

No. 753,041.

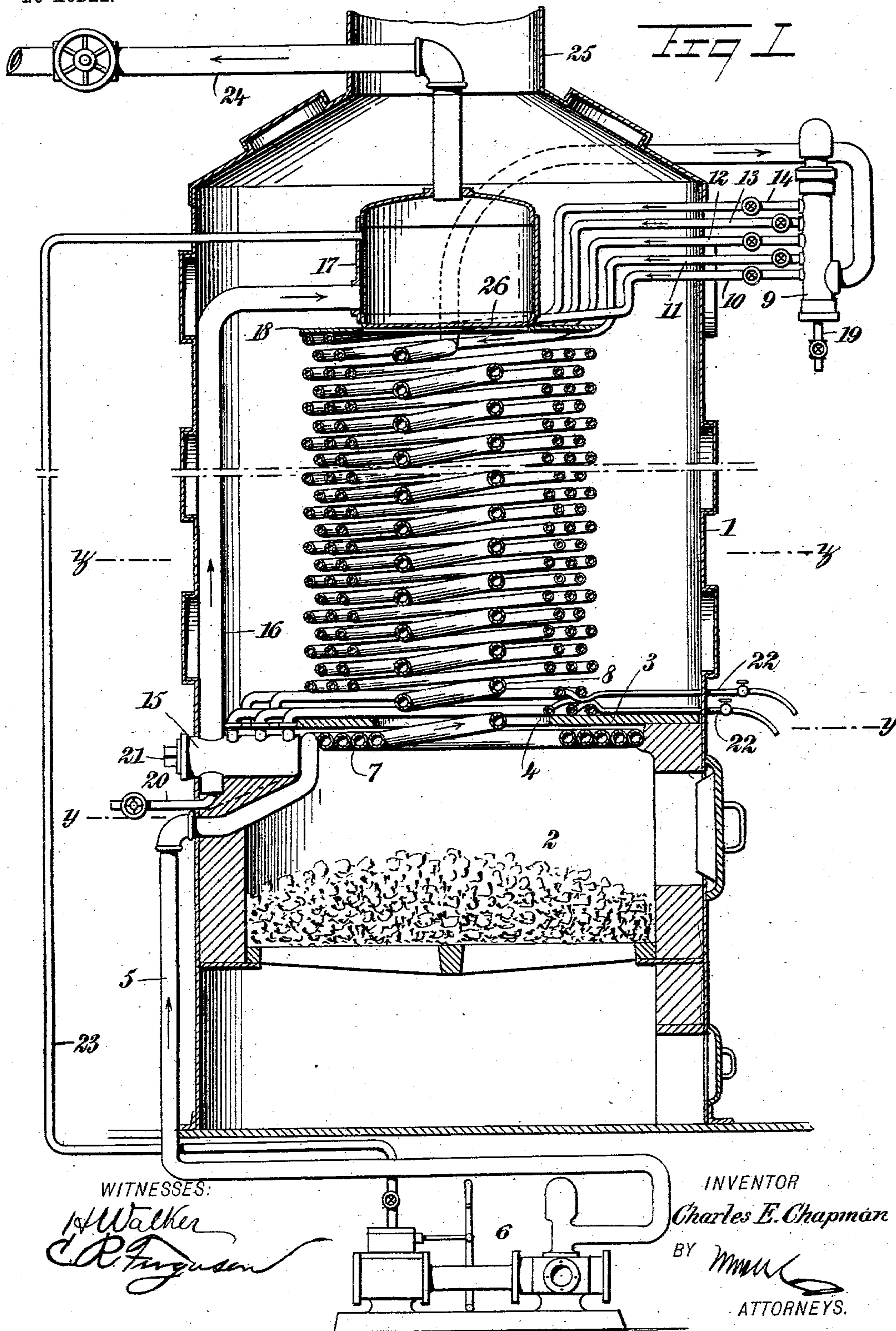
PATENTED FEB. 23, 1904.

C. E. CHAPMAN.
STEAM BOILER.

APPLICATION FILED JUNE 18, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig 2

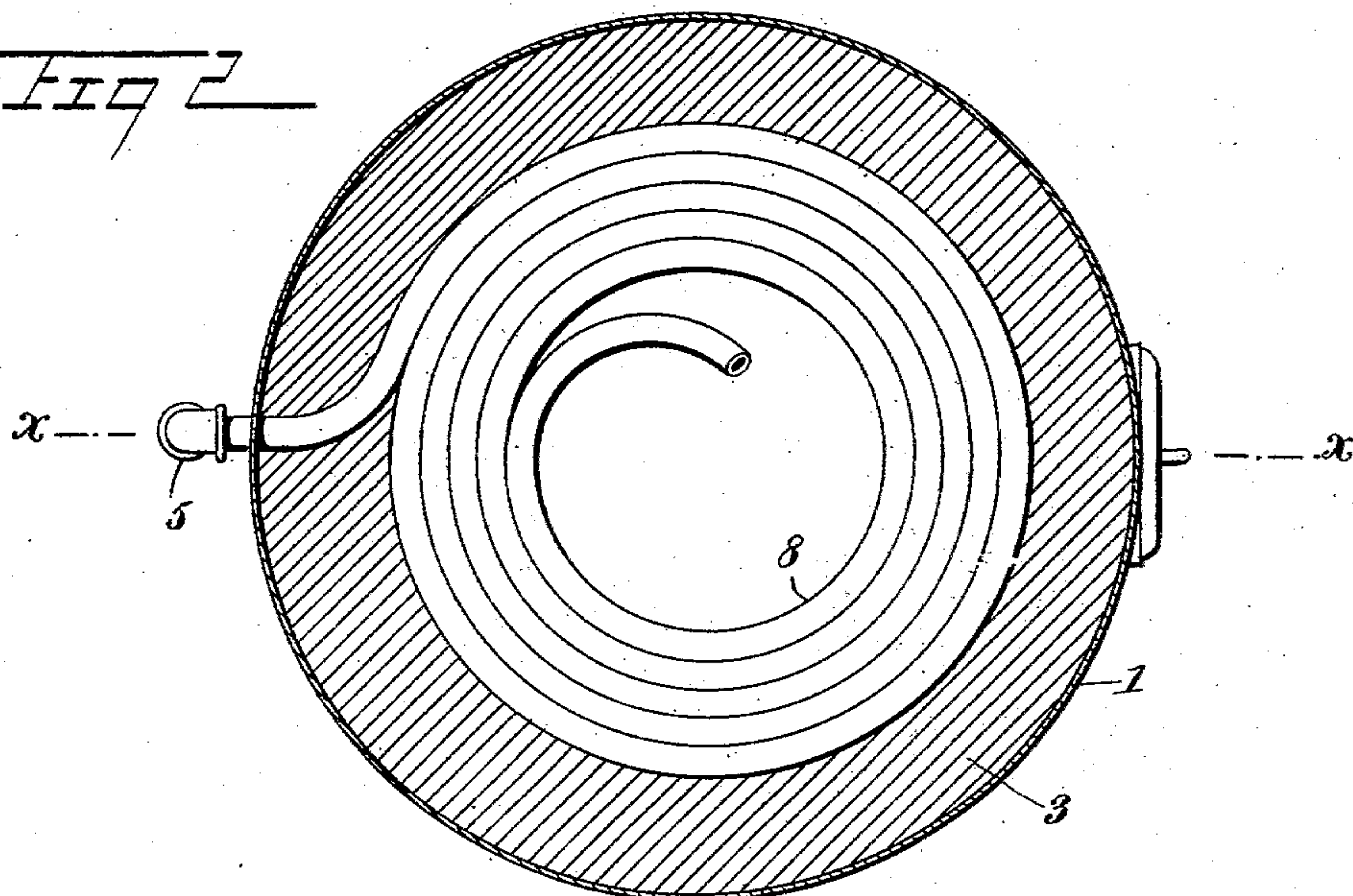


Fig 3

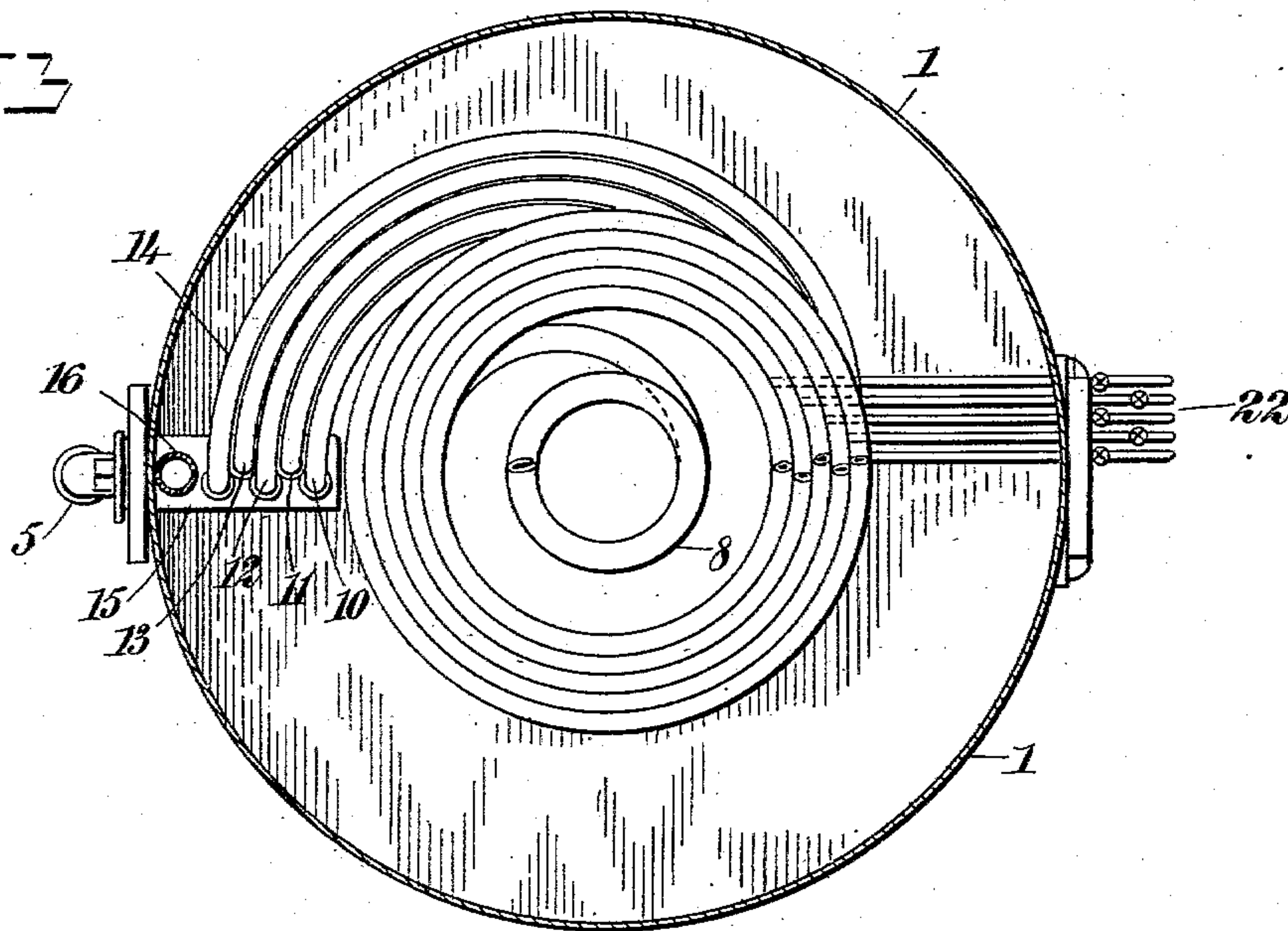
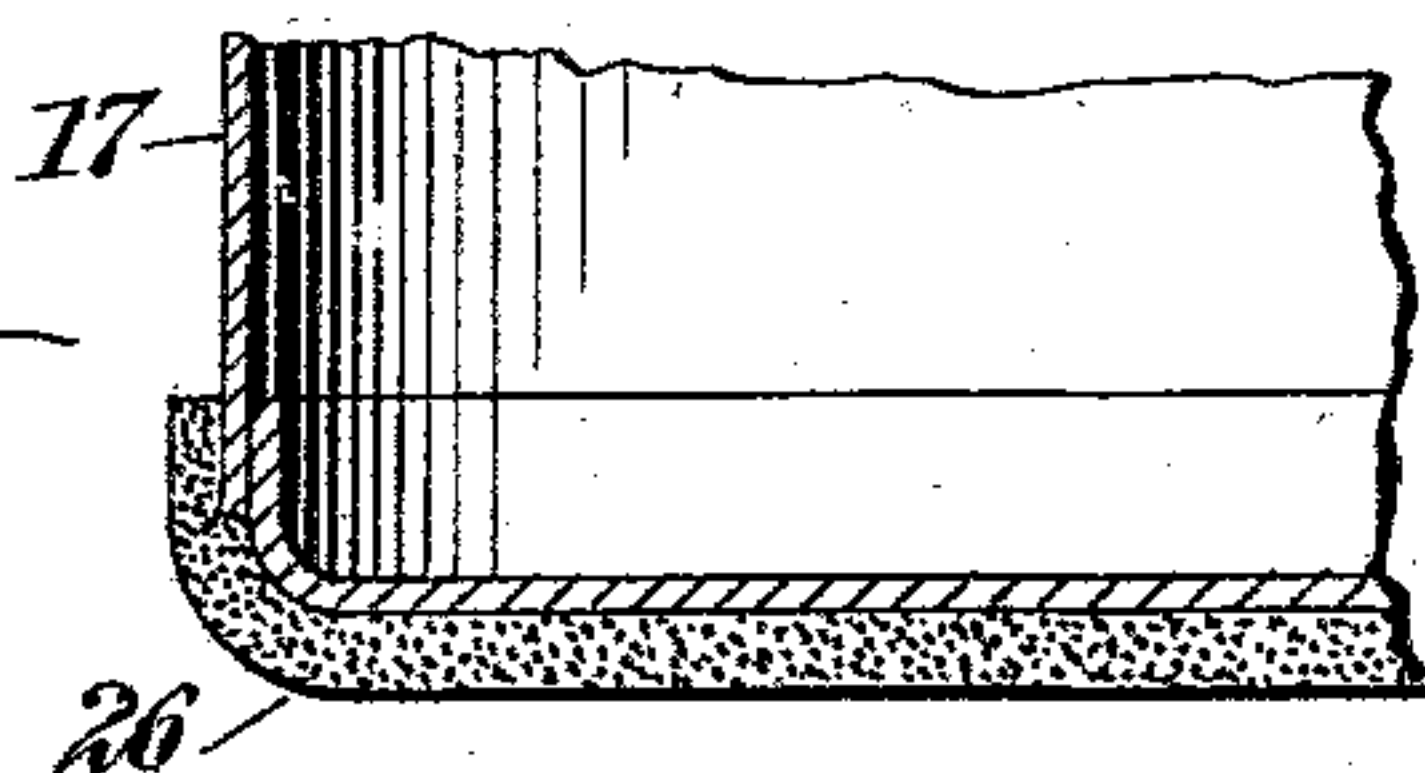


Fig 4

WITNESSES:
H. Walker
C. R. Ferguson



INVENTOR
Charles E. Chapman
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES E. CHAPMAN, OF FORT EDWARD, NEW YORK, ASSIGNOR OF ONE-HALF TO JOSEPH GOODFELLOW, OF FORT EDWARD, NEW YORK.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 753,041, dated February 23, 1904.

Application filed June 18, 1903. Serial No. 162,019. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. CHAPMAN, a citizen of the United States, and a resident of Fort Edward, in the county of Washington and State of New York, have invented a new and Improved Steam-Boiler, of which the following is a full, clear, and exact description.

This invention relates to improvements in steam-boilers, an object being to provide a boiler of comparatively small dimensions, but having a large heating area, so that steam may be quickly generated.

I will describe a steam-boiler embodying my invention and then point out the novel features in the appended claims.

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

Figure 1 is a sectional elevation on the line xx of Fig. 2, showing a boiler embodying my invention. Fig. 2 is a section on the line yy of Fig. 1. Fig. 3 is a section on the line zz of Fig. 1, and Fig. 4 is a sectional detail showing a modification.

Referring to the drawings, 1 designates the boiler-shell, arranged over a furnace 2, the top plate or wall 3 of which has a reduced central opening 4, through which the products of combustion pass and the purpose of which will be hereinafter described. A feed-pipe 5 leads from a suitable water-supply, here indicated as a pump 6, and this supply-pipe 5 has a flat or mat-like coil portion 7 arranged in the furnace directly underneath the top plate 3. The feed-pipe is extended upward through the shell 1 in the form of a coil 8 and then passes out through the top wall of the shell and communicates with the lower portion of a header 9. From this header 9 a plurality of water and steam conducting tubes extends. I have here indicated five of such tubes 10 11 12 13 14, each one of which is provided with a valve. These several tubes are formed in coils around the coil 8, the several coils being arranged one outside of another. The lower ends of these tubes communicate with a header 15, from which a pipe 16 leads into the steam-dome 17, supported at the upper portion of

the several coils. As here shown, the dome is supported on a ring-shaped baffle-plate 18. The header 9 is provided with a valved blow-off pipe 19, and the pipe 16 is provided with a blow-off pipe 20, while the header 15 has a removable plug 21, so that the said header may be readily cleaned when necessary. Leading outward from the several coils of the tubes are valved test-tubes 22.

The pump 6 may be operated by steam taken from the dome 17 and conveyed through the pipe 23, and the steam for the engine to be driven is carried from the dome through a pipe 24.

The shell of the boiler is provided at suitable places with manholes, so that the interior may be examined or to facilitate interior repairs.

In the operation the feed-water is forced through the coil 7, where it becomes turned to water and steam. Then it passes up to the coil 8, to the header 9, and thence back through the several tubes 10 to 14, and in its passage through these tubes the water is converted wholly to steam, which passes to the dome through the pipe 16. By providing the several tubes 10 to 14 with valves it is obvious that any desired number of them may be cut out of the system, if found desirable. The heat from the furnace will obviously come up through the restricted opening 4 through the several coils and thence will be brought outward by the baffle plate or ring 18. This baffle-plate will prevent the products of combustion from passing directly up and around the sides of the dome to the uptake 25.

To protect the bottom of the dome 17 from burning out by excessive heat, I may provide it with a cover 26, of asbestos or like material not affected by fire or heat.

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

1. A steam-boiler, comprising a shell, a furnace on which the shell is mounted, the top plate of said furnace having a restricted central opening, a feed-water pipe having a portion coiled on the under side of said top plate, and a coiled portion extended upward within the shell, a steam-dome, and means for pro-

viding communication between the feed-water pipe and said dome.

2. A steam-boiler comprising a shell, a furnace on which the shell is mounted, a top plate for said shell having a restricted opening, a feed-water pipe having a flat coiled portion at the under side of said top plate and a coiled portion extended upward in the shell, a header at the outer side of the shell and with which said feed-pipe communicates, a plurality of valved tubes leading from said header and coiled around the first-named coil, a header with which said tubes communicate, a steam-dome in the shell, and a pipe connection between said dome and the last-named header.

3. A steam-boiler comprising a furnace, a shell mounted on the furnace, a feed-water pipe having a coiled portion in the shell, a header at the outer side of the shell and with which said feed-pipe communicates, a plurality of tubes extended from said header and having portions coiled around the first-named coils, valved test-tubes leading from the lower portions of said tube-coils, a header with which the tubes communicate, a steam-dome arranged above the coils, and a pipe connection between said dome and the last-named header.

4. A boiler comprising a furnace, a shell supported on the furnace, a feed-water pipe having a coiled portion within the shell, a header at the outer side of the shell with

which said feed-pipe communicates, a plurality of tubes extended from said header and coiled around the first-named coil, a baffle plate at the upper portion of the coils, a steam-dome arranged above the coils, and a pipe connection between said dome and said tubes.

5. A steam-boiler comprising a furnace, a shell mounted thereon, a feed-water pipe having a flat or mat-shaped coiled portion arranged in the furnace and a plurality of independent valved tubes surrounding the pipe and having communication therewith.

6. A steam-boiler comprising a furnace, a shell mounted thereon, a feed-water pipe having a coiled portion in the shell, and a plurality of tubes having portions coiled around the feed-water-pipe coil, the said tubes being of smaller diameter than said pipe.

7. A steam-boiler comprising an inner coil and a plurality of independent outer coils having a forced and constant circulation by means of a pump or other constant pressure, forcing water through the inner coil and returning through the outer coils in the form of steam.

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

CHARLES E. CHAPMAN.

Witnesses:

EVA COLEMAN,
SUSAN A. KING.