C. C. WALWORTH.
Steam Boiler.

No. 201,638. Patented March 26, 1878.

Fig. 1.

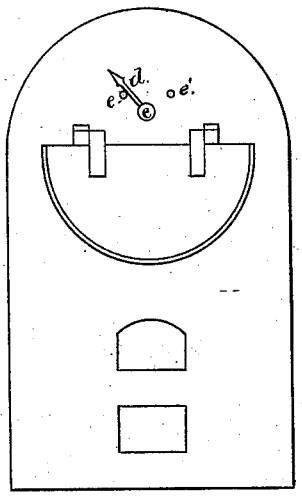


Fig. 3.

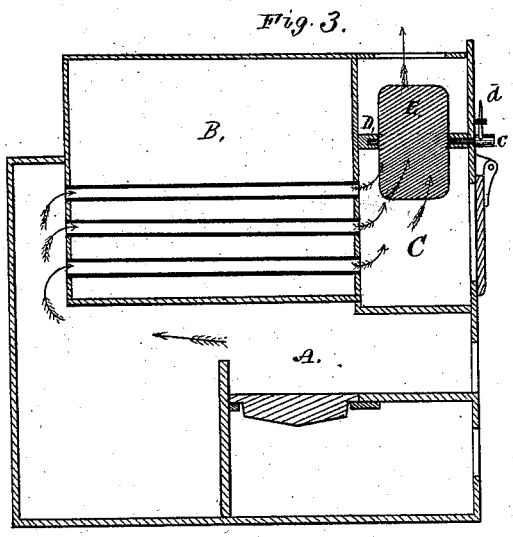
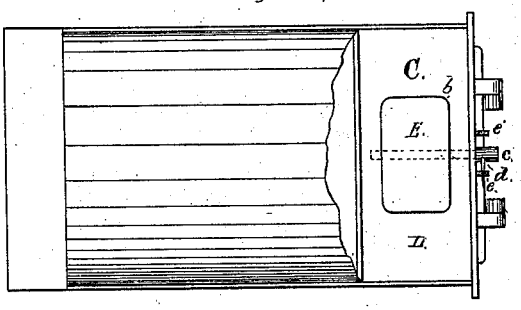


Fig. 2.



Witnesses.
Geo Gray.
F. L. Hale.

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UNITED STATES PATENT OFFICE.

CALEB C. WALWORTH, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **201,638**, dated March 26, 1878; application filed March 20, 1876.

To all whom it may concern:

Be it known that I, CALEB C. WALWORTH, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

In the said drawings, Figure 1 denotes a front end elevation of an ordinary tubular boiler and its furnace, having my invention applied thereto. Fig. 2 is a top view of the same, a portion of the shell of the boiler being broken away in order to show the arrangement of the damper, which in this figure is represented as closed. Fig. 3 is a vertical and longitudinal section, the damper being exhibited as standing vertically, or open to its greatest extent.

My invention has reference to an improved arrangement of the damper with respect to the flue-tubes of the boiler, so as to effect a better regulation of the draft, and enable the same to be operated with greater facility than under the ordinary arrangement; and it consists in arranging a diaphragm in the uptake of return-flue boilers just above the upper tubes, and in said diaphragm a damper, which can be easily manipulated at the front of the boiler by the engineer, and the draft can be regulated to any degree required.

Dampers for regulating the heat of the furnace of steam-boilers, as ordinarily applied, have been arranged within the chimney or smoke-stack. This is objectionable, as it is often so far removed from the engineer or fireman as to render it difficult for him to reach and regulate the damper to give the draft or heat required.

My invention obviates this objection, and consists in the peculiar arrangement of the diaphragm and damper, as hereinafter described and claimed.

In the drawing, A denotes the furnace, disposed under a tubular boiler or steam-generator, B, the furnace and boiler being of the ordinary construction and arrangement, the gases and volatile products of combustion, when generated, passing along in impingement with the lower surface of the boiler, thence upward against the rear head or end thereof, thence through the series of tubular flues disposed in the boiler, and escaping through the front or eduction ends of the flues into the chamber C, in front of the boiler, and thence into the smoke-stack or chimney.

In carrying out my invention, I arrange within the chamber C a horizontal diaphragm, D, such extending entirely across the chamber, and being disposed a short distance above the upper range of flues. This diaphragm rests on suitable ledges, or is otherwise properly affixed to the walls of the chamber C. Within the central part of the diaphragm I form a rectangular or other suitably-shaped opening, *b*, into which I place a damper, E, of corresponding shape, its journals being supported in bearings in the diaphragm D, one of such journals, *c*, extending through the front wall of the chamber C, and having an index or pointer, *d*, affixed thereto, and extending upward at a right angle, such pointer not only serving to indicate the position of the damper, but as a lever by which its movements may be readily effected.

e e' are two detents or stops disposed on opposite sides of the pointer, such serving to determine the extremes of movement of the damper—that is to say, when the pointer is moved to the left, so as to impinge against the detent on that side, it shows the damper is entirely closed, and when moved in the opposite direction, so as to impinge against the detent *e'*, it indicates the damper is entirely open.

By moving the index or pointer between the limits of its movement the greatest nicety of regulation of the draft may be obtained, the index showing the exact position of the damper.

My invention is equally applicable to either

old or new boilers, and, if desirable, may have its pointer connected with a steam-regulator, so as to be automatically operated thereby.

Having described my invention, what I claim is—

In a return-flue boiler, the combination, with the uptake-chamber C, of the diaphragm D, arranged above the tubes, and provided with the damper E, having the index *d*, all constructed and arranged substantially as shown and described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

CALEB C. WALWORTH.

Witnesses:

F. P. HALE,

F. C. HALE.