(No Model.)

W. DAWSON.

LOCOMOTIVE BOILER.

No. 348,831. Patented Sept. 7, 1886.

Fig. 1.

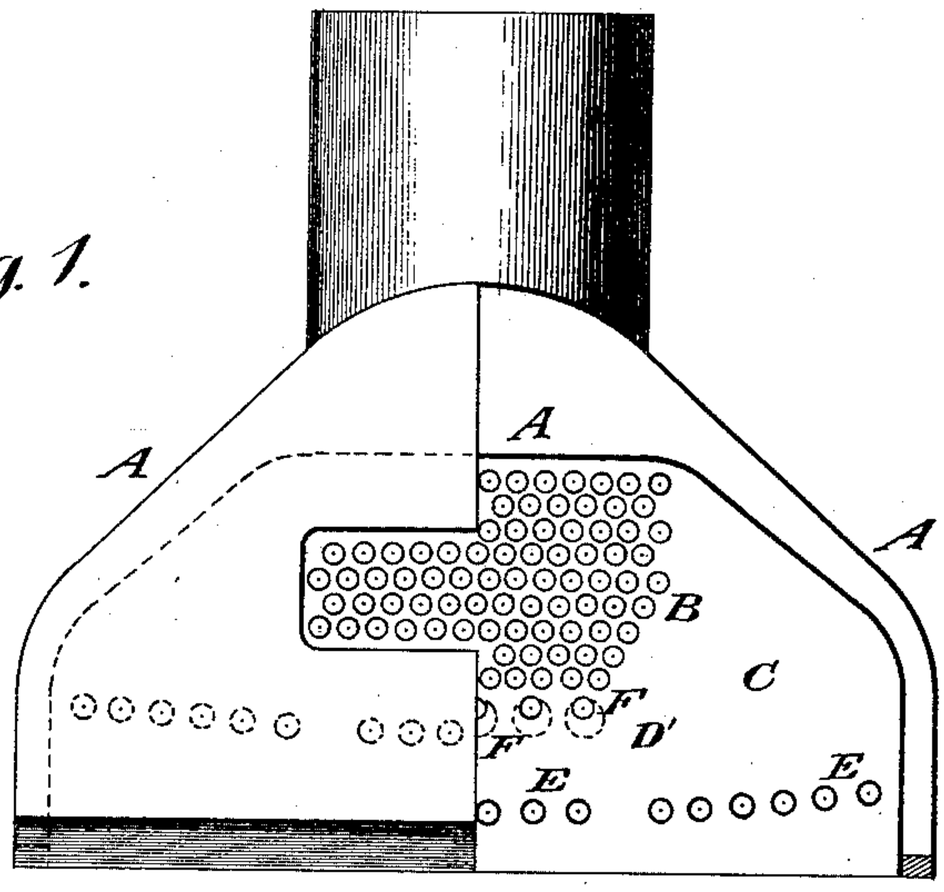
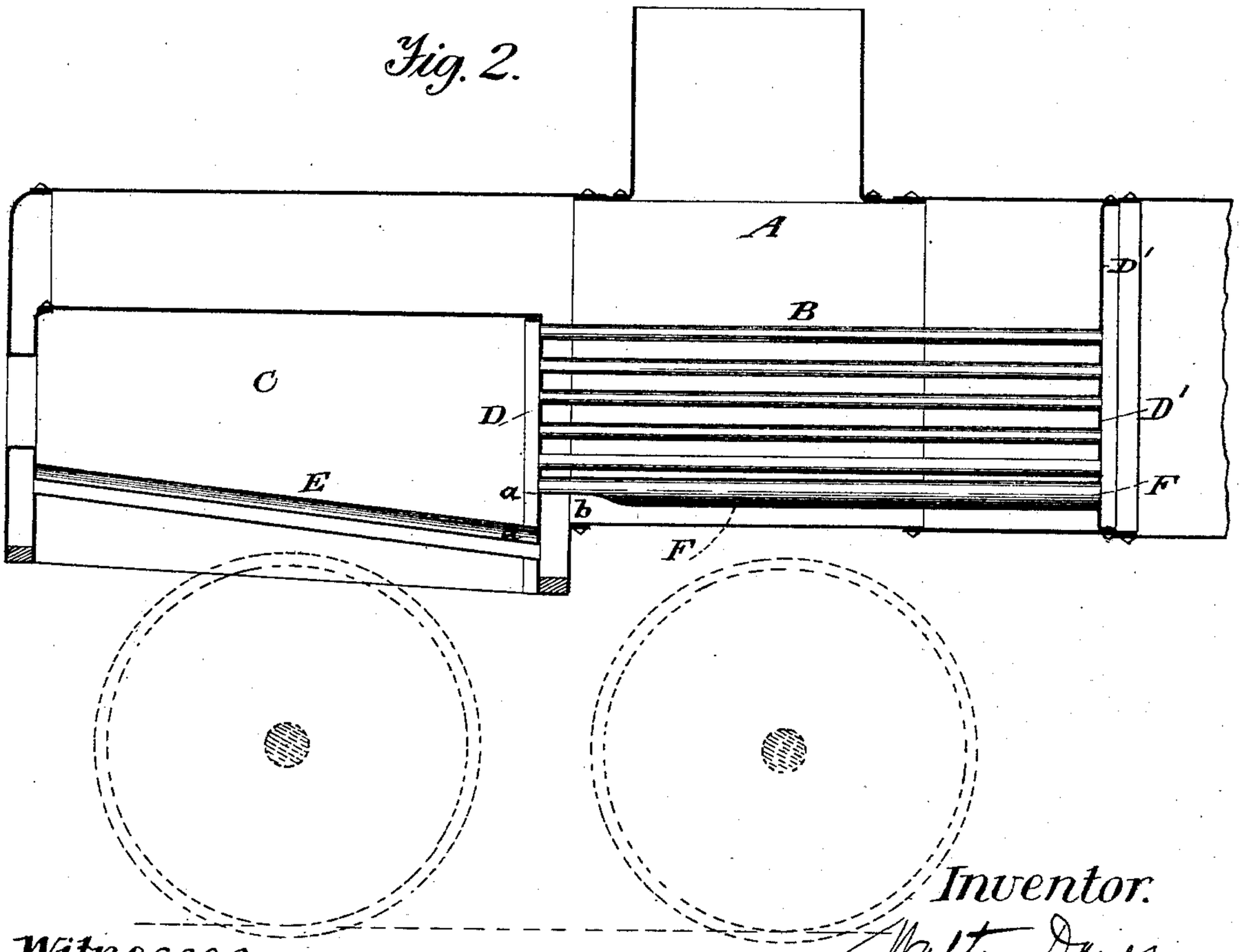


Fig. 2.



Witnesses:
A. Ruppert.
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UNITED STATES PATENT OFFICE.

WALTER DAWSON, OF SCRANTON, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM F. HALLSTEAD, OF SAME PLACE.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 348,831, dated September 7, 1886.

Application filed June 8, 1886. Serial No. 204,500. (No model.)

To all whom it may concern:

Be it known that I, WALTER DAWSON, of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Locomotive or other Boilers, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my invention is to construct a boiler specially adapted to burn pulverized fuel, waste coal, culm, &c., although other fuel may be used to advantage, the invention consisting in the construction, combination, and arrangement of parts, as hereinafter claimed.

In the accompanying drawings, Figure 1 is a front view, partly in section, of a locomotive-boiler embodying my improvements. Fig. 2 is a longitudinal section of the same.

Similar letters of reference indicate similar parts in both figures.

A is the shell or waist of the boiler. B B represent tubes such as are ordinarily used in boilers of this class.

C is the fire-box, and D its tube-sheet.

E represents a tubular grate connecting the front and rear water-spaces of the furnace.

F F represent the lower series of tubes. The inner or furnace ends of said series of tubes unite with the tube-sheet D, the said tubes having here the same diameter as have the tubes B—say two inches. The opposite end of each tube F, where it connects with the forward tube-sheet, D′, as indeed the entire length of the tube, except at the point of its connection with the furnace tube-sheet, is enlarged to a diameter of, say, four inches. The object of this construction is threefold, first, to provide a space, as from *a* to *a*, for the fuel; secondly, to produce a wide or enlarged space, *b*, through which an unobstructed and sufficient circulation of water may pass, and thus protect the boiler at a point exposed to a high degree of heat; and, thirdly, to bring the tube-surface in as close proximity to the lower portion of the shell or waist of the boiler as is practicable, and thus effectually heat the water occupying said part of the shell.

In boilers as ordinarily constructed there is a large space at the bottom of the waist or shell, which contains water comparatively cold, because the tube-surface does not extend into it. Consequently no heat is imparted to a large body of water. By my improvement this body of water is effectually heated, the steaming qualities of the boiler being improved, and its durability increased, owing to the production of a uniform temperature.

Having described my invention, I claim—

In a locomotive or other boiler, the combination, with a shell, furnace-grate, and tube-sheets D D′, of a tube, (or series of tubes,) F, arranged throughout the greater part of its length in close proximity to the shell, and of reduced diameter or size where it connects with the tube-sheet D, substantially as set forth.

In testimony whereof I have hereunto set my hand and seal.

WALTER DAWSON. [L. S.]

Witnesses:

JOSEPH A. MOTT,

MOSES E. CLIFFORD.