No. 682,437. Patented Sept. 10, 1901.

C. VANDERBILT.

LOCOMOTIVE BOILER.

(Application filed May 22, 1901.)

(No Model.)

2 Sheets—Sheet 1.

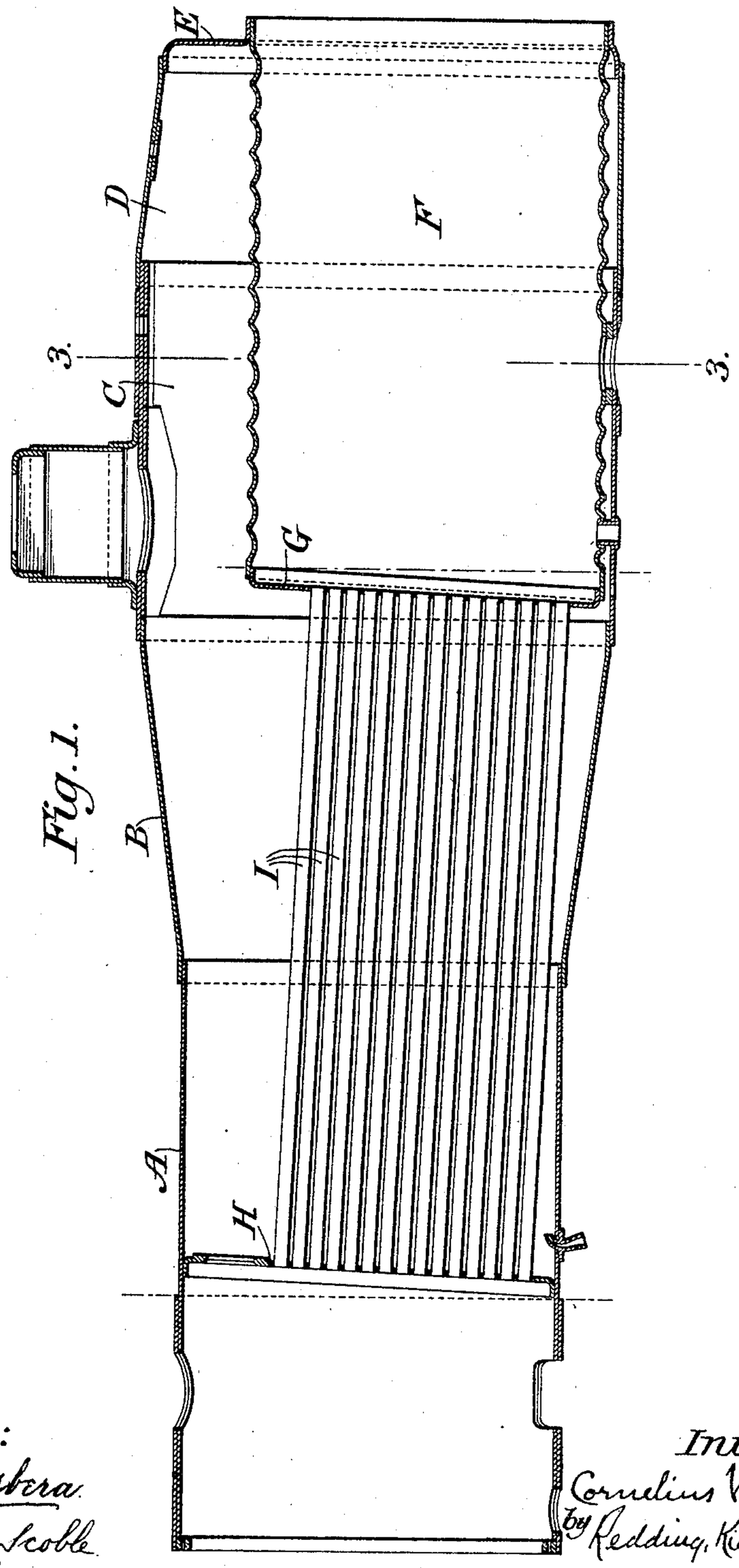

Fig. 1.

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Fig. 2.

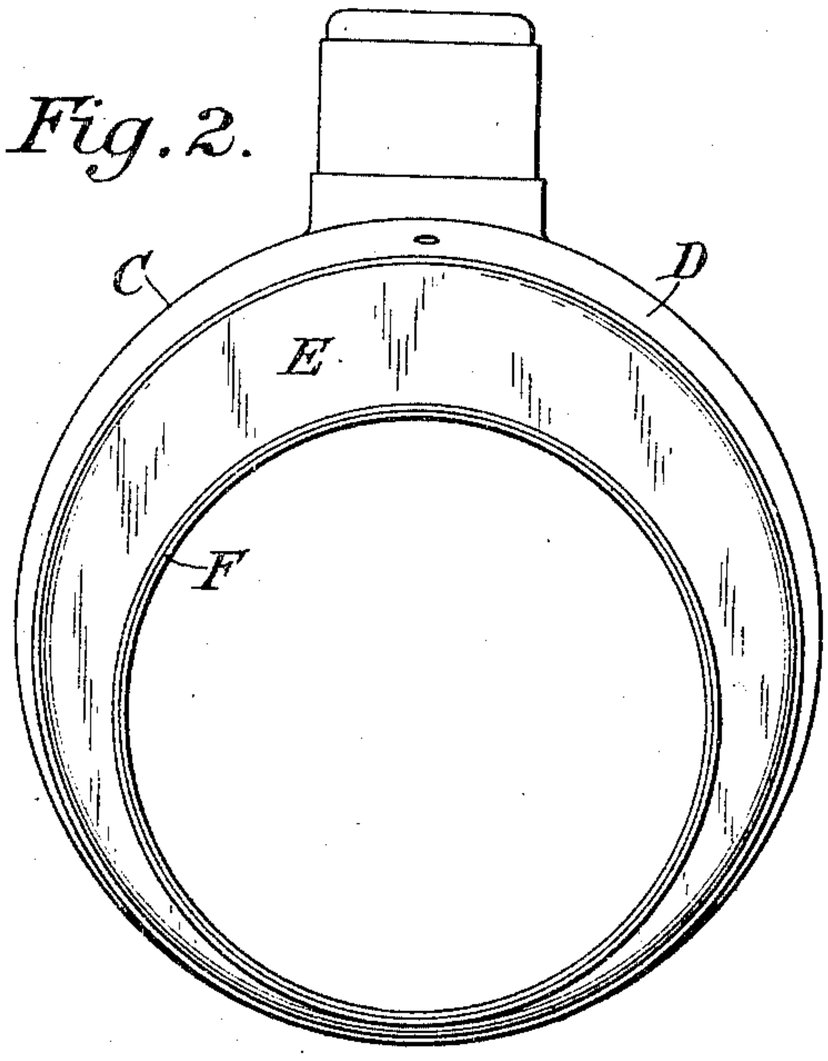
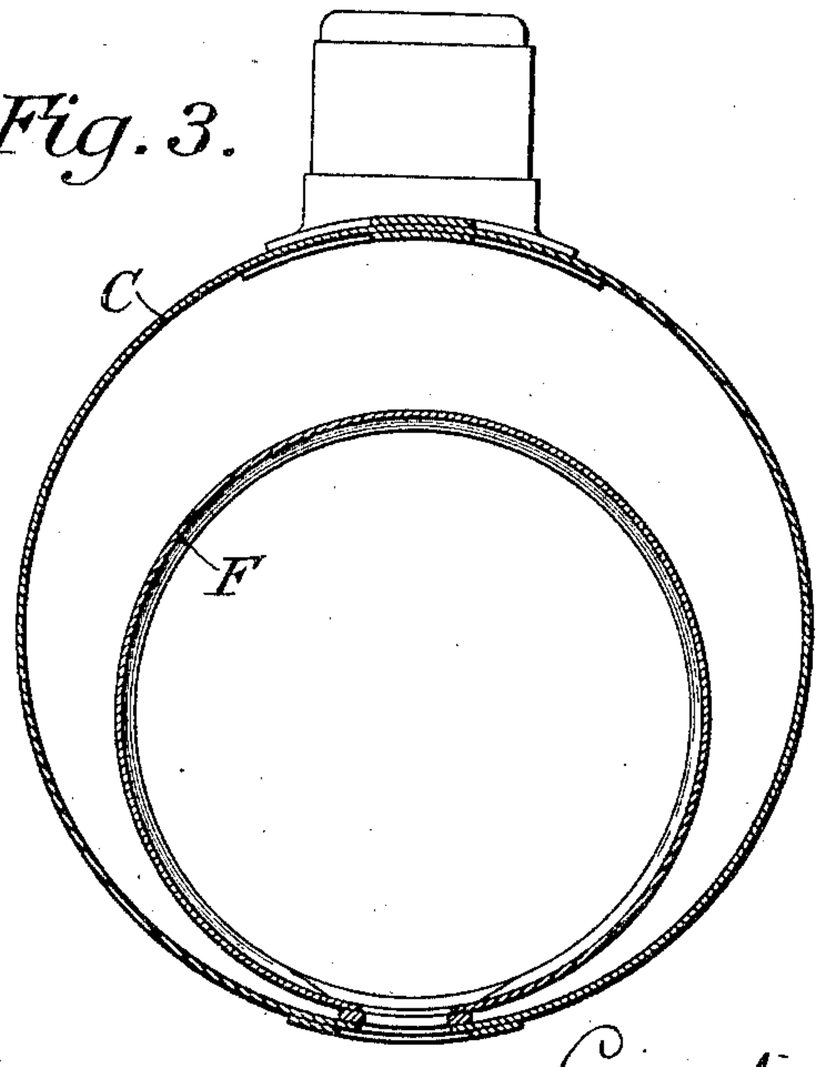


Fig. 3.



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UNITED STATES PATENT OFFICE.

CORNELIUS VANDERBILT, OF NEW YORK, N. Y.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 682,437, dated September 10, 1901.

Application filed May 22, 1901. Serial No. 61,352. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS VANDERBILT, of the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Locomotive-Boilers, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to locomotive-boilers of the general type of that shown and described in Letters Patent of the United States No. 637,186, dated November 14, 1899; and the object of the invention is to further improve the construction of boilers of the type shown in said Letters Patent, and particularly to avoid the danger of leakage at the joints of the boiler-shell occasioned by unequal expansion and contraction of the parts, while avoiding unnecessary weight, saving valuable space in the cab, and retaining desirable generating surface and steam-space. To attain these desirable results in one structure, the main fire-box section, the forward or barrel section, and the middle conical section are arranged symmetrically with respect to the common axis, and the rear portion of the fire-box section is reduced or tapered to a head which is of larger diameter than the cylindrical fire-box, and, furthermore, the flue-sheet is inclined from the vertical, so that it shall stand at right angles to the inclined tubes.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a view in longitudinal central section of the improved boiler. Fig. 2 is a rear end elevation thereof, the ends of the tubes not being shown. Fig. 3 is a view in transverse section on the plane indicated by the line 3 3 of Fig. 1.

As represented in the drawings, Fig. 1, the forward or barrel section A of the boiler is cylindrical and is connected by a truncated conical middle section B with the main fire-box section C, which is also cylindrical and is of greater diameter than the forward or barrel section A. These three sections of the boiler-shell, as will be observed by reference to Fig. 1, are severally symmetrical with respect to the common axis of the boiler, whereby unequal expansion and contraction at the joints between the several sections are avoided, and consequently leakage at such joints is also avoided. The rear portion D of the fire-box section is tapered or reduced in diameter to afford additional room within the cab and to avoid unnecessary weight, the extreme end of such portion D being secured in the usual manner to a head E, which is of greater diameter than the cylindrical fire-box F. If this portion of the fire-box section were reduced to the diameter of the fire-box, not only would desirable generating-surface be lost, since the water-level within the boiler is necessarily higher than the top of the fire-box, but valuable steam-space above the water-level would also be sacrificed. The connection of the tapered portion of the fire-box section D to the head E avoids the objections just mentioned and at the same time secures the advantages above referred to. The fire-box F is preferably cylindrical in cross-section and is disposed eccentrically within the fire-box section C of the boiler. The rear flue-sheet G and the forward flue-sheet H are set at a slight angle from the vertical, so that the inclined tubes I may be secured to said flue-sheets at right angles thereto, thereby avoiding danger of leakage at the joints between the tubes and the flue-sheets.

The advantages derived from the improved construction have been pointed out above and will require no further explanation herein.

I claim as my invention—

1. A locomotive-boiler having a cylindrical forward section, a truncated conical middle section and a cylindrical fire-box section all symmetrically disposed with relation to the common axis, substantially as shown and described.

2. A locomotive-boiler having a cylindrical forward section, a truncated conical middle section and a cylindrical fire-box section all symmetrically disposed with relation to the common axis, a reduced or tapered rear portion of the fire-box section and a rear head to which said reduced portion is secured, said

head having a greater diameter than the fire-box, substantially as shown and described.

3. A locomotive-boiler having a cylindrical forward section, a truncated conical middle section and a cylindrical fire-box section all symmetrically disposed with relation to the common axis, inclined tubes and front and rear flue-sheets disposed at right angles to said tubes, substantially as shown and described.

This specification signed and witnessed this 14th day of May, A. D. 1901.

CORNELIUS VANDERBILT.

In presence of—

EDWIN C. FARLOW,

L. A. SHEPARD.