F. X. BAYER.

BOILER CLEANER.

APPLICATION FILED JAN. 31, 1908.

900,078. Patented Oct. 6, 1908.

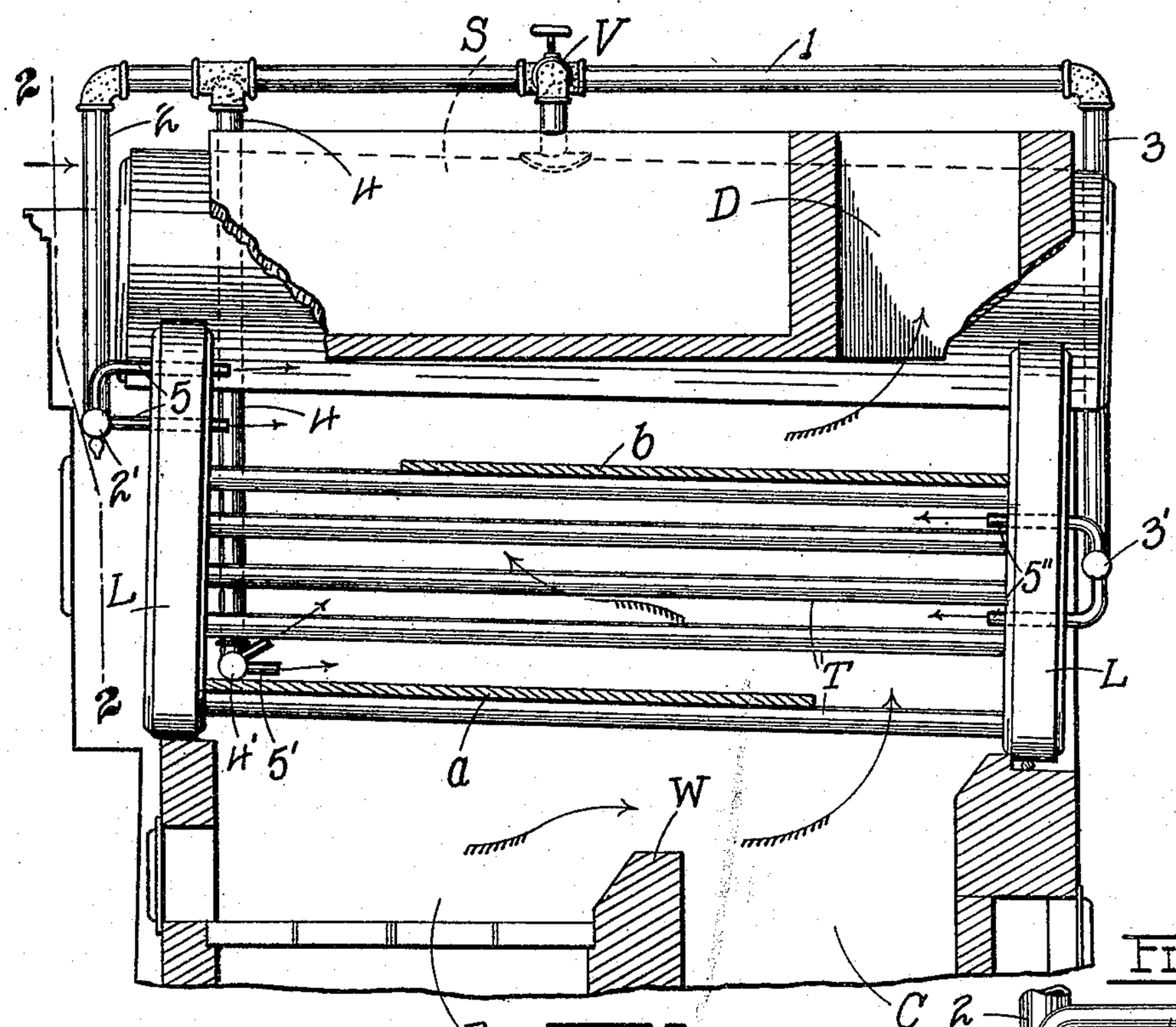

Fig. 1.

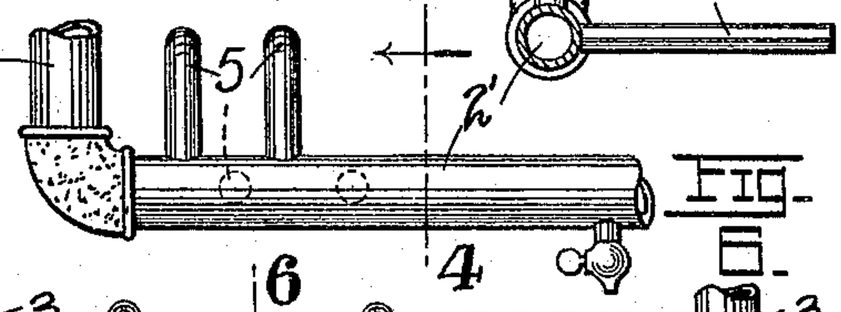

Fig. 3.

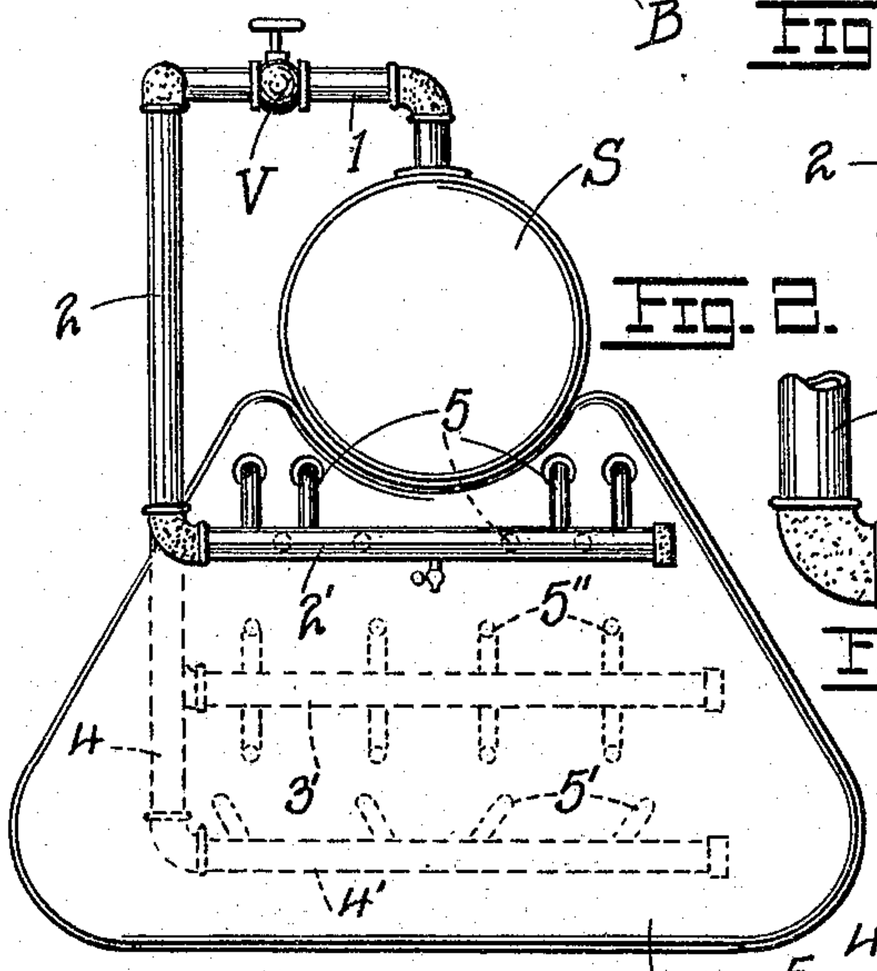

Fig. 2.

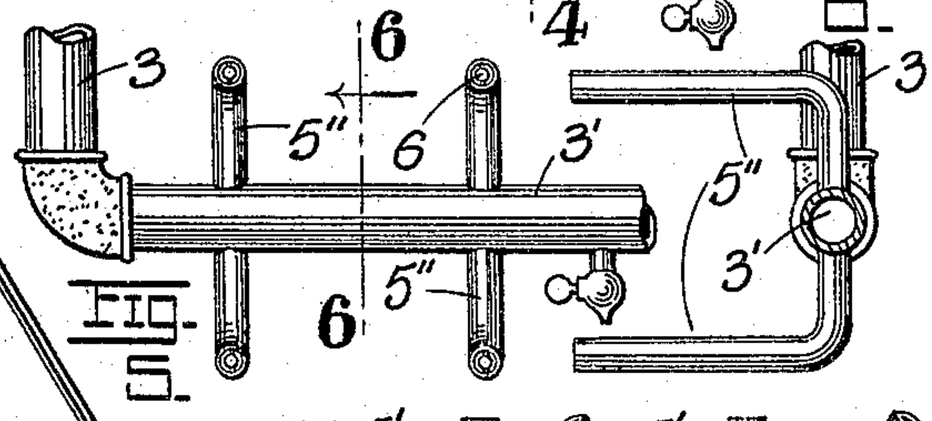

Fig. 5.

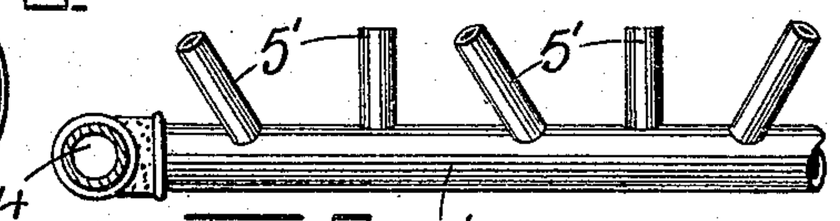

Fig. 7.

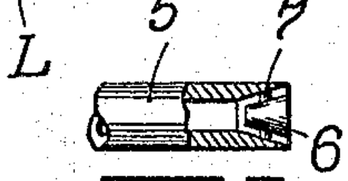

Fig. 8.

WITNESSES:

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BOILER-CLEANER.

No. 900,078. Specification of Letters Patent. Patented Oct. 6, 1908.

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To all whom it may concern:

Be it known that I, FRANK X. BAYER, citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Boiler-Cleaners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in boiler-cleaners; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a sectional side elevation of a conventional water-tube boiler showing my invention applied thereto; Fig. 2 is a vertical transverse section on the line 2—2 of Fig. 1; Fig. 3 is an enlarged front elevational detail of the upper jet-pipes for the front of the boiler; Fig. 4 is a cross section on the line 4—4 of Fig. 3; Fig. 5 is an enlarged inside elevational detail of the rear jet-pipes; Fig. 6 is a cross section on the line 6—6 of Fig. 5; Fig. 7 is an inside elevational detail of the lower front jet-pipes; and Fig. 8 a sectional detail showing one form of spray-plug for the jets.

The object of my invention is to provide suitable means for cleaning the spaces between the water-tubes of a water-tube boiler by means of steam-jets conducted to suitable spray-pipes from the steam space of the boiler-shell, the jets being so positioned as to not only assist in the draft for intensifying the combustion of such carbonaceous material as may accumulate among the pipes, but to direct the material dislodged by the jets in proper direction to effect its final escape through the furnace stack.

The advantages of the invention will be better apparent from a detailed description thereof, which is as follows:

Referring to the drawings, S, represents a boiler shell having terminal water-legs L, L, connected by the circulating water-tubes T. Extending over the fire-box B, and above the bridge-wall W, and a suitable distance over the rear combustion chamber C, is a deflecting wall *a*, the products of combustion passing rearwardly below said wall *a*, thence upwardly between the tubes T, and forwardly, where they pass above the upper deflecting wall *b* between said wall and shell S, into the stack D. These features of course form no part of my invention.

Tapping the shell S at a convenient point above the water line is a steam pipe 1 having front and rear depending terminals 2 and 3 respectively, controlled by valves V at convenient points, the horizontal extension 2′ of the terminal 2 being provided with reduced pipes or nozzles 5, 5, passing through the top of the front water-leg and discharging steam under pressure and in the form of forcible sprays or jets into the space between the shell and the wall *b*. Leading from the pipe 1 and to the rear of the pipe 2 is a depending pipe 4 whose bottom horizontal extension 4′ is likewise equipped with nozzles 5′ at various inclinations, discharging rearwardly directly behind the bottom of the front water-leg into the spaces between the water-tubes. The horizontal extension 3′ of the branch 3 is equipped with nozzles 5″ passed through the middle portion of the rear water-leg and discharging forwardly into the spaces between the water tubes.

While the character of steam jet is immaterial I prefer to form it by means of a conical plug 6 held in position by spacing pieces or studs 7, (Fig. 8) this arrangement causing a diverging form to the jet.

It will be seen from the foregoing, that the combined action of the several jets will not only mechanically dislodge any accumulations which may have settled around the tubes T, but will automatically impel them along when once dislodged, in the general direction followed by the products of combustion, so that the material is finally forced into the stack D. The jets moreover serve to create a forced draft which thereby intensifies the combustion, so that any unconsumed carbon which may lodge between the tubes will be completely burned up should the jets fail to dislodge it in the manner indicated.

The present invention dispenses with the necessity of hand-cleaning now so generally resorted to with this type of boiler, a method both laborious and unsatisfactory, and one imposing inconvenience on the person doing the cleaning.

Having described my invention what I claim is:—

In combination with a boiler comprising a shell, a front and rear water-leg, a series of water-tubes communicating with the interiors of the respective water-legs, a fire-box and rear combustion chamber, a deflecting wall extending from the base of the front

water-leg rearwardly over a portion of the combustion chamber, a second deflecting wall extending from the top of the rear water-leg and below the shell, forwardly to a suitable distance from the front water-leg, a steam pipe leading from the steam space of the shell and having terminal branches provided with nozzles passing through the top of the front water-leg and through the rear water-leg below the upper deflecting wall, and discharging respectively into the space between said wall and shell, and into the spaces between the water-tubes, and an intermediate branch terminating in nozzles discharging rearwardly at a point behind the front water-leg and above the lower deflecting wall, whereby the material dislodged follows the general direction of the draft of the boiler, the parts operating substantially as, and for the purpose set forth.

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

FRANK X. BAYER.

Witnesses:

EMIL STAREK,

FANNIE E. WEBER.