

O. W. OTT.

SUPERHEATER FOR LOCOMOTIVE BOILERS.

APPLICATION FILED APR. 8, 1907. RENEWED AUG. 21, 1909.

935,224.

Patented Sept. 28, 1909.

2 SHEETS—SHEET 1.

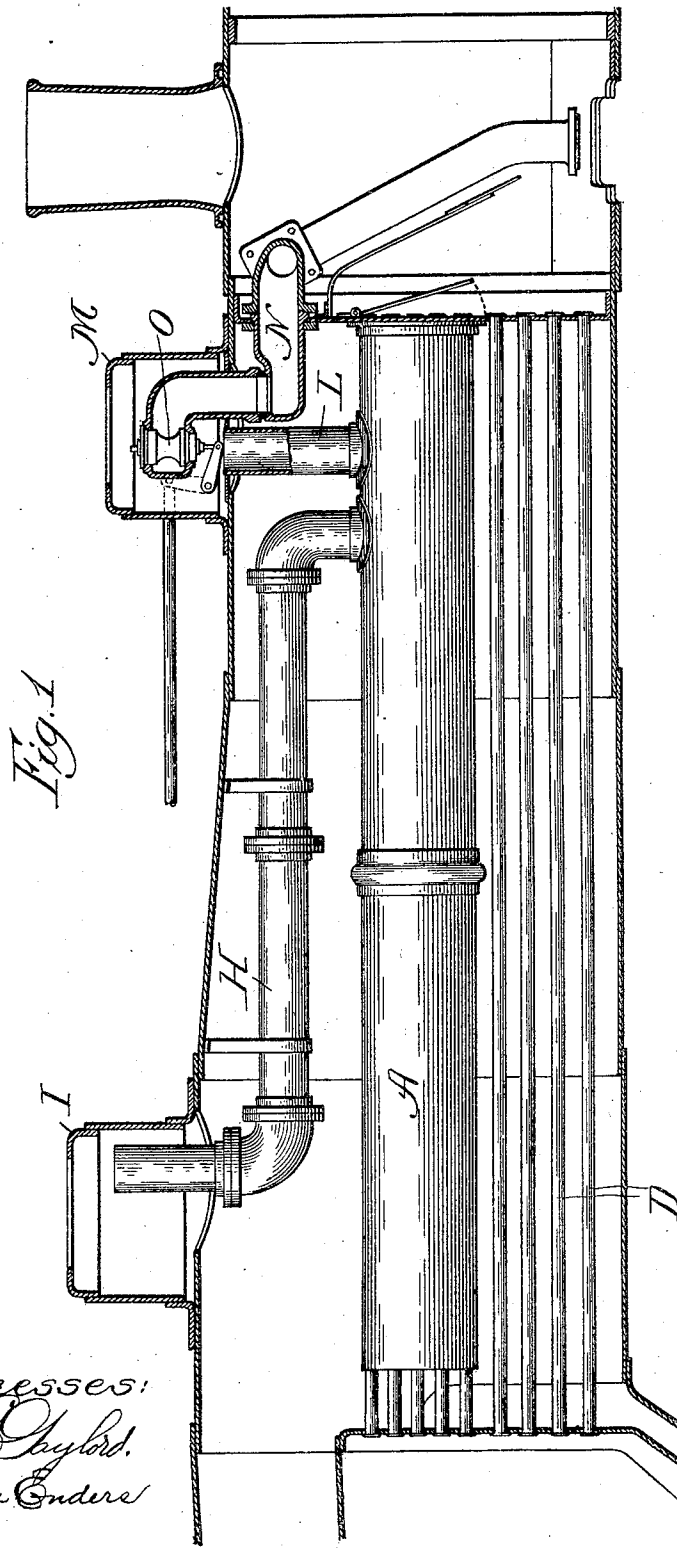


Fig. 1

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John Enders

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By
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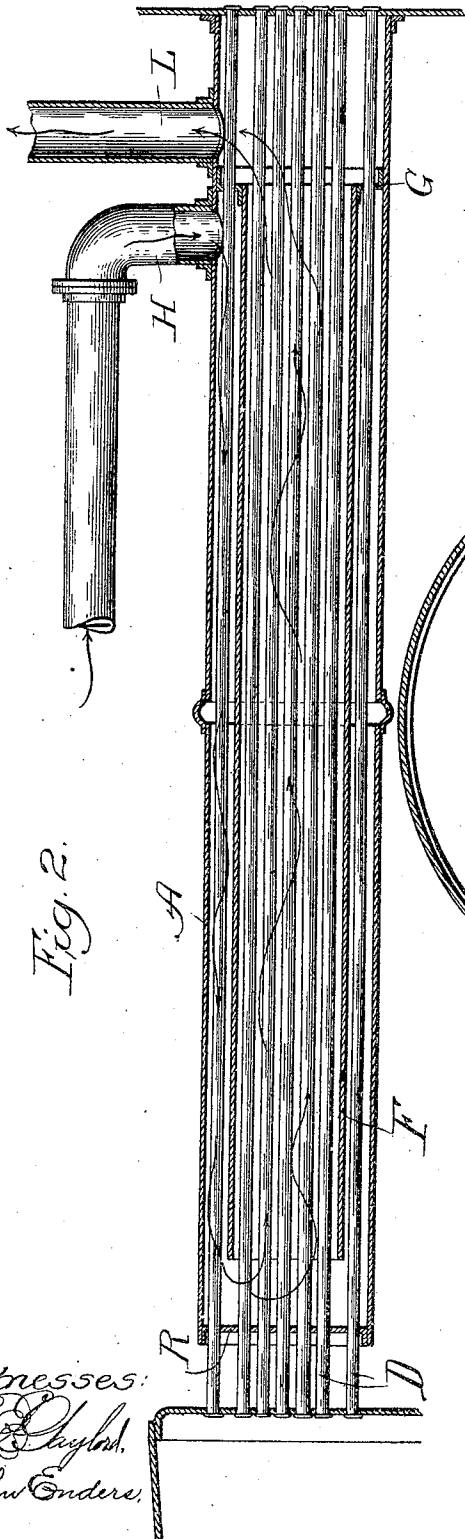


Fig. 2.

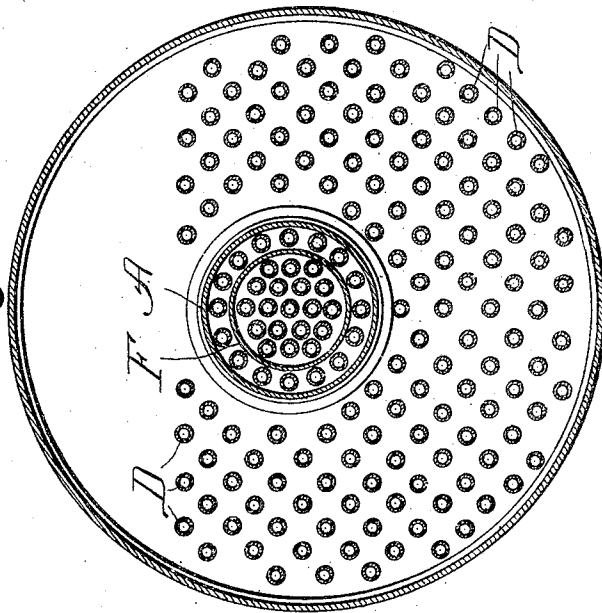


Fig. 3.

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UNITED STATES PATENT OFFICE.

ORAN W. OTT, OF OAK PARK, ILLINOIS.

SUPERHEATER FOR LOCOMOTIVE-BOILERS.

935,224.

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To all whom it may concern:

Be it known that I, ORAN W. OTT, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Superheaters for Locomotive-Boilers, of which the following is a specification.

The object of my invention is to provide a superheater for locomotive or other fire tube boilers of simple construction and efficient operation.

The precise nature of my invention will be clearly apparent from the following description and claims, taken in connection with the drawings forming part of this application.

In the drawings—Figure 1 is a transverse section of a locomotive boiler equipped with my invention. Fig. 2 is a longitudinal section of the superheater, and Fig. 3 is a transverse section of the boiler and superheater.

For the purpose of superheating the steam I utilize a certain number of the flues, jacketing such flues throughout almost their entire length. The drum which forms the superheater is secured at its forward end to the front flue plate and extends to within a short distance of the rear flue plate, where it is provided with an end plate spaced a short distance from the rear flue plate, in order that the rear end of the superheater may be jacketed with water and thus protected from the extreme heat of the fire-box. The outer casing A of the superheater is preferably cylindrical in form, and incloses a sufficient number of the flues D to properly superheat the steam. Inside of the superheater and extending throughout the greater part of the length thereof is an inner shell F, which incloses part of the flues inside of the superheater, the remainder of said flues occupying the space between the shell F and the wall A of the superheater. At one end, preferably the forward end, the shell F is connected by a partition ring G with the outer wall A of the superheater. The flues D lying outside of the shell F pass through apertures in the partition ring G. The boiler is provided with the usual steam dome I from which a pipe H leads to the superheater at a point just back of the partition G. Upon the opposite side of the partition G the superheater is connected by means of pipe L with a second steam dome M. The pipe N leads from the steam dome M to the cylinders in the usual manner, and is pro-

vided with a throttle valve O located inside of the dome M. The front flue plate constitutes the forward end wall of the superheater and the rear end wall R consists of a plate situated just far enough from the rear flue plate to form an effectual water jacket between the rear end of the superheater and the rear flue plate. This water jacket is provided for the purpose of preventing any possibility of injury to the superheater from the extreme heat of the fire-box.

The boiler illustrated in the drawings is of standard locomotive type, its fire-box having a flue sheet above which is a crown sheet. In practice it is necessary to keep the water level above the crown sheet and above the flues. The drum A is below the level of the crown sheet and is thus at all times immersed in water. This guards against burning out parts and is also a very simple construction to manufacture.

In operation, steam passes from the dome I through the pipe H into the superheater, passing between the outer wall of the superheater and the shell F to the rear end of the superheater, and thence passes forward inside of the shell F and into the dome M. During the passage of the steam through the annular space between the shell F and the outer wall of the superheater it is jacketed by the water in the boiler, but upon its return passage through the interior of the shell F the superheated steam is jacketed by the incoming steam in the annular space, thereby rendering it possible to superheat the steam to a high degree.

It will be apparent that through the location of the throttle in the superheater dome M the steam pressure upon opposite sides of the walls of the superheater is always equal, thus reducing to a minimum the possibility of leakage at the joints between the superheater and the boiler structure.

I claim:

1. In an apparatus of the class described, a boiler, flues, a superheater drum inclosing a plurality of said flues from their forward ends to a point adjacent their rear ends, the forward end of said drum abutting against and being attached to the inner face of the front flue sheet, a shell inside of said superheater and inclosing part of the flues therein, and an annular partition joining one end of said shell to the side wall of the drum at a point intermediate the ends of the latter.

2. In an apparatus of the class described, a boiler, flues, a superheater drum inclosing part of said flues, said superheater drum being attached to the inner face of the front flue plate and extending therefrom to a point adjacent the rear flue plate, an open ended inner shell inclosing part of the flues in said superheater, and a partition between said inner shell and the wall of the superheater, at a point intermediate the ends of said drum.

3. In an apparatus of the class described, a boiler, flues, a superheater inclosing part of said flues, said superheater extending from the inner face of the front flue plate to a point adjacent the rear flue plate, an open ended inner shell inclosing part of the flues in said superheater, a partition between said inner shell and the wall of the superheater, an inlet for steam on one side of said partition, and an outlet for steam on the other

side, both said inlet and outlet being between the flue sheets of the boiler.

4. In an apparatus of the class described, a steam boiler, a steam dome thereon, flues in said boiler, a superheater inclosing part of said flues, said superheater extending from the front flue plate to a point adjacent the rear flue plate, a steam dome connected to said superheater, an open ended inner shell inclosing part of the flues in said superheater, and a partition between said inner shell and the wall of the superheater, said steam domes being connected to said superheater on opposite sides of said partition within the boiler between the flue sheets thereof.

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Witnesses:

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