

J. A. PEGG.
LOCOMOTIVE SMOKE BOX.
APPLICATION FILED AUG. 5, 1909.

967,968.

Patented Aug. 23, 1910.

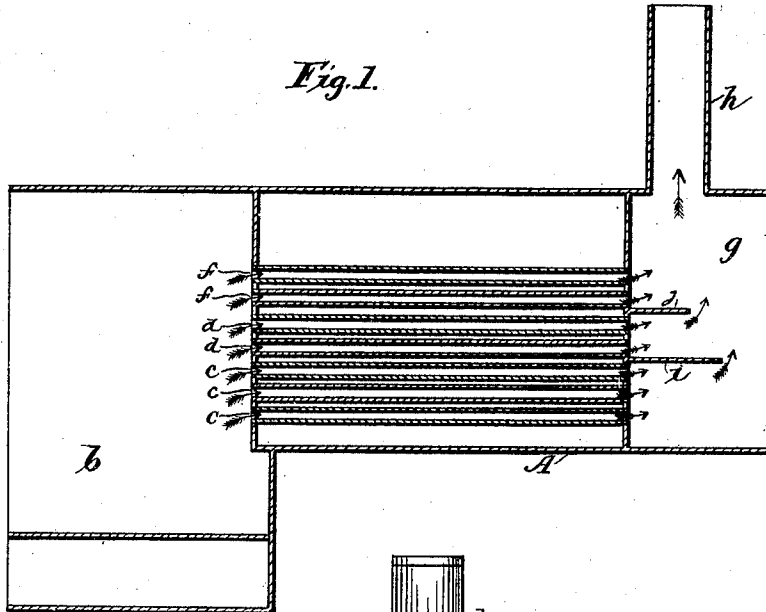
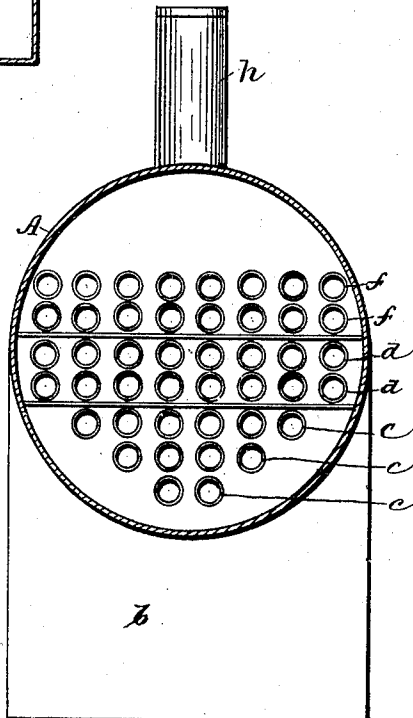


Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES ALBERT PEGG, OF STRABANE, ONTARIO, CANADA, ASSIGNOR OF ONE-HALF TO
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LOCOMOTIVE SMOKE-BOX.

967,968.

Specification of Letters Patent. Patented Aug. 23, 1910.

Application filed August 5, 1909. Serial No. 511,454.

To all whom it may concern:

Be it known that I, JAMES ALBERT PEGG, a citizen of the Dominion of Canada, residing at the village of Strabane, in the county of Wentworth, Province of Ontario, Canada, have invented a certain new and useful Improvement in Locomotive Smoke-Boxes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

The invention relates to an improvement in boilers of the class specified that will prevent their leaking in the lower tubes, a fault which is so prevalent in locomotive boilers at present in use, and consists in the construction and arrangement to prevent their leaking as will be more fully described hereinafter and shown in the drawings accompanying this specification, in which,—

Figure 1, represents a longitudinal section of a common locomotive boiler embodying my invention. Fig. 2, is an end view with back removed.

Similar letters refer to similar parts throughout the several views.

It may be observed that in the ordinary locomotive boilers the lower three rows of tubes are caused to leak by the extreme heat of the fire which rises off the grates in the fire box and travels direct into the said three rows of tubes by suction caused by the exhaust steam which is discharged into the exhaust chamber and is vented in the smoke stack. This leaves very little flame and products of combustion to pass through the upper and remaining rows of tubes; thus the great heat that passes into the bottom rows of tubes causes a severe expansion and contraction of the tubes, causing them soon to leak at the hottest or softest end which is in the fire box, and the leaking water spurting from them touches the rest of the tubes and causes them to contract and the result is they soon leak also.

The object of my invention is to check the draft in the lower tubes and equalize it over the entire system or rows of tubes, that is to say, the draft will be checked in the lower three rows of tubes and increased through the upper rows of tubes, which will cause the heat to rise and go through the tubes all alike, so that no one row of tubes will have more heat than it is able to stand.

A practical test of two boilers, which formerly leaked very badly, when fitted with

my improvement, proved the advantage of it when the said boilers did not leak a drop in three months, besides saving a great deal of fuel.

In carrying out my invention practically it will be seen by reference to the accompanying drawings that A, represents a longitudinal section of a locomotive boiler, *b*, the fire box, *c, c, c*, the three lowest rows of tubes, *d, d*, the two middle rows of tubes, and *f, f*, the two top rows of tubes, all communicating from the fire box *b*, to the exhaust chamber *g*, and smoke stack *h*.

To check the draft of the lower tubes *c*, which are nearest the fire, (and the quickest to burn out) and middle tubes *d*, and equalize the draft, I construct a projecting horizontal partition *i*, in the exhaust chamber *g*, securing it to the boiler between the lower group of tubes *c*, and the middle two rows of tubes *d*, allowing it to project about two thirds of the distance across the exhaust chamber *g*, leaving a clear open space of about one third, more or less, for the upward draft from the said lower tubes *c*, to the smoke stack *h*, so that the products of combustion have a longer distance to travel before entering the smoke stack, and I also construct another horizontal partition *j*, between the middle two rows of tubes *d*, and the two upper rows *f*, the partition made to extend into the exhaust chamber *g*, about half the distance of the width of the said exhaust chamber which retards the draft in the said two middle rows of tubes *d*, and allows part of the heat to ascend to the two upper rows of tubes *f*, thus equalizing the flame from the fire and preventing the lower tubes from leaking from too much heat and expansion, at the same time economizing fuel.

Having thus described my device and its advantages, what I claim as my invention and desire to secure by Letters Patent is:

1. In combination with a locomotive boiler and smoke box, of a horizontal partition secured to the rear end of a boiler between the bottom group and the middle group of tubes, leaving a small open space between the end of the partition and the end of the smoke box for the products of combustion to pass, for the purpose specified.

2. In combination with a locomotive boiler and smoke box, a horizontal partition secured to the rear end of a boiler between the

middle group of tubes and the upper group of tubes, leaving an open space between the end of the partition and the end of the smoke box for the products of combustion to pass upward, for the purpose specified.

3. In combination with a locomotive boiler and smoke box, of a horizontal partition (*i*) secured to the rear end of a boiler between the middle group of tubes and the lower group of tubes, leaving a narrow open space between the outer end of the partition and the wall of the smoke box, and a smaller horizontal partition (*j*) parallel to the lower

one, secured to the rear end of the boiler between the middle group of tubes and the upper group of tubes, leaving a wider open space between the end of the partition and the wall of the smoke box than the lower space, for the purpose specified. 15

Signed at Hamilton, Ontario, this 29th day of June, 1909. 20

JAMES ALBERT PEGG.

In the presence of—

Wm. BRUCE,
G. NICHOLSON.