M. KELLY.

STEAM BOILER.

APPLICATION FILED MAR. 31, 1911.

1,018,425. Patented Feb. 27, 1912.

Fig. 1.

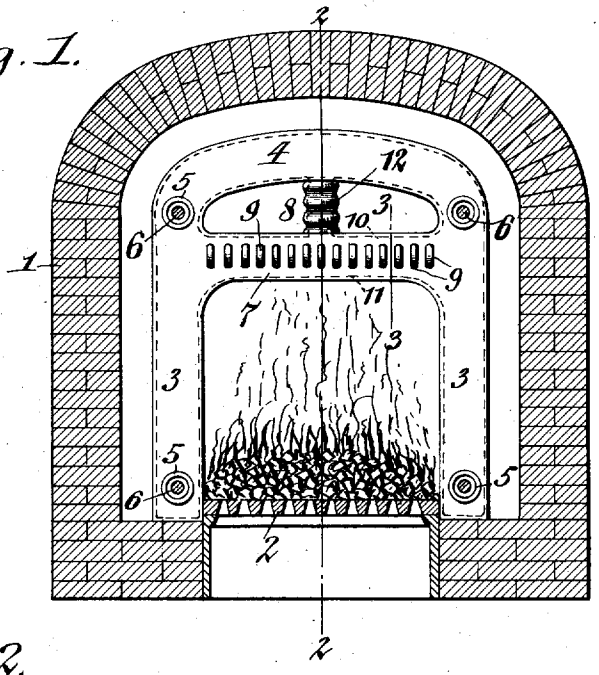


Fig. 2.

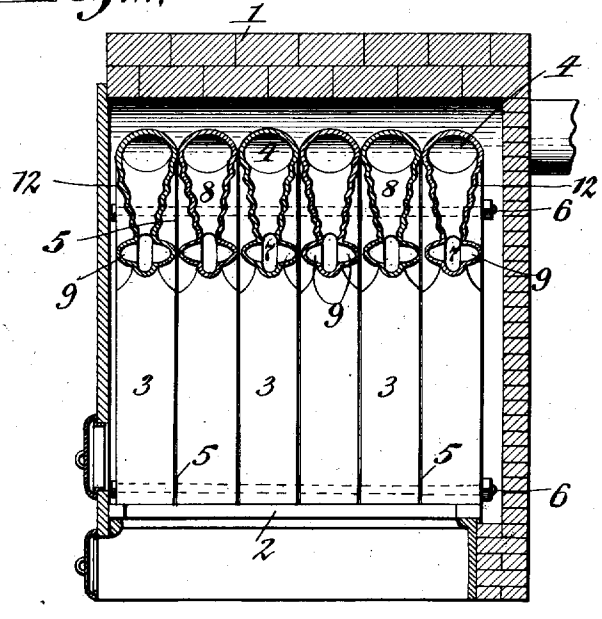


Fig. 3.

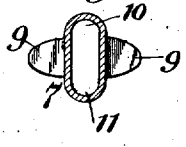
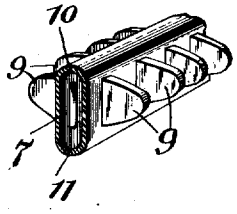


Fig. 4.



Witnesses:-
Alfred Bakenhagen
Richard Sommer

Inventor
Michael Kelly
by Geyer & Popp
Attorneys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MICHAEL KELLY, OF BUFFALO, NEW YORK.

STEAM-BOILER.

1,018,425. Specification of Letters Patent. Patented Feb. 27, 1912.

Application filed March 31, 1911. Serial No. 618,171.

To all whom it may concern:

Be it known that I, MICHAEL KELLY, a citizen of the United States, and resident of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Steam-Boilers, of which the following is a specification.

This invention relates to a steam boiler and has the object to provide a boiler for this purpose in which the sections are so constructed that the steam or water of lower temperature is permitted to separate from the water of lower temperature with the greatest freedom and thus enable hot water to be produced rapidly or steam to be generated quickly and with a minimum expenditure of fuel.

In the accompanying drawings: Figure 1 is a vertical transverse section of a steam boiler embodying my invention. Fig. 2 is a vertical longitudinal section of the same in line 2—2, Fig. 1. Fig. 3 is a fragmentary cross section in line 3—3, Fig. 1. Fig. 4 is a fragmentary sectional perspective view of the cross pipe of one of the boiler sections.

Similar letters of reference indicate corresponding parts throughout the several views.

1 represents the housing of the boiler containing the furnace and 2 the grate arranged below the furnace.

Within the housing and above the grate is arranged a group of generator sections which are arranged in a longitudinal row and each of which comprises two upright hollow legs or columns 3, 3 arranged on opposite sides of the furnace, and a hollow arch 4 connecting the upper ends of the legs. The several sections communicate with each other by registering nipples 5 and the same are tied together by a plurality of horizontal tie rods 6 passing preferably through the nipples.

Below the arch of each generator section the legs thereof are connected by a hollow cross pipe 7 which communicates at its ends with the legs and which is connected at its central part with the central part of the companion arch by an upright hollow column or pipe 8.

The cross pipe is preferably contracted so that the same is oblong in cross section and arranged with its wide or flat sides vertically. On its opposite flat sides the cross pipe is provided with two horizontal rows of corrugations or hollow wings 9 which are elongated vertically and open into the interior of the cross pipe. These wings do not extend to the upper and lower sides of the cross pipe but terminate at their upper and lower ends short of the top and bottom of this pipe, thereby leaving a straight or unbroken horizontal conduit or runway 11 for the water in the lower part of each cross pipe and a straight or unbroken horizontal conduit or runway 10 for the steam in the upper part of the cross pipe. It follows from this construction that the water of lower temperature flows freely in the lower part of each cross pipe and is supplied to the wings without meeting any obstructions.

Upon entering the wings the water owing to its divided condition is rapidly raised in temperature or converted into steam which escapes to the top of the cross pipe and is then conducted by the upper part of the cross pipe to the central upright pipe without encountering any obstruction, thereby facilitating the escape of the steam or water of higher temperature to the top of the generator section. By this means the water is heated to a higher temperature, steam is generated more rapidly and with less consumption of fuel, thereby enabling a smaller boiler to be used for producing a given amount of hot water or steam and economizing in fuel.

For the purpose of permitting the central pipe to expand and contract freely in adapting itself to changes of temperature without liability of fracturing the same this pipe is provided with corrugations 12 arranged transversely of its length.

I claim as my invention:

1. A steam boiler comprising a section having upright hollow columns at its opposite sides, a hollow arch connecting the upper ends of said columns, and a horizontal hollow pipe connecting said columns below the arch and provided on its opposite sides with horizontal rows of laterally projecting hollow wings which terminate short of the top and bottom of said pipe leaving a straight low temperature water supply runway or conduit in the bottom of said pipe and a straight high temperature water or steam delivery runway or conduit in the upper part of said pipe.

2. A steam boiler comprising upright hollow columns, a hollow transverse arch connecting the upper ends of said columns, a horizontal cross pipe connecting the col-

umns below said arch and provided on its underside with a contracted longitudinal channel forming a low temperature water conduit and on its upper side with a contracted longitudinal channel forming a high temperature or steam conduit and provided on laterally opposite sides with hollow wings or corrugations, and an upright hollow column connecting the central parts of said cross pipe and arch.

Witness my hand this 23rd day of March, 1911.

MICHAEL KELLY.

Witnesses:
E. M. GRAHAM,
ANNA HEIGIS.