

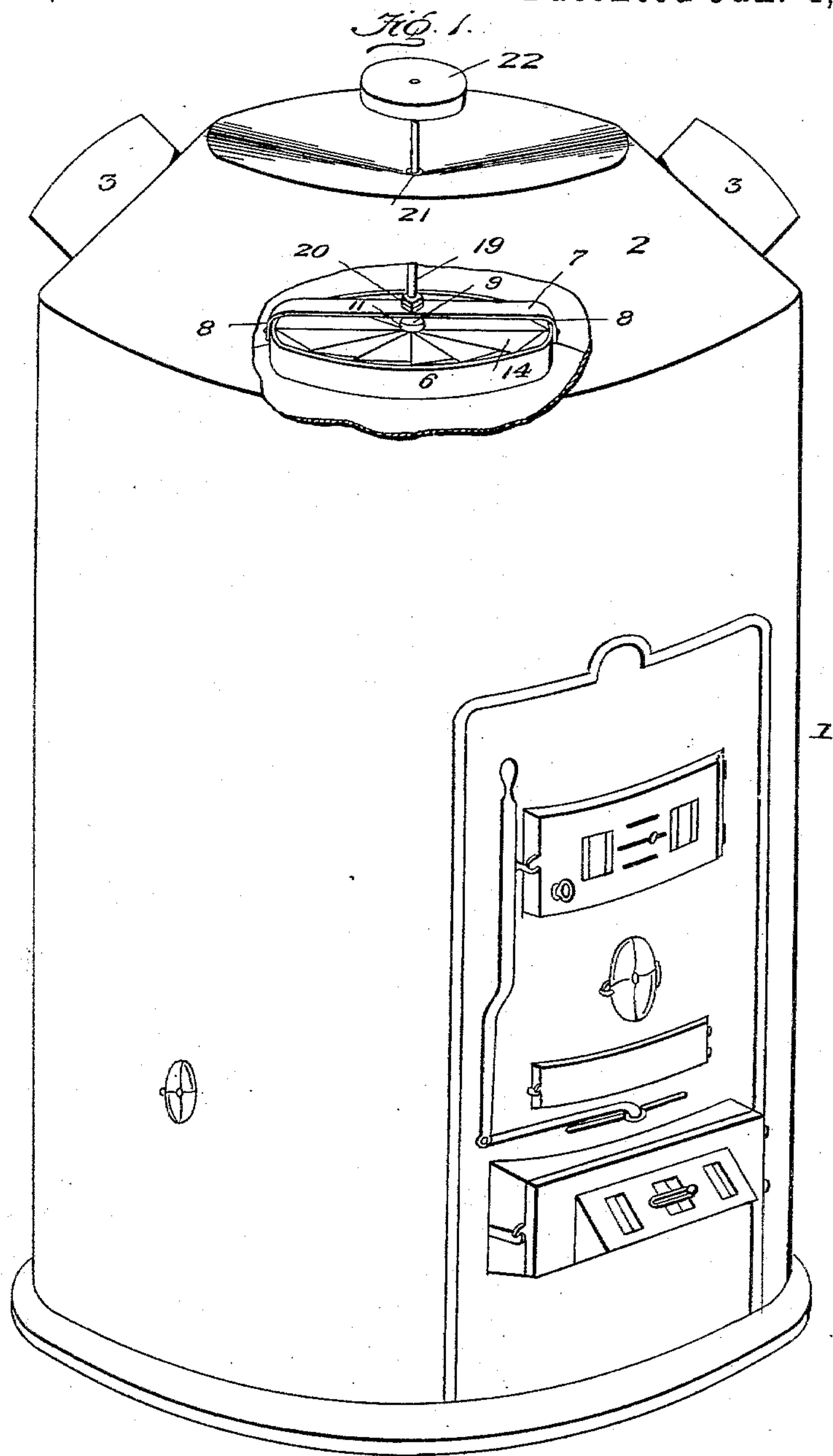
(No Model.)

2 Sheets—Sheet 1.

W. F. SHILEY.  
GRAVITY FAN FURNACE.

No. 596,916.

Patented Jan. 4, 1898.



Witnesses

*Wm. C. Shiley*  
*J. A. Billson*

Inventor  
*William F. Shiley*

By *A. B. Williams*

Attorney

(No Model.)

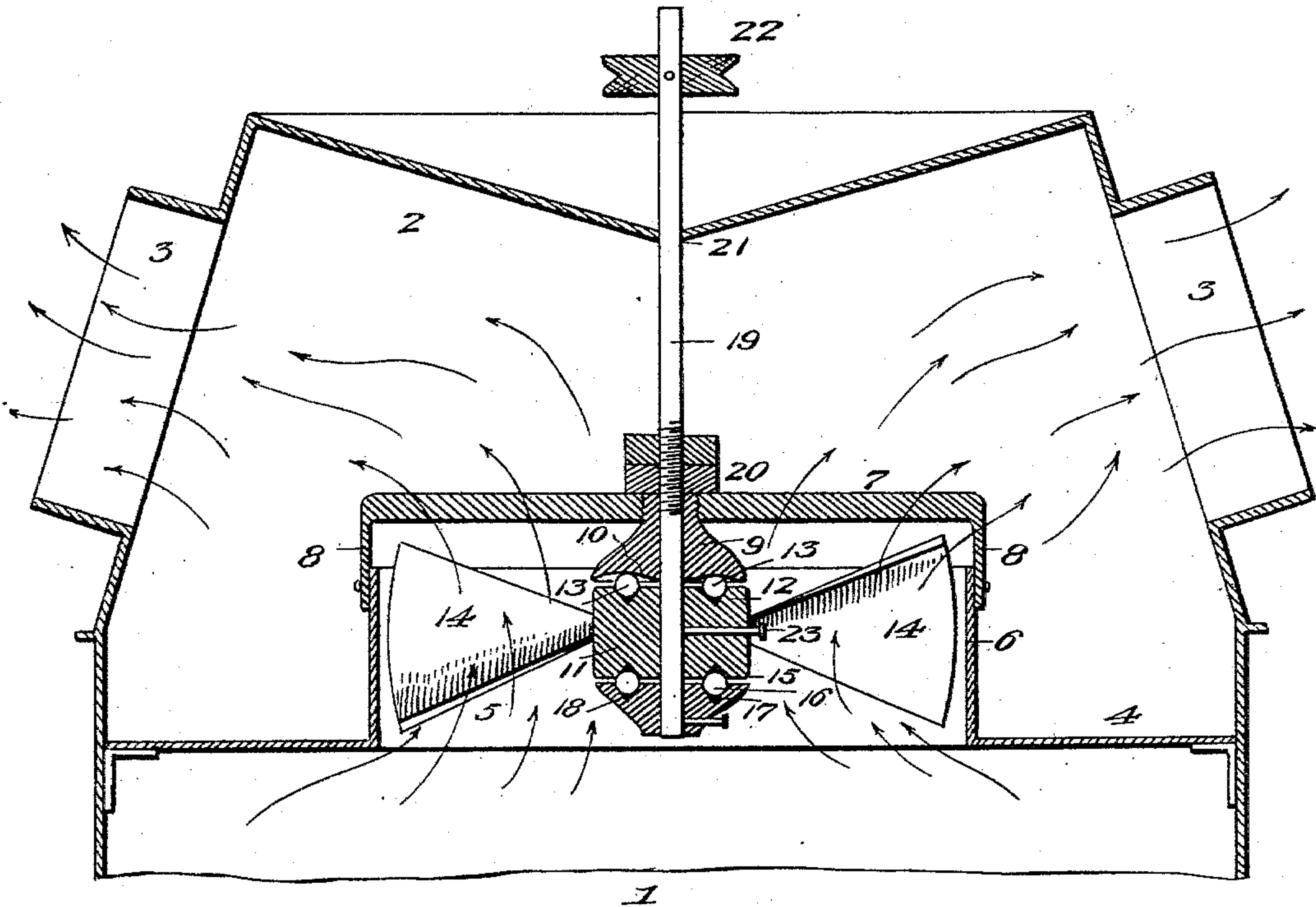
2 Sheets—Sheet 2

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Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM F. SHILEY, OF PHILADELPHIA, PENNSYLVANIA.

## GRAVITY-FAN FURNACE.

SPECIFICATION forming part of Letters Patent No. 596,916, dated January 4, 1898.

Application filed February 3, 1897. Serial No. 621,826. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. SHILEY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Gravity-Fan Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to improvements in hot-air furnaces; and the object is to improve the construction of the same to thoroughly mix the heated air in the furnace before it passes out the hot-air flues.

To this end the novelty consists in the construction, combination, and arrangement of the same, as will be hereinafter more fully described, and particularly pointed out in the claim.

In the accompanying drawings the same reference-characters indicate the same parts of the invention.

Figure 1 is a perspective view of a hot-air furnace with a portion of the top broken away to show my improvement, and Fig. 2 is a vertical section of the upper part of the same.

1 represents an ordinary form of hot-air furnace provided with the hot-air hood 2, from which the pipes 3 3 lead to the apartments to be heated.

4 represents a horizontal diaphragm extending entirely across the top of the furnace and separating the hood therefrom. This diaphragm is provided with a central circular orifice 5, surrounded by a vertical flange or collar 6. 7 represents a transverse brace extending across the top of said orifice, and its outer ends are turned downward at a right angle to form ears 8 8, which are riveted to the opposite walls of the collar 6. A sleeve 9 is centrally secured in said brace, and its lower end 10 is cup-shaped to receive the upper end of a hub 11, the contiguous face of which is formed with an annular groove 12, carrying a series of balls 13, which form a ball-bearing between the upper face of the hub and the sleeve 9.

14 14 represent a series of radial fan-blades secured to the hub and adapted to revolve snugly within the collar 6. The lower face

15 of the hub 11 rests upon a series of balls 16, mounted in an annular groove 17 in a bearing 18, secured by a set-screw on the lower end of a vertical shaft 19, suspended from the cross-brace 7 by a nut 20, and it will thus be seen that as the current of heated air from the furnace passes upward through the orifice in the diaphragm it causes the fan to revolve very rapidly and thoroughly mix the air and render it of a uniform temperature as it passes out the branch pipes, thus greatly economizing the heat and utilizing it as fast as it is generated. This shaft 19 extends upwardly through a bearing 21 in the top of the hood, and its outer end is provided with a pulley 22, to which power may be communicated from a small electric, water, or other motor. (Not shown.) In this case the set-screw 23 on the fan-hub 11 is set up against the shaft 19, so that the fan will be driven by the shaft, and in summer when the furnace is not in use the fan will force cool air through the pipes 3 3 and effectually ventilate and cool the apartments connected therewith.

Although I have specifically described the construction and relative arrangements of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

A furnace of the class described, comprising the horizontal diaphragm 4, provided with the central orifice 5, the annular vertical flange 6, and the transverse brace 7, the sleeve 9 secured in said brace, the vertical shaft 19 mounted in said sleeve, the hub 11 adjustably mounted on said shaft and provided with the fan-blades 14, and the bearing 18 secured to the lower end of said shaft, substantially as shown and described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WILLIAM F. SHILEY.

Witnesses:

J. A. WILLSON,  
H. J. ENNIS.