

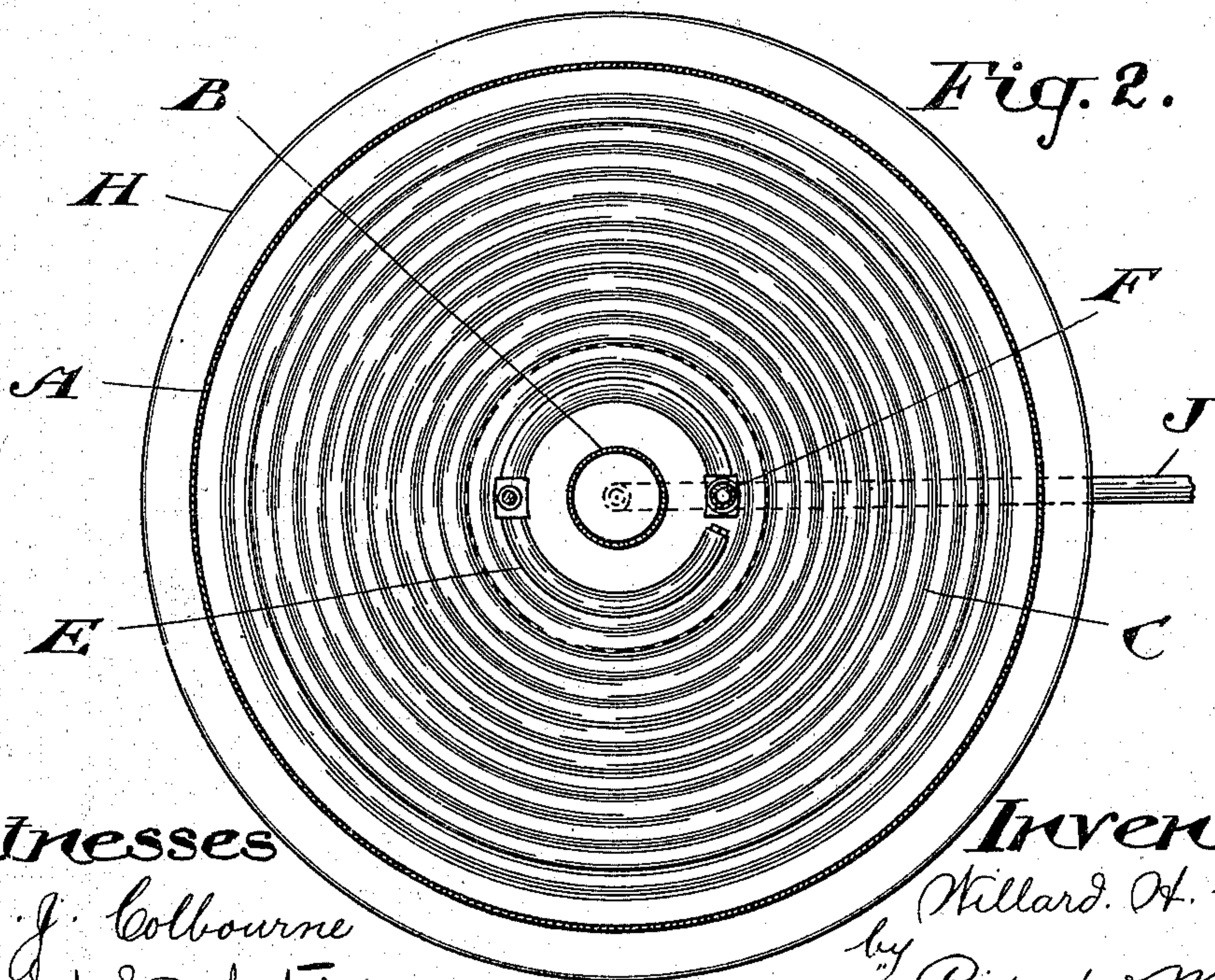
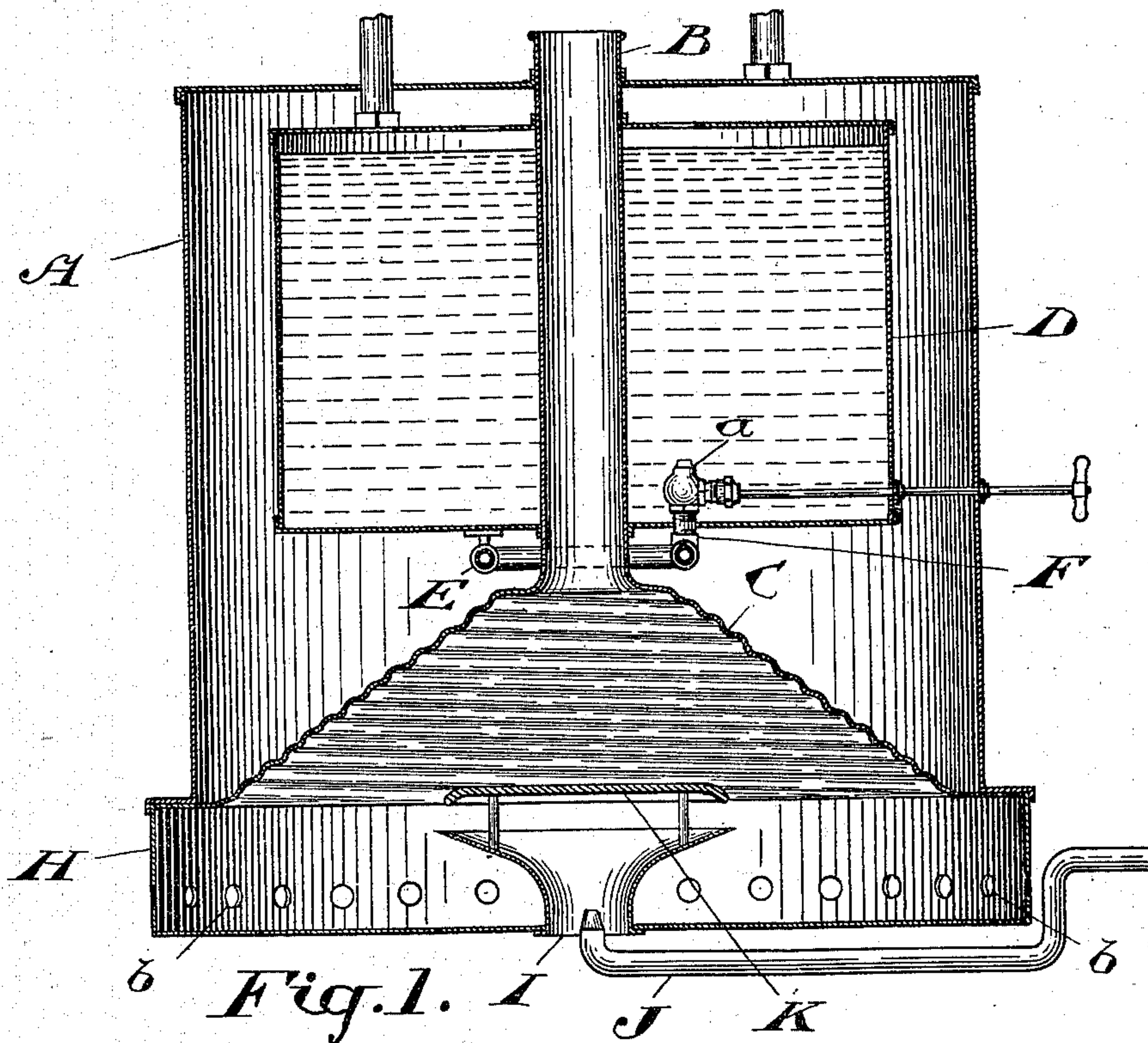
No. 681,198.

Patented Aug. 27, 1901.

W. H. COUN.
FLASH BOILER.

(Application filed Sept. 22, 1900.)

(No Model.)



Witnesses

G. J. Colbourne
J. W. Webster

Inventor

Willard H. Coun
by Ridout & Maybee
attys

UNITED STATES PATENT OFFICE.

WILLARD H. COUN, OF TORONTO, CANADA, ASSIGNOR TO GEORGE F. ATWOOD, OF WEST CHAZEY, NEW YORK, AND ELMAR A. MESSENGER, OF BOSTON, MASSACHUSETTS.

FLASH-BOILER.

SPECIFICATION forming part of Letters Patent No. 681,198, dated August 27, 1901.

Application filed September 22, 1900. Serial No. 30,799. (No model.)

To all whom it may concern:

Be it known that I, WILLARD H. COUN, electrochemist, of the city of Toronto, in the county of York, Province of Ontario, Canada, have invented certain new and useful Improvements in Flash-Boilers, of which the following is a specification.

The object of my invention is to devise a very light small boiler of great steaming capacity, such as will be particularly adapted for use in automobiles; and it consists, essentially, in forming the heating-surface of the boiler of a cone-shaped plate, preferably provided with helically-arranged corrugations, down which the water is permitted to run in a very thin stream, and in such other details of construction as are hereinafter more specifically described and then definitely claimed.

Figure 1 is a vertical section of my improved boiler. Fig. 2 is a sectional plan on the line *a a*, Fig. 1.

In the drawings like letters of reference indicate corresponding parts in both figures.

A is the shell of a boiler, preferably of cylindrical form. Extending through the top of the shell is the flue B. Connected with the lower portion of the shell and with the flue is the inclined heating-plate C, preferably formed as the frustum of a cone. This heating-plate is corrugated horizontally, as shown, the corrugations preferably forming a helix running from the top of the heating-plate toward the bottom. As with screw-threads, corrugations for a single helix or a plurality of helices might be formed on the plate, according as it is desired to make the pitch small or great. Surrounding the flue above the heating-plate is the water-tank D. Below the water-tank and over the upper portion of the heating-plate is located the perforated ring E, connected by the pipe F with the interior of the water-tank, at or near its bottom. In this pipe is located the valve *a*, which may be suitably adjusted, either automatically or manually, to supply the desired quantity of water to the perforated ring E.

Below the heating-plate C is located the heater H. This is constructed substantially on the principle of the well-known Bunsen

burner. In the center of the heater is located the pipe I, flared outwardly toward the sides of the heating-plate C. Into this pipe enters the vapor-injector J, suitably supplied with gas or vaporized oil. In the walls of the heater are formed a series of holes *b* to supply air to the outside of the flame.

K is a spreader adapted to throw the flame against the sides of the heating-plate, so that the same may be intensely heated.

The means for generating the vapor and controlling its supply form no part of the present invention; hence are not particularly described. In practice, however, the supply of vapor and water will be regulated to correspond with one another.

The operation of my device is substantially as follows: The burner being lighted, the heating-plate C becomes intensely heated. At the same time small quantities of water are allowed to escape from the perforated ring E and flow down over the plate, following the helical corrugations therein. By the time this water has reached the bottom it has been completely flashed into steam, filling the steam-space of the shell. The water-tank being located in the steam-space and about the flue through which the products of combustion escape, the water is warmed to a high temperature before reaching the heating-plate, resulting in considerable economy in the working of the apparatus.

A boiler constructed as I have described is not only very light and simple, but is capable of generating a large quantity of steam, in proportion to its size. For these reasons it is particularly adapted for use in steam-automobiles.

In practice changes may be made in the details of construction without departing from the spirit of my invention, as other constructions might readily be devised employing the essential features of my device—namely, the flashing of water into steam by causing it to travel down an inclined corrugated plate kept intensely heated while the apparatus is in use.

What I claim as my invention is—

1. In a boiler the combination of a shell; an inclined heating-plate connected with the

shell; a flue connected with the upper part of said inclined heating-plate and leading the products of combustion or waste heat therefrom; a water-tank having an outlet through which small quantities of water may be permitted to drop on the heating-plate; and means for highly heating the said plate, substantially as and for the purpose specified.

2. In a boiler the combination of a shell; an inclined horizontally-corrugated heating-plate connected with the shell; a flue connected with the upper part of said inclined heating-plate and leading the products of combustion or waste heat therefrom; a water-tank having an outlet through which small quantities of water may be permitted to drop on the heating-plate; and means for highly heating the said plate, substantially as and for the purpose specified.

3. In a boiler the combination of a shell; a flue; an inclined heating-plate shaped as the frustum of a cone and connected with the shell and with the flue; a water-tank situated within the boiler and having an outlet through which small quantities of water may be permitted to drop on the heating-plate; and means for highly heating the said plate, substantially as and for the purpose specified.

4. In a boiler the combination of a shell; an inclined horizontally-corrugated heating-plate shaped as the frustum of a cone and connected with the shell; a flue connected with the upper part of said inclined heating-plate and leading the products of combustion or waste heat therefrom; a water-tank having an outlet through which small quantities of water may be permitted to drop on the heating-plate; and means for highly heating the said plate, substantially as and for the purpose specified.

5. In a boiler the combination of a shell; an inclined heating-plate shaped as the frus-

tum of a cone and connected with the shell; a flue connected with the upper part of said inclined heating-plate and leading the products of combustion or waste heat therefrom; helical corrugations being formed in the heating-plate to form one or more water-channels; a water-tank having an outlet through which small quantities of water may be permitted to drop on the heating-plate; and means for highly heating the said plate, substantially as and for the purpose specified.

6. In a boiler the combination of a shell; a flue; an inclined heating-plate shaped as the frustum of a cone and connected with the shell and with the flue; a water-tank situated within said boiler; and a perforated ring located over the upper part of the heating-plate and connected with the water-tank, substantially as and for the purpose specified.

7. In a boiler the combination of a shell; a flue; a heating-plate connected with the shell and the flue; a water-tank within the boiler surrounding the flue and provided with an outlet through which small quantities of water may be permitted to drop on the heating-plate; and means for highly heating the said plate, substantially as and for the purpose specified.

8. In a boiler the combination of a shell; a flue; a heating-plate connected with the shell and the flue; and shaped as the frustum of a cone; a water-tank within the boiler surrounding the flue; a perforated ring located over the upper part of the heating-plate and connected with the water-tank; and means for highly heating the said plate, substantially as and for the purpose specified.

Toronto, September 13, 1900.

WILLARD II. COUN.

In presence of—

JOHN G. RIDOUT,

A. J. COLBOURNE.