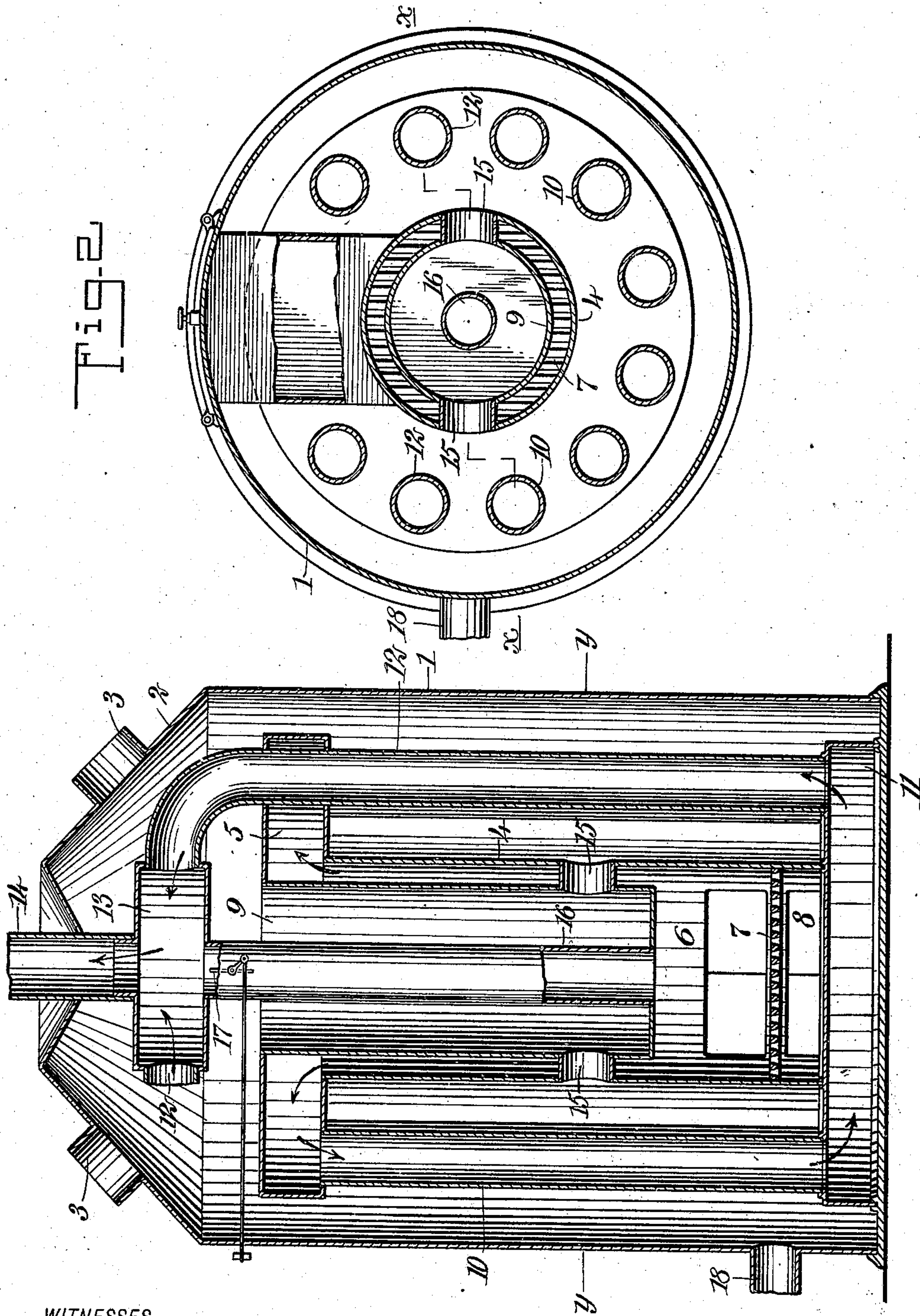


No. 881,844.

PATENTED MAR. 10, 1908.

H. BEVAN.  
HEATER.

APPLICATION FILED APR. 29, 1907.



WITNESSES  
J. A. Brophy  
C. A. Ferguson

INVENTOR  
*Herbert Bevan*  
BY *Munn & Co.*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

HERBERT BEVAN, OF BURLINGTON, NEW JERSEY.

## HEATER.

No. 881,844.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed April 29, 1907. Serial No. 370,867.

*To all whom it may concern:*

Be it known that I, HERBERT BEVAN, a citizen of Great Britain, and a resident of Burlington, in the county of Burlington and State of New Jersey, have invented a new and Improved Heater, of which the following is a full, clear, and exact description.

This invention relates to improvements in furnaces for heating air to be discharged through flues into various rooms of a dwelling or other building, the object being to provide a heater having a large heat radiating surface, so that air may be heated with an economical use of coal or other fuel.

I will describe a heater embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation on the line  $x-x$  of Fig. 2 of a heater embodying my invention; and Fig. 2 is a section on the line  $y-y$  of Fig. 1.

The heater comprises an outer shell 1 having a dome-shaped top 2 from which hot air flues 3 extend, the said flues, of course, being designed to carry the hot air to the various rooms of a building. Arranged within the outer shell 1 is a cylinder 4 which communicates at its upper end with a casing 5, and the lower portion of the cylinder 4 forms a fire chamber 6 provided with a grate 7 below which is the ash pit 8. The fire chamber and ash pit are provided with suitable doors and with tubes through which coal may be passed to the grate or ashes removed from the ash pit. Depending from the casing 5 and opening through the top thereof is an inner air cylinder 9, said air cylinder being closed at the bottom and having an exterior diameter somewhat smaller than the cylinder 4, thus providing a space through which the products of combustion or gases may pass into said chamber 5 from which the said products of combustion or gases discharge downward through tubes 10 into a bottom casing or chamber 11 and thence upward through intakes 12 which lead into a drum 13 arranged directly above the opening of the inner cylinder 9, and this drum is provided with an outlet pipe 14 for smoke and the like.

It will be noted that there are a plurality of tubes 10 and the air within the outer shell

or casing will circulate freely around the several tubes and become quickly and highly heated before passing off through the tubes 3, and of course the air will circulate around the cylinder 4 and pass through short tubes 15 into the cylinder 9, the said tubes 15 communicating with the interior of the cylinder 9 near the bottom and opening outward through the cylinder 4, and thus a portion of the air will pass into said inner cylinder and become heated.

In starting a fire upon the grate 7, it may be found that the draft through the conduit 10, chamber 11, and conduits 12 to the drum 13 is not readily established until the drum has become heated. In order to facilitate the draft at the starting of the fire, I provide a conduit 16 leading from the fire chamber 6 directly to the drum 13, and having a damper 17 for controlling the same. In starting the fire, the damper 17 would be opened to permit of a direct draft, while the damper might later be closed to cause the circulation of the products of combustion through the several conduits and chambers. The air to be heated in the furnace may enter the casing at any suitable point, as, for instance, through a conduit 18, and, as will be noted, passes through among the several conduits on its way to the delivery tubes 3.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An air heating furnace, comprising an outer shell, a cylinder arranged therein the lower portion of which forms a fire chamber, a casing with which the upper end of the cylinder communicates, a casing in the lower portion of the furnace, tube connections between the upper and lower casings, a cylinder arranged within the first-named cylinder and passing through the upper casing, said cylinder communicating with the outer shell, a drum above the upper end of said inner cylinder, and pipe connections between said drum and said lower casing.

2. A furnace for heating air, comprising an outer shell, a cylinder arranged therein, a grate in the lower portion of said cylinder, a casing with which the upper end of said cylinder communicates, a cylinder arranged within the first-named cylinder and passing through said casing, the said inner cylinder being open at the top, tubes leading from the lower portion of the inner cylinder

through the wall of the first-named cylinder, a casing in the lower portion of the furnace, tube connections between the upper and lower casings, a drum arranged above said inner cylinder and having an outlet for smoke and the like, and pipe connections between said drum and said lower casing.

3. A hot air furnace, comprising an outer shell having a dome top, flues leading from said dome top, a cylinder arranged within the casing the lower portion of which forms a fire chamber, a casing with which the upper portion of said cylinder communicates, a cylinder within the first-named cylinder and having an exterior diameter smaller than the interior diameter of the first-named

cylinder, the said inner cylinder being open at the top, a lower casing, a plurality of tubes providing communication between the upper and lower casings, a drum arranged in the upper portion of the furnace and having an outlet for smoke and the like, and pipe connections between said drum and said lower chamber.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT BEVAN.

Witnesses:

AGNES WATTS,  
ABRAHAM C. BELL.