

No. 610,312.

Patented Sept. 6, 1898.

F. WALKER.
SELF CLEANING STAND BOILER.

(Application filed July 2, 1897.)

(No Model.)

Fig. 1.

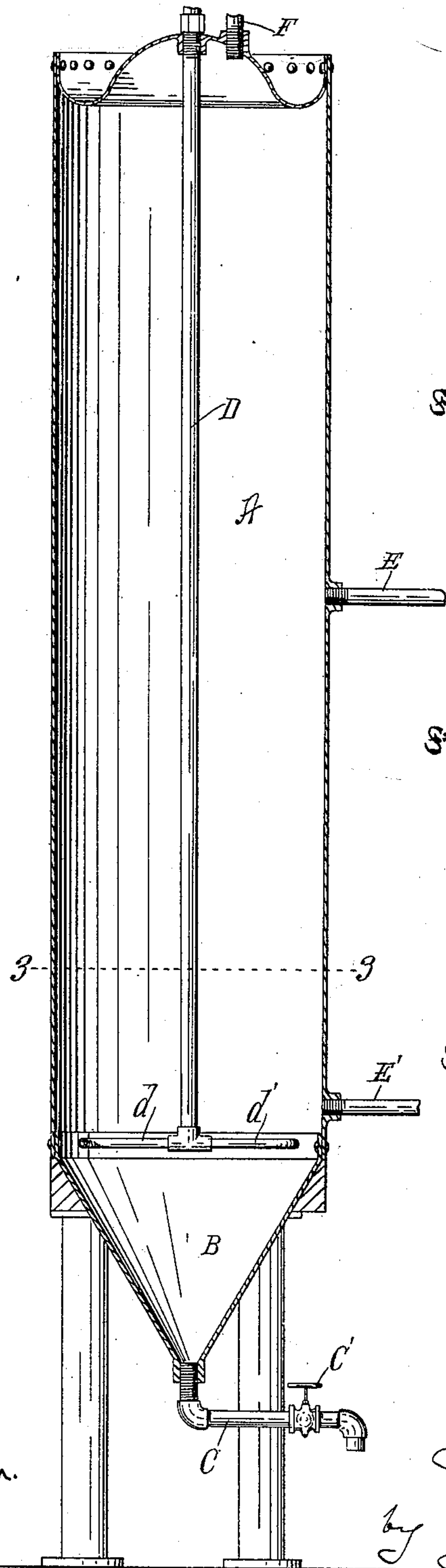


Fig. 4.

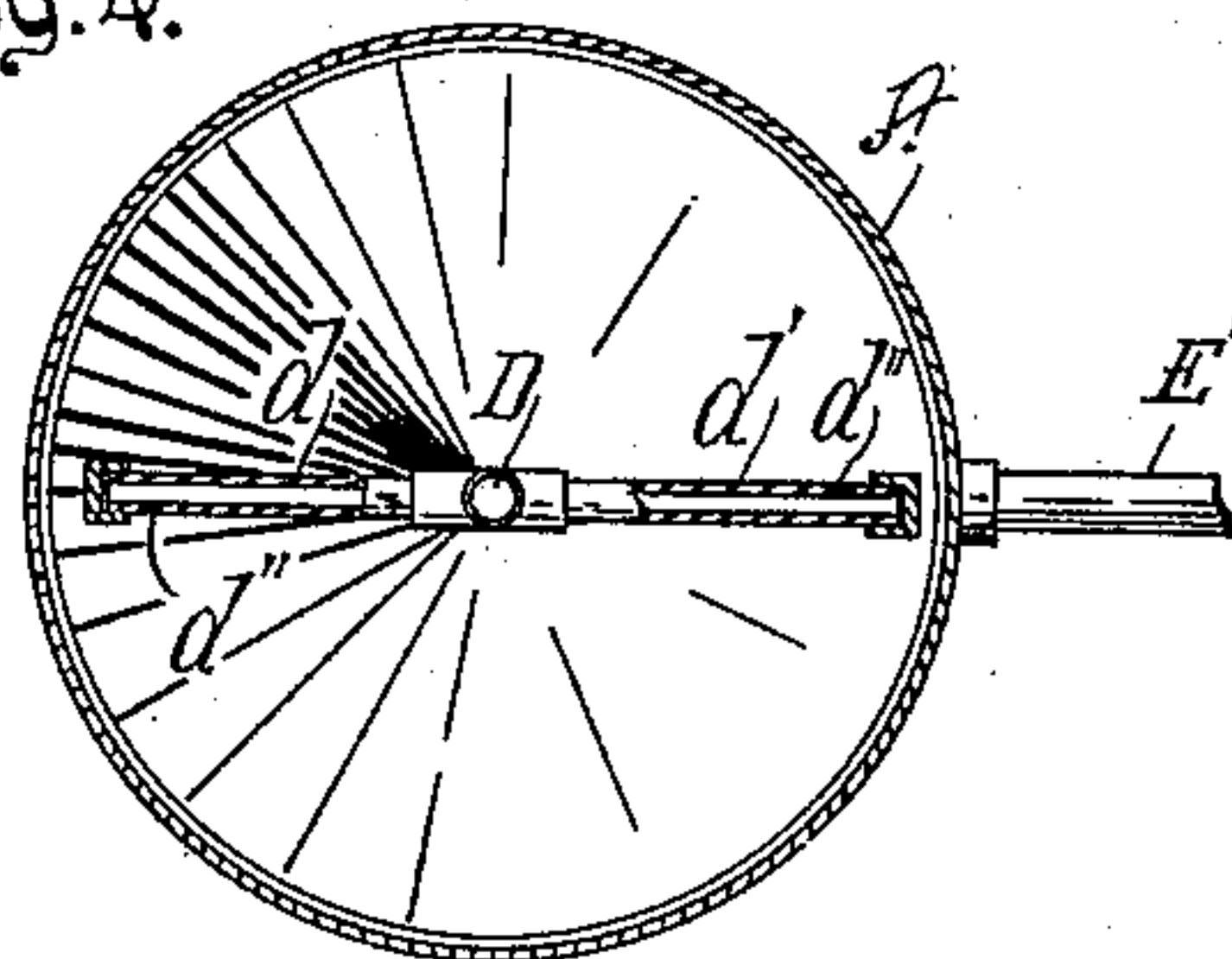


Fig. 3.

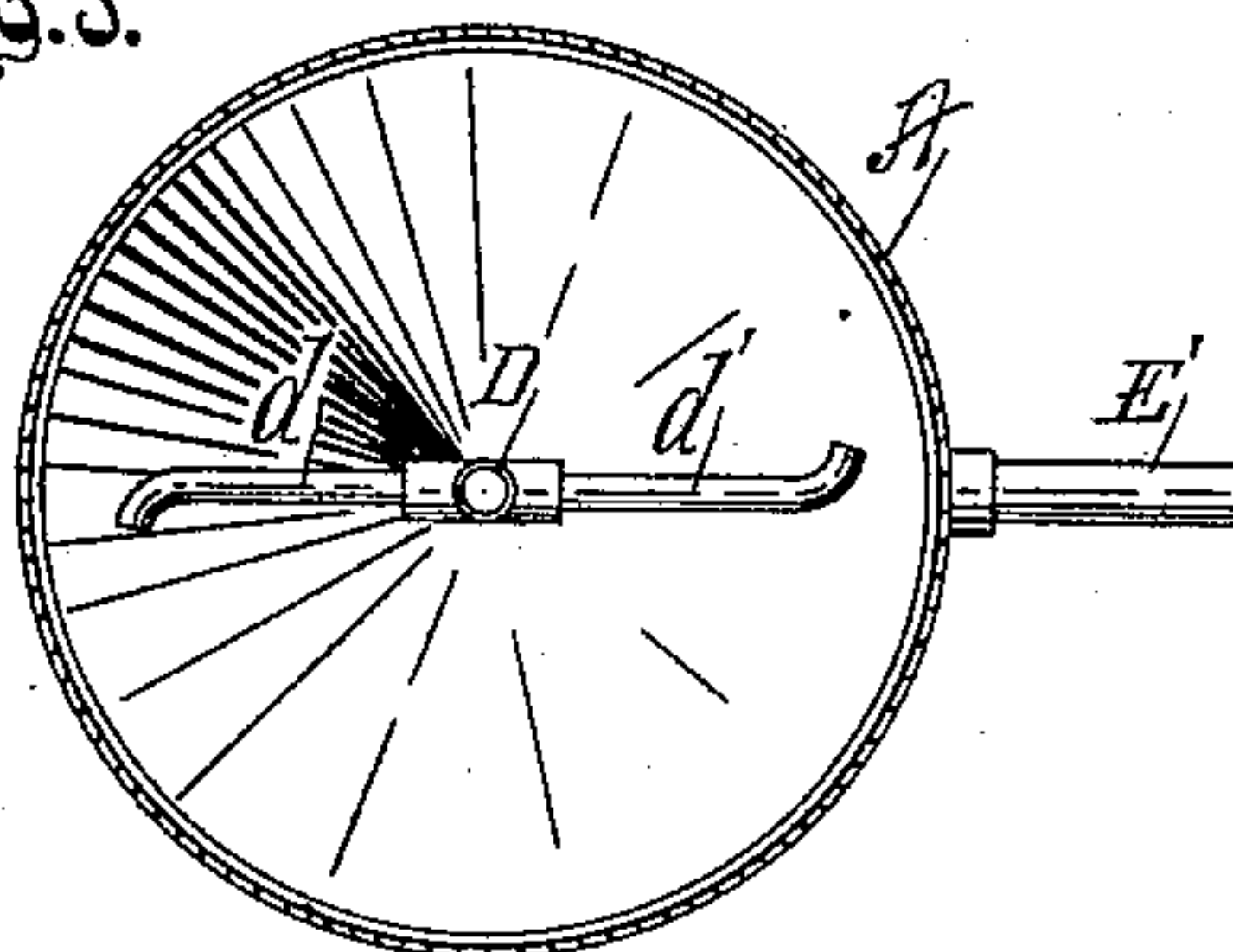
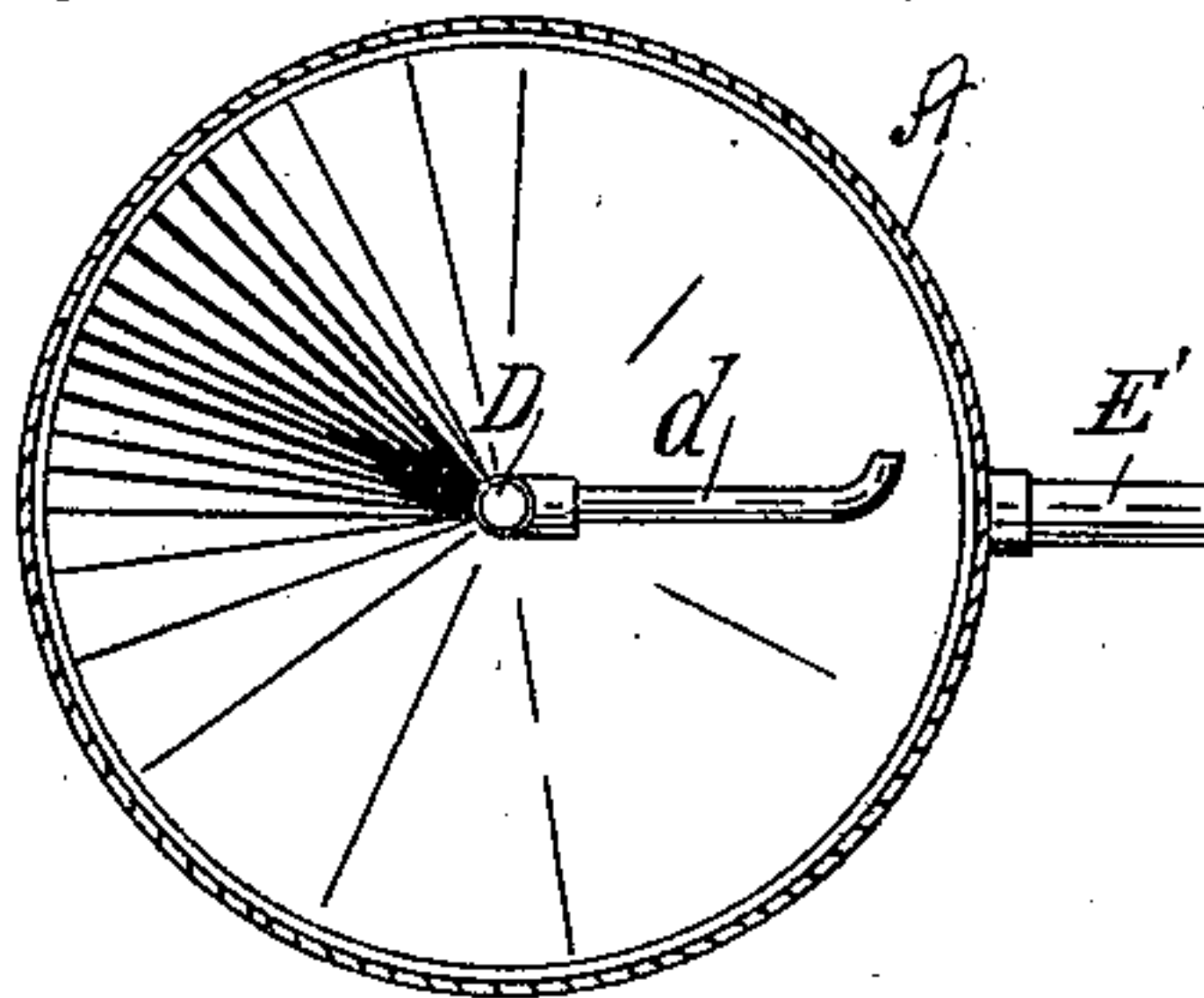


Fig. 2.



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UNITED STATES PATENT OFFICE.

FRANK WALKER, OF LOS ANGELES, CALIFORNIA.

SELF-CLEANING STAND-BOILER.

SPECIFICATION forming part of Letters Patent No. 610,312, dated September 6, 1898.

Application filed July 2, 1897. Serial No. 643,211. (No model.)

To all whom it may concern:

Be it known that I, FRANK WALKER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Self-Cleansing Stand-Boiler, of which the following is a specification.

My invention relates particularly to those stand-boilers which are heated by a coil or water-back in a stove or range.

In many cities there is a large amount of sediment in the water, which when the water becomes heated is deposited in the boiler. The boilers are ordinarily provided with substantially flat bottoms having a central outlet through which the sediment is occasionally removed. It has, however, been heretofore proposed to use a conical bottom. I have found with such boilers the mud or sediment accumulates in the bottom of the boiler, and only a small portion of the mud therein is removed when the discharge-orifice is opened—that is to say, the bottom of the boiler may contain a body of sediment or mud of considerable depth, and when the blow-off is opened the center of the mud body is drawn off, leaving a funnel-shaped depression in the middle of the body, but leaving the main body of sediment or mud around the edges of the boiler practically intact. This mud becomes stagnant and produces a foul odor in the water, rendering it unfit for use, although many persons are not aware of the reason why the water is contaminated. It has heretofore been proposed to provide the conical bottom above referred to with a hole closed by a removable cap to allow such accumulations to be removed by hand, the cap also being provided with a blow-off pipe for the removal of as much sediment as could be drawn off therethrough.

The object of my invention is to provide a cheap, simple, and effective device whereby all the sediment in the boiler will be washed therefrom and effectually removed whenever the blow-off outlet is opened.

It is to be understood that this invention relates to stand-boilers from which the water for use is drawn from the top, while the cold water is admitted into the boiler at the bottom thereof.

My invention comprises a stand-boiler having its inlet-pipe opening near the bottom of the boiler and provided with a discharge outlet or outlets arranged to discharge the water tangentially into the boiler in order to give to the water in the boiler a circular motion, whereby when the water is drawn off at the top the inflowing water ascends from the inlet or inlets in a long spiral path and not in a straight line, so that the sediment has a greater time in which to settle; but when the blow-off is open the spiral action of the inflowing water causes a rapid rotation downward of all the water below the bottom of the supply-pipe, thus forcibly removing all of the sediment.

My invention also comprises the various features of construction and combinations of parts hereinafter fully set forth and claimed.

The accompanying drawings illustrate my invention.

Figure 1 is a vertical longitudinal mid-section of a boiler embodying my invention. Fig. 2 is a cross-section showing the inlet-pipe provided with but one discharge member. Fig. 3 is a cross-section on line 3 3, Fig. 1, looking down. Fig. 4 is a cross-section illustrating another form of inlet-pipe.

In the drawings, A is a boiler, which is preferably provided with a tapering bottom B, having a blow-off pipe C leading therefrom and controlled by a valve C'.

D is the inlet-pipe, which is fixed stationary in the boiler, and, as shown in the drawings, extends to near the bottom of the boiler and is provided at its bottom with two discharge members *d d'*, extending on opposite sides of the pipe outward to near the sides of the boiler. As shown in Figs. 1 and 3, the ends of the inlet-pipes are curved at the outer end, so as to discharge the water from their mouths tangentially upon opposite sides of the boiler in opposite directions, so as to produce a circular motion of the water which enters the boiler and a corresponding rotation of the water within the lower portion of the boiler.

In Fig. 2 I have shown the inlet-pipe having but one discharge-limb which discharges water tangentially against the wall of the boiler, and in Fig. 4 I have shown the ends

of the pipes d d' capped and provided with perforations d'' , through which the water is discharged tangentially.

E E' represent circulating-pipes, which in the usual manner extend to the water-back. The lower member E' of the circulating-pipe is arranged leading from the boiler at a point above the bottom thereof, so as to avoid the circulation of sediment through the water-back, which is a prolific cause of the filling up and burning out of water-backs, since the sediment becomes precipitated when subjected to the intense heat, and thus forms a scale within the water-back, which causes it to quickly fill up and burn out. However, I do not claim it to be new to locate the mouth of the circulating-pipe above the level of the sediment deposit.

In practice with my improved boiler when any water is drawn from the boiler, either through the outlet-pipe F or the blow-off pipe C, the water which rushes in through the inlet-pipe D is discharged tangentially into the boiler, near the bottom thereof, and causes a rotary motion of the water therein, which drives the sediment toward the center of the boiler, so that it settles into the tapering bottom. When the blow-off pipe C is opened, the water and accumulated sediment rush out through the blow-off pipe and a corresponding volume of water rushes into the boiler through the inlet-pipe and discharging tangentially against the inner walls of the boiler causes a rotary motion of the water and a consequent loosening and scouring of the mud within the bottom of the boiler, so that all the mud and sediment are washed therefrom and driven out through the blow-off pipe.

While I consider the tapering bottom preferable to a flat bottom, still my invention will produce satisfactory results when applied to a flat-bottomed or substantially flat-bottomed boiler, and therefore my claims are not limited to the tapering bottom shown.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A stand-boiler having an outlet in its bottom; a stationary inlet-pipe arranged with its opening near the bottom of the boiler and adapted to discharge tangentially into the boiler above the bottom thereof.

2. A stand-boiler having a tapering bottom provided with an outlet; a stationary inlet-pipe extending to near the bottom of the boiler and adapted to discharge tangentially against the side of the boiler.

3. A stand-boiler having a tapering bottom provided with an outlet; a stationary inlet-pipe extending to near the bottom of the boiler and provided with a discharge adapted to produce a circular movement or rotation of the water in the boiler when water is discharged into the boiler through the inlet-pipe.

4. A stand-boiler provided at its bottom with an outlet; a stationary inlet-pipe arranged extending to near the bottom of the boiler and provided with two outwardly-projecting discharge members arranged to discharge tangentially in opposite directions against opposite sides of the boiler.

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Witnesses:

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