

T. E. WHITE.
 APPARATUS FOR BLOWING SOOT.
 APPLICATION FILED JAN. 24, 1911.

996,180.

Patented June 27, 1911.

2 SHEETS—SHEET 1.

FIG. 1.

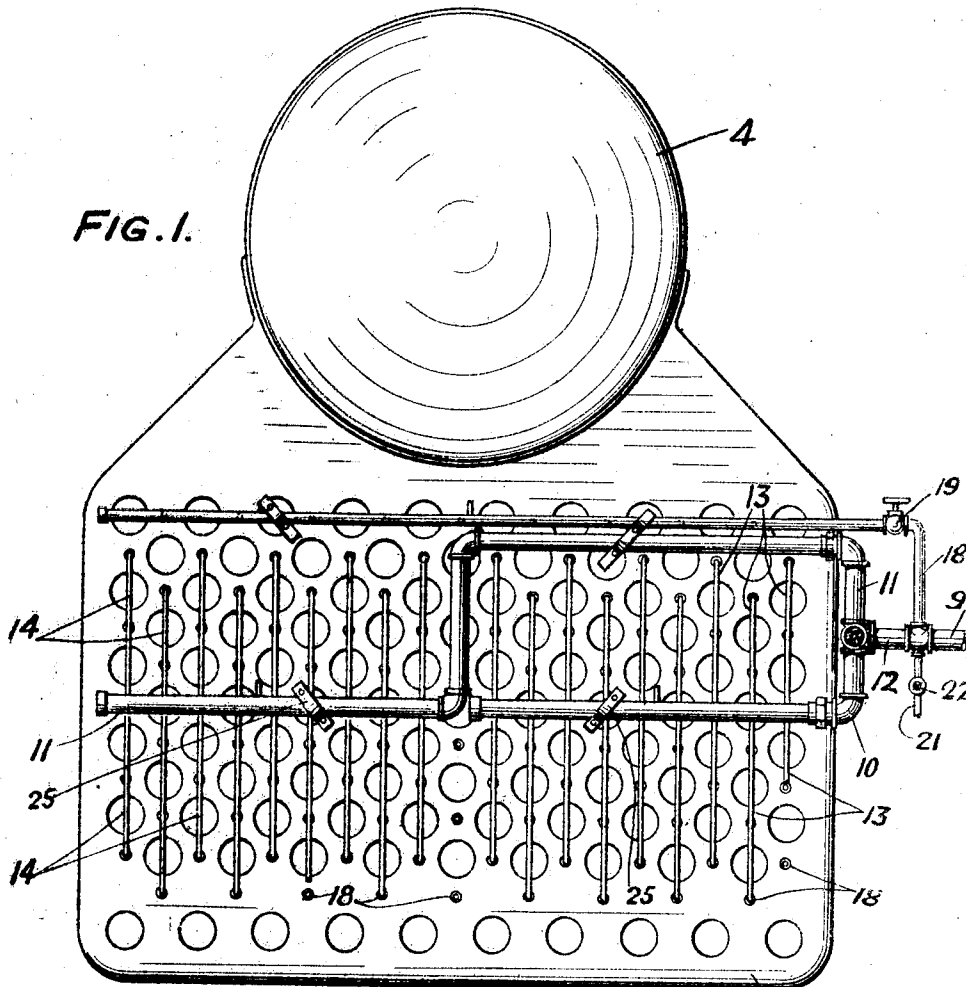
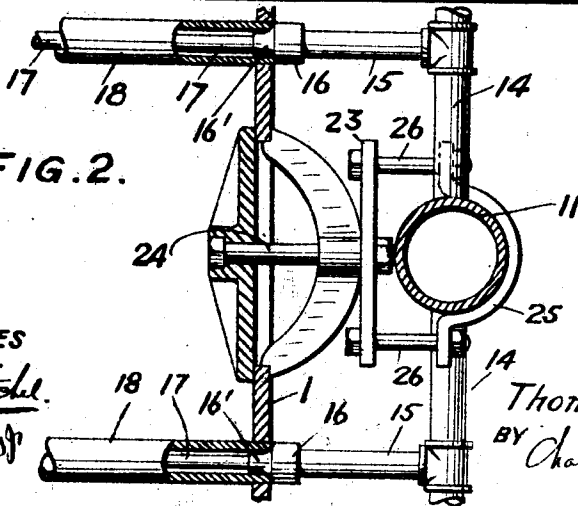


FIG. 2.



WITNESSES

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APPARATUS FOR BLOWING SOOT.

996,180.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS E. WHITE, a citizen of the United States, residing in the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented an Improved Apparatus for Blowing Soot, of which the following is a specification.

My invention is designed for blowing soot from boilers and its leading object is to more effectively clear the heating surfaces of deposits by simple and inexpensive apparatus.

The characteristic features of my invention are fully disclosed in the following description and the accompanying drawings in illustration thereof.

In the drawings, Figure 1 is a front elevation of a boiler having my improved apparatus applied thereto; Fig. 2 is a sectional elevation representing details of construction; Fig. 3 is a part sectional and side elevation of the construction illustrated in Fig. 1; Fig. 4 is a front elevation of a marine boiler having improvements of my invention applied thereto, and Fig. 5 is a vertical section taken on the line 5-5 of Fig. 4.

The apparatus illustrated in Figs. 1, 2, and 3 comprises the headers 1 and 2 connected by the tubes 3, and connected with the drum 4, the tubes carrying the baffles 5 and 6 and the headers resting on the furnace walls 7 and 8.

The steam pipe or main 9 is connected with the branch pipes 10 and 11, and a three way valve 12, at the junction of the main with its branches, controls the discharge from the main so that it can be sent through the respective branches alternately. The branch pipes discharge through the respective laterals 13 and 14 which discharge through branches 15 connected by couplings 16 with nozzles 17. These nozzles are disposed in the hollow staybolts 18 extending through the header 1 and the couplings have the tapered ends 16' which fit in and close the outer ends of the stay bolts. A further branch pipe 18, controlled by the valve 19, discharges through similar nozzles 20 above the baffle 6. A branch 21, controlled by the valve 22, is adapted for draining.

The branch pipes, with the parts depending thereon, are supported by plates or bars 23 engaged by the cover plate bolts 24 and the straps or shoes 25 coupled to the parts

23 and clamped on the pipes by bolts 26, the pipes being pressed against the ends of the cover plate bolts.

The nozzles are so disposed that jets of steam discharged therethrough sweep the exterior surfaces of the tubes 3.

In operation, with the gaseous products of combustion flowing from the combustion chamber 27 through the pass 28 toward the header 1, and thence to the pass 29, steam is admitted to first one and then to the other of the pipes 10 and 11 so that the sections of the pass 28 on either side of a vertical plane passed longitudinally through the center thereof are blown at different times, with the result that in the section being blown the heating gases and steam jets act in opposite directions; lift the soot and force it into the unobstructed current of heating gases flowing in the adjacent section, whereby the soot is carried to the stack.

In the apparatus illustrated in Figs. 4 and 5, the main pipe 30 is provided with branch pipes 31 to which steam is admitted under control of the respective valves 32. Branches 33 extend laterally from the pipes 31 and connect them with nozzles 34 disposed so that steam jets can be forced through the fire tubes 35 into the combustion chamber 36 through which the furnace chambers 37 discharge to the stack 38.

In operation, a set of tubes is cleaned by opening one of the valves 32, while the other is closed, and blowing against the current of the heating gases into the chamber 36, whence the soot is carried by the heating gases through the other half of the tubes of the set, from which the steam is cut off. When half the tubes of a set have been cleaned by discharging steam jets therethrough from a set of branches 31 and 33, the steam is cut off from these branches and admitted to complementary branches 31 and 33, whereby the soot is blown from the second half of the tubes into the chamber 36 and carried thence by the heating gases through the first half of the tubes.

I have found that most effective cleaning can be obtained by this mode of operation, with an apparatus that is simple and readily applied.

Having described my invention, I claim:

1. The improvements which comprise the combination of a set of tubes and means for carrying gases in contact with the surfaces of said tubes, with two sets of nozzles adapt-

ed for discharging fluid oppositely to the current of the heating gases in contact with different tubes of said set, and means whereby said sets of nozzles can be discharged in
5 succession.

2. The improvements which comprise the combination of a set of boiler tubes, with a main pipe, branch pipes, valve mechanism whereby said branch pipes are alternately
10 placed in communication with said main pipe, lateral pipes connected with the respective branch pipes aforesaid, and nozzles connected with the respective lateral pipes aforesaid.

15 3. The improvements which comprise the

combination of headers, tubes connecting said headers, hollow stay bolts extending through said headers, and hand hole covering means comprising bolts, with branch
20 pipes, means supported by said last named bolts for holding said pipes, nozzles disposed in said stay bolts and means for connecting said nozzles with said pipes.

In witness whereof I have hereunto set my name this 23rd day of January, 1911, in
25 the presence of the subscribing witnesses.

THOMAS E. WHITE.

Witnesses:

JOS. G. DENNY, Jr.,

CHARLES N. BUTLER.