(No Model.)

E. LIND.

WATER PURIFIER.

No. 598,635. Patented Feb. 8, 1898.

FIG. 1

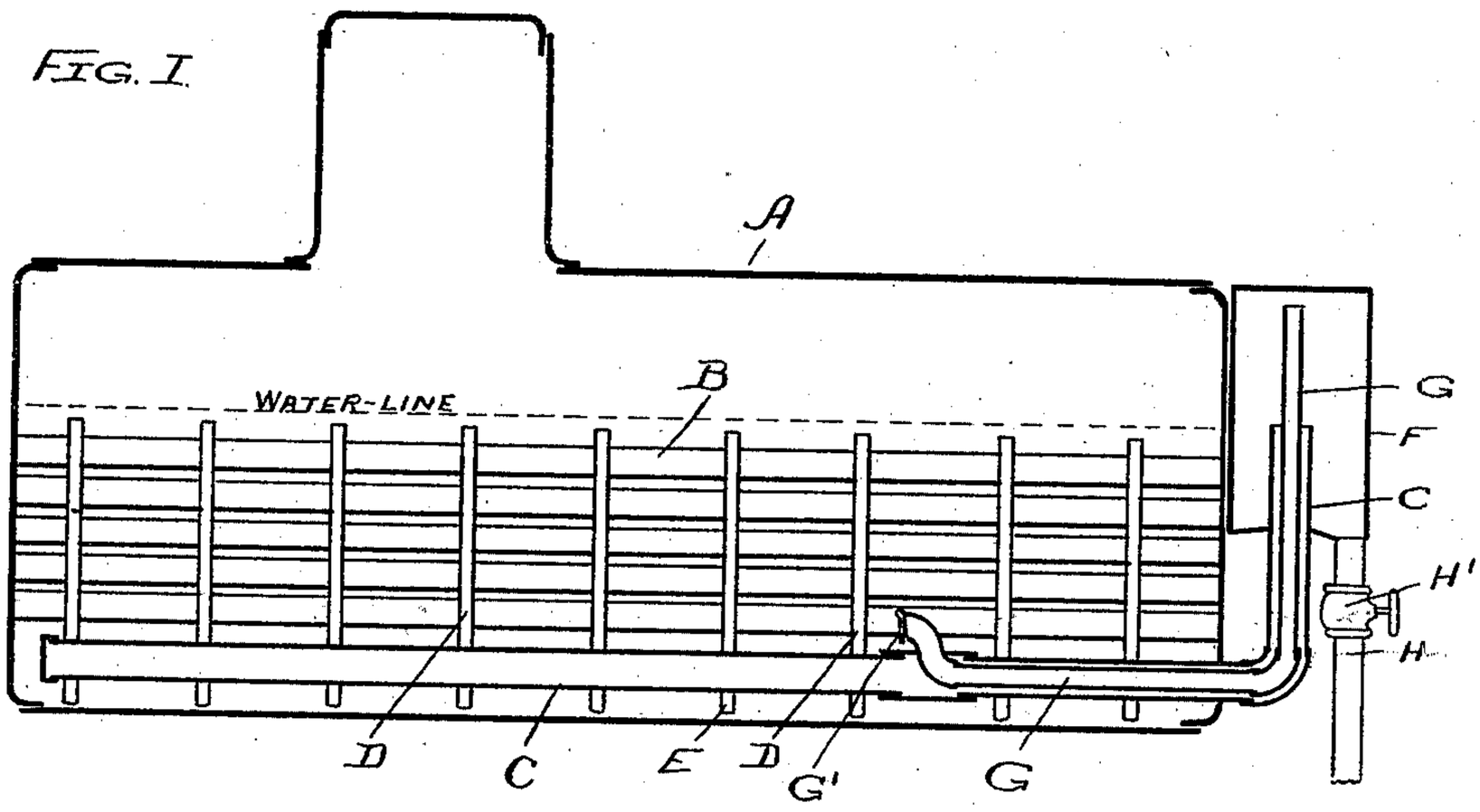


FIG. 2.

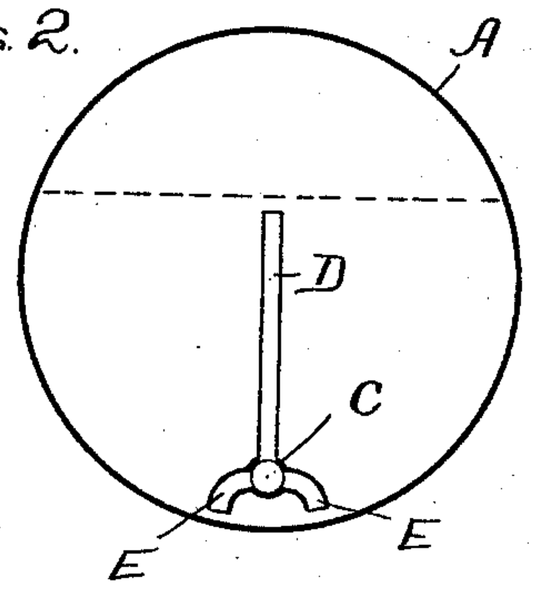
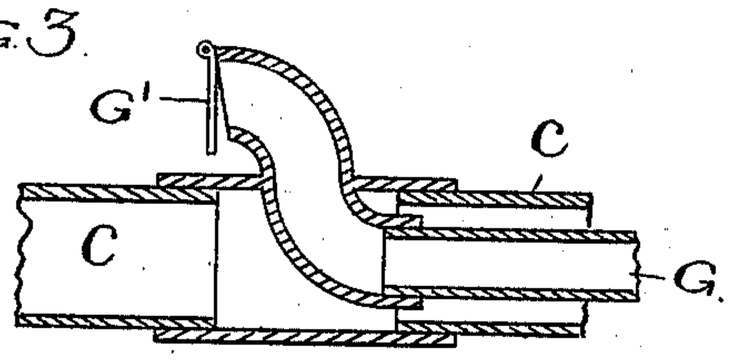


FIG. 3.



WITNESSES:
Sew. E. Curtis
A. D. Monday,

INVENTOR:
EUGENE LIND
BY Monday, Evarts & Adcock,
HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

EUGENE LIND, OF CHICAGO, ILLINOIS.

WATER-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 598,635, dated February 8, 1898.

Application filed March 13, 1897. Serial No. 627,290. (No model.)

To all whom it may concern:

Be it known that I, EUGENE LIND, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Water-Purifiers, of which the following is a specification.

This invention relates to apparatus for purifying the water in steam-boilers and preventing the formation of scale.

It consists in the novel arrangement and combination of devices and parts of devices set forth in the subjoined description and illustrated in the accompanying drawings, in which latter—

Figure 1 is a longitudinal vertical section of a boiler to which my invention has been applied. Fig. 2 is a cross vertical section, and Fig. 3 is a detail section.

In said drawings, A represents the boiler, which may be provided with tubes B in the usual manner. In the bottom of the boiler is a longitudinal pipe C, and extending upward from such pipe is a series of vertical pipes D, adapted to draw scum, &c., from the surface of the water and conduct it into said pipe C. Branching from each side of pipe C in downwardly directions is another series of pipes E, adapted to take up the sediment and impurities which may seek the lower levels of the water and to conduct them into said pipe C.

The pipes D and E are employed in such numbers as may be necessary or desirable to draw off the impurities from all parts of the water.

I prefer that the pipes E be bent, as shown, and that they be joined to pipe C above the bottom of the latter, as shown, for the following reason: In my use of pipes connecting directly with the bottom of pipe C, I have found that there is a tendency by the sediment which is taken up into pipe C at the fire end of the boiler, where the water agitation is greatest, to fall out through the collectors at the farther end of the boiler, where the agitation is less, so that some of it finds its way again into the water-space of the boiler instead of being carried off to the mud-drum. This tendency I overcome by joining the pipes E to pipe C at a level above the bottom of the latter.

The pipe C is extended through the rear end of the boiler and is then bent upward and enters the bottom of the mud-drum F and terminates, preferably, some distance above its bottom, so as to form a trap in the bottom of the drum, where the impurities will be caught. A return-pipe G passes from the top of the drum back into the water-space of the boiler, and I prefer to lead this pipe through the pipe C, as clearly illustrated, as it renders the apparatus very compact, and I find that a vigorous circulation attends its use when thus constructed. At the end within the boiler this return-pipe is provided with a check-valve G′, and the mud-drum has a blow-off pipe H, with a valve H′. When this valve H′ is opened, the check-valve automatically closes, so that the current through pipe C will be quickened and carry off all accumulations of impurities.

I prefer to locate the drum in close proximity to the boiler and above the level of the pipe C, so the latter may enter at the bottom.

I claim—

1. The combination with the boiler of the pipe C for carrying off the impurities, the collectors D and E, the mud-drum with which pipe C communicates, and the return-pipe G extending from the drum back to the boiler and passing through said pipe C, substantially as specified.

2. The combination with a boiler of a mud-drum located above the level of the pipe which collects and conducts the impurities to it, a return-pipe leading back from the drum to the boiler and passing through said collecting-pipe, and said pipes, substantially as specified.

3. The combination with the boiler of a mud-drum, and a pipe for collecting the impurities longitudinally arranged in the bottom of the boiler and having its end bent upward and entering the drum located outside the boiler, as shown substantially as specified.

EUGENE LIND.

Witnesses:

FRANK MILBRAK,

JAMES E. MCGRATH.