

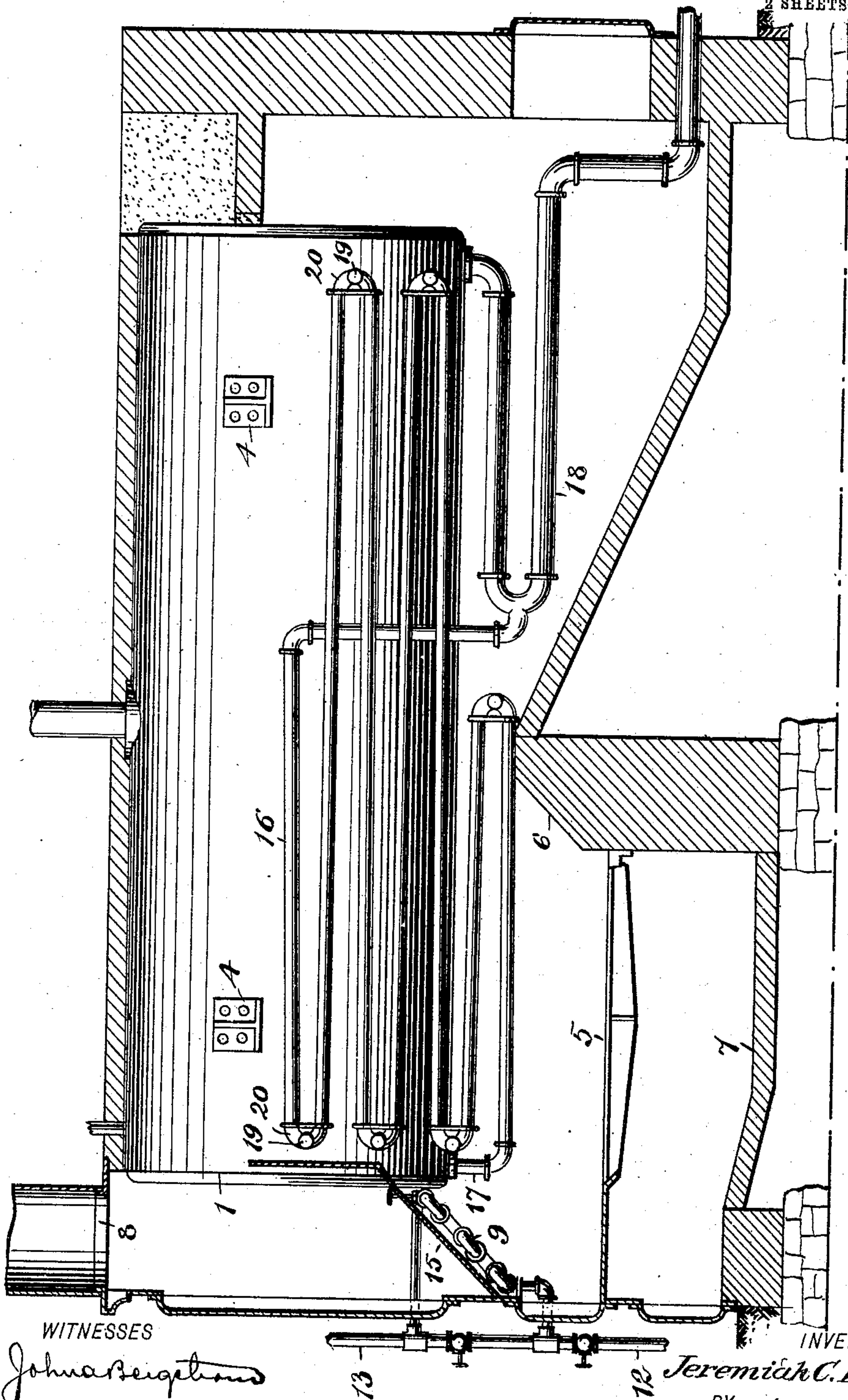
No. 842,006.

PATENTED JAN. 22, 1907.

J. C. PARKER.
HORIZONTAL BOILER.

APPLICATION FILED AUG. 18, 1906.

2 SHEETS—SHEET 1.



WITNESSES

John A. Beigther
C. W. Fairbank

INVENTOR

Jeremiah C. Parker

BY *Munn & Co.*

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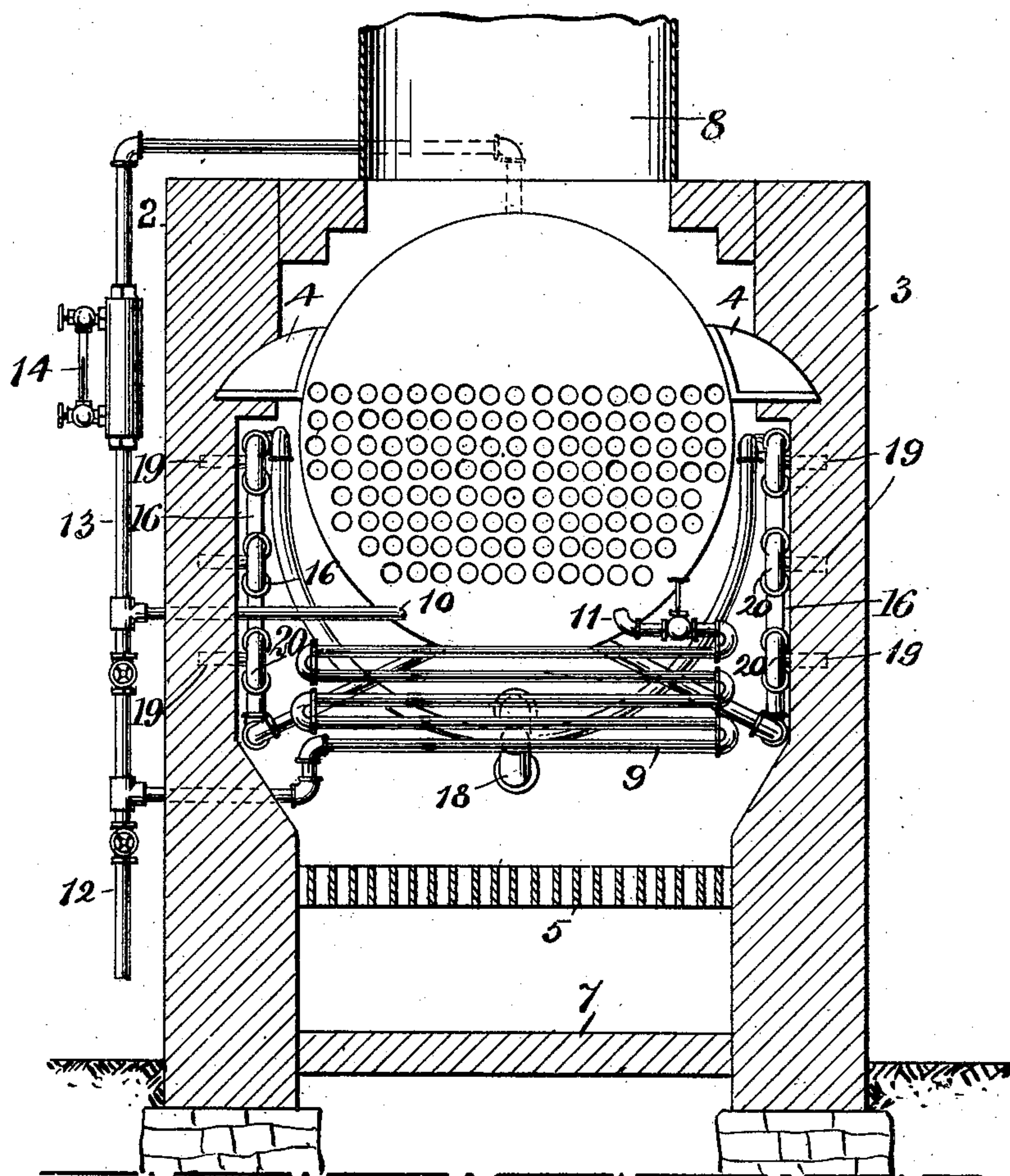


Fig. 2

WITNESSES

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UNITED STATES PATENT OFFICE.

JEREMIAH CHADWICK PARKER, OF RED BANK, NEW JERSEY.

HORIZONTAL BOILER.

No. 842,006.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed August 18, 1906. Serial No. 331,130.

To all whom it may concern:

Be it known that I, JEREMIAH CHADWICK PARKER, a citizen of the United States, and a resident of Red Bank, in the county of Monmouth and State of New Jersey, have invented a new and Improved Horizontal Boiler, of which the following is a full, clear, and exact description.

This invention relates to horizontal boilers, and more particularly to certain improvements for facilitating the generation of steam and preventing the loss of waste heat.

According to my invention I do away entirely with the brick arch commonly used in boilers for closing off the draft between the fire-box and the front end of the boiler and replace this by a coil of pipe having both ends thereof connected to the boiler, said coil being covered with a sheet of asbestos. The brick arch formerly used was subject to the intense heat from the boiler, and by reason of the deterioration thus produced it was customary to replace or rebuild this arch several times during the life of the boiler. In my invention I effect just as perfect a seal between the fire-box and the front of the boiler, and at the same time the water circulating in the coil forming this seal or partition aids in the generation of steam by the absorption of heat which would otherwise be lost.

Reference is to be had to the accompanying parts, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both figures, in which—

Figure 1 is a side elevation of a horizontal boiler provided with my improvements, one wall being removed to more clearly show the novel construction; and Fig. 2 is an end elevation of the boiler, the front wall and asbestos being removed.

In the drawings I have illustrated a common form of return-tube boiler 1, supported between brick walls 2 and 3 by means of suitable brackets 4 and provided with the customary grate 5, bridge 6, and ash-pit 7. The hot gases from the fire on the grate 5 pass over the bridge to the back end of the boiler and return through the tubes thereof and up the chimney 8 in the customary manner. Instead of supporting the front end of the boiler by a heavy brick arch, as is customary, I provide a coil of pipe 9, extending back and forth across the end of the boiler and lying in a diagonal plane, as indicated in Fig. 1, the ends 10 and 11 of this pipe enter-

ing the boiler adjacent the lower side. This pipe may, if desired, extend to the outside and be connected to the feed-pipe 12 and may include as a portion thereof the stand-pipe 13, having the water-level gage 14. This coil of pipe 9 is preferably covered with a large sheet of asbestos 15, which extends from the end of the boiler to the casing and also extends between the boiler and the side walls to a point midway of the height of the boiler, so that the hot gases from the fire on the grate-bars 5 cannot pass directly to the chimney, but must pass over the bridge to the opposite end and return through the boiler-tubes. This sheet of asbestos may be of any desired thickness and may be arranged above the coil at a greater or less distance or may rest directly upon the coil, it only being essential that it shall effectively prevent the direct escape of gases from the fire-box. This coil 9 is in open communication with the boiler, and as it is directly exposed to the fire the water in said coil becomes heated to a very high temperature and rapidly circulates throughout the coil to deliver the heated water to the boiler and to be replaced by the boiler-water of a lower temperature. The heat which the coil 9 absorbs does not in any way detract from the amount of heat otherwise supplied to the boiler, because this coil does not lie between the fire and the boiler, but only serves to absorb waste heat which would otherwise be lost in heating the heavy brick arch formerly used at this point. There is no danger of this coil burning out, as water circulates in it continually, and there is no danger of the sheet of asbestos forming the substitute for the brick arch from being unduly affected by the heat.

In addition to the coil 9 above described I may place additional coils along the sides of the boiler and connect the opposite ends of said coils to the boiler to aid in the generation of steam. These coils 16, as shown, are supported on the brick side walls alongside the boiler, and each communicates with the front end of the boiler through an inclined pipe 17, while the opposite ends of these coils communicate either directly with the boiler or with a loop in the return-pipe 18 of the steam-radiating system. These side coils are not between the fire and the boiler and do not in any way tend to prevent the boiler from being heated by the direct contact of the hot gases; but these coils serve

merely to absorb the heat which would otherwise be wasted in heating the brick side walls to a high temperature, and in this way they aid greatly in the generation of steam. These
 5 coils may be supported in any suitable manner, but preferably on water-lugs 19, formed integral with the return-bends 20 of the side coils. The water automatically circulates in these coils, and as the water in the water-lugs
 10 is at substantially the same temperature as that in the coils the lugs are prevented from being heated to a temperature at which they would be burned out. It is evident that these coils 16 may be constructed and sup-
 15 ported in any suitable manner and that any suitable number of them may be provided, it only being essential that they are not placed beneath the boiler, where they would interfere with the normal heating of the latter.
 20 The pipes may, if desired, extend only as far back as the bridge, thus absorbing heat at the part of the wall subjected to the highest temperature; but as the gases are still at a very high temperature at the time they reach
 25 the back end of the boiler it is advantageous to extend these side pipes 16 back substantially as far as the back end of the boiler.

By the use of the novel construction hereinbefore described I accomplish the saving
 30 of a large percentage of fuel due to the absorption of heat which would otherwise be entirely lost, and this saving in fuel would in a very short time more than pay for the cost of providing an ordinary horizontal boiler
 35 with the improvements constituting my invention.

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

40 1. In combination with a horizontal boiler, a casing therefor, a coil of pipe having both

ends thereof connected to the boiler, said coil being inclined and extending from the front end of the boiler to the front of the casing, and an inclined sheet of asbestos resting upon
 45 the said coil and preventing the escape of gases.

2. In combination with a horizontal boiler, a casing therefor, a coil of pipe having the ends thereof entering said boiler, said coil
 50 lying in an inclined plane between the front end of the boiler and the casing, and a sheet of asbestos supported on said coil and completely preventing the passage of gases beyond said coil.

3. In combination with a horizontal boiler, side walls supporting the same, coils of pipe supported by said side walls and having their ends connected to said boiler, said coils
 60 lying entirely out of the normal passage of the combustion-gases, and water-lugs carried by said coils and entering recesses in said side walls.

4. In combination with a horizontal boiler, side walls supporting the same, a casing con-
 65 nected to said side walls and spaced from the end of the boiler, coils supported on said side walls and having their ends connected with said boiler, a coil lying between the front end of said boiler and the front of said casing and
 70 having its ends connected with the end of the boiler, and a sheet of asbestos resting on the said coil and preventing the passage of combustion-gases.

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

JEREMIAH CHADWICK PARKER.

Witnesses:

W. J. SUTTON,
 SAMUEL SABATH.