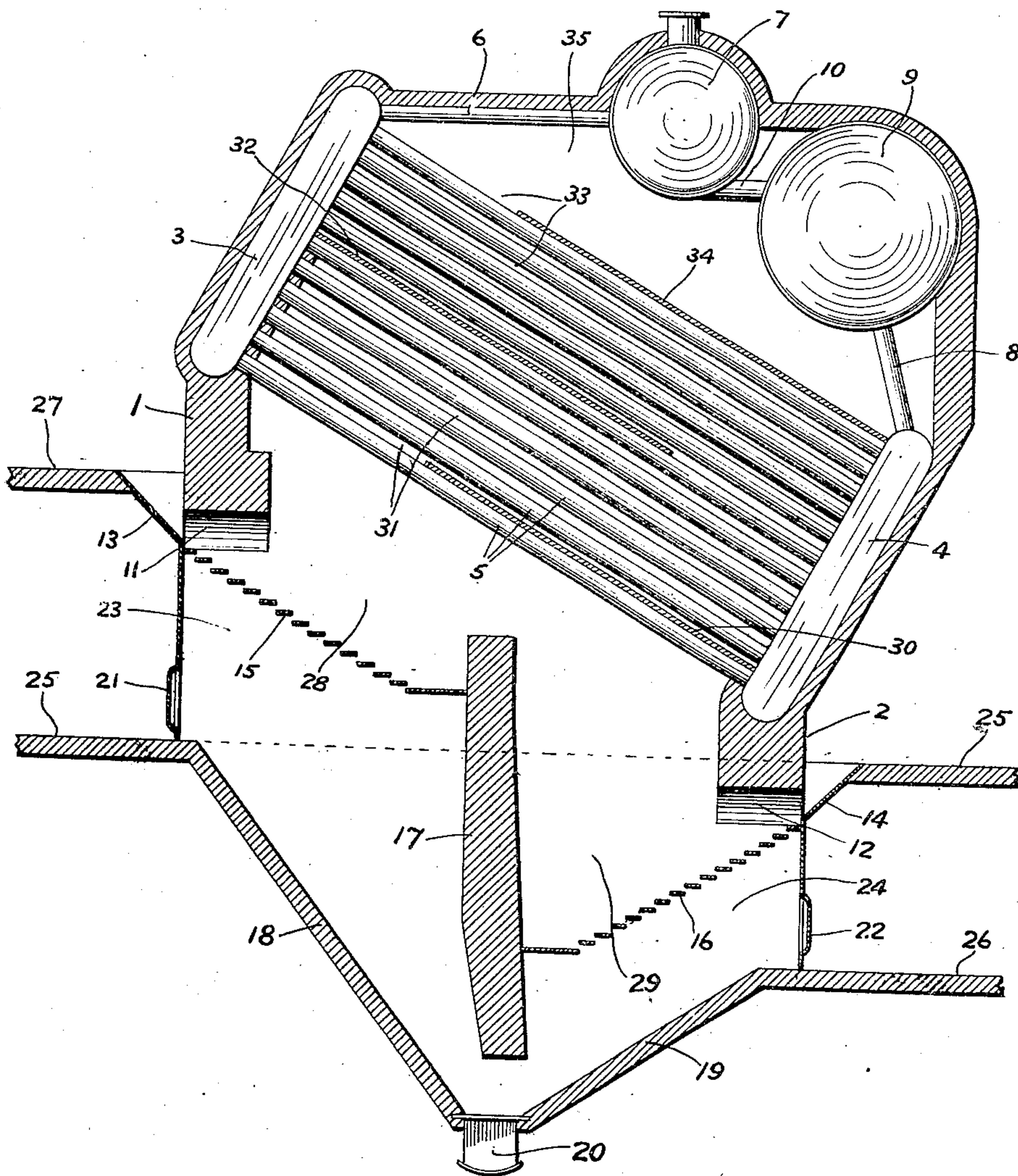


J. C. PARKER.  
BOILER FURNACE.  
APPLICATION FILED JAN. 3, 1908.

914,749.

Patented Mar. 9, 1909.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN C. PARKER, OF PHILADELPHIA, PENNSYLVANIA.

## BOILER-FURNACE.

No. 914,749.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed January 3, 1908. Serial No. 409,117.

*To all whom it may concern:*

Be it known that I, JOHN C. PARKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Boiler-Furnaces, of which the following is a specification.

This invention is an inclined tube boiler furnace characterized by grates disposed at different elevations, in correspondence with the inclination of the boiler tubes, and having a large area, preferably extending under substantially the entire boiler, with a view to increasing the steam generating capacity. The lower tubes of the boiler are preferably exposed through substantially their entire length to the radiant heat from the fuel carried by the grates, to facilitate steam generation, and the gases evolved from the fuel upon the lower grate are carried over the fuel upon the upper grate to further the combustion of such gases, the combustion chamber above the upper grate being preferably smaller than the chamber above the lower grate and the gases from the latter combustion chamber being thereby brought into closer relation to the fire upon the upper grate. In the preferred construction two grates extend downwardly respectively from hoppers having different elevations corresponding to the respective ends of the boiler at which they are located, to a bridge wall, each grate having beneath it an ash pit with an inclined floor extending to an outlet and the upper grate being substantially parallel to the tubes.

The accompanying drawing represents a vertical sectional view of a boiler furnace embodying the invention.

The drawing represents a furnace having walls 1 and 2 which support a boiler having the upper and lower headers 3 and 4 resting on the respective walls. The headers 3 and 4 connect the respective ends of the inclined water circulating and steam generating tubes 5 and are connected respectively at their tops by the steam tubes 6 with the steam drum 7 and by the water tubes 8 with the water drum 9, water tubes 10 connecting the lower part of the drum 7 with the upper part of the drum 9.

The walls 1 and 2 contain the coking arches 11 and 12, beneath which fuel is fed from the corresponding hoppers 13 and 14 to the respective grates 15 and 16 which ex-

tend inwardly and downwardly to the bridge wall 17; the respective arches, hoppers and grates having different elevations corresponding with the different elevations of the boiler ends under which they are placed. The ash pit floors 18 and 19 beneath the grates extend downwardly and inwardly to an outlet 20 beneath the bridge wall 17.

The doors 21 and 22 permit access to the respective ash pits 23 and 24 from the floors 25 and 26 of different levels, and the floors 27 and 28 at the level of the respective hoppers 13 and 14 provide for working and storing fuel to be fed to the grates.

The gaseous products of combustion evolved from the fuel burning on the upper and lower grates 15 and 16 are carried into contact with the upper and lower ends of the lower tubes 5 by the corresponding combustion chambers 28 and 29 divided by the wall 17. The gaseous products from the chamber 29 are deflected by the baffle 30 supported by the tubes 5 and flow over the wall 17 into the top of the chamber 28, whence the total volume of gases flows in contact with the tubes through the pass 31 beneath the baffle 32, thence through the pass 33 beneath the baffle 34, and thence to the pass 35 into contact with the drums 7 and 9.

By the foregoing construction and arrangement means are provided for conveniently feeding and satisfactorily burning fuel under the entire inclined tube boiler with the direction of the gaseous products of combustion so that the upper ends of the lower tubes receive the highest heating effect, to induce evolution of steam upwardly through the upper header. The grates have different elevations corresponding to but not necessarily equally distant from the boiler ends under which they are placed, to provide room for stoking and combustion under both ends of the boiler.

Having described my invention, I claim:—

1. In a boiler furnace, inclined water tubes, two distinct combustion chambers under the respective ends of the tubes, in one of the combustion chambers under the upper ends of the tubes a grate inclined in the direction of inclination of the tubes, in the other of the combustion chambers under the lower ends of the tubes a grate lower in position than the grate under the upper ends of the tubes, and means for directing the products of combus-



tion from the chamber containing the lower grate through the chamber containing the upper grate.

2. In a boiler furnace, inclined water tubes, two distinct combustion chambers under the tubes, two grates in the combustion chambers extending under substantially the entire length of the tubes, one of the grates being disposed substantially parallel to the tubes under the higher ends thereof and the other being disposed at a lower level under the lower ends of the tubes, and means for carrying the gaseous products of combustion from the lower grate over the upper grate, the lower tubes being exposed to radiant heat from fuel on both grates.

3. In a boiler furnace, inclined water tubes, two distinct combustion chambers under the respective ends of the tubes, and in the respective combustion chambers inwardly inclined grates at different elevations corresponding to the different elevations of the

ends of the tubes under which they are placed, the tubes being exposed to the radiant heat from fuel on both grates.

4. In a boiler furnace, inclined water tubes, two distinct combustion chambers under the respective ends of the tubes, in the respective combustion chambers inwardly inclined grates at different elevations corresponding to the different elevations of the ends of the tubes under which they are placed, the tubes being exposed to the radiant heat from fuel on both grates, and under the respective grates floors inclined downwardly and inwardly.

In witness whereof I have hereunto set my name this 31st day of December, 1907, in the presence of the subscribing witnesses.

JOHN C. PARKER.

Witnesses:

ROBERT JAMES EARLEY,  
JOS. G. DENNY, Jr.