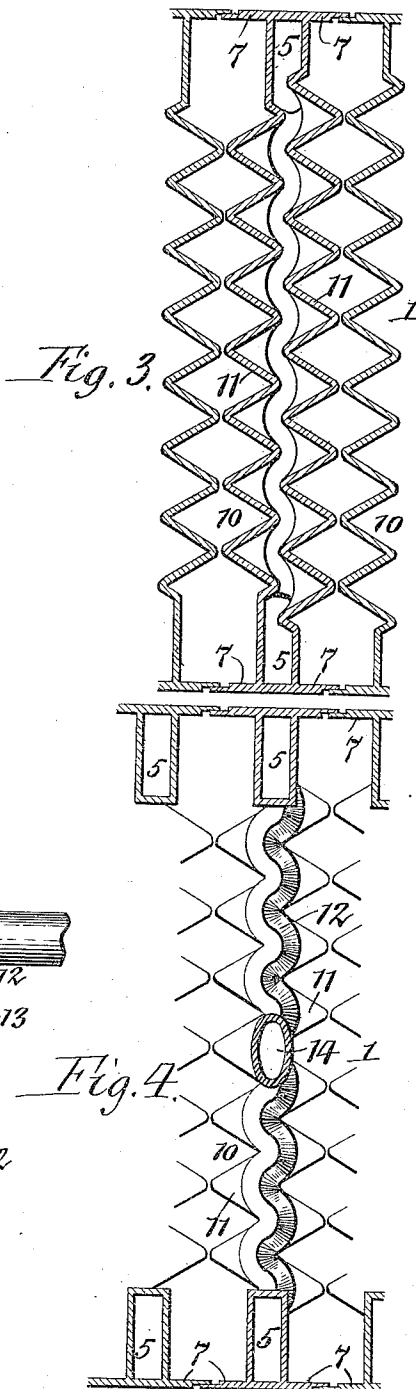
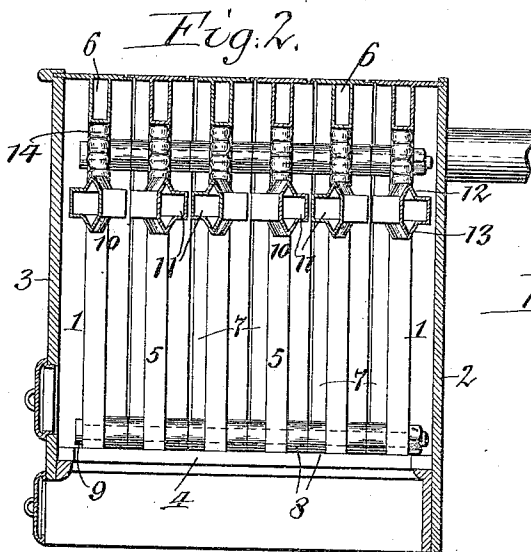
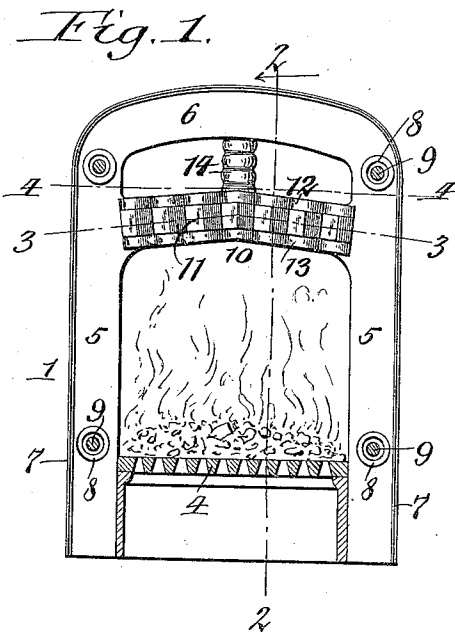


M. KELLY.
STEAM BOILER.

APPLICATION FILED FEB. 19, 1912.

1,041,295.

Patented Oct. 15, 1912.



Witnesses:
Leroy S. Hodges
Anna Heigie

Inventor
Michael Kelly
by *[Signature]* Attorneys.

UNITED STATES PATENT OFFICE.

MICHAEL KELLY, OF BUFFALO, NEW YORK.

STEAM-BOILER.

1,041,295.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed February 19, 1912. Serial No. 678,476.

To all whom it may concern:

Be it known that I, MICHAEL KELLY, a citizen of the United States, residing at 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 sectional steam boiler and has the object to provide a boiler of this character which will permit of generating steam more rapidly and economically.

In the accompanying drawings: Figure 1 is a vertical transverse section of a steam boiler embodying my improvements. Fig. 2 is a vertical longitudinal section of the same taken in line 2—2, Fig. 1. Figs. 3 and 4 are horizontal sections taken in the correspondingly numbered lines in Fig. 2.

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

In its general organization this boiler comprises a plurality of upright sections 1 which are arranged in a longitudinal row one behind the other, a back wall or plate 2 forming the rear end of the fire space or furnace between the boiler sections, a front wall or plate 3 forming the front side of this fire space, and 4 the grate within the fire space.

Each of the boiler sections comprises two hollow upright columns 5, 5 which are arranged at opposite ends of the section and a hollow arch 6 connecting the upper ends of the pair of columns of the section. On opposite sides of the columns and arch of each section are arranged marginal flanges 7 which are adapted to engage with corresponding flanges on the adjacent boiler sections and thereby form part of the inclosing casing or shell for the fire space or furnace of the boiler.

The interiors of the several boiler sections communicate with each other by means of hollow nipples 8 and the several boiler sections are drawn firmly against each other so as to form a tight joint between their communicating nipples by means of tie rods 9 extending through these nipples.

Below the upper hollow arch of each boiler section is arranged a horizontal cross pipe 10 which is connected at its opposite ends with the hollow columns of this section. The lower cross pipe of each of the boiler sections has the central part of its

side walls corrugated horizontally, the corrugations 11 of each of these walls being substantially V-shaped and forming external vertical passages between the same, and the relative arrangement of the corrugations of both walls is such that each base between two corrugations of one wall is arranged opposite the space between two bases of adjacent corrugations of the other wall, thereby forming a tortuous, wavy or serpentine path for the water as it passes horizontally through this pipe. The bases of the corrugations on the central parts of both side walls of the cross pipe are preferably in line or nearly so. By this means the water is divided into comparatively thin sheets and is of substantially the same thickness in all parts of this pipe, thereby causing the same to be heated more readily and steam to be generated quicker than has been possible heretofore.

The upper and lower parts 12, 13 of the cross pipe of each boiler section are contracted or made V-shaped and narrower than the width of the corrugated central part thereof, the bottom of the lower narrow part being continuous and even and the top of the upper part being also continuous or even. By this means water is readily conducted by the lower narrow part of the cross pipe to all of the laterally extending corrugations of the central part of this pipe and the steam which is generated or the water of higher temperature which is created by the heat of the furnace, is carried off more quickly by the upper narrower part of the cross pipe.

In order to properly connect the lower and upper channels of each cross pipe section with the corrugated side walls of this pipe the channels are preferably made of wavy or corrugated form, each corrugation of these channels extending in the same direction and corresponding to the corrugations of the central parts of the side walls, as shown in Figs. 3 and 4.

The central part of the lower cross pipe of each boiler section is preferably connected with the central part of the arch of this section by an upright central column 14 which latter is preferably corrugated vertically as shown so as to permit the same to expand and contract freely without liability of cracking under the effects of the heat of the furnace. To facilitate the movement of the water and steam from the side columns

to the central column this pipe inclines from its outer ends upwardly toward its central part where it unites with the central column.

By means of this improved construction of boiler a greater amount of hot water or steam can be produced for a given consumption of fuel and in a shorter time than has been possible heretofore. Furthermore, this construction of boiler permits of producing the same at comparatively low cost and also enables the same to be assembled without the employment of skilled help.

I claim as my invention:

1. A boiler comprising a section having upright hollow columns at its opposite sides, a hollow arch connecting the upper ends of the columns, and a hollow horizontal pipe connecting the columns below said arch and having its upright sides corrugated horizontally so that the base between two adjacent corrugations of one of these sides is arranged opposite to the space between two

bases of adjacent corrugations of the other wall.

2. A boiler comprising a section having upright hollow columns at its opposite sides, a hollow arch connecting the upper ends of the columns, a hollow horizontal pipe connecting the columns below said arch and having its upright sides corrugated horizontally so that the base between two adjacent corrugations of one of these sides is arranged opposite to the space between two bases of adjacent corrugations of the other wall and having its upper and lower parts narrowed and constructed in the form of waving channels which correspond to the corrugations of the side walls thereof.

Witness my hand this 17th day of February, 1912.

MICHAEL KELLY.

Witnesses:

THEO. L. POPP,
ANNA HEIGIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."