M. Smith,

Flue and Tubular Boiler.

No. 34,275. Patented Jan. 28, 1862.

Fig. 1.

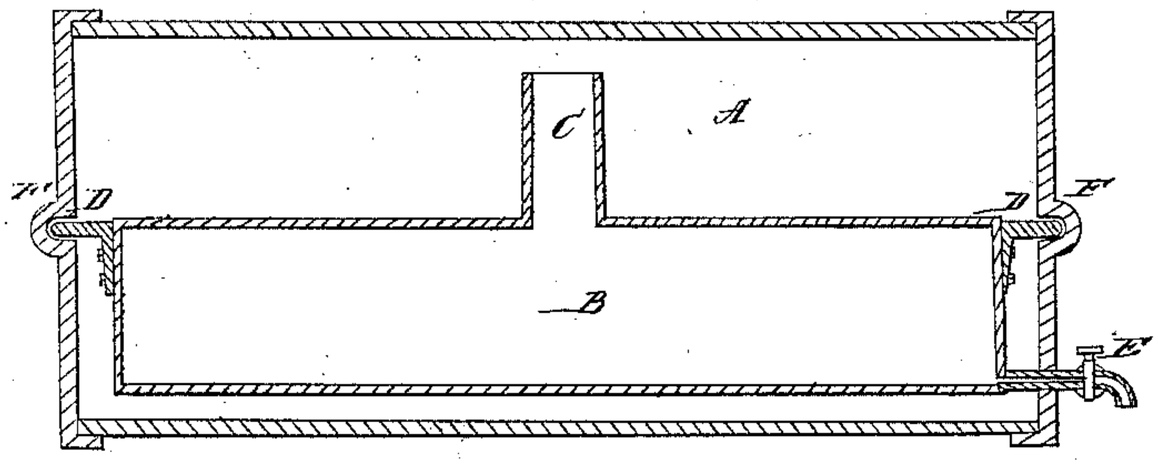


Fig. 2.

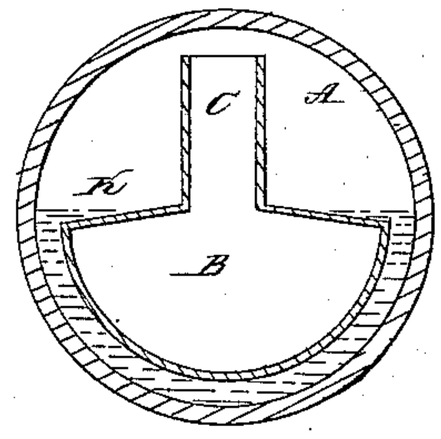
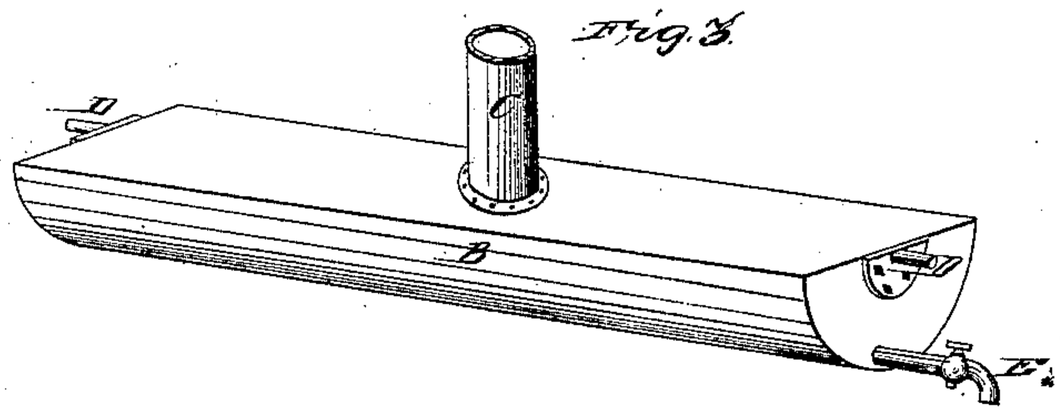


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

MATTHEW SMITH, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **34,275**, dated January 28, 1862.

To all whom it may concern:

Be it known that I, MATTHEW SMITH, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, 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, reference being had to the accompanying drawings, which form part of this specification, and to the letters of reference marked thereon.

The nature of my invention consists in placing within the water-body of a cylindrical boiler one or more large water-tight semi-cylindrical or other shaped steam-receivers, so arranged in relation to the bottom of the boiler as that the greater portion of the space usually occupied by the water shall be taken up by the receiver, allowing only a thin sheet of water between the receiver and the lower portion of the boiler, extending up to the regular water-line, by which arrangement only one-third of the water generally used in cylinder-boilers is necessary, and this being kept in direct contact with the hottest portion of the shell is quickly heated and steam more rapidly generated than could be by any other means with a cylinder-boiler. The receiver in my boiler I have constructed semi-cylindrical, as being best adapted to the shape. From the top of the receiver I have carried a pipe high enough to keep the water out and yet sufficiently below the top of the boiler to admit of a full opening for the admission of the steam as fast as generated.

Another portion of my invention consists in supporting and keeping the receiver in its proper position by trunnions formed upon its ends and resting in bearings in the heads of the boiler. This arrangement admits of the receiver being rotated when found necessary to clean out the accumulation of mud, and for other purposes.

Attached to the lower portion of the receiver is a cock extending through the head of the boiler, for the purpose of blowing off such water as may accumulate in the receiver by condensation or otherwise.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by reference to the accompanying drawings, in which—

Figure 1 represents a longitudinal vertical section of my improvement. The part marked letter A indicates the boiler, which may be constructed in any of the known forms of cylindrical boilers; but in order to obviate the necessity of carrying so much water and at the same time creating a greater space for the steam, I have applied therein a large steam-receiver. (Represented by letter B.) This receiver can be constructed of any shape to suit the boiler wherein it is intended to be placed. The receiver is to be made perfectly water-tight, having an opening for the admission of steam only at the top of the pipe C, connected with the receiver near its middle. This is sufficiently high to prevent the water from getting in and large enough to allow the steam to pass and repass with freedom. The receiver is supported or swung upon trunnions (marked D) attached to the heads of the receiver by bolts or otherwise. These rest in bearings in the center of the heads of the boiler. (Marked F.) This enables the receiver to be turned or swung around to admit of cleaning the boiler, the receiver hanging so low as to produce but a thin sheet of water between the boiler and receiver, requiring but a small amount of fuel to get up steam. At the lowest point of the receiver at its front end is a blow-off cock E. This extends through the front head of the boiler and allows of any water that may accumulate in the receiver by condensation or otherwise to be blown out. The heads of the boiler can be so constructed with large man-holes as to admit of their being taken off for the double purpose of cleansing and repairing the boiler or receiver, and also for taking the receiver out, if found necessary to do so.

Fig. 2 represents a transverse vertical section of the boiler and receiver, letter K showing the water-line.

Fig. 3 represents a perspective view of the receiver.

All the letters on the different figures indicate like parts.

Having thus described my invention, what I claim is—

1. Combining with the interior of a cylin-

drical boiler a steam receiver or receivers wholly or partially immersed in the water and permanently held in such proximity to the bottom of the boiler as to produce a thin sheet of water between the receiver and the boiler, for the purpose as herein set forth.

2. The combination of a steam-receiver by means of trunnions with the interior of a cylindrical boiler, in the manner and for the purpose as herein set forth.

3. The combination of a blow-off valve or cock with a steam-receiver, in a cylindrical boiler, passing through the boiler and communicating only with the interior of the receiver, for the purpose as hereinbefore stated.

MATTHEW SMITH.

Witnesses:
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