(No Model.) 4 Sheets—Sheet 1.

G. H. TAYLOR.

LOCOMOTIVE BOILER.

No. 516,949. Patented Mar. 20, 1894.

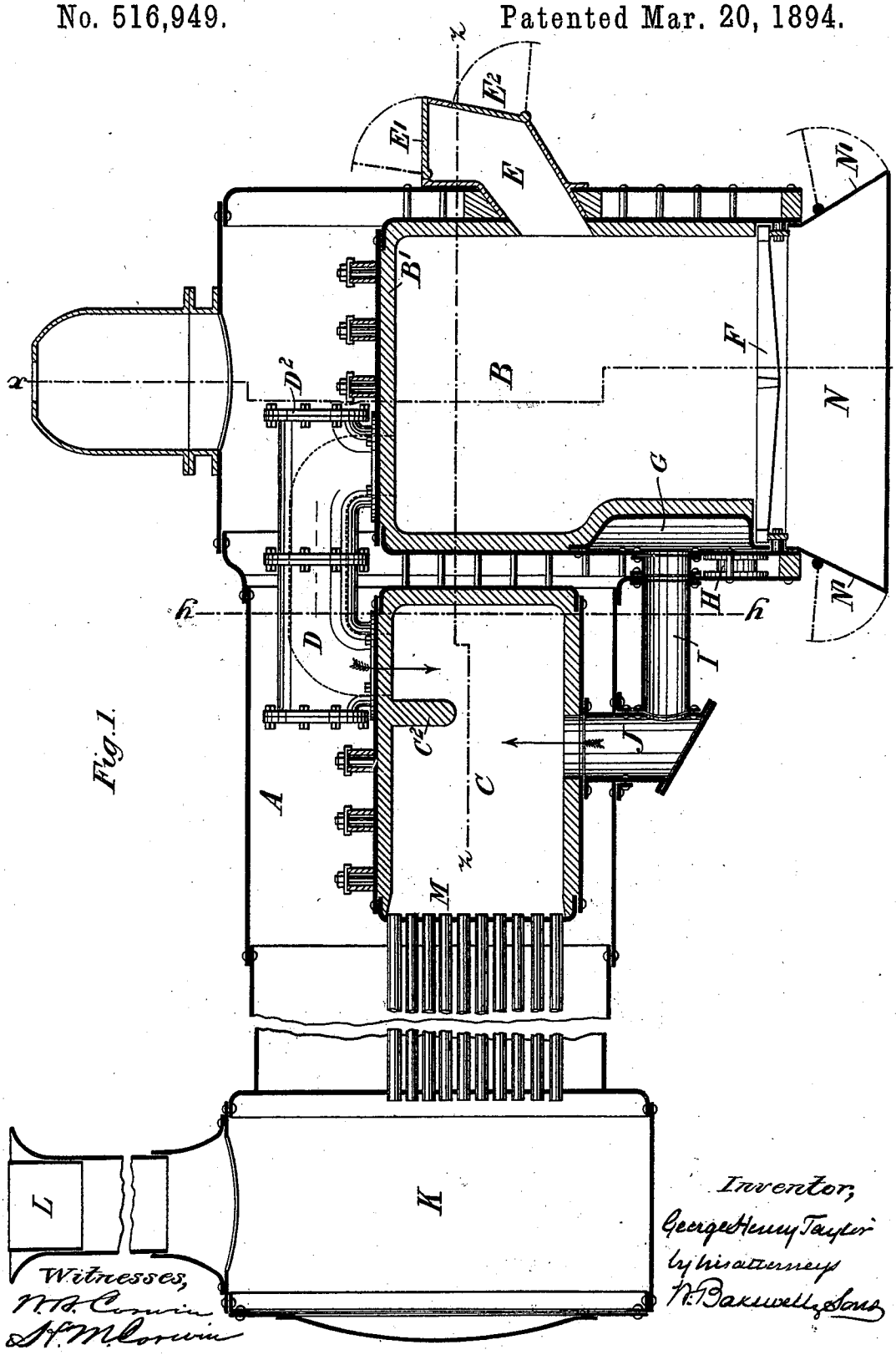

Fig. 1.

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H. M. Corwin

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by his attorneys
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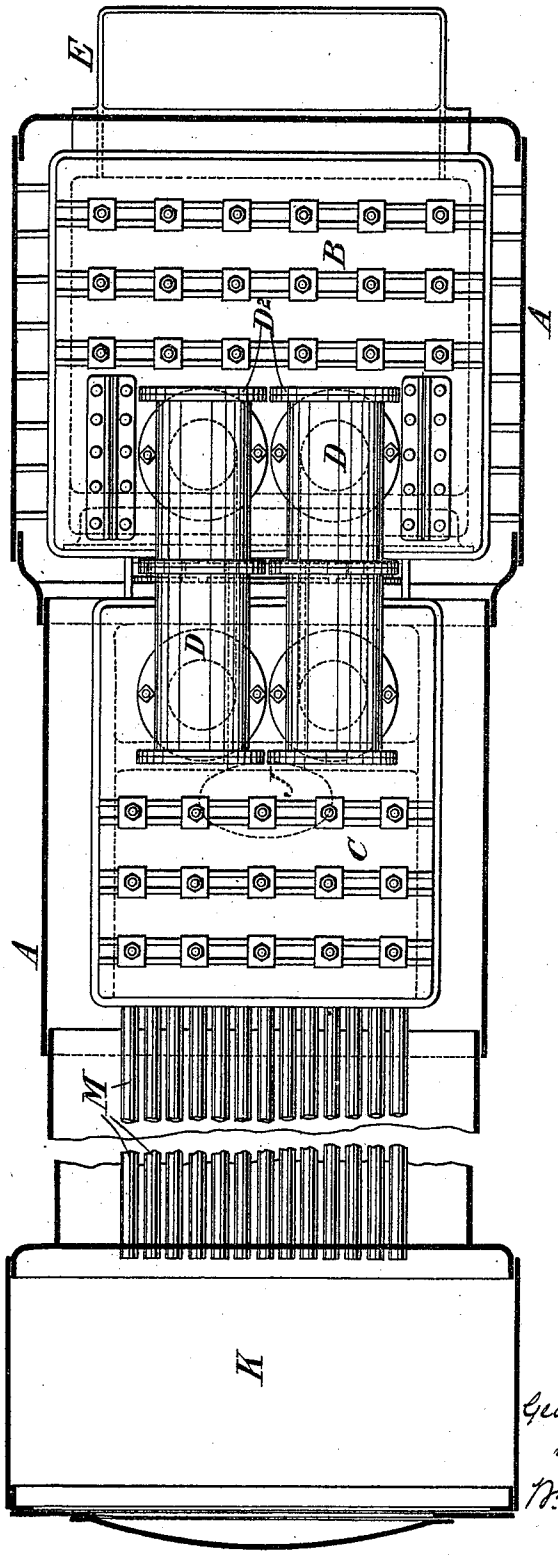

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

G. H. TAYLOR.

LOCOMOTIVE BOILER.

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Fig. 3.

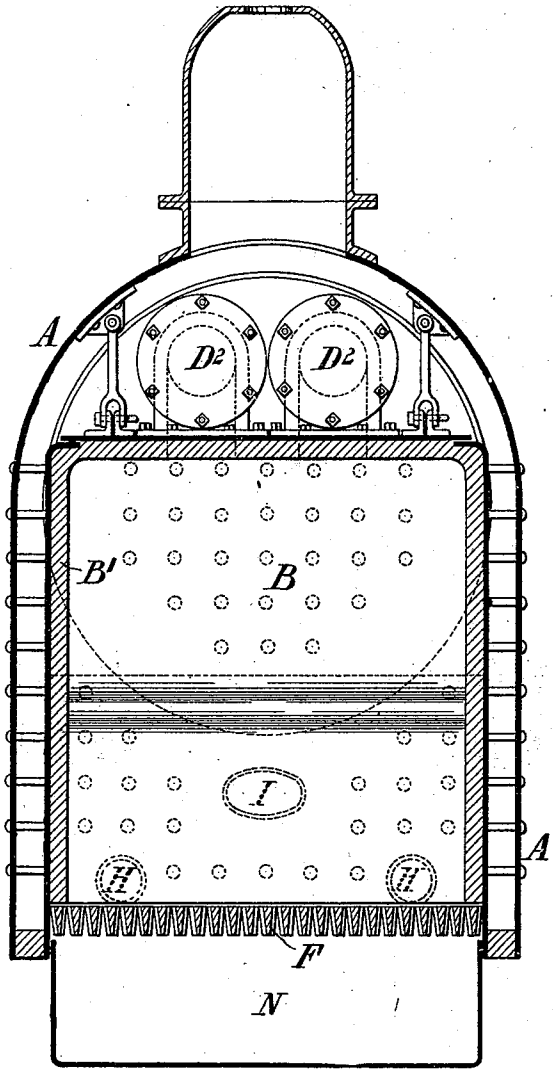
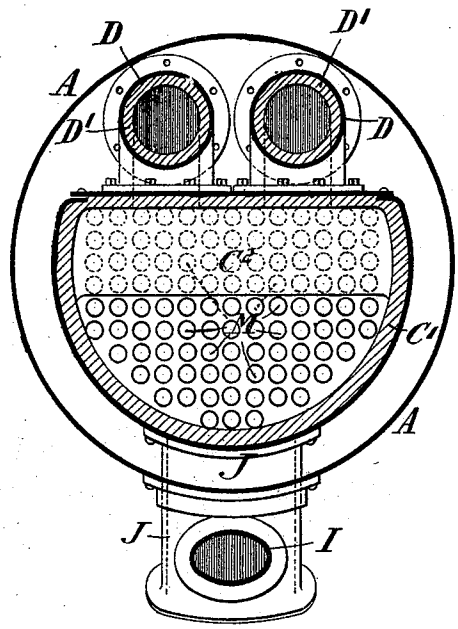


Fig. 4.



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(No Model.) 4 Sheets—Sheet 4.

G. H. TAYLOR.

LOCOMOTIVE BOILER.

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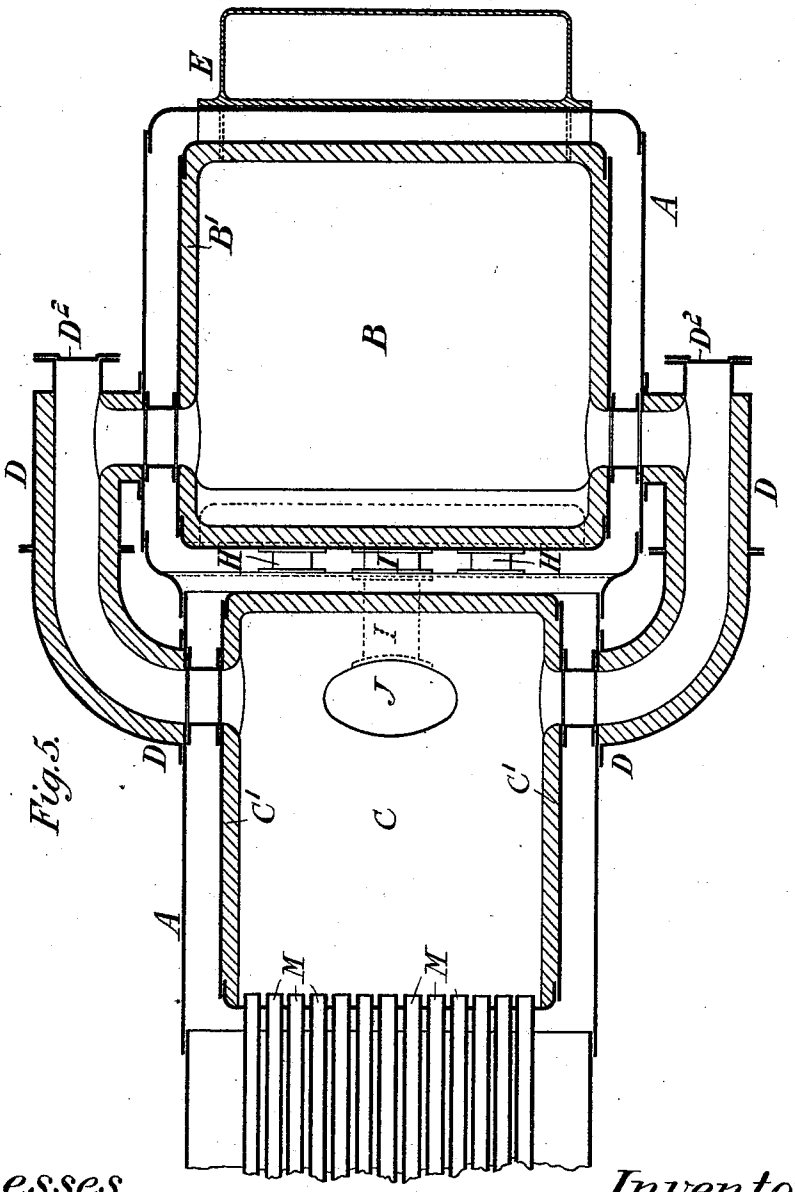

Fig. 5.

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THE NATIONAL LITHOGRAPHING COMPANY,
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UNITED STATES PATENT OFFICE.

GEORGE HENRY TAYLOR, OF LONDON, ENGLAND.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 516,949, dated March 20, 1894.

Application filed August 30, 1893. Serial No. 484,376. (No model.) Patented in England May 7, 1892, No. 8,685.

To all whom it may concern:

Be it known that I, GEORGE HENRY TAYLOR, a subject of the Queen of England, residing at London, England, have invented certain new and useful Improvements in Boilers of the Locomotive Type, (for which I have obtained Letters Patent of Great Britain, No. 8,685, dated May 7, 1892,) of which the following is a specification.

This invention relates to boilers of the locomotive type whether used upon locomotive engines or as stationary boilers provided with a gas producer or furnace and a separate combustion chamber.

The invention will be best understood by reference to the accompanying drawings in which—

Figure 1 is a vertical longitudinal section of a boiler constructed according to this invention. Fig. 2 is a plan of the same; Fig. 3 a vertical cross section upon the line *x*—*x* of Fig. 1; Fig. 4 a vertical cross section upon line *y*—*y* of Fig. 1, and Fig. 5 is a horizontal vertical section through a portion of the boiler upon the line *z*—*z* of Fig. 1 and shows a modified arrangement.

Like letters represent like parts throughout the drawings.

A is the barrel of the boiler of substantially usual construction, B a gas producer which in its position and general features resembles and takes the place of the ordinary fire box.

C is the combustion chamber connected with the gas producer B by any suitable number of connecting tubes or passages D, the gas producer, tubes D and combustion chamber C being all lined with ganister or other suitable fire resisting material B′, D′, and C′.

The fire-box B is fed through the chute or opening E preferably provided with two lids or doors E′ and E² hinged to the chute E as indicated and opening respectively up and down as shown by the dotted lines; the door E² is convenient for giving access to the interior of the gas producer B for stirring the fuel. The fuel is charged in through the doors E′ into the chute E and fire box B resting upon the fire-bars F.

A pocket G is formed upon the lower portion of the back of the fire box and is in direct communication with the outer air by any suitable number of passages H one of which is shown in Fig. 1 and two in dotted lines in Fig. 3. The pocket G is therefore freely supplied with atmospheric air and in the case of a locomotive engine when running the air is forced strongly into this pocket from which it passes by the tube or horizontal passage I preferably located in the center line of the boiler into the vertical passage J which delivers it directly into the bottom of the combustion chamber C as clearly shown in Fig. 1. The pocket G though shallow is made as large as possible in order that the air may become heated and may pass in a hot condition to the combustion chamber C. There is always when the boiler is at work a strong current of air entering the combustion chamber C by the passage J in a vertical direction and there is also a strong current of gas from the producer B entering the combustion chamber C from a downward direction from the pipes D forced to the bottom of the combustion chamber by the deflecting bridge C² so that the gas and the air mingle and become intimately mixed in the combustion chamber from which the flames and products of combustion pass to the smoke box K and chimney L through the tubes M in the usual manner.

The arrangement of tubes D inside the boiler as shown in Fig. 1 is preferred as presenting a neater appearance and economizing heat and space, but if it be desired to introduce the gas from the gas producer into the combustion chamber in a horizontal instead of a downward direction and also lower down in the combustion chamber this can be effected in the manner shown in Fig. 5 where the pipes D are carried outside the shell of the boiler and open into the side of the combustion chamber. The flanges D² in both arrangements provide for ready access to the interior of the tubes D.

In operation the gas producer B is filled with fuel up to about the level of the top of the chute E the fire being lighted upon the fire-bars F at the bottom. The gas fills the upper portion of B and passes by the tubes D into the combustion chamber C where it meets the supply of air from J, the two forming a combustible mixture so that the com-

bustion chamber C is filled with a mass of flame which passes through the tubes M, the products escaping by the chimney L.

N is an ash-pan of ordinary construction and preferably provided with doors N′ back and front so as to regulate the draft as required.

I claim—

1. In a boiler of the locomotive type the combination with a gas producer and a combustion chamber of tubes or passages located on top of the gas producer and combustion chamber and communicating with both and an air pocket on the front face of the gas producer the whole of these parts being located inside the shell of the boiler.

2. In a boiler of the locomotive type the combination with a gas producer and combustion chamber located inside the shell of the boiler of tubes or passages communicating with and located outside the shell of the boiler.

3. In a boiler of the locomotive type the combination with a gas producer located inside the shell of the boiler of an air pocket having openings to the atmosphere and passages leading from the air pocket to the combustion-chamber as set forth.

4. In a boiler of the locomotive type the combination with a gas producer and a combustion chamber both located inside the shell of the boiler of a pocket in the combustion chamber and passages communicating therewith and with the outer air and with the combustion chamber as set forth.

5. In a boiler of the locomotive type the combination with a gas producer and a combustion chamber both located inside the shell of the boiler of tubes or passages connecting the two and an air pocket in the wall of the gas producer and passages communicating with the atmosphere and between the pocket and the combustion chamber.

6. A boiler of the locomotive type comprising a gas producer a combustion chamber passages communicating between the two an air chamber having tubes outside the shell and leading to the combustion chamber and tubes connecting the combustion chamber and the smoke box as set forth.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

GEORGE HENRY TAYLOR.

Witnesses:

ALFRED J. BOULT,

HARRY B. BRIDGE.