

*T. G. Gardner,
Steam-Boiler Cleaner.*

No 25,328.

Patented Sep. 6, 1859.

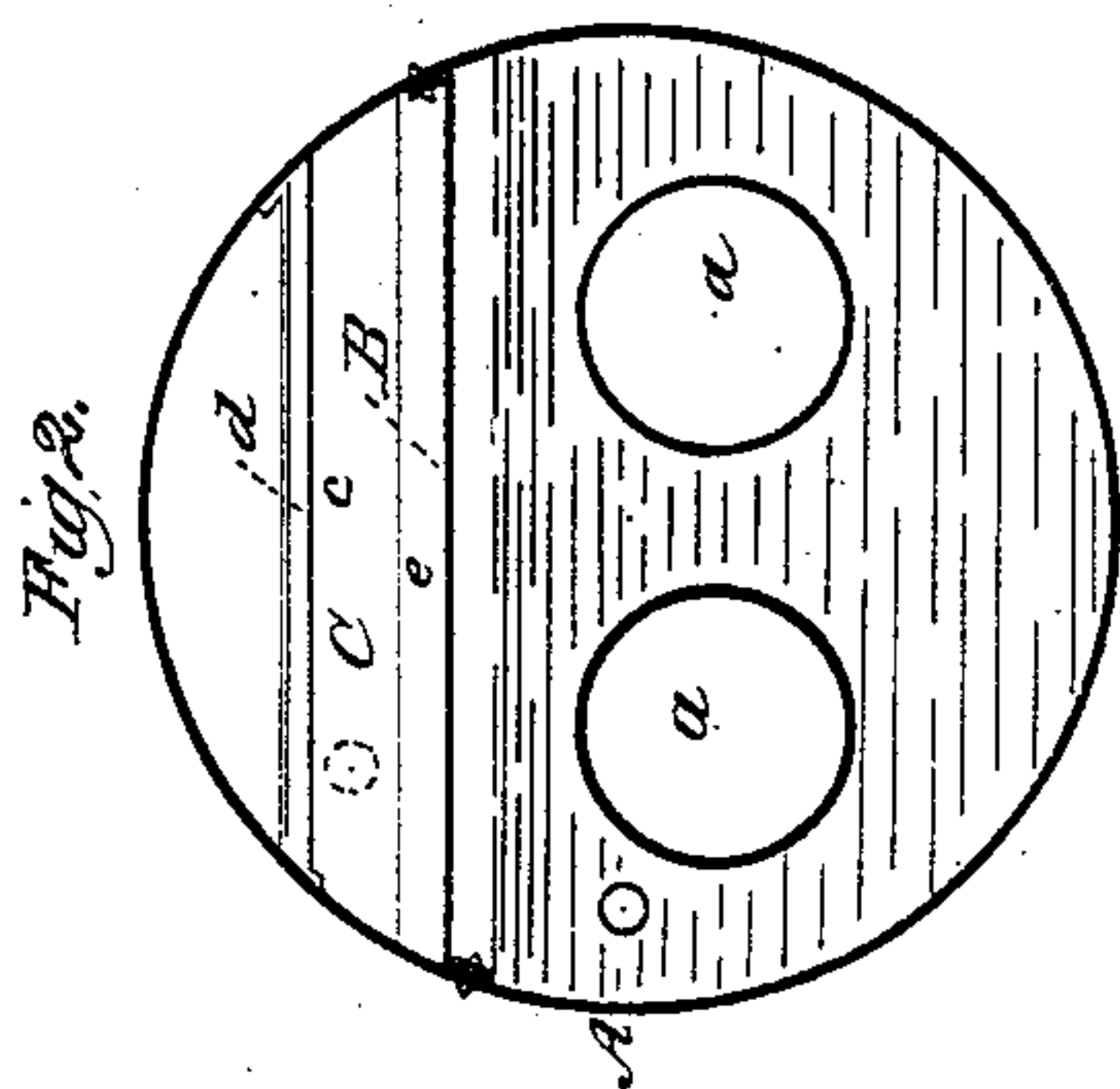


Fig. 1.

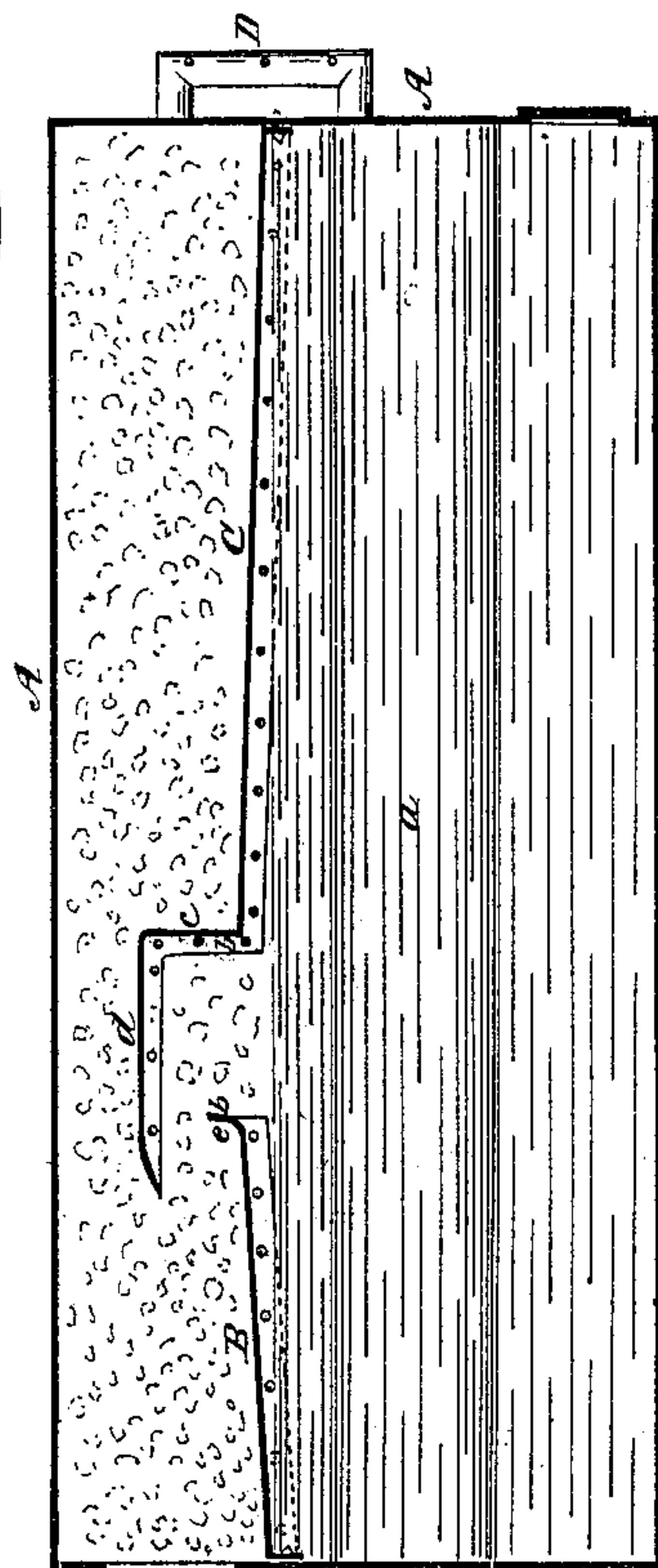
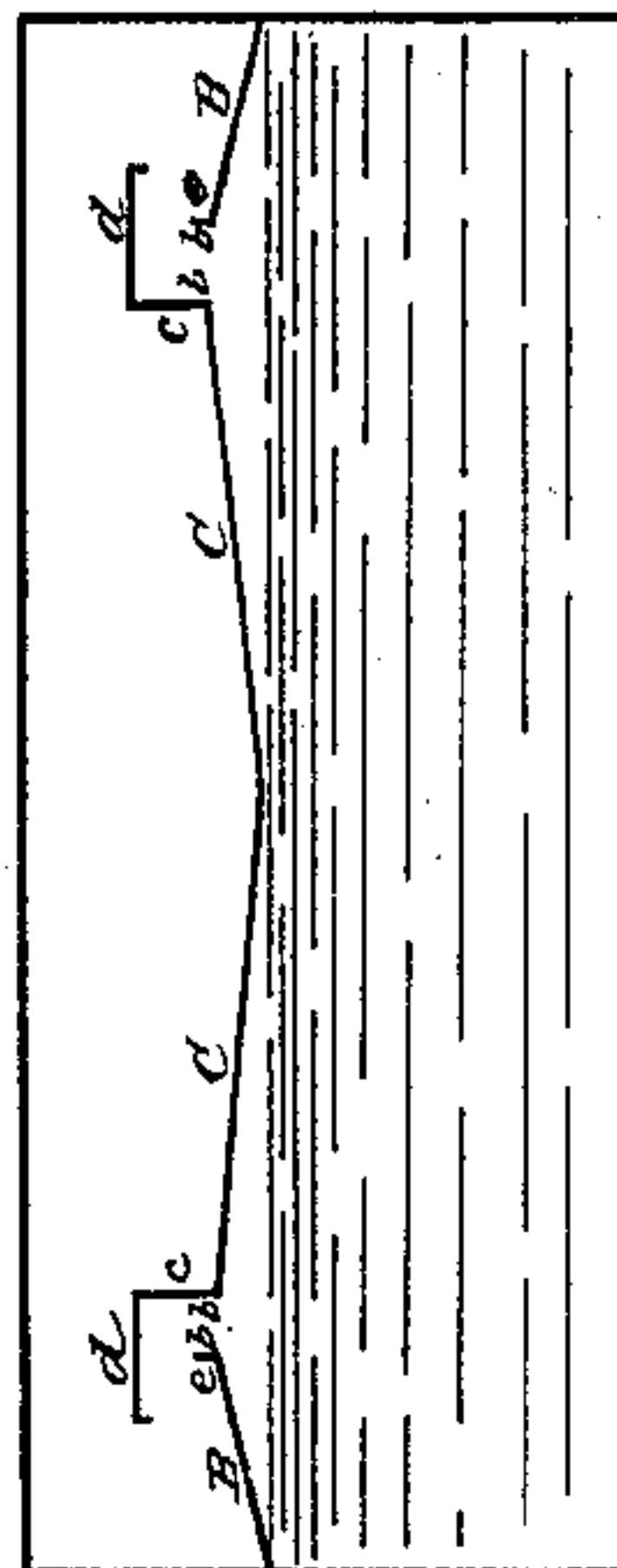


Fig. 3.



Witnesses:

*Thos Boshbaugh.
G. H. Inley.*

Inventor.

Thomas G. Gardner.

UNITED STATES PATENT OFFICE.

THOMAS G. GARDNER, OF MOUNT PULASKI, ILLINOIS.

FOAM-COLLECTOR FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 25,328, dated September 6, 1859.

To all whom it may concern:

Be it known that I, THOMAS G. GARDNER, of Mount Pulaski, in the county of Logan and State of Illinois, have invented a new and Improved Foam-Collector for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central longitudinal vertical section of a boiler having the foam-collector employed. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a central longitudinal sectional view exhibiting a modification of the invention.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in fitting a boiler with a plate or plates attached to its sides and heads and so arranged as to cover the whole or very nearly the whole of the surface of the water therein, but with an opening for the escape of steam, and with a descent from the said opening toward the ends or sides of the boiler. The foam, being carried up by the steam against the lower surface of the plate or plates, is collected at the aforesaid opening and caused to pass through it to the upper surface of the plate or plates to a receptacle formed at the lower part of said surface, from whence it may be blown off.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the shell of the boiler, which is supposed to be a stationary one of the horizontal two-flue kind, and *a a* are the flues.

B C, Figs. 1 and 2, are two plates, which constitute the sediment-collector, each secured to one of the heads of the boiler and to the two sides thereof in such a manner as to make a perfectly steam-tight joint with the shell A, that no steam may pass into the upper part of the boiler in any other way but by the opening *b b* between the said plates. The said plates have a downward inclination from the opening *b b* toward their respective ends of the boiler. The plate C is made in a hood-like form, as shown at *c d* in Fig. 1, at the opening *b b*, so that it covers

the said opening and a small portion of the plate B; but the latter plate is simply turned upward along the margin of the said opening, as shown at *e* in the same figure. The lowest portions of the plates B and C—viz., where they connect with the heads of the boiler—should be at the medium water-level.

D, Figs. 1 and 2, is a pipe with two elbows applied outside of the boiler to connect the steam-space above the plate C with the water-space below. In this pipe the try-cocks for ascertaining the water-level are to be applied.

The operation of the foam-collector is as follows: The steam as it rises from the surface of the water in the boiler, seeking an outlet from below the plates B C, passes along the under surfaces of the said plates toward the opening *b b*, whence it escapes into the upper part of the boiler, and in so doing it carries the foam up through the opening *b b* and causes its deposit on the plate B. The foam thus collected can be blown out of the boiler by opening a cock situated over and just above the lower part of the plate B, or be removed in any other way as often as necessary. It may sometimes occur that some foam will collect within the opening *b b* and fail to be expelled therefrom by the steam; but this may be caused to float over the edge *e* of the plate B by slightly raising the level of the water.

A single plate with a suitable opening may be so formed and applied as to cover the surface of the water in a similar manner to the two plates B C, and present a similar means of escape for the steam and foam and of collecting the foam, and constitute in every respect an equivalent for the plates B C, as will be readily understood by engineers. The opening *b b* should in all cases be as far as practicable from the steam-pipe. In applying the invention to locomotives, more especially to those on roads with steep grades, there may be an opening *b b* near each end, as shown in Fig. 3, and each of such openings should be provided with a valve to close it, so that only one need be opened, according to the direction of the inclination of the boiler, and that the flues may be kept well covered with water.

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

Fitting a boiler with one or more plates so applied as to present inclined surfaces above the surface of the water, with one or more outlets, *b b*, for steam and foam at the highest parts of the said plate or plates, and as to provide a receptacle for foam above the said

plate or plates, substantially as described, and to operate substantially as herein set forth.

THOMAS G. GARDNER.

Witnesses:

THOS. P. LOSHBAUGH,
G. W. LINLEY.