No. 737,937. PATENTED SEPT. 1, 1903.

M. F. KENELY.

BOILER.

APPLICATION FILED JAN. 9, 1903.

NO MODEL.

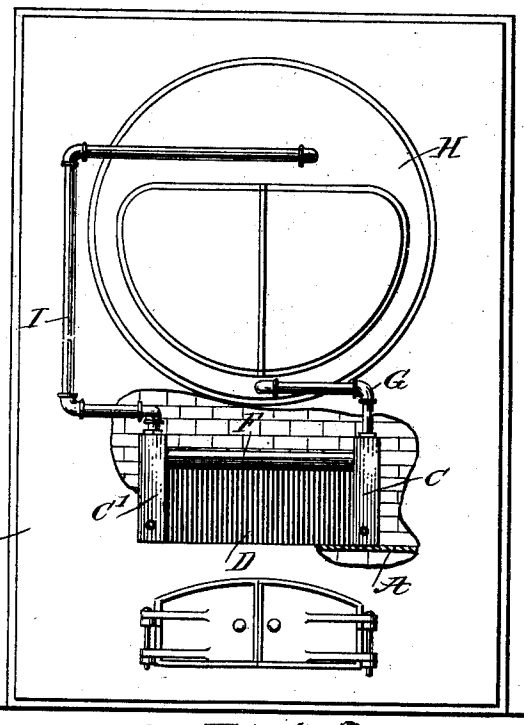
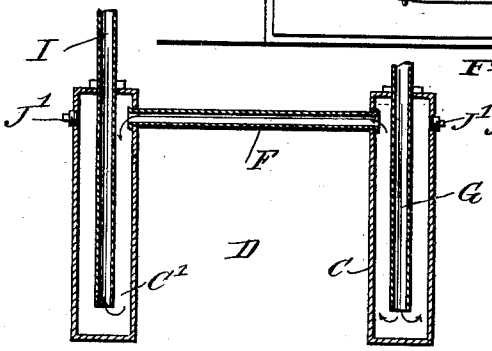
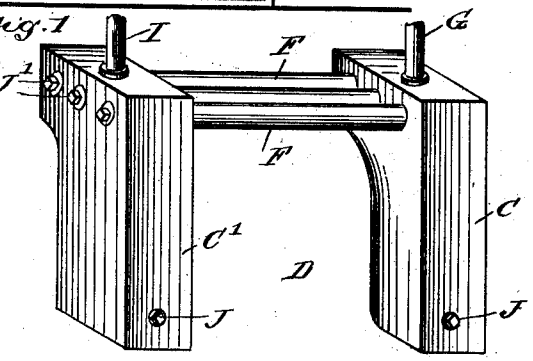


Fig. 1





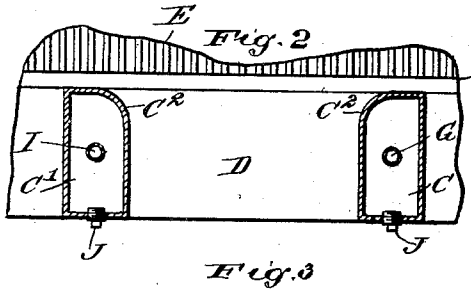


Fig. 2

Fig. 3

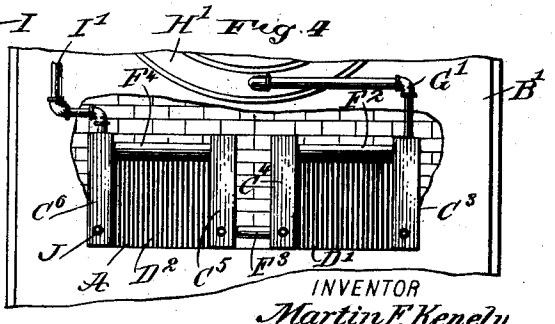


Fig. 4

Fig. 5

WITNESSES:

John A. Berglund

Reg. J. Hoskins

INVENTOR

Martin F. Kenely

BY Munn & Co.

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C

No. 737,937. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

MARTIN F. KENELY, OF ELIZABETH, NEW JERSEY.

BOILER.

SPECIFICATION forming part of Letters Patent No. 737,937, dated September 1, 1903.

Application filed January 9, 1903. Serial No. 138,391. (No model.)

To all whom it may concern:

Be it known that I, MARTIN F. KENELY, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented a new and Improved Boiler, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in boilers whereby the water is quickly heated, a rapid circulation of the water is effected, and the front of the boiler is protected against the intense heat emanating from the burning fuel in the fire-box.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the improvement as applied to a single-door boiler, parts being broken out. Fig. 2 is an enlarged sectional front elevation of the water heating and circulating boxes. Fig. 3 is a sectional plan view of the same. Fig. 4 is a perspective view of the same, and Fig. 5 is a front elevation of the improvement as applied on a double-door boiler.

On the dead-plate A of a boiler-front B are set spaced water boxes or chambers C and C′, forming the side walls of a door-opening D, leading to a fire-box E, and the opposite sides of the said boxes C and C′ are connected with each other near the top by a plurality of pipes F to establish communication between the said water-boxes, the pipes also forming the roof of the door-opening D. An inlet-pipe G, connected with a boiler H at or near the bottom thereof, extends through the top of the box C to the inside thereof to within a short distance of the bottom of the box, and an outlet-pipe I connects the box C′ with the boiler H near the top of the water-compartment thereof, as plainly indicated in Fig. 1, the inlet end of the pipe I in the box C′ being within a short distance of the bottom thereof, as plainly indicated in Fig. 2. Screw-plugs J are arranged in front of the boxes C and C′, near the lower ends thereof, to allow cleansing of the boxes of any possible sediment, if necessary, and screw-plugs J′ screw in the outer sides of the boxes C and C′ in alinement with the pipes F to allow of beading the inner ends of the pipes F on the inner sides of the boxes C and C′ to prevent leakage. The inner corners of the opposite sides of the boxes C C′ are rounded off, as plainly indicated at C^2 in Fig. 3, to permit the fireman to conveniently reach around in the corners of the fire-box E in placing the fuel in position in the fire-box and in stirring the burning fuel whenever it is desired to do so. As shown in Fig. 4, the upper portions of the boxes C C′ are somewhat deeper than the lower portions thereof, and the lower portions have their corners rounded off, as described. Now when the boiler is in use then the water from the boiler H passes to the pipe G into the water-box C near the bottom thereof, so that the water in being heated in the box C rises to finally flow to the pipe F into the upper portion of the box C′, and this water now circulates in a downward direction in the box C′ to finally reach the outlet-pipe I, which conducts the water back into the boiler H at a higher level than that at which the water flows from the boiler into the pipe G. Thus by the arrangement described the water is quickly heated in its passage through the highly-heated boxes C and C′ and their connecting-pipes F, and a rapid circulation of the water in the boiler H is effected, so that a quick generation of steam takes place.

By having the water-boxes C and C′ and the connecting-pipes F forming the side walls and roof of the door-opening D it is evident that the front of the boiler is effectively protected, and the heat radiating from the burning fuel in the water-box is utilized for heating the water circulating through the protector formed by the boxes C C′, the pipes F, and the inlet and outlet pipes G and I.

In case the boiler-front B′ is provided with two door-openings D′ and D^2 then the water-boxes C^3 and C^4 are used as side walls for the door-opening D′ and the water-boxes C^5 and C^6 are used for side walls of the door-opening D^2. Pipes F^2 connect the water-boxes C^3 and C^4 with each other near the tops thereof, while the lower ends of the water-boxes C^4

and C^5 are connected with each other by pipes F^3, and pipes F^4 connect the upper ends of the water-boxes C^5 and C^6 with each other to establish circulation of the water through the several water-boxes and their connecting-pipes, it being understood that the water enters the water-box C^3 by the inlet-pipe G′ and passes from the water-box C^6 by the outlet-pipe I′. The pipes G′ and I′ are connected with the boiler H′ the same as the pipes G and I.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A boiler provided with a protector, comprising boxes forming the side walls of a door-opening, one of the boxes having a water-inlet and the other a water-outlet, and a connection between the boxes, to form the roof of the door-opening, the said inlet and the said outlet extending to within a short distance of the bottoms of their respective boxes, as set forth.

2. A steam-generator having a boiler, a fire-box for the same, closed water-boxes forming the side walls of the door-opening for the fire-box and set on a dead-plate, pipes connecting the upper ends of the boxes with each other and forming the roof of the door-opening, an inlet-pipe leading from the boiler and extending through the top of one box, to within a short distance of the bottom thereof, and an outlet-pipe leading from near the bottom of the other box upwardly and out of the box, to connect with the boiler, as set forth.

3. A steam-generator having a boiler, a fire-box for the same, closed water-boxes forming the side walls of the door-opening for the fire-box and set on a dead-plate, pipes connecting the upper ends of the boxes with each other and forming the roof of the door-opening, an inlet-pipe leading from the boiler and extending through the top of one box to within a short distance of the bottom thereof, and an outlet-pipe leading from near the bottom of the other box upwardly and out of the box, to connect with the boiler at a higher level than the connection of the inlet-pipe, as set forth.

4. A protector for the door-opening of the fire-box of a boiler, comprising spaced and connected chambers having their upper portions enlarged, the inner opposing corners of the lower portions of the chambers being rounded off, and a pipe leading from the top of each chamber, as set forth.

5. A protector for the door-opening of the fire-box of a boiler, comprising spaced chambers having their upper portions enlarged, the inner opposing corners of the chambers being rounded off, pipes connecting the chambers with each other near the top, and inlet and outlet pipes for the chambers respectively, said pipes extending into the chambers to within a short distance of the bottoms of the chambers, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN F. KENELY.

Witnesses:
EDWARD NUGENT,
JAMES P. KELLY.