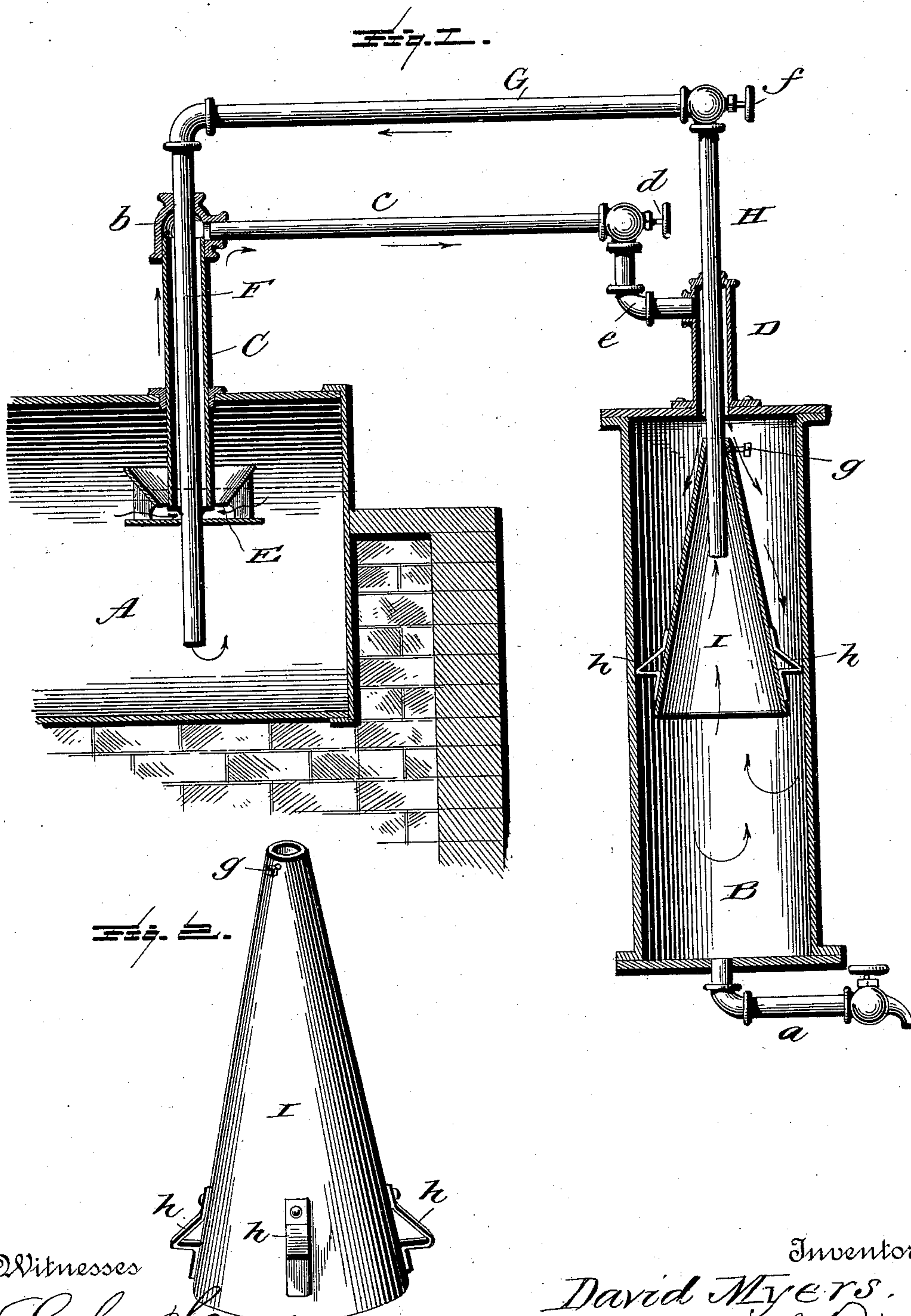


(No Model.)

D. MYERS.
AUTOMATIC BOILER CLEANER.

No. 466,506.

Patented Jan. 5, 1892.



Witnesses

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UNITED STATES PATENT OFFICE

DAVID MYERS, OF NORTH MANCHESTER, INDIANA.

AUTOMATIC BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 466,506, dated January 5, 1892.

Application filed April 27, 1891. Serial No. 390,581. (No model.)

To all whom it may concern:

Be it known that I, DAVID MYERS, a citizen of the United States, residing at North Manchester, in the county of Wabash and State of Indiana, have invented certain new and useful Improvements in Automatic Boiler-Cleaners; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

This invention relates to certain new and useful improvements in automatic boiler-cleaning apparatus of that class in which the foul water in the upper levels of the boiler is caused to pass out from the boiler and into a precipitator, where the heavier matters are collected and left and the purified water returned to the boiler.

The present invention has for its immediate object to improve upon the construction for which I obtained a patent dated March 25, 1890, and numbered 423,943. The novelty in the present instance resides in the employment of a cone-shaped spreader in the precipitator, which serves the double function of a sediment-gatherer, down the inclined sides of which the sediment falls into the bottom of the precipitator and is prevented from being sucked in the pure-water pipe returning to the boiler, and also as a pure-water chamber, into which the pure-water pipe extends.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a vertical section, with parts in side elevation and broken away, illustrating my improved apparatus in connection with a boiler. Fig. 2 is a perspective view of the cone removed.

Referring now to the details of the drawings by letter, A designates a portion of a boiler of known construction.

B is the precipitator or cylinder, suitably

supported at some point in proximity to the boiler. It is provided with a suitable blow-off or clean-out pipe and cock at the bottom, as shown in Fig. 1.

C is the tube, suitably supported by the upper wall of the boiler and extending within the same and upward a distance outside thereof. To the upper end of this tube is a cap or coupling *b*, to which is connected the horizontal pipe *c*, the same being provided with a valve *d*, and connects by a short pipe *e* with a tube D on the top of and communicating with the precipitator, as shown. The tube C carries at its lower end within the boiler a skimmer E, which is arranged to dip below the surface of the water in the boiler, and is preferably similar to that shown in my prior patent before referred to, although other forms may be employed. A pipe F extends down through the tube C and into the boiler, and has connected to its upper end the horizontal pipe G, which in turn connects with the vertical pure-water pipe H. The pipe H extends down through the tube D and into the precipitator, and at some suitable point, as at the juncture of the pipes G and H, there is provided a suitable valve *f*, as shown in Fig. 1. A cone I is adjustably held to the end of the pipe H and is located within the precipitator, said adjustment being made by means of a set-screw *g* or by any other preferred and well-known manner. Near the base of the cone, upon the outside thereof, are provided a plurality of lugs or projections *h*, which serve to assist in holding the cone in position within the precipitator and prevent it from bearing against the interior thereof, or, in other words, hold it centrally within the precipitator without its periphery impinging against the interior side walls thereof, which would tend to form a lodgement for the sediment.

The operation of my device is as follows: Valves *d* and *f* being closed, steam is raised in the boiler, and a portion of the lime and like material, which is set free by the heating of the water, collects as a scum on the surface of the water. Valve *d* is now opened, and drain-pipe *a* being open the steam-pressure in the boiler drives a portion of the surface water and the scum floating thereon through the openings of skimmer E into tube C, thence

through pipes *c* and *e* and tube *D* into the top of the precipitator *B*, where it is discharged over and around the cone *I*. The lime and other solids are deposited upon and adhere to the outer surface of the cone for a time, where it forms in masses and then slides down the inclined sides and settles to the bottom of the precipitator. The air being now expelled from the precipitator, the valve in the drain-pipe is closed and the water and sediment accumulate in the precipitator until the lower end of pipe *H* is reached, the sediment being deposited at its circumference and the clear water rising in the center. The clear water is forced by the steam-pressure to fill pipe *H*, and valve *f* being then opened, the clear water having been cooled in the precipitator and being of a lower temperature than the water which fills pipes *c* and *C*, it falls to the bottom of the boiler, and a circulation being thus established and pipe *C* discharging at a lower point than the mouth of pipe *H*, a siphon is formed, which continues to draw the water from the precipitator so long as it remains at a higher level therein than the mouth of pipe *H* and at a lower temperature than the water in the boiler. The cone may be adjusted vertically to suit varying circumstances under which the apparatus may be worked, and this adjustment may be attained by any means

found preferable and best adapted to the purpose.

What I claim as new is—

1. In a boiler-cleaner, the combination, with the precipitator, of the pipe leading therefrom to the boiler, the pipe from the boiler thereto, and the cone suspended within the precipitator and having the pipe to the boiler extending within the cone, said cone being adjustably held to said pipe and provided with exterior projections *h*, substantially as specified.

2. The combination, with the boiler, the precipitator, and the cone within the latter, of the pipe *D* on the precipitator, the pipe *C*, leading into the boiler, the skimmer on said pipe *C* within the boiler, the pipe *G*, passed through the pipe *C*, the pipe *H*, connecting the pipe *G* and passed through the pipe *D* and carrying the cone, the pipe *c*, connecting the pipes *C* and *D*, and suitable valves, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

DAVID MYERS.

Witnesses:

C. A. BROWN,
JOHN H. BARR.