(No Model.) 2 Sheets—Sheet 1.

A. L. BAUHARD.

AUTOMATIC BOILER CLEANER.

No. 521,874. Patented June 26, 1894.

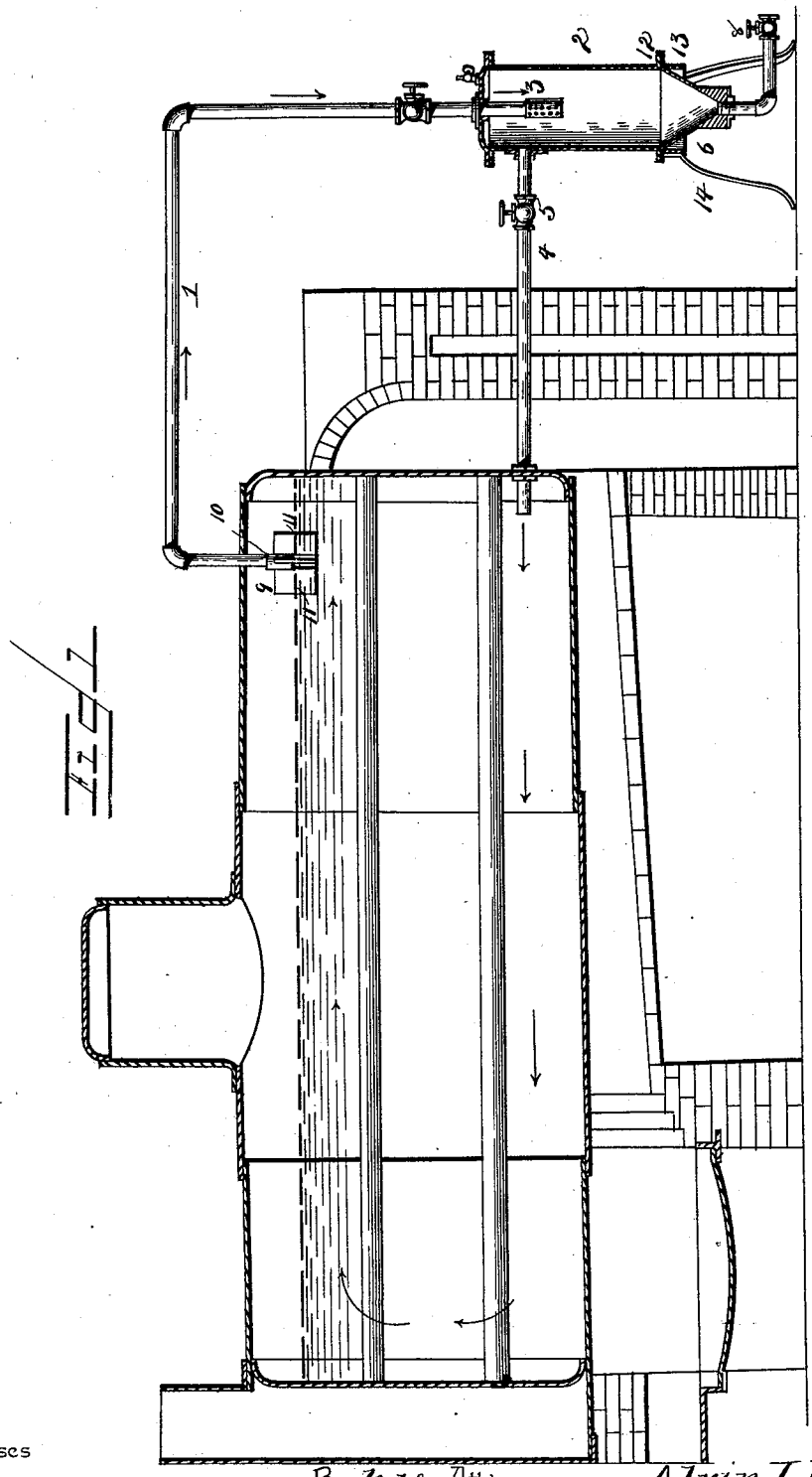

Fig. 1.

Inventor

Witnesses

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O. E. Wolfe.

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WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig 2

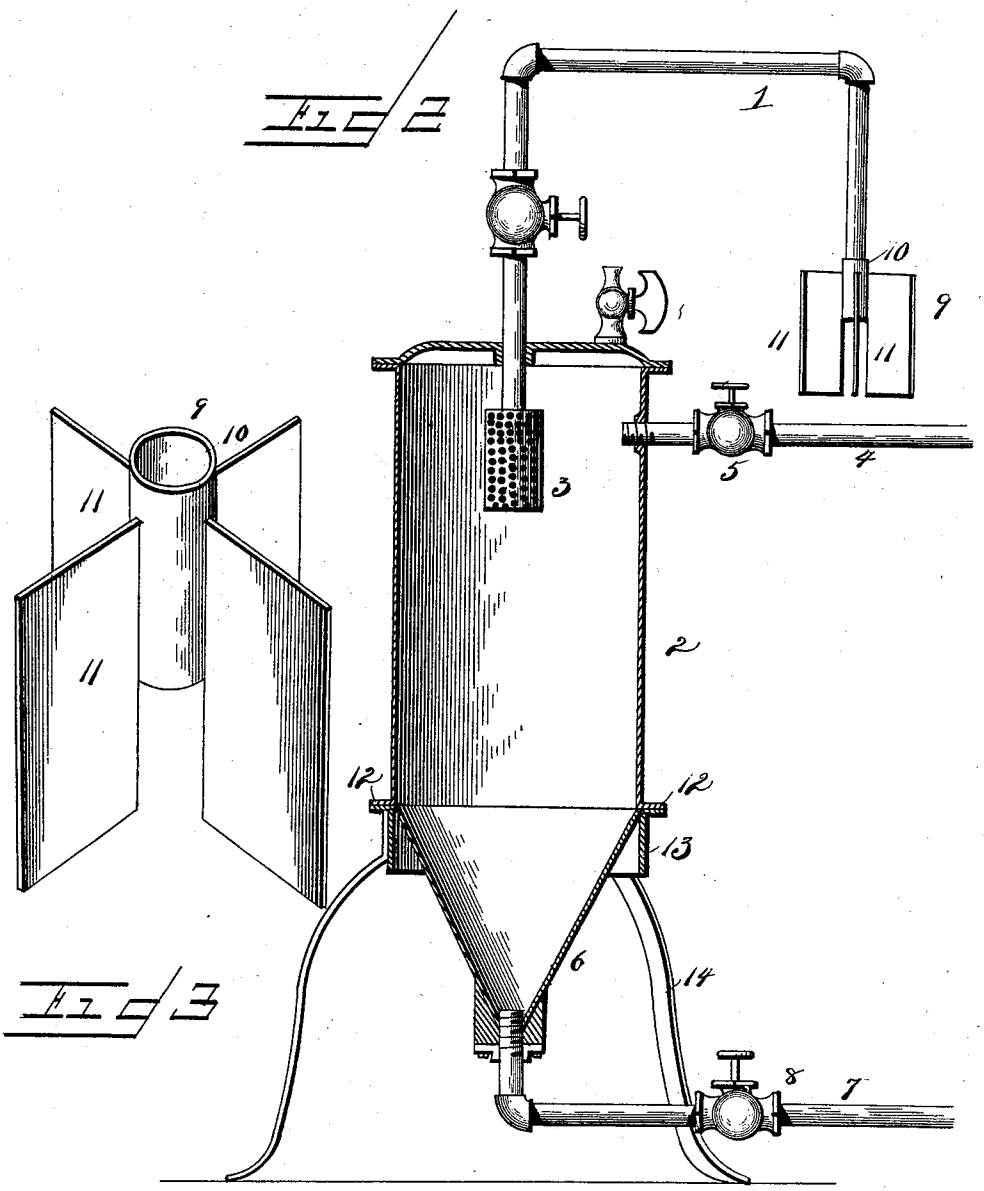

Fig 3

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UNITED STATES PATENT OFFICE.

ALVIN L. BAUHARD, OF BRISTOL, TENNESSEE.

AUTOMATIC BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 521,874, dated June 26, 1894.

Application filed June 14, 1893. Serial No. 477,567. (No model.)

To all whom it may concern:

Be it known that I, ALVIN L. BAUHARD, a citizen of the United States, residing at Bristol, in the county of Sullivan and State of Tennessee, have invented a new and useful Automatic Boiler-Cleaner, of which the following is a specification.

My invention relates to boiler-cleaning apparatus designed to receive the foul water, scum, &c., from the upper levels in the boiler and convey the same into a precipitator in which the impurities are precipitated and eventually blown off, while the purified water is returned to the lower levels of the boiler.

In carrying out my invention I employ a certain novel construction, combination and arrangement of devices which will be fully described hereinafter in connection with the drawings, the novel features thereof being particularly pointed out in the claims.

In the drawings: Figure 1 is a sectional view of a boiler and boiler-cleaning apparatus attached thereto in operative position, the direction of circulation through the boiler and precipitator being indicated by darts. Fig. 2 is a detail view in perspective of the accumulator or skimmer, which is located in the boiler at the inlet end of one of the circulating pipes. Fig. 3 is a sectional view enlarged of the precipitator.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

It is well known that the water in a boiler, as soon as it becomes heated to a certain temperature, circulates from the point of greatest heat to that of least heat, and thus continually circulates throughout the boiler. The impurities which are separated from the water by the action of the heat follow this circulation until they reach a point upon the surface remote from the application of heat, and there accumulates in the form of foam or scum. At this point of the boiler I arrange the inlet end of a circulating pipe 1, which communicates directly with the top of a precipitator 2, which is substantially cylindrical in form, the pipe extending down thereinto below the surface of the water and being provided with an atomizer or sprayer 3. A second circulating pipe 4 communicates with the boiler near its bottom, and with the precipitator at a point adjacent to the top. The pipe 1 is designed to convey the impure water to the precipitator, and the pipe 4 is designed to convey the purified water back to the boiler, as indicated by the arrows in Fig. 1, both pipes being provided with suitable valves 5.

The precipitator is provided with an inverted conical bottom 6, with the apex of which is connected a blow-off pipe 7, having a suitable valve 8, and connected to the inlet end of the supply circulating pipe 1, is an accumulator 9, consisting of a sleeve or hub 10, provided with radially-disposed wings 11, which extend for about one-half their lengths below the lower or inlet end of the pipe and are separated to allow a free passage through the pipe.

This being the construction of my improved boiler-cleaning apparatus, the operation thereof, briefly stated, is as follows: The scum which accumulates at the rear end of the boiler is attracted by the accumulator and is guided by the radially-disposed wings thereof to the inlet end of the supply accumulating pipe, whence they pass to the precipitator and are finely divided in escaping through the atomizer. The temperature of the contents of the precipitator being a few degrees lower than those of the boiler, the impurities are caused to fall and settle in the conical or funnel-shaped bottom of the precipitator, from which they may be blown at intervals by the pressure in the boiler. The purified water passes from the precipitator through the return-pipe 4 to the boiler, thus making room for the impure water which is introduced through the pipe 1. It will be understood that this circulation of water from the boiler through the precipitator and back to the boiler is continuous, and the temperature of the water is but slightly reduced in its passage.

The construction of the apparatus as described is simple and effective, and may be inexpensively manufactured. The precipitator is provided, near its base, with a lateral flange 12, which is adapted to bear upon the collar 13 of the tripod 14, the conical portion of the bottom of the precipitator extending through and below said collar.

The construction and disposition of the

parts of the accumulator cause the scum to flow from all directions toward the inlet end of the circulating pipe, and thus prevent the accumulation of any quantity of these impurities.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction of parts may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a boiler-cleaning apparatus, the combination with a precipitator, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, of an accumulator attached to the inlet end of the pipe leading to the precipitator and comprising a sleeve 10 fitted snugly upon the end of said pipe, and radially-disposed wings 11 secured at their inner edges to the sleeve depending below the plane of the inlet end of the same and separated at their adjacent edges below said inlet end to form a passage, substantially as specified.

2. In a boiler-cleaning apparatus, the combination with a precipitating chamber, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, said chamber having a funnel-shaped or conical bottom with a blow-off pipe connected to its apex, of an accumulator attached to the inlet end of the pipe leading to the precipitator and having radially-disposed wings to guide the floating impurities to the said inlet end, and an atomizer connected to the discharge end of the same pipe to which the accumulator is connected, said atomizer consisting essentially of a perforated receptacle or basket 3, having no outlet except through its perforations, whereby the contents of the pipe are finely divided as they are discharged into the precipitator, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ALVIN L. BAUHARD.

Witnesses:
W. D. KENNEDY,
J. A. DANIEL.