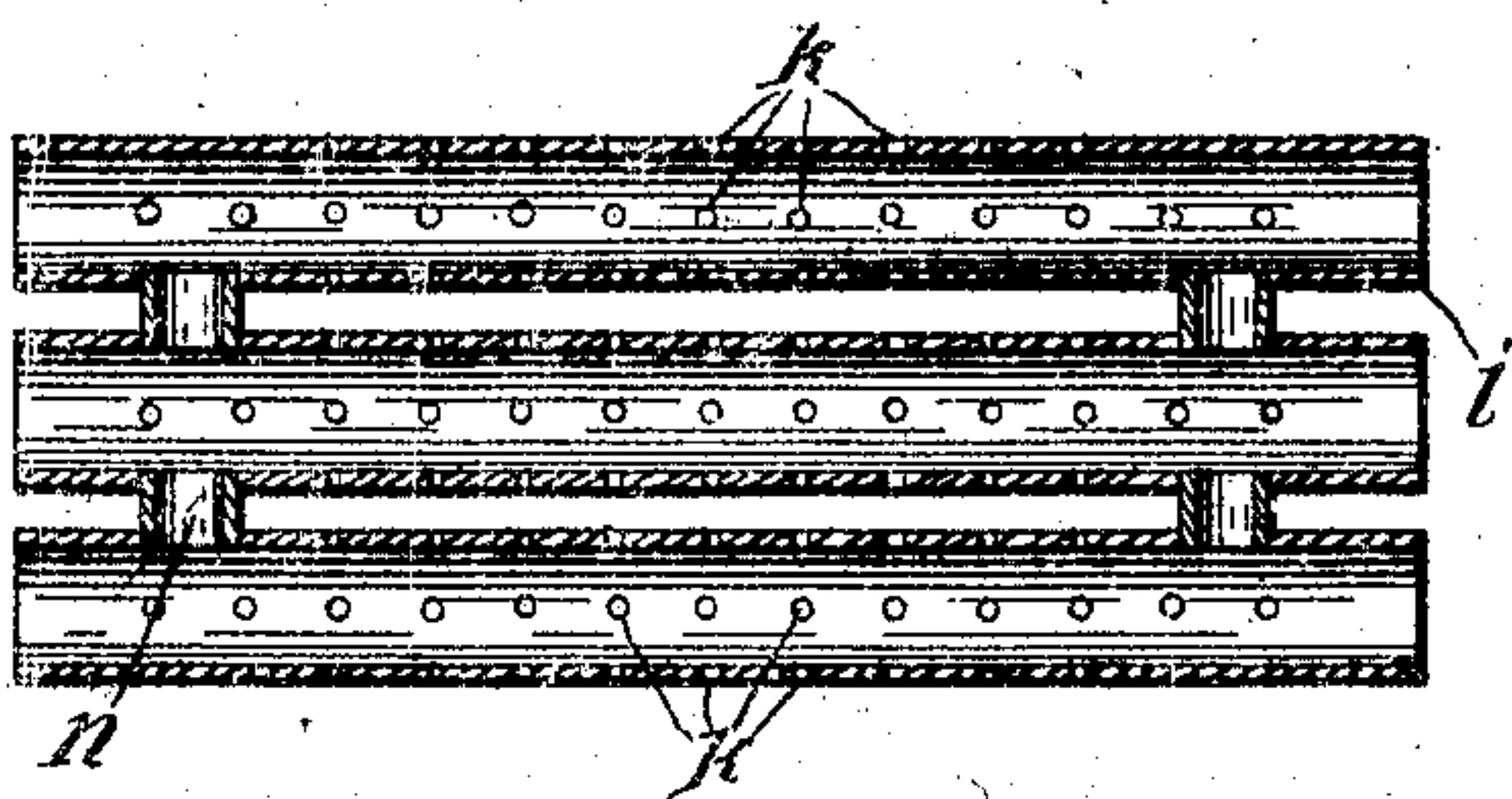


FIG. 3.

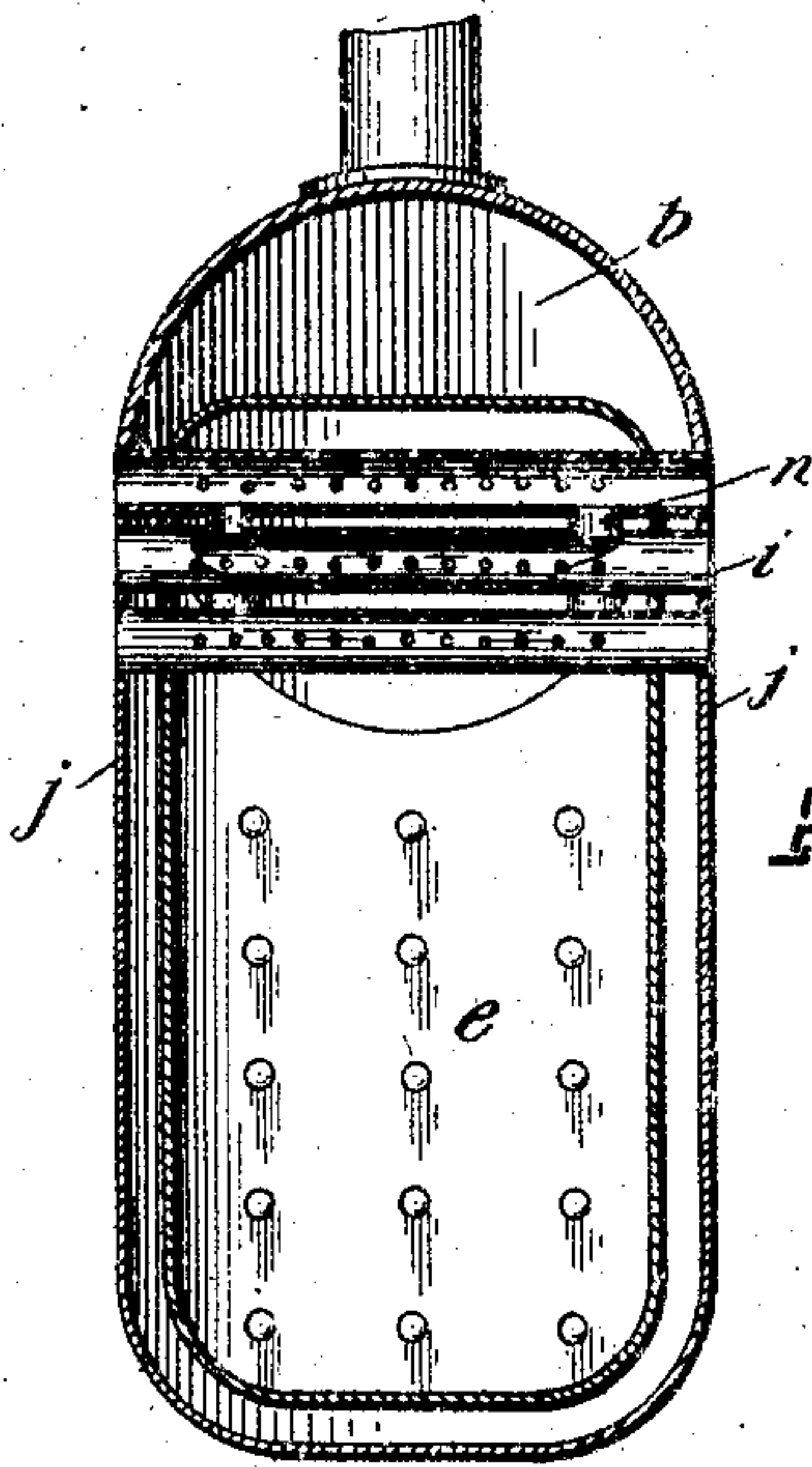


FIG. 2.

Witnesses

Milton Lenoir

Amos E. Dodge

Inventor

Michael Edward Casey

By John H. Case

His Attorney

UNITED STATES PATENT OFFICE.

MICHAEL EDWARD CASEY, OF MANSFIELD, OHIO.

AIR-FEEDING DEVICE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 786,726, dated April 4, 1905.

Application filed June 17, 1904. Serial No. 213,032.

To all whom it may concern:

Be it known that I, MICHAEL EDWARD CASEY, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented new and useful Improvements in Air-Feeding Devices for Furnaces, of which the following is a specification.

My invention has for its object the construction of a steam-boiler or furnace having an auxiliary combustion-chamber located in such a relative position to the fire-box as will permit, without obstruction and in the direct line of draft, the unconsumed gases to enter the chamber and means for admitting air into the chamber in such quantities as to properly mix with the gases and burn, evolving and generating more heat from the fuel than could be obtained if the gases passed out through the chimney unconsumed, thereby resulting in a saving of fuel and arresting the smoke and combustibles, causing the consumption of the same.

Another feature of my invention is the method employed in constructing a boiler or furnace and combining it with a fire-box and combustion-chamber in such a manner as to afford facilities for consuming the smoke and gases.

With the above and other objects in view the invention consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like characters of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a longitudinal sectional elevation of a straw-burning boiler to which my invention is applied. Fig. 2 is an end elevation on line *xx* of Fig. 1, showing tubes for the admission of air. Fig. 3 is a side and end view in detail of the air-tubes.

A indicates a straw-burning boiler comprising a boiler-shell, within which is located the furnace consisting of an ash-pit *d*, a fire-box 1, and a combustion-chamber 8, extending lat-

erally of the fire-box and into the waist *b* of the boiler. The forward end of the combustion-chamber is provided with a tube-sheet *c*, from which tubes *a* extend forwardly through the boiler to the forward tube-sheet 2. The shell *A* is provided at its forward end with a smoke-stack or chimney 3, connecting therewith, a smoke-chamber 4 being left between the forward flue-sheet 2 and the forward end of the boiler-shell immediately beneath the stack. The forward end of the fire-box is separated from the boiler-shell by means of the wall *e*. The combustion-chamber of course lies in the direct line of draft between the fire-box and the tubes or flues *a*, the consumed gases and products of combustion passing from the fire-box into the combustion-chamber and thence through the flues into the smoke-box 4 and up the stack.

Transversely of the combustion-chamber and in alinement with and above the wall *e* of the fire-box are located the air-inlet tubes *i*, the tubes being located at the entrance to the combustion-chamber from the fire-box and form longitudinal passage-ways for the admission of atmospheric air to the combustion-chamber, which is admitted into the outer open ends of the tubes, which pass through the furnace-walls and boiler-shell, and the air so admitted passes out through the apertures *h* into the chamber, by which apertures the air is directed toward the products of combustion, which are thus brought in contact with the air and mixed therewith in such proportions as to produce a flame of intense heat for consuming the smoke and heated gases. The effect of the intimate mixing of the air and gases in such proportions as to cause the ignition of the gases before passing out, is to produce a greater amount of heat from the fuel, and the consumption of the smoke keeps the fire-tubes *a* perfectly clean. The tubes *i* are connected by hollow standards *n*, thus bringing the tubes in communication with each other, permitting the air to pass freely between the plurality of air-inlet tubes. The air-inlet tubes are located immediately over and in line with the back wall *e* of the boiler. It will be noted that the products of combustion must pass the opening between

the tubes and in so doing mix with the air. It will be noted that one or more tubes can be used. Hence I do not limit myself to the construction shown.

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

10 1. The combination with a furnace, of a plurality of apertured air-inlet tubes having open ends and extending across the furnace and through the walls thereof, and a hollow standard connecting the tubes intermediate their ends and within the furnace for strengthening the tubes and permitting intercommuni-
15 cation.

2. The combination with a furnace, of a plu-

20 rality of apertured air-inlet tubes located between the fire-box and combustion, the tubes sustained at their ends in the walls of the furnace, and a hollow standard connecting the tubes intermediate their ends, the tubes being spaced apart from each other and from the walls of the furnace to permit the passage of the products of combustion below, above and between the same.

25 Signed at Mansfield, Ohio, this 18th day of May, 1904.

MICHAEL EDWARD CASEY.

Witnesses:

JOHN H. COSS,
R. W. HARTMAN.