E. RANSOM.

BOILER-CLEANERS.

No. 194,723. Patented Aug. 28, 1877.

Fig. 1.

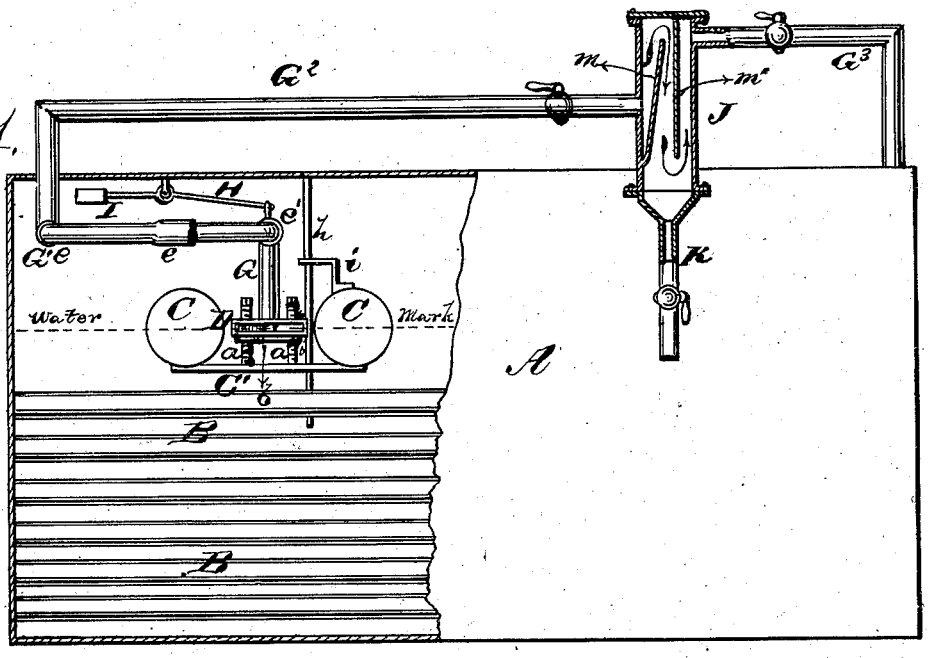
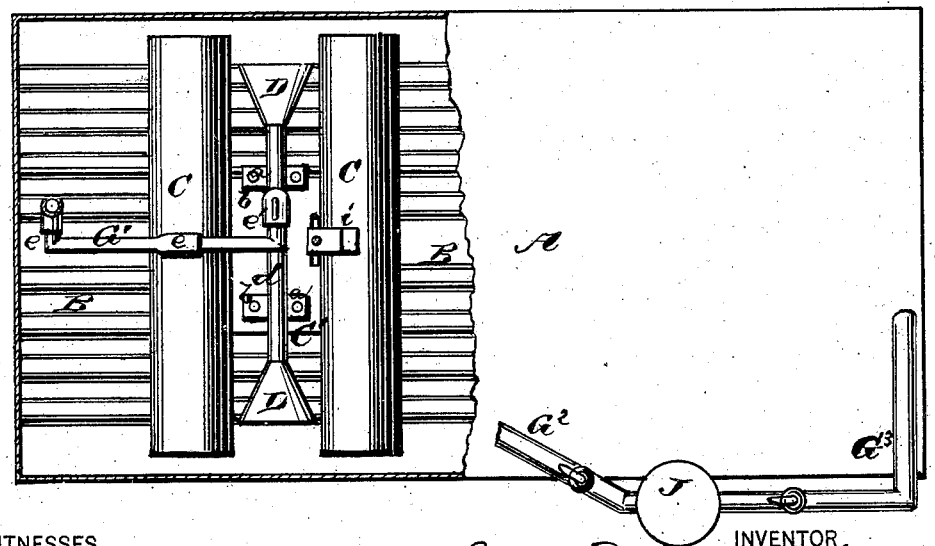


Fig. 2.



WITNESSES

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EZRA RANSOM, OF FLINT, MICHIGAN.

IMPROVEMENT IN BOILER-CLEANERS.

Specification forming part of Letters Patent No. **194,723**, dated August 28, 1877; application filed June 30, 1877.

To all whom it may concern:

Be it known that I, EZRA RANSOM, of Flint, in the county of Genesee and State of Michigan, have invented a new and valuable Improvement in Apparatus for Extracting Impurities from Water in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a part sectional side elevation of my apparatus for extracting impurities from water in steam-boilers, and Fig. 2 is a plan view of the same.

The nature of my invention consists in the construction and arrangement of an apparatus for extracting impurities from water in steam-boilers, the object being to take the scum from the surface of the water in that part of the boiler over the fire-box, and, by means of a pipe, carry it outside of the boiler through a filter and back into the rear part of the boiler through a pipe connecting the filter with the rear part of the boiler.

The annexed drawings, to which reference is made, fully illustrate my invention.

A represents a steam-boiler, with tubes or flues B B of any ordinary construction. Within the boiler A are two floats, C C, connected by a plate, C′, and on this plate are bolts *a a*, upon which are placed two small bars or plates, *b b*, adjusted up and down on the bolts, and held at any height desired by suitable nuts; or ordinary set-screws may be used for the same purpose.

The bars or plates *b b* are attached to two skimmers, D D, which are made in the form of bellows, and their inner ends connected by a pipe, *d*. The skimmers being thus made adjustable they can be raised or lowered, so as to bring their mouths even with the surface of the water.

From the center of the pipe *d* a pipe, G, leads to and connects with a short pipe, G^1, passing through the top of the boiler. In this pipe G^1 are three joints, *e*, *e*, and e^1, which allow the floating skimmers to adjust themselves to the level of the water, rising or falling in the boiler by the working of the feed-pump; or, in locomotive-boilers, going around curves or up and down grades; or in marine-boilers subjected to the roll of the ship.

h is a rod, passing down through the lug *i*, to keep the floating skimmer in the center of the boiler. H is a lever, connected to the inner end of the pipe G, and hung on a rod in the boiler, the other end of the lever being provided with a counterbalancing-weight, I, for the purpose of lifting a portion of the dead-weight of the floats, skimmers, joints, and pipes, so that the skimmers can be set lower and still be on the surface. This enables the skimmers to perform their office closer down to the tubes or flues.

The upper end of the pipe G^1 is, by a pipe, G^2, connected with a filter, J, outside of the boiler. This filter is provided with interior partitions *m m′*, arranged as shown, whereby the current of water is partially broken, the water first passing up over the top of the partition *m*, thence down the center of the filter, where the impurities, being heaviest, will settle, and the purified water passes up between the partition *m′* and the shell of the filter to the outlet-pipe G^3, through which it passes back into the boiler.

The filter J is at the bottom provided with an outlet-pipe, K, which should have a stop-cock to be opened when required, for drawing off all the sediment out of the filter.

The pipes G^2 and G^3 are also to be provided with stop-cocks, for the purpose of stopping the circulation when required.

The operation of the apparatus is as follows: The stop-cock in pipe G^3 being closed and that in the pipe G^2 opened, a current of hot water, with the impurities contained therein, with steam, will be forced up through the skimmers and pipes G G^1 G^2 into the filter J, and thence into that portion of the pipe G^3 between its stop-cock and the filter. The stop-cock G^3 is then opened, when the filtered water will be carried back into the rear part of the boiler, a partial vacuum being formed in the pipes G G^1 G^2 by the condensation of the steam therein and the cooling of the water, thus causing a continuous circulation of the water from the front to the rear part of the boiler, and a removal of the impurities.

What I claim as new, and desire to secure by Letters Patent, is—

1. The skimmers D D, adjustably connected to floats A, and by pipes connected with a filter outside the boiler, for the purposes herein set forth.

2. The lever H, with counterbalancing-weight I, in combination with the floats, skimmers, and pipes connected with the filter, as and for the purposes herein set forth.

3. The joints *e e e'*, formed in the pipe G, in combination with the skimmers and floats, substantially as and for the purposes herein set forth.

4. The combination of the floats, the skimmers, counterbalancing-lever, jointed pipe, filter, and connecting-pipes, all constructed and arranged to operate substantially as and for the purposes herein set forth.

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

EZRA RANSOM.

Witnesses:
OREN STONE,
HENRY C. VAN DUSEN.