

No. 741,485.

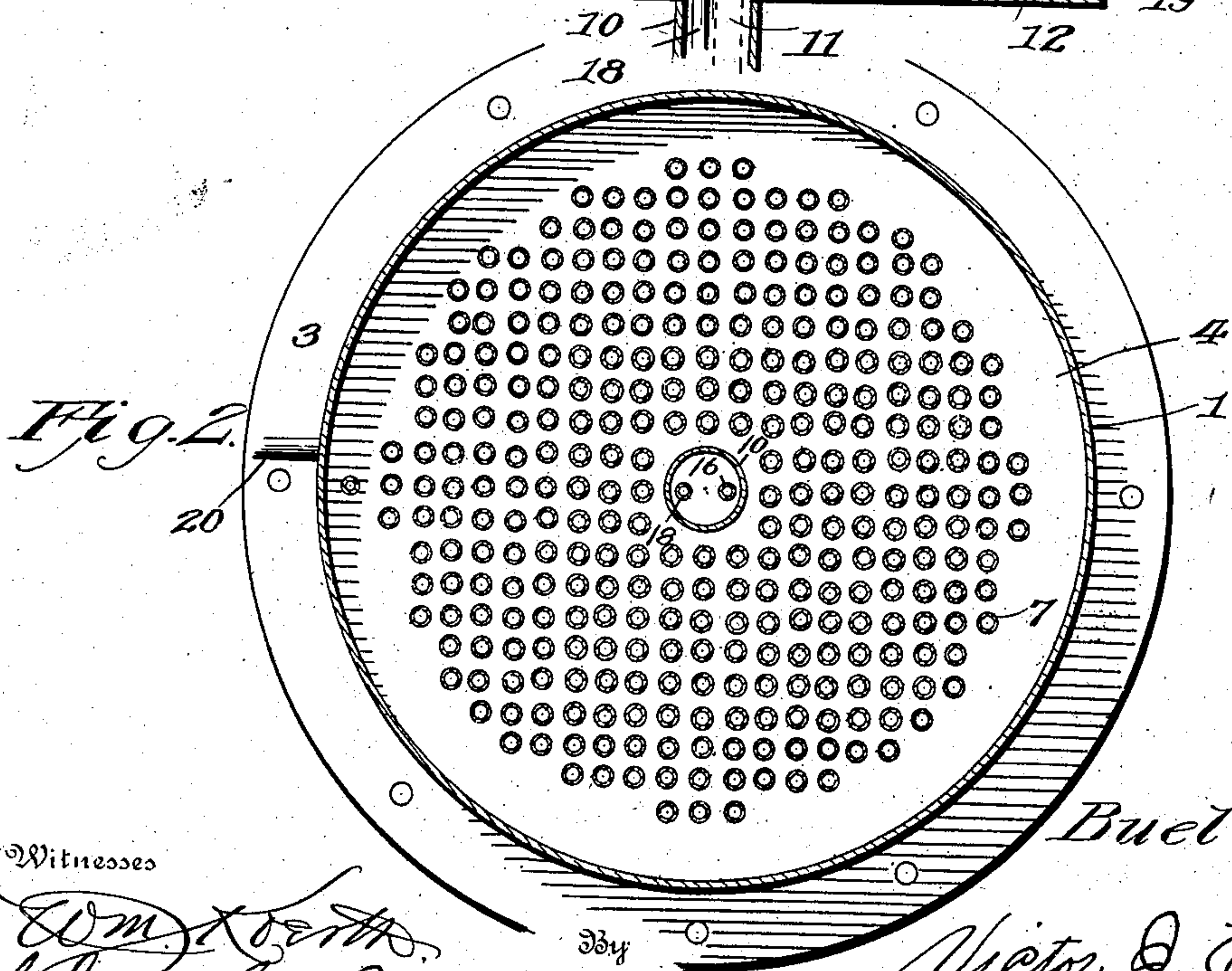
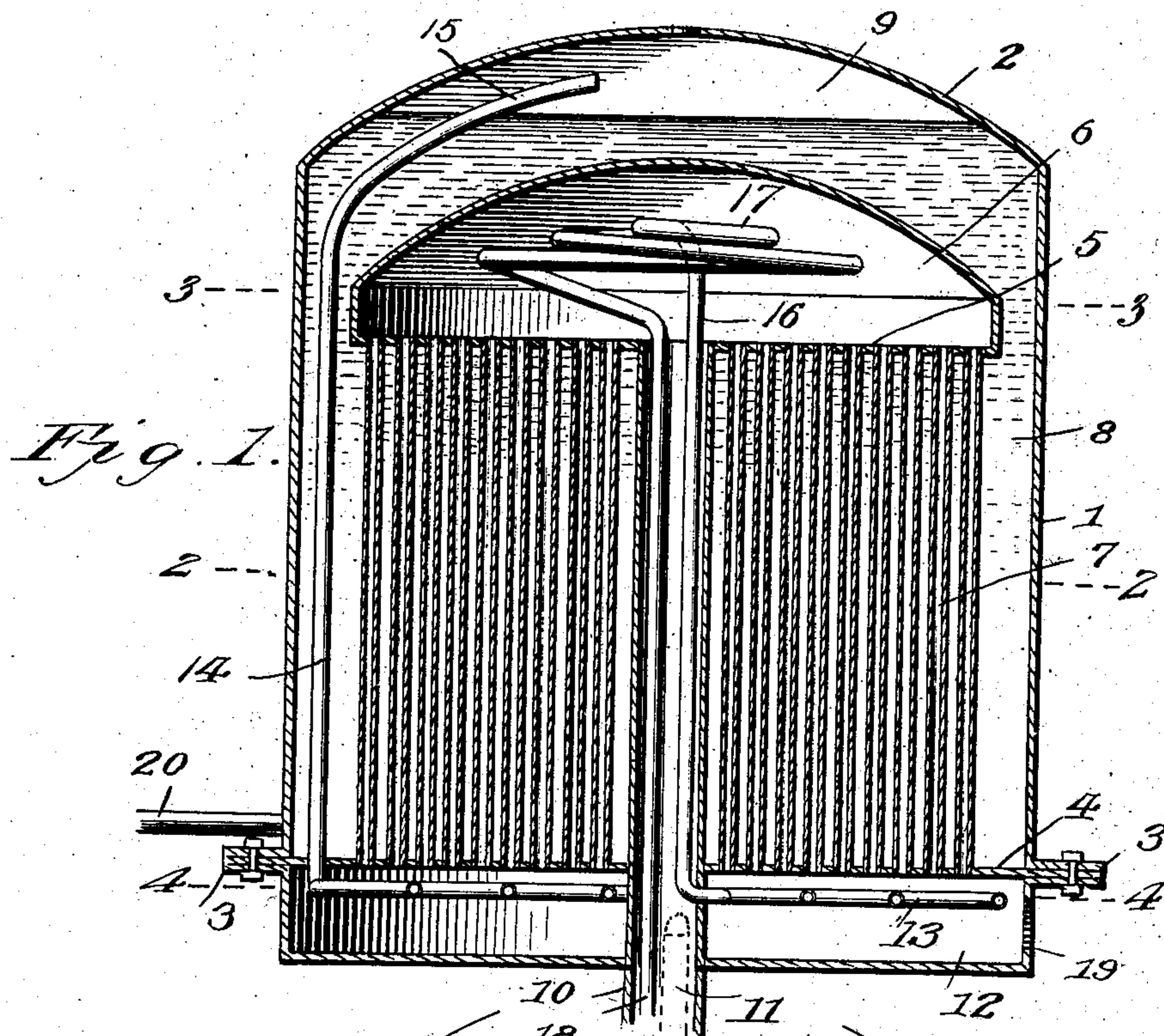
PATENTED OCT. 13, 1903.

B. H. GREEN.
STEAM BOILER.

APPLICATION FILED OCT. 29, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

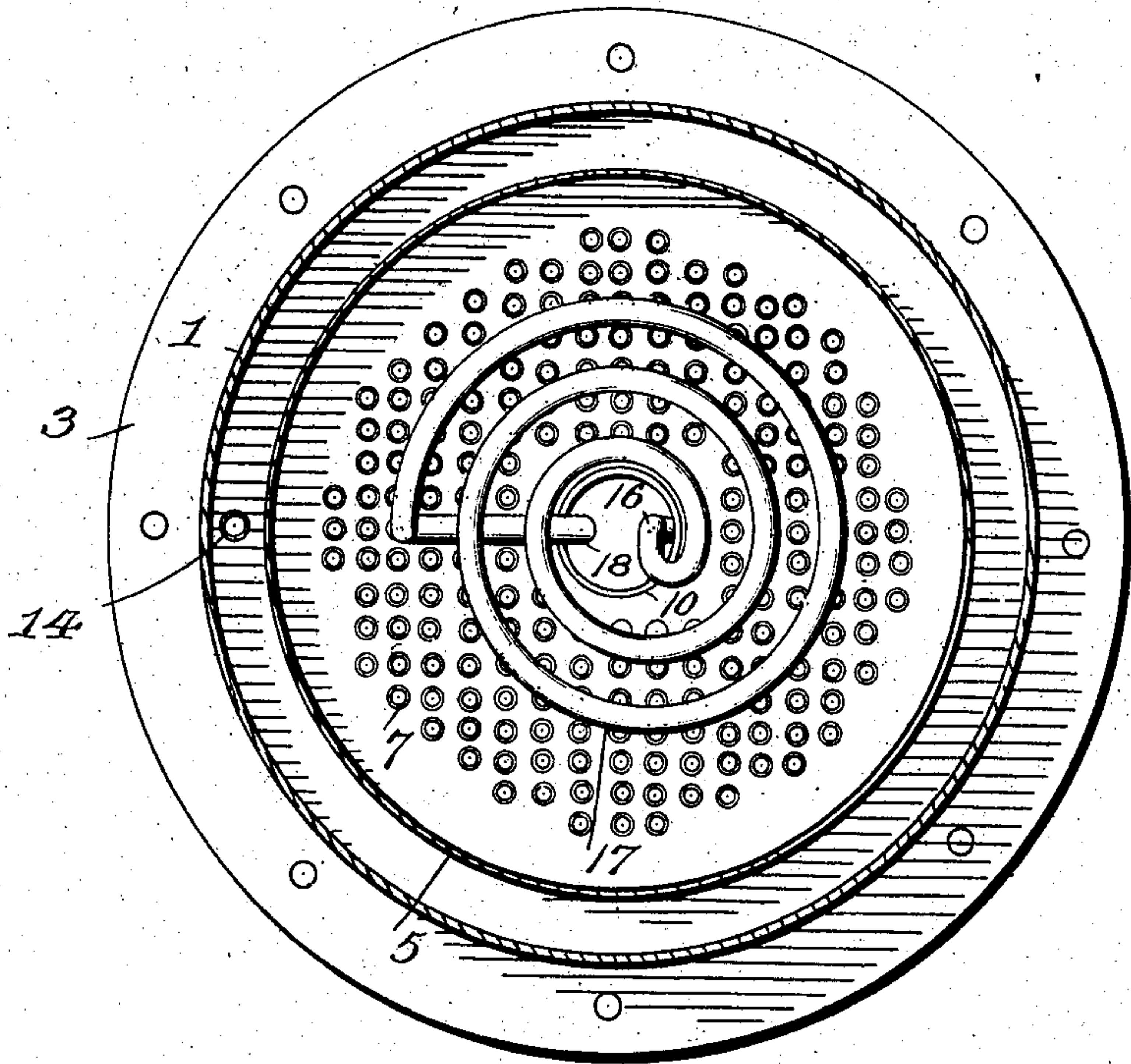
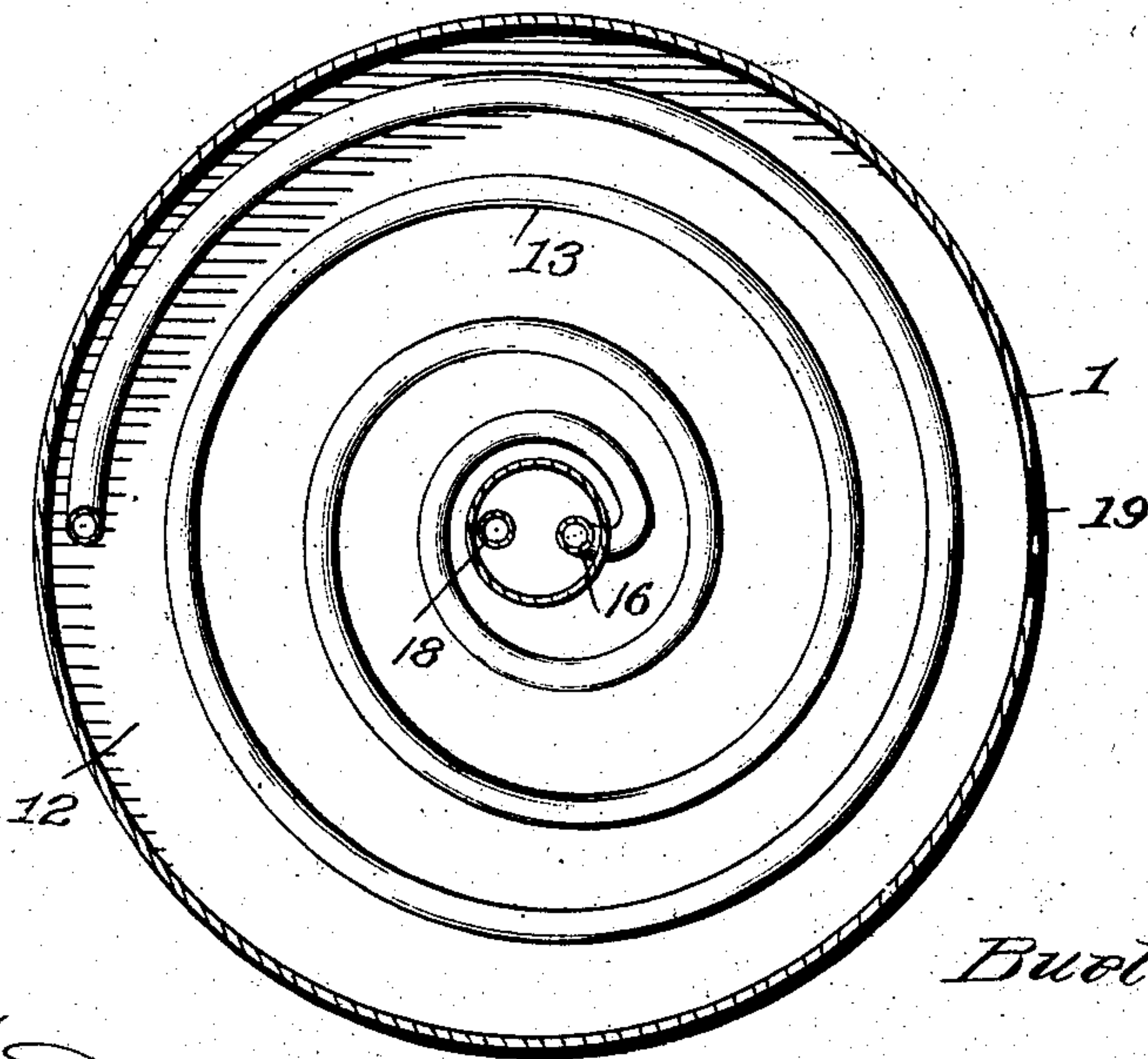


Fig. 4.



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BUEL H. GREEN, OF LOS ANGELES, CALIFORNIA.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 741,485, dated October 13, 1903.

Application filed October 29, 1902. Serial No. 129,275. (No model.)

To all whom it may concern:

Be it known that I, BUEL H. GREEN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Steam-Boilers, of which the following is a specification.

This invention relates to steam-boilers, and the purpose of the same is to provide a novel organization of compactly-arranged elements by which steam may be generated and superheated with the use of a minimum amount of heat, which is caused to thoroughly circulate through a series of tubes in a direction reverse to the circulation of the water about the tubes and in the boiler, and to so dispose steam-conveying means within the boiler that the same heat which is utilized in the formation of the steam will also effectively superheat the latter in the conveying means.

The invention consists in the novel construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a transverse vertical section of a boiler embodying the features of the invention. Fig. 2 is a horizontal section taken in the plane of line 2 2, Fig. 1. Fig. 3 is a horizontal section taken in the plane of line 3 3, Fig. 1. Fig. 4 is a horizontal section taken in the plane of line 4 4, Fig. 1.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates the outer shell or casing constructed of suitable metal and having a dome-like top 2 and a lower surrounding flange 3, standing outwardly from the shell or casing 1 at a right angle. A flue-plate 4 is removably bolted to the flange 3, and between the same and the bottom plate 5 of a heating-dome 6 a series of vertical flue-tubes 7 are arranged and suitably secured at their upper and lower ends to the respective plates 4 and 5. The flue-tubes 7 open through the plates 4 and 5, and they are also regularly spaced apart, as in ordinary boiler-tube construction, to permit water to freely circulate therearound. A water-space 8 is formed between the plate 4 and the dome-like top 2,

and in the same a suitable quantity of water is fed by any of the well-known means to permit it to rise above the heating-dome 6 to a height sufficient for thorough heating and practical formation of steam, and above the water-level a steam-space 9 is provided. Extending centrally through the boiler and communicating with the heating-dome 6 is a tube 10, having therein a burner 11 of any preferred form of construction, but preferably of that character capable of instituting a draft. Removably bolted to the plate 4 and flange 3 of the shell or casing 1 is a lower annular heating-chamber 12, with which the flue-tubes 7 communicate, and within the said chamber is a spiral steam-coil 13, having a supply-pipe 14 extending upwardly through the water-space 8 and communicating with the steam-space 9 above the water-level through the medium of a curved steam-receiving extremity 15. The coil 13 is a primary steam-superheating coil, and connected with the inner portion thereof is a pipe 16, which extends upwardly to the center of a secondary superheating-coil 17, disposed in the heating-dome 6 and having an outlet-pipe 18 extending downwardly through the central tube 11, and from which steam may be taken for any use desired. The lower heating-chamber 12 is formed with an opening 19, through which the heat-currents escape to the atmosphere or exterior of the boiler. By having the plate 4 and chamber 12 removable the interior of the boiler can be inspected at any time and the flue-tubes cleaned or otherwise treated; but before such operation it will be understood that the water will be drawn off from the water-space 8. To supply the boiler with water, a suitable valved pipe 20 will be connected thereto, and the water from the space 8 may be drawn off or permitted to run out through the said pipe.

In operation the heat from the burner 11 passes up through the central tube 10 into the heating-dome 6 and then downwardly through the flue-tubes 7 into the lower heating-chamber 12 and out through the opening 19 to the atmosphere or exterior of the boiler. By such circulation of the heat-currents it will be seen that the water in the space 8 will be thoroughly heated by contact with the flue-

tubes, the plate 4, and the heating-dome 6, and the steam as formed will pass into pipe 14 through the coil 13, upwardly to the coil 17, and outwardly through the service-pipe 5 18, and during such circulation of the steam it will become superheated by the use of the same heat utilized in the formation of the steam, and hence an economical use of caloric will result. By having an increased heating 10 service within the boiler and comprising the tubes 7, heating-chamber 6, and plate 4 steam can be readily generated, particularly after the said heating means become thoroughly affected by the heat-currents. The boiler is 15 compact in form and is capable of general use.

Having thus fully described the invention, what is claimed as new is—

1. A boiler comprising an interiorly-located 20 heating-dome, a lower heating-chamber, flue-tubes connecting and opening into the dome and chamber, a central heat-supplying tube communicating with the heating-dome, and steam-superheating coils in the chamber and 25 dome respectively having pipes extending from the steam-space and to the exterior of the boiler, said coils being connected with each

other by means extending through the central heat-supplying tube.

2. In a boiler the combination of a sur- 30 rounding shell or casing, having a steam-space provided in the upper portion thereof, a lower heating-chamber having an exterior outlet, an upper interiorly-located heating-dome, over which the water is adapted to 35 circulate, flue-tubes connecting the dome and chamber, a central heat-conveying tube extending vertically upward through the boiler and opening solely into the heating-dome and having a burner therein, a lower primary su- 40 perheating-coil in the chamber having a pipe extending up to the steam-space, and a secondary superheating-coil in the heating-dome connected to the said primary coil, and also having an outlet or service pipe projecting 45 downwardly through the heat-conveying tube.

In testimony whereof I affix my signature in presence of two witnesses.

BUEL H. GREEN.

Witnesses:

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L. E. BERKEET.