

No. 755,076.

PATENTED MAR. 22, 1904.

S. R. THOMPSON.
BOILER FURNACE.

APPLICATION FILED JUNE 22, 1901. RENEWED AUG. 1, 1903.

NO MODEL.

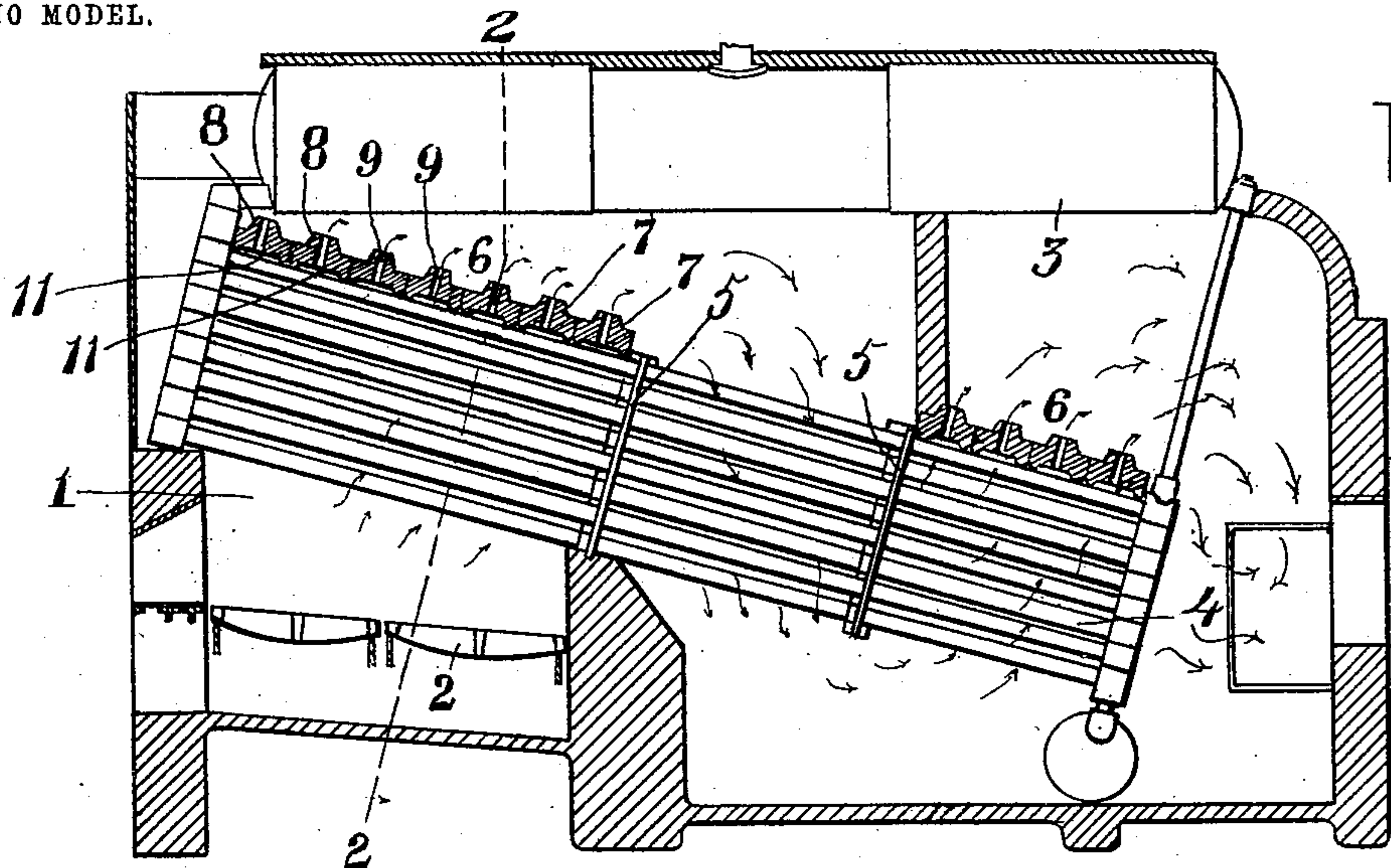


FIG. 1.

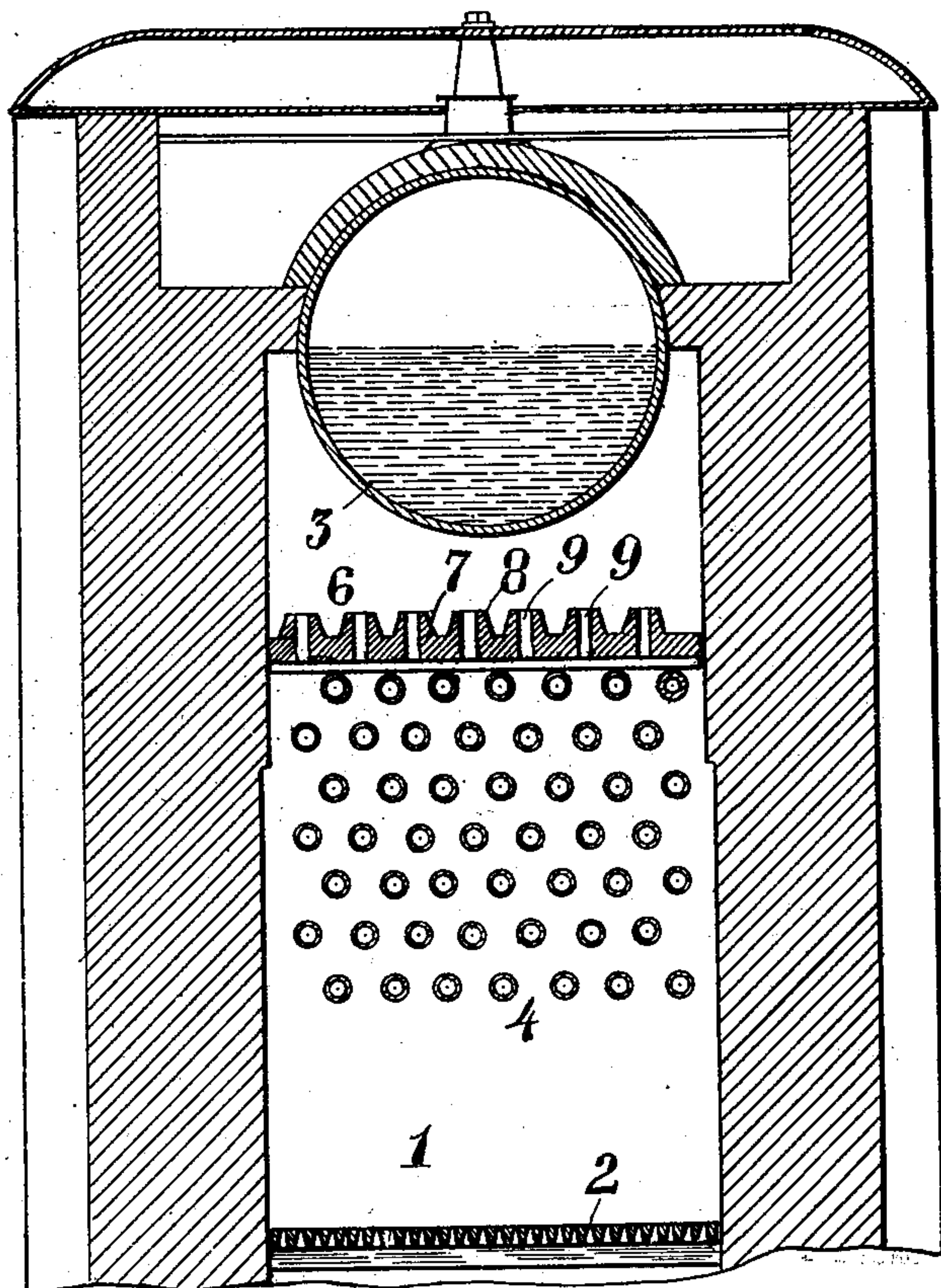


FIG. 2.

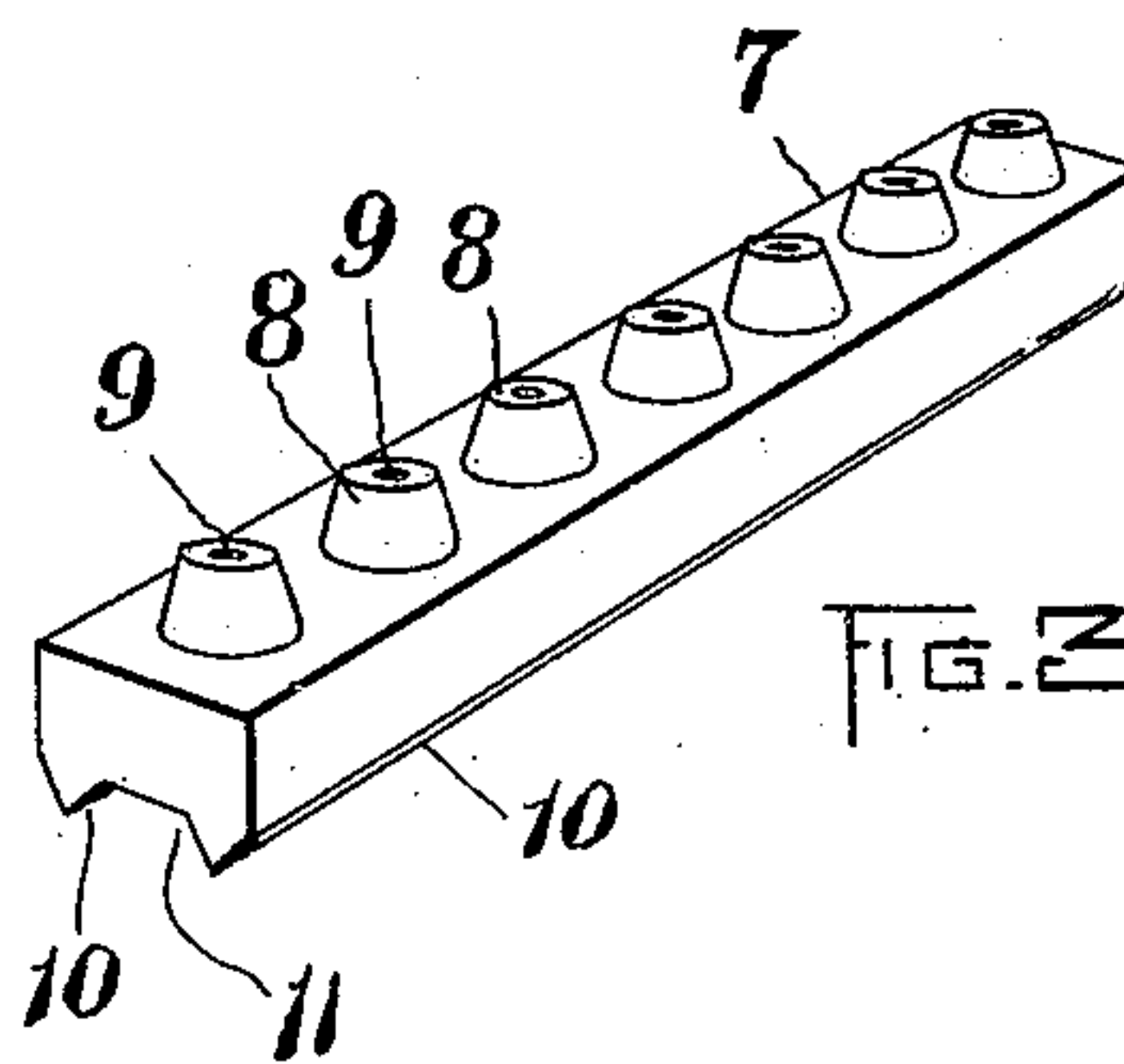


FIG. 3.

WITNESSES:
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UNITED STATES PATENT OFFICE.

SAMUEL R. THOMPSON, OF EAST LEXINGTON, MASSACHUSETTS, AS-
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BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 755,076, dated March 22, 1904.

Application filed June 22, 1901. Renewed August 1, 1903. Serial No. 167,948. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. THOMPSON, of East Lexington, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Boiler-Furnaces, of which the following is a specification.

This invention relates to water-tube boilers; and its object is to improve and regulate the combustion of the furnace-gases.

It consists in locating close to a group of water-tubes in the path of the furnace-gases a perforated partition of a novel character, composed of refractory material, such as fire-clay, which becomes heated by the flame and gases from the furnace and gives back its heat to the unconsumed gases and smoke, with the effect of improving their combustion.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal vertical section of a boiler of the Babcock & Wilcox pattern provided with my improvement. Fig. 2 represents a section on the line 2 2 of Fig. 1. Fig. 3 represents a detail perspective view of one of the tiles composing the perforated partition.

The same reference characters indicate the same parts in all of the figures.

In the drawings, 1 represents the furnace-chamber or fire-box of the boiler, and 2 represents the grate.

3 is an elevated horizontal steam-drum, and 4 represents an inclined group or stack of tubes connected at each end to the steam-drum 3 and having three compartments for the gases separated by transverse baffles 5 5, which cause the furnace-gases to travel first upwardly through the front portion of the stack of tubes, then downwardly through the middle portion, and upwardly through the rear portion, as indicated by the arrows.

Across the front and rear sections of the tube group, in the path of the furnace-gases, I locate partitions 6 6, composed of a series of fire-clay tiles 7 7, laid close together in parallel arrangement crosswise of the tubes, the partitions being held from sliding in any suitable manner, as by the upper end of the first

baffle 5 in the case of the front partition 6 and by the rear headers in the case of the rear partition. The tiles 7 are formed on their upper sides with a series of nozzle-like projections 8 8, in each of which is a hole or aperture 9, traversing the tile vertically. The lower side edges of the tile are provided with two parallel ribs 10 10, which rest against the boiler-tubes and between which is a groove or channel 11, extending longitudinally of the tile and transversely of the tube group. These channels serve to give a free circulation of the gases over the tubes in the upper row and allow free access of the gases to the lower ends of the apertures 9. By extending the apertures 9 through the projections 8 they are made of such length as to cause the gases to have intimate contact with the tiles and become thoroughly heated in the case of unconsumed gases and smoke or to effectually give off their heat to the tiles in the case of flame or incombustible gases. The described construction of the tiles allows this length of aperture to be maintained without adding greatly to the amount of material in the tiles and thus increasing their cost. At the same time the surface on the upper sides of the tiles is increased and the furnace-gases, which will have some eddying action above the partition, will be exposed to a greater heat absorbing or radiating surface.

I claim—

1. In a steam-boiler, a furnace, a group of water-tubes, and a perforated refractory partition placed across the path of the furnace-gases and lying against the group of tubes, said partition having a series of channels on its side next the tubes and transverse to the length of said tubes, for the circulation of gases.

2. In a steam-boiler, a furnace, a group of water-tubes, and a perforated refractory partition placed across the path of the furnace-gases and lying against the group of tubes, the side of said partition away from the tubes having numerous outstanding projections to increase the heat radiating and absorbing surface thereof.

3. In a steam-boiler, a furnace, a group of water-tubes, and a perforated refractory partition placed across the path of the furnace-gases and lying against the group of tubes, the side of said partition away from the tubes having numerous outstanding projections to increase the heat radiating and absorbing surface thereof, the perforations of said partition extending through said projections.
- 10 4. A section or block for boiler-partitions comprising an elongated tile of refractory ma-

terial having a longitudinal channel on one side and on the other side a series of nozzle-like projections, said tile also having ducts or apertures traversing the partition through said projections. 15

In testimony whereof I have affixed my signature in presence of two witnesses.

S. R. THOMPSON.

Witnesses:

A. D. HARRISON,
C. F. BROWN.