No. 750,145. PATENTED JAN. 19, 1904.

J. WISTER.

LOCOMOTIVE BOILER.

APPLICATION FILED FEB. 18, 1903.

NO MODEL.

Fig. 1.

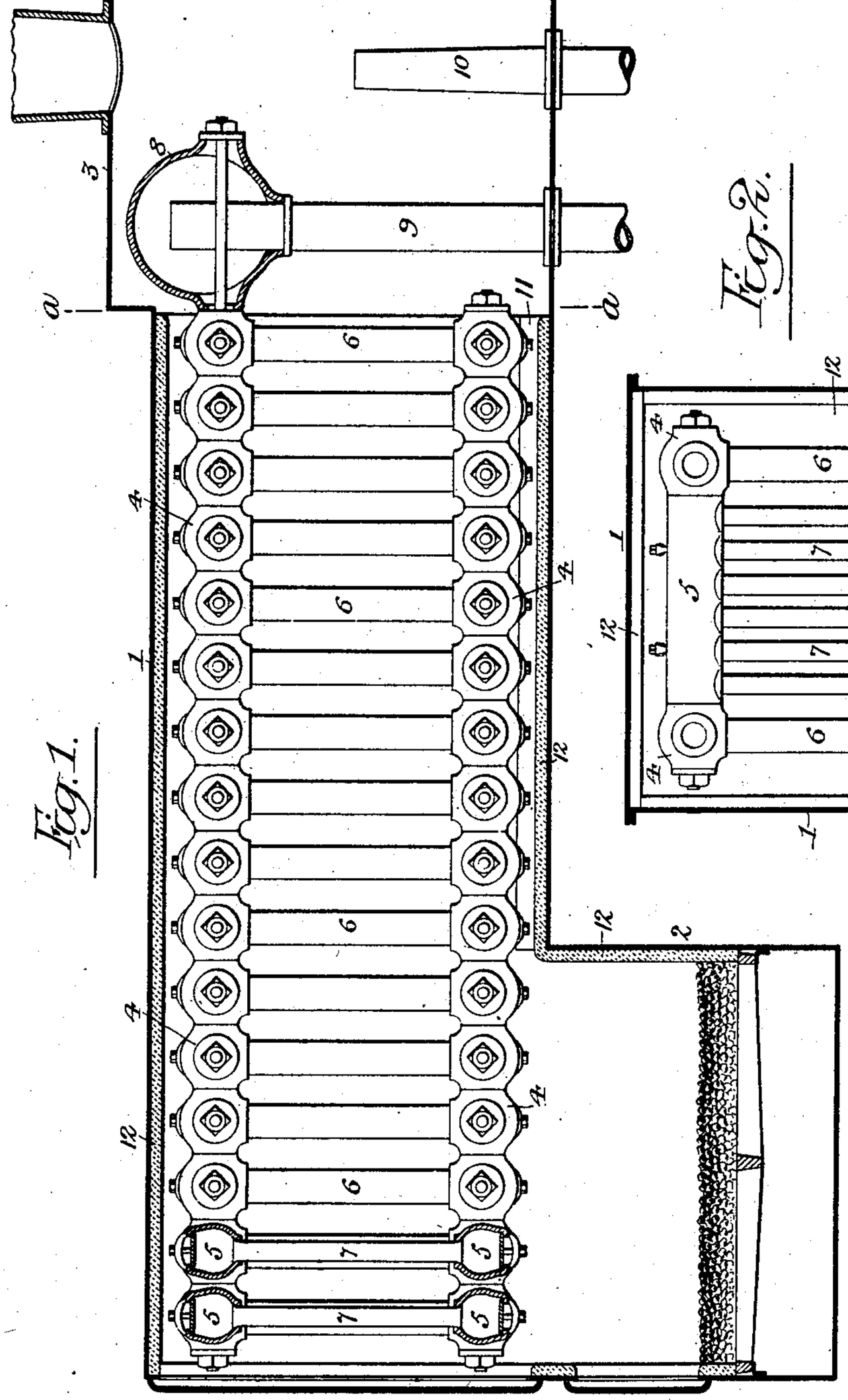

Fig. 2.

Witnesses:-

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UNITED STATES PATENT OFFICE.

JONES WISTER, OF PHILADELPHIA, PENNSYLVANIA.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 750,145, dated January 19, 1904.

Application filed February 18, 1903. Serial No. 143,931. (No model.)

To all whom it may concern:

Be it known that I, JONES WISTER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Locomotive-Boilers, of which the following is a specification.

The object of my invention is to so construct a boiler for locomotives as to reduce the expense of the same and permit of repairs to the boiler without withdrawing the locomotive from service during the time that such repairs are being made. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section, partly in elevation, of a locomotive-boiler constructed in accordance with my invention; and Fig. 2 is a transverse section of the same.

In order to adapt it to the ordinary disposition of the frame, running-gears, and operating parts of a locomotive as at present constructed, I retain the ordinary locomotive-boiler shape—that is to say, the longitudinal barrel 1 with depending fire-box 2 at the rear end and smoke-box 3 at the forward end—but the longitudinal barrel and fire-box shell in the present case constitute no part of the steam-generating structure, but form simply a combustion-chamber casing. Hence they are not subjected to pressure and all of the expensive crown-bars, crown-bar hangers, and other internal stays of the ordinary locomotive-boiler are dispensed with. In place of the tubular barrel of the ordinary locomotive-boiler I employ a water-tube boiler of any available type which is inserted within the longitudinal barrel 1 and projects over the fire-box, so that the products of combustion in their passage from the fire-box to the smoke-box will circulate freely in contact with all parts of this inserted boiler structure and will quickly generate steam therein.

In the present instance I have shown a boiler comprising longitudinal manifolds 4, transverse manifolds 5, and vertical connecting-tubes 6 and 7; but I do not wish to be limited to a boiler of this type, as any available form of water-tube boiler may be used.

The longitudinal barrel 1 may be of the usual cylindrical form; but in the present instance I have shown it as of rectangular form in order to confine the products of combustion more closely to the internal boiler and I have shown the smoke-box 3 enlarged at the top for the reception of a steam-drum 8, which is connected to the ends of the upper longitudinal manifolds 4 and communicates with the pipe 9, whereby steam is conveyed to the cylinders of the engine, the usual exhaust-nozzle 10 being located in the smoke-box in advance of said pipe. When said exhaust-nozzle is removed, the smoke-box portion of the pipe 9 disconnected from the lower portion of the same, and the feed connections of the boiler disconnected therefrom, said boiler can be withdrawn longitudinally from the forward end of the smoke-box whenever any repairs become necessary and another boiler can be readily substituted for it, so that the engine is not withdrawn from service during the time that the repairs to the boiler are being effected, in that way overcoming a serious objection to ordinary locomotives, in which the whole machine is incapacitated during all the time that boiler repairs are being made.

The boiler may be supported upon rollers, rails, or the like on the inside of the combustion-chamber casing, rails 11 being shown in the present instance.

Instead of withdrawing the boiler through the front end of the smoke-box the top of the combustion-chamber casing may be detached and the boiler may be lifted from its position in said casing by means of a suitable crane.

To protect the fire-box casing and barrel from the heat of the products of combustion, said parts may have a suitable refractory or non-conducting lining, as shown at 12, and to prevent loss of heat by radiation the fire-box casing and barrel may be provided with a covering of non-conducting material.

It will be understood, of course, that the outer shell of the boiler structure may be provided with suitable handholds, such as are commonly employed in the art, for the removal of the water-tubes when desired.

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

1. A locomotive-boiler having an outer casing which contains a combustion-chamber

closed except at the ends, a depending fire-box communicating with one end of said chamber and an outlet-stack communicating with the other end of the same, and a water-tube boiler contained wholly within said combustion-chamber, substantially as specified.

2. A locomotive-boiler having an outer casing which contains a combustion-chamber closed except at the ends, a depending fire-box communicating with one end of said chamber and an outlet-stack communicating with the other end of the same, and a water-tube boiler contained wholly within said combustion-chamber and projecting over the depending fire-box, substantially as specified.

3. A locomotive-boiler having an outer casing which contains a combustion-chamber closed except at the ends, a depending fire-box communicating with one end of said chamber and an outlet-stack communicating with the other end of the same, and a water-tube boiler contained wholly within said combustion-chamber, and removable through one of the ends of the casing, substantially as specified.

4. A locomotive-boiler having an outer casing which contains a combustion-chamber closed except at the ends, a depending fire-box communicating with one end of said chamber, an outlet-stack communicating with the other end of the same, a water-tube boiler contained in said combustion-chamber and rails or bars in the lower portion of the combustion-chamber for the support of said boiler, substantially as specified.

5. A locomotive-boiler having a fire-box and a longitudinal combustion-chamber casing enlarged at the forward end, and a water-tube boiler contained in said casing and having at the forward end a steam-drum contained in said enlarged portion of the casing, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JONES WISTER.

Witnesses:

CHARLES C. NORRIS, Jr.,

F. E. BECHTOLD.