No. 733,781. PATENTED JULY 14, 1903.

D. M. WEBSTER.

STEAM BOILER.

APPLICATION FILED JULY 23, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

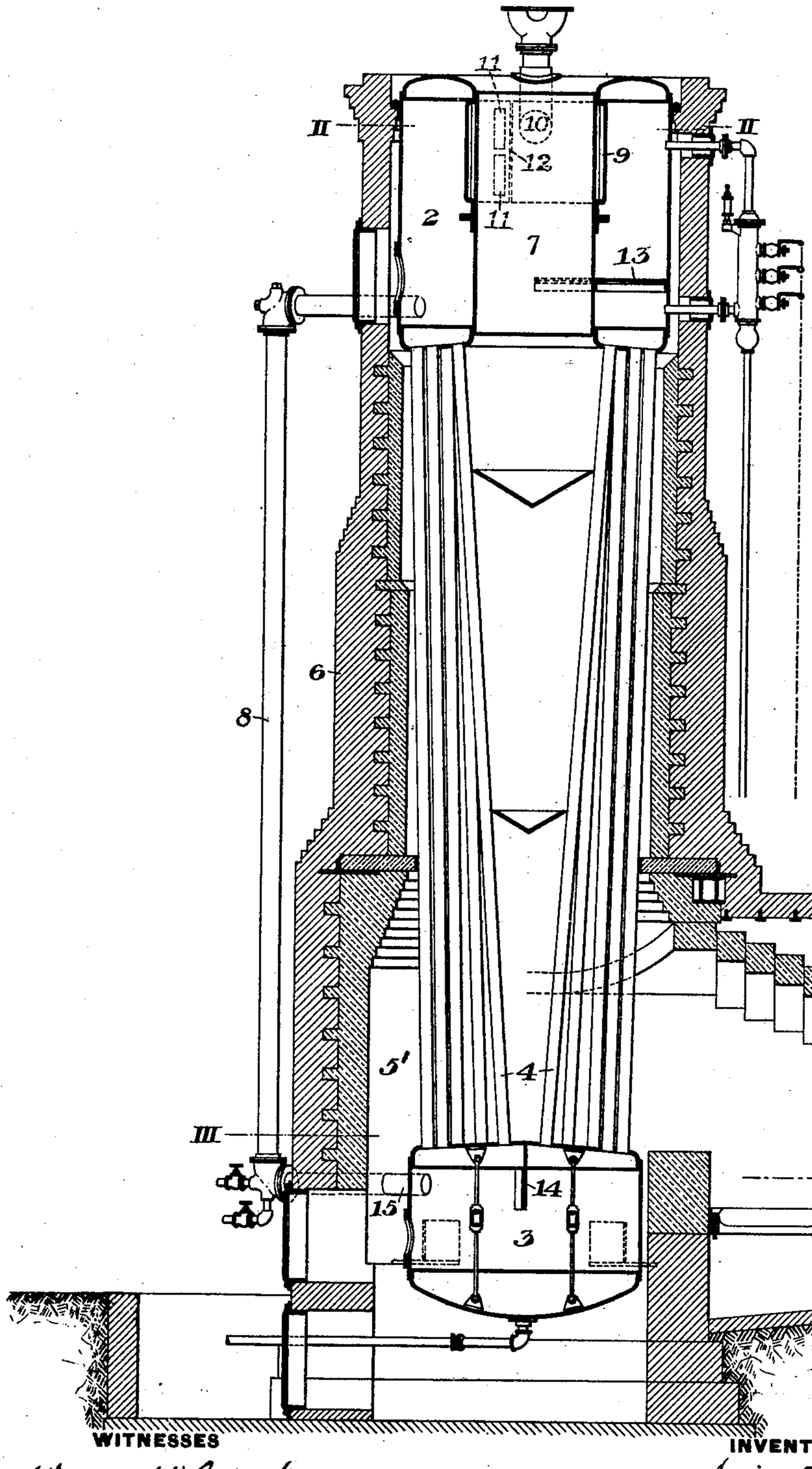

Fig. 1.

WITNESSES

Warren W. Swartz

Geo. B. Fleming

INVENTOR

Daniel M. Webster

by Bakewell & Byrnes

his attorneys

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NO MODEL. 3 SHEETS—SHEET 2.

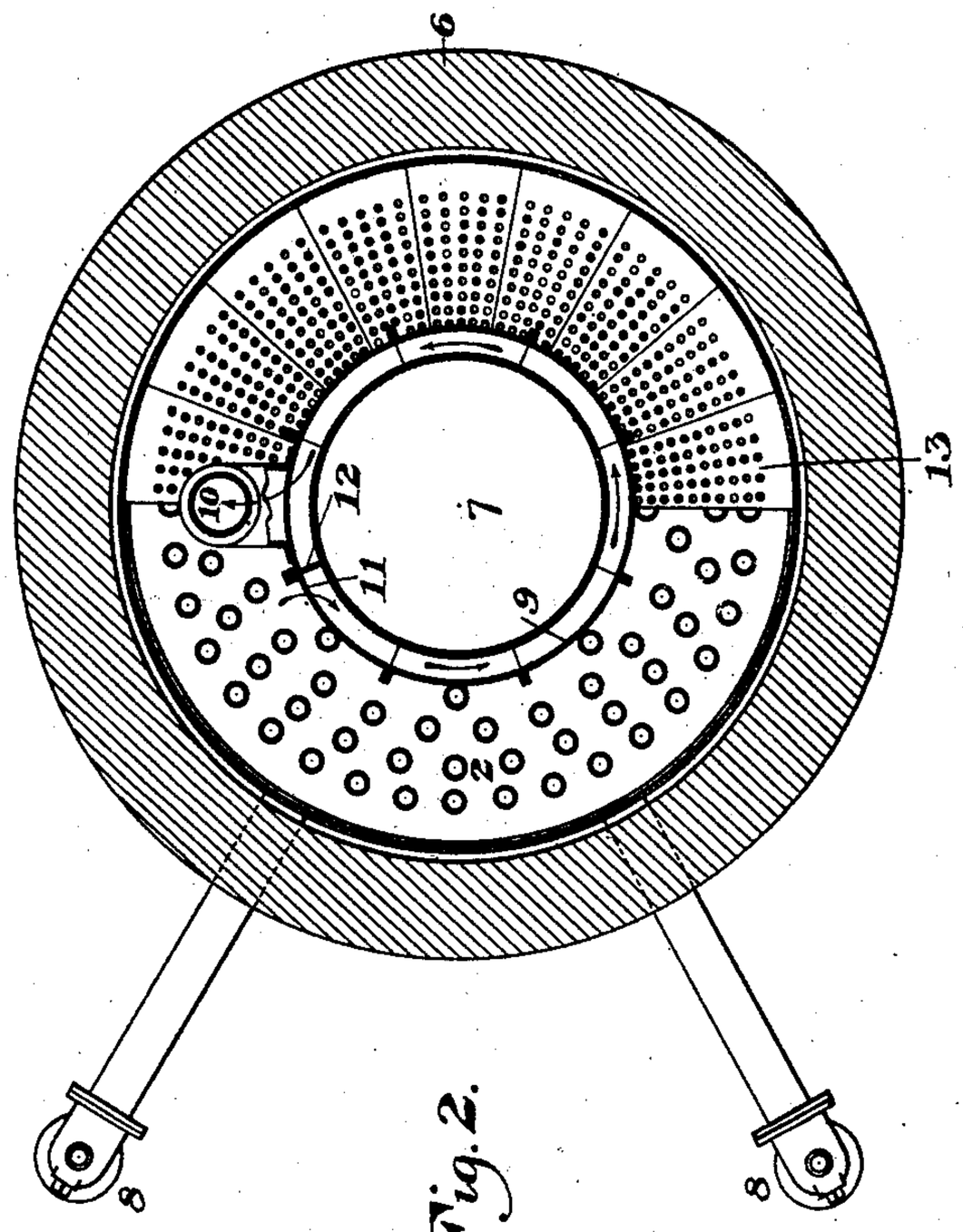

Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 3.

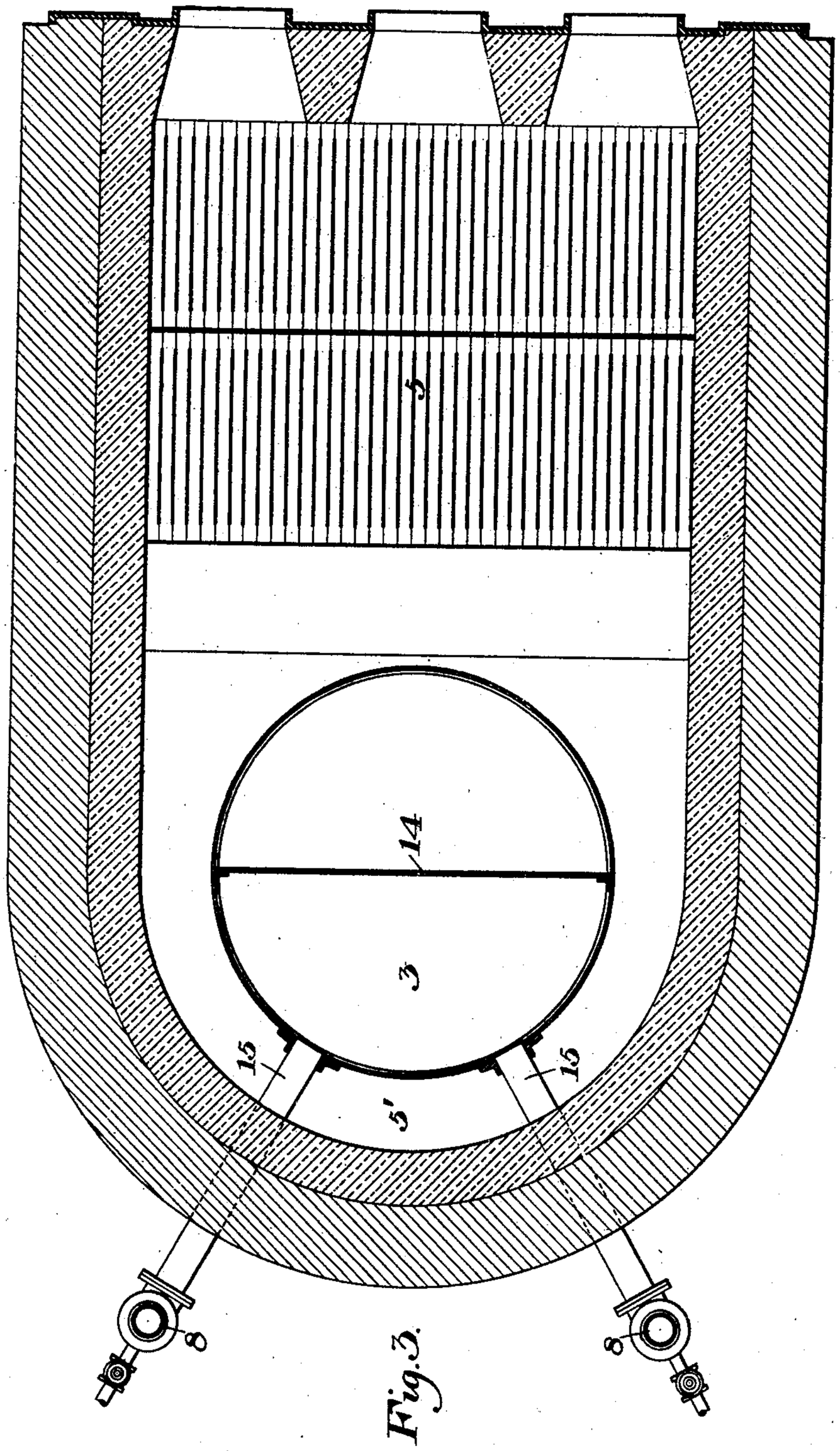

Fig. 3.

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UNITED STATES PATENT OFFICE.

DANIEL M. WEBSTER, OF MANSFIELD, OHIO, ASSIGNOR TO THE AULTMAN & TAYLOR MACHINERY COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF OHIO.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 733,781, dated July 14, 1903.

Application filed July 23, 1901. Serial No. 69,388. (No model.)

To all whom it may concern:

Be it known that I, DANIEL M. WEBSTER, of Mansfield, in the county of Richland and State of Ohio, have invented a new and useful Improvement in Steam-Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a steam-boiler constructed in accordance with my invention; and Figs. 2 and 3 are horizontal sections on the lines II II and III III, respectively.

In the drawings, 2 represents the steam and water drum, 3 the mud-drum, and 4 the connecting-tubes, of a water-tube boiler.

5 5′ represent the furnace-chamber, 6 the brick setting or shell of the boiler, and 7 the outlet-flue extending through the upper drum, which is preferably made of annular form, the bank of tubes being correspondingly annular in their arrangement.

8 is a circulating-pipe, which extends outside the brick shell from the water-space of the upper drum to the mud-drum outside the tube-chamber, so that being in a cooler part it may induce a circulation up through the water-tubes.

For the purpose of superheating the steam obtained from the boiler I may form in the upper drum an annular jacket 9, surrounding the outlet-flue 7 above the water-line, and provide it with a steam-delivery pipe 10, extending to the exterior of the boiler, and with a steam-inlet opening 11, separated from the outlet by a partition 12, so that the steam entering at the inlet will travel around the jacket to the outlet and being subjected in its passage to the heat communicated through the material of the steam-drum from the hot gases will be highly superheated thereby.

I have also provided my boiler with means for preventing priming, by which I mean the carrying of water out with the steam by reason of the rapid circulation of the water through the tubes, which in some cases is so violent as to cause to a serious extent the evil just mentioned. For this purpose I place in the steam-drum a submerged perforated or grid-like plate 13, situated below the normal water-line, preferably only a few inches below the same. This plate may extend entirely across the steam-drum, or it may be placed only in that part of the drum which is opposite the ends of the tubes in which the most violent ebullition occurs. Even when the water is oily, which generally causes the most violent ebullition, the presence of the perforated baffle-plate is sufficient to check the foaming, and it renders it harmless.

I also prefer to provide in the mud-drum a partition-plate 14, which extends across the mud-drum at the top toward but not to the bottom. This divides the ends of part of the tubes from the others and serves to cause the current of cold feed-water which enters the mud-drum from the feed-pipes 15 to strike against the partition-plate and to precipitate to a great extent its sediment, which will sink to the bottom of the mud-drum and which if the partition were not present would tend to pass with the circulation up through the front portion of the bank of tubes.

I claim—

1. A steam-boiler having a steam and water drum, water-tubes entering the same, and a perforated baffle-plate in said drum, submerged somewhat below the normal water-line and situated above the tubes; substantially as described.

2. A steam-boiler having upright water-tubes, a steam and water drum at the upper end thereof, and a perforated baffle-plate set in the steam-drum below the water-line and opposite to the ends of the tubes; substantially as described.

3. In a steam-boiler, the combination with an annular steam-drum having an outlet-flue extending through the same for the passage of the hot gases, an annular steam-jacket in the steam-drum around the flue, and a steam-inlet and steam-outlet, and a partition between the inlet and the outlet; substantially as described.

In testimony whereof I have hereunto set my hand.

DANIEL M. WEBSTER.

Witnesses:
E. W. GANS,
B. HURXTHAL.