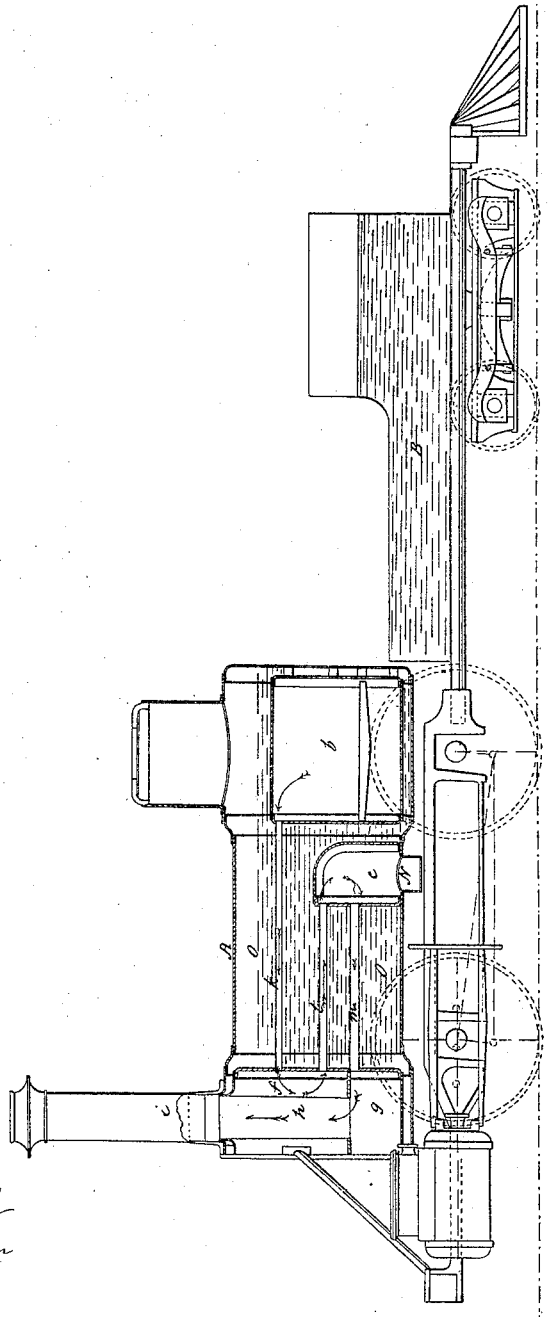
H. Hinkley,

Steam-Boiler Fire-Tube.

No. 51,046. Patented Nov. 21, 1865.



Witnesses.

D. P. Hale Jr

G. H. Washburn

Inventor.

Holmes Hinkley

by his Attorney.

R. H. Eddy

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

HOLMES HINKLEY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **51,046**, dated November 21, 1865.

To all whom it may concern:

Be it known that I, HOLMES HINKLEY, of Boston, in the county of Suffolk and State of Massachusetts, have made a new and useful Improvement in Boilers for Locomotive Steam-Engines for Railways; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawing, which is a vertical and longitudinal section of a locomotive engine provided with my invention.

The nature of the said invention consists in a peculiar arrangement of smoke-flues and chambers with the smoke-box, the furnace, and water-space of the boiler.

In the drawings, A is the locomotive-engine, and B the tender.

I combine with the furnace *b* the water-space *o*, the smoke-box *g*, and the discharge-pipe *h*, leading to the chimney *i*, two other smoke-chambers or boxes, *e f*, which I arrange within such water-space, or with respect to it and the furnace, substantially in the manner as represented in the drawing.

I connect the furnace and the smoke-boxes by means of three series of tubes, *k l m*. The first of these series opens out of the furnace and leads into the smoke-box *f*, which is around or next to the chimney-pipe *h*. The second or next series, *l*, of pipes leads from the smoke-box *f* into the upper part of the other auxiliary smoke-box, *e*. The third and last of the series of pipes—viz, that marked *m*—leads from the smoke-box *e* into the main smoke-box *g*. Each series of pipes or tubes for the conveyance of the smoke and volatile products of combustion through the water-space of the boiler and into and from the auxiliary smoke-boxes, I compose of such a number of tubes as may be most convenient.

In the operation of the boiler so made the smoke will pass from the furnace through the upper series, *k*, of tubes and enter the first auxiliary smoke-box, *f*, from whence it will flow through the second series, *l*, of tubes and be discharged into the second auxiliary smoke-box, *e*, wherein will be deposited the sparks which will accumulate therein in a receiver, N, arranged at the bottom or lower part of such smoke-box. It is intended that the said receiver shall be so made as to enable the sparks to be removed from it, as occasion may require. From the box *e* the smoke will course through the third series, *m*, of tubes and enter the main smoke-box *g*, from whence it will be discharged by the flue *h* into the chimney *i*.

Owing to the peculiar position and arrangement of the smoke-box *e* the sparks and dust will be arrested by such box.

My construction of boiler causes it to be larger in diameter and much shorter than one of like power constructed with a single stack only of smoke-flues leading from the furnace to the smoke-box from which the chimney proceeds.

I claim—

The arrangement of the three series *k l m* of smoke-tubes, and the two auxiliary smoke boxes or chambers *e f*, with the main smoke-box *g*, the furnace *b*, and water-space *o* of the boiler.

HOLMES HINKLEY.

Witnesses:

R. H. EDDY,

G. H. WASHBURN.