

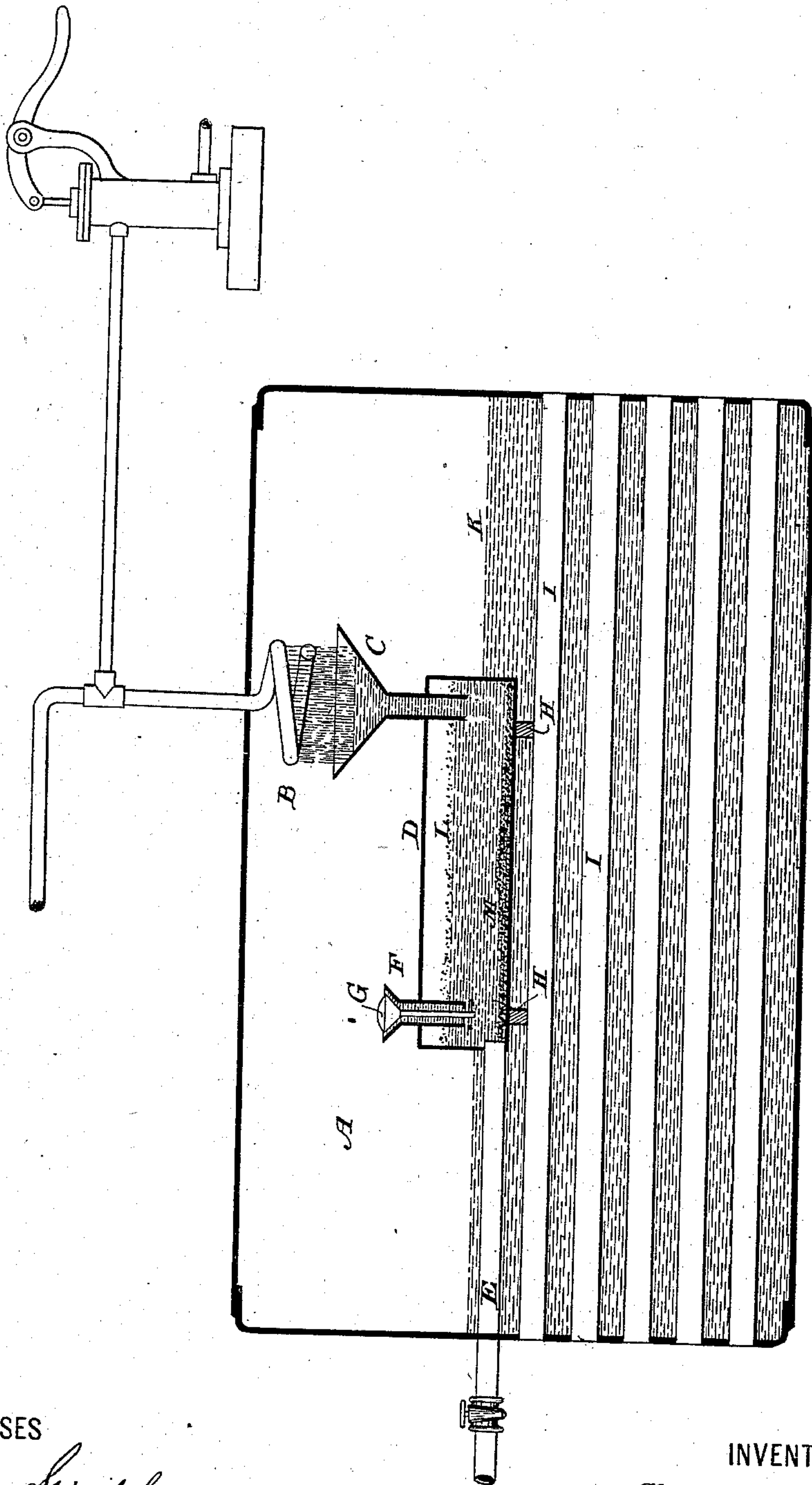
(No Model.)

C. ELLIOT.

APPARATUS FOR PURIFYING WATER FOR BOILERS.

No. 271,821.

Patented Feb. 6, 1883.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR PURIFYING WATER FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 271,821, dated February 6, 1883.

Application filed December 6, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES ELLIOT, a citizen of the United States, residing at the city and county of San Francisco, in the State of California, have invented a new and useful Apparatus for Purifying Water for Boilers, of which the following is a specification.

My invention relates to an apparatus adapted to be placed in the interior of a boiler for the purpose of purifying the water previous to its use in the boiler.

It consists of a closed cylindrical settler having a drip-funnel opening into the settler to receive the inflowing water, and an overflow through which the purified water escapes into the boiler. The settler has legs, which rest upon the tubes of the boiler, and the whole apparatus is placed above the water-level in the boiler.

The body of the settler may be made square as well as cylindrical.

The water is introduced into the apparatus through a perforated spiral pipe at or near the top of the boiler, above the water-line, and falls in a fine spray through the mouth of the flaring drip-funnel into the settler. It there deposits its impurities. Such as are sufficiently heavy sink to the bottom, while the lighter impurities float on the surface above the level of the interior opening of the overflow, which extends for some distance into the settler for this purpose. The purified water then escapes by the exterior mouth of the overflow, which is on a lower level than the mouth of the drip-funnel. The sediment is removed by means of a blow-off adapted to the settler. A check-valve in the overflow closes that opening when the blow-off is opened, so that the steam is caused to enter at the drip-funnel and effect a thorough cleansing of the settler by traversing it from end to end.

It is necessary that the drip-funnel should extend some little distance into the settler, in order to secure the air-space inside the settler into which the impurities may rise. It should not, however, extend as far into the settler as the overflow. By spraying the water previous to its introduction into the settler it is exposed to the high heat of the boiler, and the depositing of its sediment greatly assisted.

In order to supply chemicals to the water in the settler, I attach a branch pipe to the feed-pipe, through which the chemicals are forced by a force-pump or other suitable means into the feed-pipe, and thence carried to the settler.

In the accompanying drawing, which represents my invention, A is the boiler. B is the perforated spiral feed-pipe. C is the drip-funnel. D is the settler. E is the blow-off. F is the overflow extending below the level of the water in the settler. G is the check-valve. H H are the legs of the settler, resting on the tubes I I of the boiler. K is the level of the water in the boiler. L is the level of the water in the settler, and M that of the sediment deposit.

I am aware that a branch pipe has been connected with the feed-pipe of a boiler for the purpose of supplying matter to the water within the boiler to prevent the formation of crusts in the interior of the boiler. Such feed and branch pipes are shown in Patent No. 22,249, granted J. H. Harnett, December 7, 1858; but I am not aware that any such feed system for chemicals has been used in combination with a settler within the boiler, wherein the chemical action to purify the water takes place within the boiler, and thus secures the advantage of a high heat to precipitate the reaction, while the presence of the chemical is practically limited to the settler. Such would be the case where the chemical was added to hasten the deposit of the sediment.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a closed settler within the boiler, of a feed-pipe, a branch pipe attached to the feed-pipe, and means for forcing chemicals through the branch pipe into the settler, substantially as hereinbefore set forth.

2. As a new article of manufacture, the apparatus for purifying water within a boiler, consisting in the combination of the drip-funnel, the closed settler, the check-valve, the overflow extending into the settler, and the blow-off, substantially as hereinbefore set forth.

3. The combination of the check-valve with the overflow of a closed settler within the boiler, and a feed-pipe, substantially as and for the purpose set forth.

5 4. The combination of the boiler, the perforated spiral feed-pipe, and the closed settler, having the drip-funnel, the overflow, and the blow-off, substantially as hereinbefore set forth.

5. The combination of the boiler, the perforated spiral feed-pipe, and the closed settler, having the drip-funnel, the overflow, the check-valve, and the blow-off, substantially as hereinbefore set forth.

CHARLES ELLIOT.

Witnesses:

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