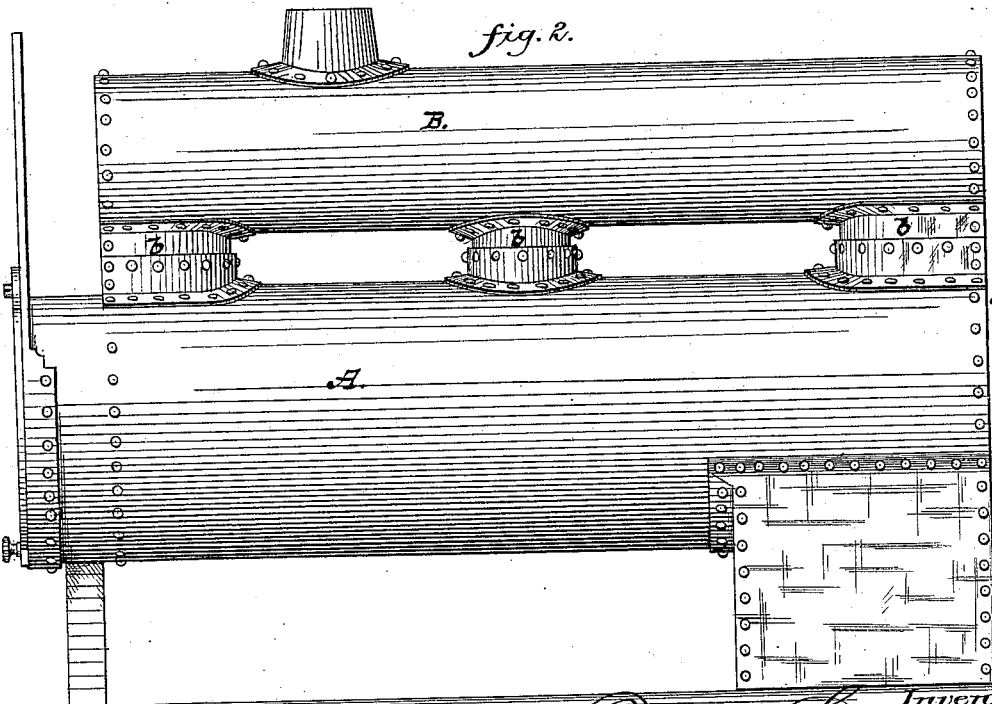
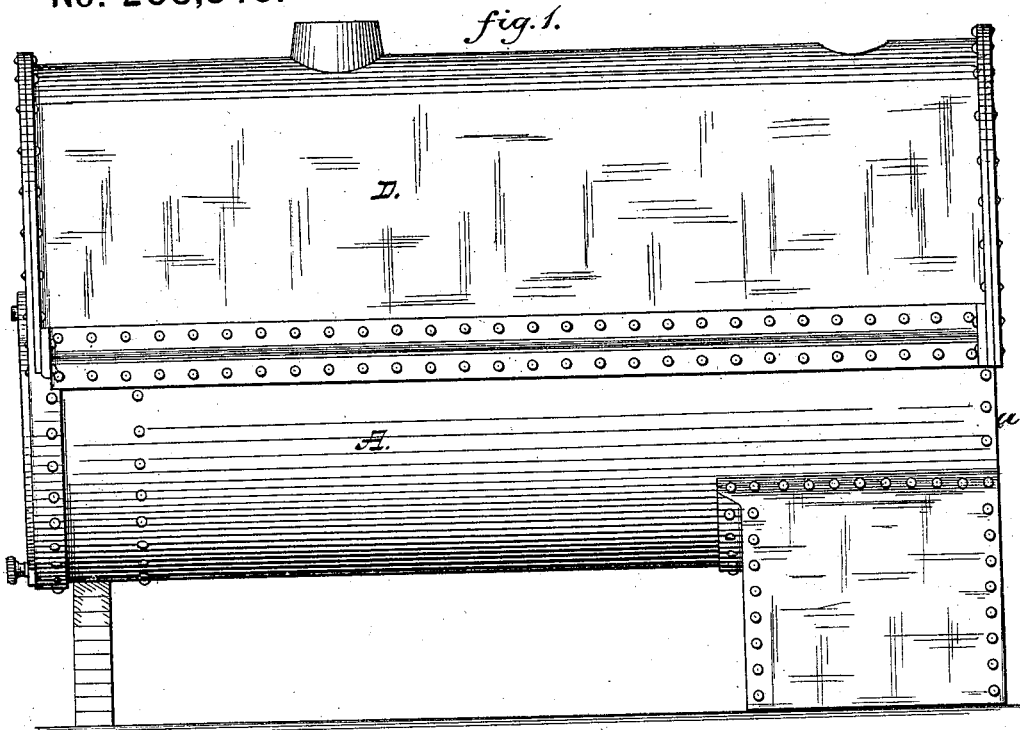


D. SULLIVAN.
Locomotive-Boiler.

No. 208,546.

Patented Oct. 1, 1878.



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Fig. 3.

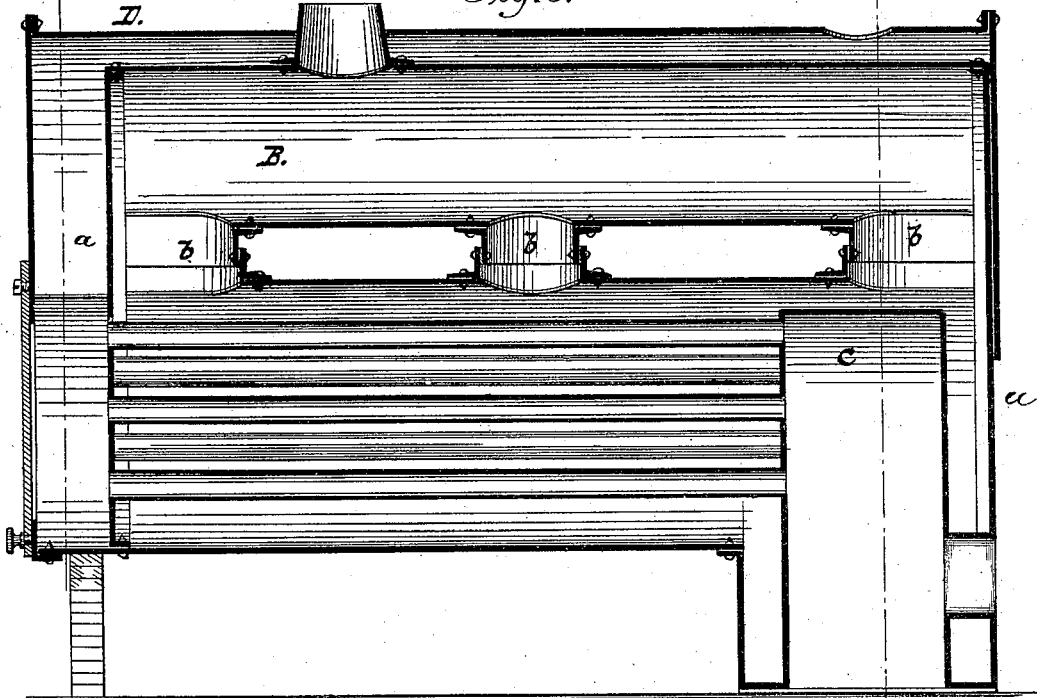


Fig. 4.

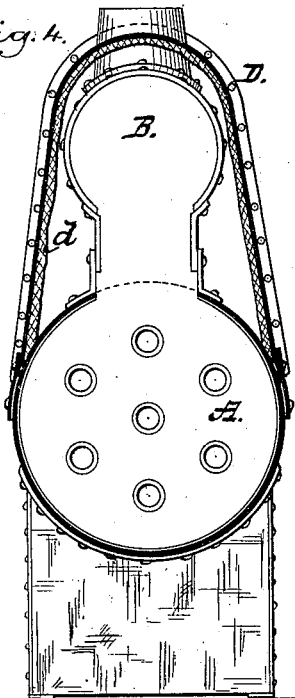
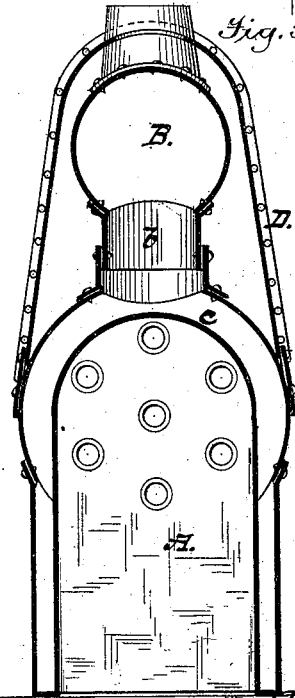


Fig. 5.



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UNITED STATES PATENT OFFICE.

DANIEL SULLIVAN, OF BANGOR, MAINE, ASSIGNOR TO EDWARD H. ASHCROFT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN LOCOMOTIVE-BOILERS.

Specification forming part of Letters Patent No. 208,516, dated October 1, 1878; application filed March 25, 1878.

To all whom it may concern:

Be it known that I, DANIEL SULLIVAN, of the city of Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Locomotive-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 represents a side elevation of a boiler embodying my improvements, and Fig. 2 represents a similar view of the same with the hood removed. Fig. 3 is a longitudinal vertical section, and Figs. 4 and 5 transverse sections, on the lines *x x* and *y y*, respectively, of Fig. 3.

Similar letters of reference indicate corresponding parts in the several figures; and in order to enable others to construct and use my invention, I will proceed to describe the same.

This invention consists in the adaptation of boilers in which the products of combustion are utilized to superheat the steam, as shown and described in Letters Patent of the United States originally granted to me April 14, 1874, No. 149,616, and reissued June 27, 1876, No. 7,196, to the locomotive type, as hereinafter described, and the novel features subsequently pointed out in the claim.

In the drawings, A represents the external shell of the main portion of the boiler, and B the auxiliary steam and water dome. These parts constitute the boiler proper, and are connected together by the heads *a a*, formed, respectively, in a single piece, and the connecting-necks *b b b*, forming communicating passages between the parts. The internal arrangement of the fire-box and horizontal fire-tubes is similar to the ordinary locomotive-boiler; but the form of the fire-box has been changed from the ordinary rectangular shape to a circular form of the crown-sheet, as shown at *c*, Fig. 5, in order to increase its strength and heating-surface. This portion of the fire-box may also be formed from a single plate extending to and including the sides thereof.

The necks or connections *b b b* are near the ends and center of the respective portions of the boiler, as shown; but a greater number of less diameter may be supplied, if desired. These necks are formed separately and in sections, as shown in Fig. 3.

It will be observed that the steam and water dome B is located at a greater distance from the main body A of the boiler than in my former Letters Patent, referred to, for a purpose hereinafter described, and the necessity of the longer connections and the changed construction thereof will be apparent.

D represents a hood or casing inclosing the dome B and forming a surrounding chamber or passage to the products of combustion. This hood may be made of any suitable metal and lined or covered with felt or other suitable material to arrest radiation, as shown at *d*, Fig. 4.

The object of increasing the space between the dome B and the main portion A of the boiler is to present an extended surface to the products of combustion and promote their perfect circulation.

I am aware that an auxiliary steam and water dome arranged upon the top of and communicating with a locomotive-boiler is not new; neither is it novel to apply a hood to the top of a boiler to provide for the passage of the products of combustion between such parts; but,

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

A locomotive-boiler constructed with an auxiliary steam-and-water dome, B, communicating with the main portion of the boiler A by a series of extended necks, *b b*, and provided with a hood or casing, D, inclosing said auxiliary dome, and forming a surrounding space within which the products of combustion are made to circulate on their way to the uptake, substantially as described.

DANIEL SULLIVAN.

Witnesses:

MARTIN LUSCOMB,
F. T. TAPLEY.