

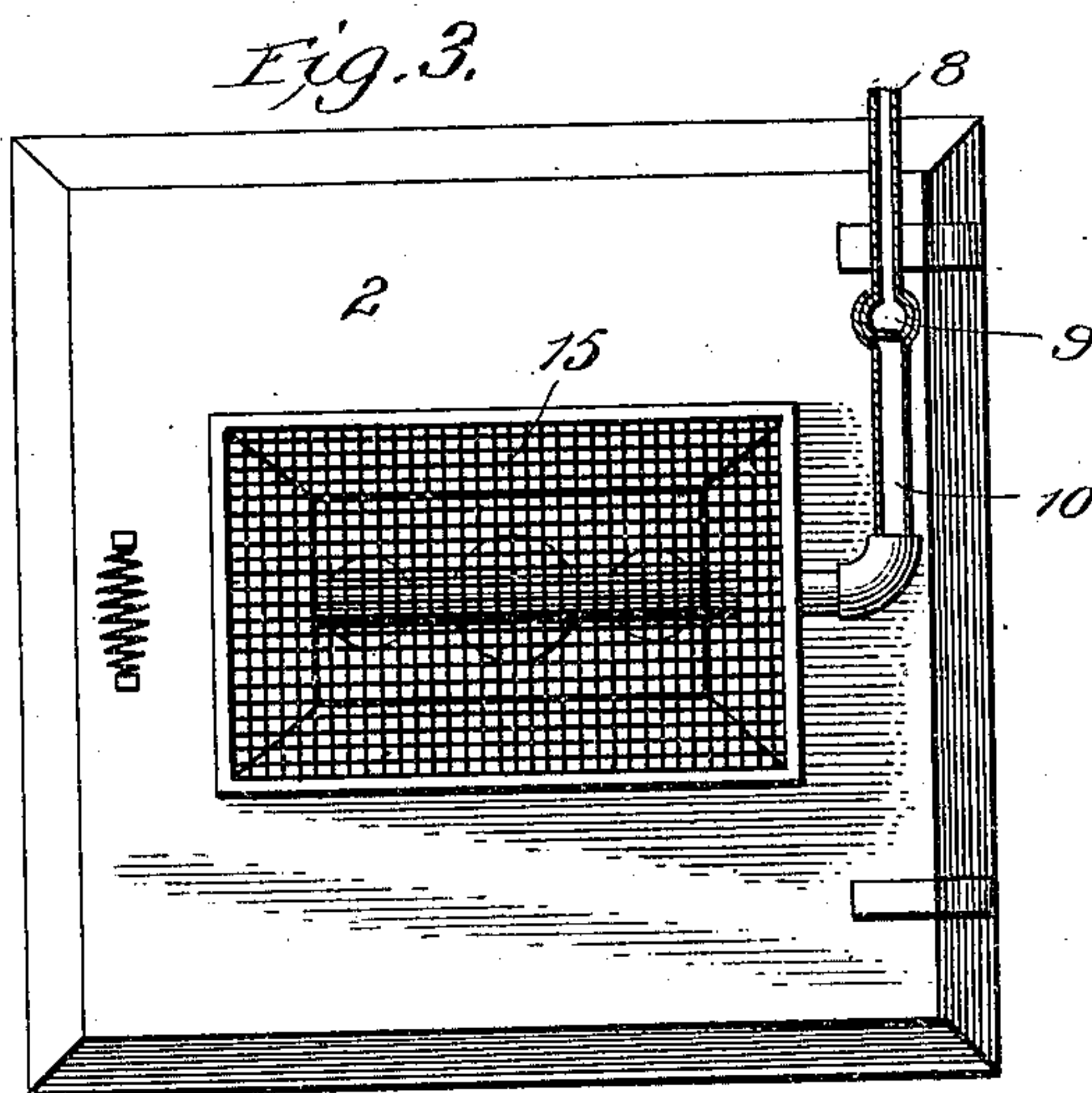
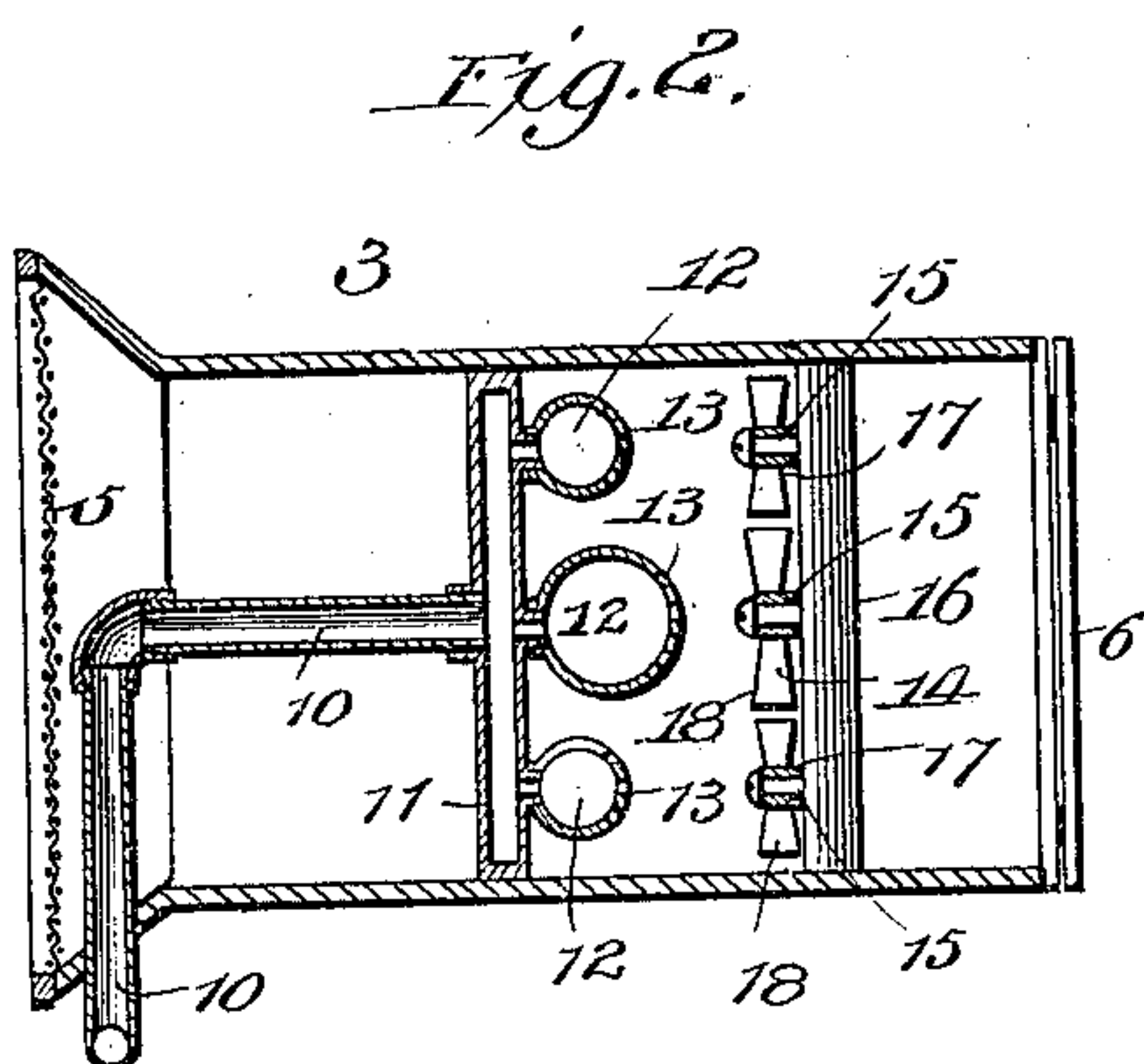
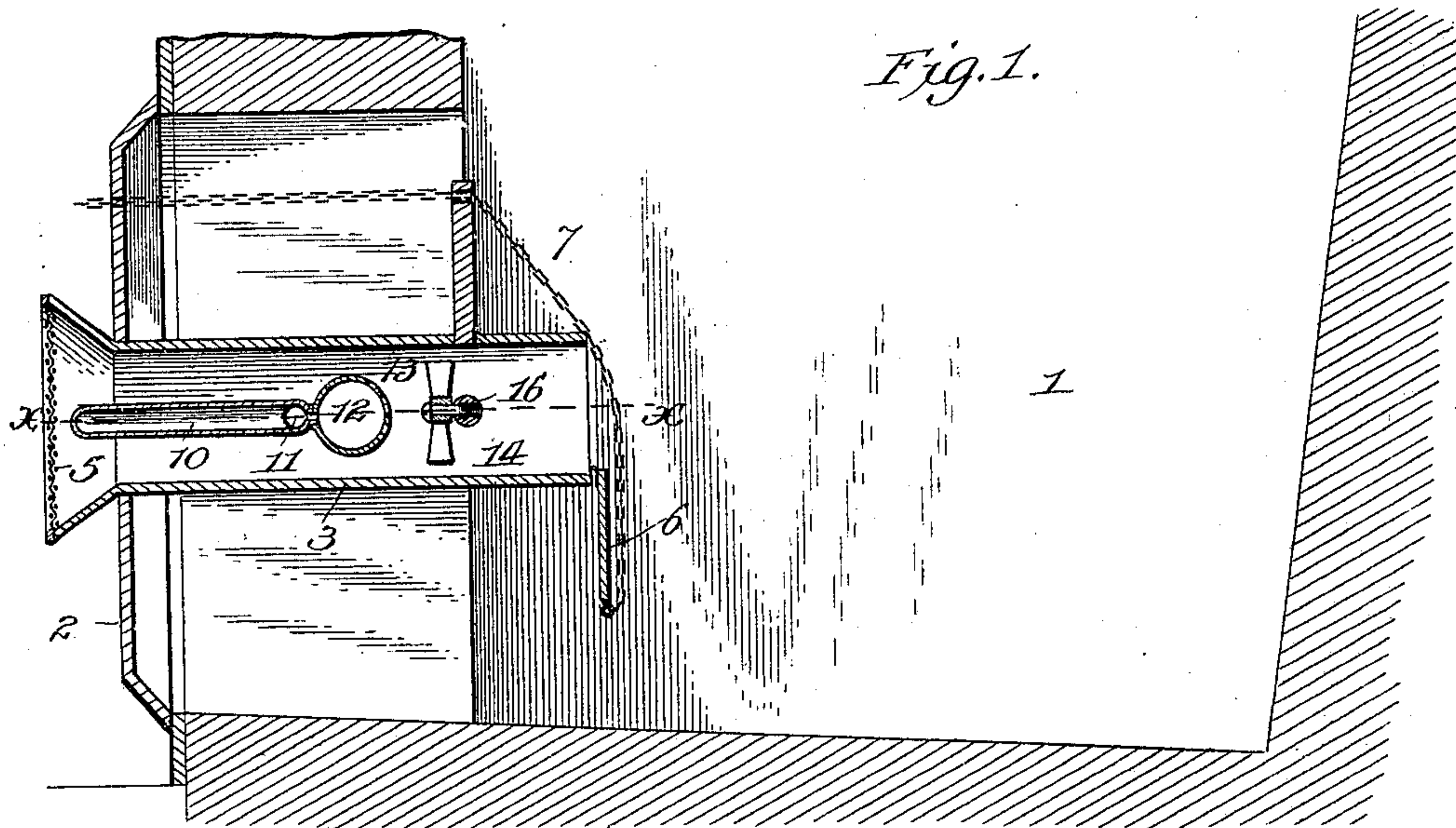
No. 617,594.

Patented Jan. 10, 1899.

J. O. MORRIS.
GENERATOR.

(Application filed June 27, 1898.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN ODEN MORRIS, OF RICHMOND, VIRGINIA, ASSIGNOR OF TWO-FIFTHS
TO JAMES C. DEATON, JR., OF SAME PLACE.

GENERATOR.

SPECIFICATION forming part of Letters Patent No. 617,594, dated January 10, 1899.

Application filed June 27, 1898; Serial No. 684,548. (No model.)

To all whom it may concern:

Be it known that I, JOHN ODEN MORRIS, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented new and useful Improvements in Generators, of which the following is a specification.

My invention relates to steam-generators for steam-boiler furnaces; and its object is to provide an improved construction of the same by means of which mixed steam and oxygen are supplied to the furnace underneath the grate, thereby promoting combustion and insuring complete consumption of the fuel.

It is also an object to provide an improved generator which can be applied to the ash-pit door of an ordinary steam-boiler furnace, whereby I secure superior advantages with respect to efficiency in operation.

The invention consists in the novel construction and combination of parts herein-after fully described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal section of so much of a steam-boiler furnace provided with my improved generator as is necessary to illustrate the invention. Fig. 2 is a horizontal section on the line $x x$, Fig. 1. Fig. 3 is a front elevation showing the ash-pit door and the swivel or flexible connection of the steam-supply pipe with the pipe leading to the boiler.

In the said drawings the reference-numeral 1 designates a steam-boiler furnace provided with a hinged door 2 to the ash-pit, having a central rectangular opening for the insertion of the generator. This door may be of any ordinary or suitable construction. The numeral 3 designates the generator, rectangular in form and of such size as to admit of its being passed through the opening in said door. The outer end of this generator is made flaring and is provided with a screen 5, which will prevent coal from entering the generator in firing or feeding fuel to the furnace. The inner end of the generator is provided with a hinged damper 6, with which is connected a chain 7, leading to the front of the furnace, by which it may be opened or closed. By partly opening this damper it can act as a deflector for directing the mixed

steam and air to the grate-bars at any angle desired, thus promoting combustion of the fuel.

The numeral 8 designates a steam-pipe connected with the boiler and also connected by a flexible or swivel joint 9 with a pipe 10, extending into the generator, the object of which swivel-joint is to enable the said door to be opened and closed without breaking the connection between said pipes. Connected with said pipe 10 is a transverse pipe 11, located in the generator and provided with three hollow balls or spheres 12, each provided with a number of steam-apertures 13. Located in front of said balls is a series of rotatable wheels 14, journaled on studs 15, secured to a transverse shaft or rod 16. These wheels consist of hubs 17, having a number of blades or buckets 18 at an angle to the said hubs. The said wheels are located in rear of the perforated balls and are in line therewith, so that the steam will be directed squarely against the same, so as to insure their being rotated so as to suck in the air.

The operation is as follows: The generator is passed through the opening in the ash-pit door, so that its inner end will be below the front end of the grate. Steam is now admitted to the generator from the boiler through the pipes 8 and 9 and escaping through the perforations in the balls will impinge upon or strike the wheels 14, rotating the same, and thus tending to produce a vacuum in the generator, which will cause air to be sucked into the latter through the screen, which, mingling with the steam, will be fed to the fire box or grate. By this means the combustion of the fuel will be promoted, insuring complete consumption of the fuel, so that no unconsumed products of combustion will escape.

The damper, which serves the double purpose of closing the end of the generator and directing the mixed steam and air to the grate-bars at an angle, so as to promote combustion, is opened by gravity when the chain is released, so as to adjust it to the proper angle.

It will be noted that the center ball 12 is larger than the two end ones for equalizing the pressure of the steam.

I am aware that it is not broadly new to

provide the generator with a single perforated ball and a series of rotatable wheels, as such are shown in the Letters Patent granted to me January 4, 1898, No. 596,903; but by providing the transverse steam-pipe and the series of large and small balls rotation of all the wheels is insured, causing an even suction of the air and steam throughout the generator.

10 The device can be applied to any ordinary furnace without the necessity of cutting holes therein, as it can be passed through the usual damper-opening in the ash-pit door.

15 Having thus fully described my invention, what I claim is—

1. In a steam-boiler furnace, the combination with the ash-pit door having an opening therein, the generator, the steam-supply pipe extending into the generator and the pipe leading to the boiler connected with said supply-pipe by a swivel or flexible connection, of the transverse pipe connected with said supply-pipe and located in said generator, the central perforated ball connected therewith, the small perforated balls at the ends of said transverse pipe and the transverse shaft provided with a series of rotatable wheels in line respectively with said perforated balls, substantially as described.

20 2. In a steam-boiler furnace, the combination with the ash-pit door having an opening therein, the generator passing therethrough,

and the steam-supply pipe extending into said generator, of the transverse pipe connected with said supply-pipe, the perforated balls, the transverse shaft, the rotatable wheels, and the damper hinged to the inner end of said generator and means for adjusting it at an angle to the line of draft for directing the mixed steam and air to the grate-bars, substantially as described.

3. In a steam-boiler furnace, the combination with the ash-pit door having an opening therein, the generator passing therethrough and the steam-supply pipe extending into said generator, of the transverse pipe connected with said supply-pipe, the central perforated ball connected therewith, the small perforated balls at the ends of said transverse pipe, the transverse shaft provided with a series of rotatable wheels in line respectively with said balls, the adjustable damper at the inner end of said generator whereby the mixed steam and air can be directed to the grate-bars and the screen at the outer end of the generator, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN ODEN MORRIS.

Witnesses:

EMMA M. GILLETT,
BENNETT S. JONES.