D. S. OLDS.

Smoke-Consuming Furnaces for Boilers.

No. 206,123. Patented July 16, 1878.

Fig. 1.

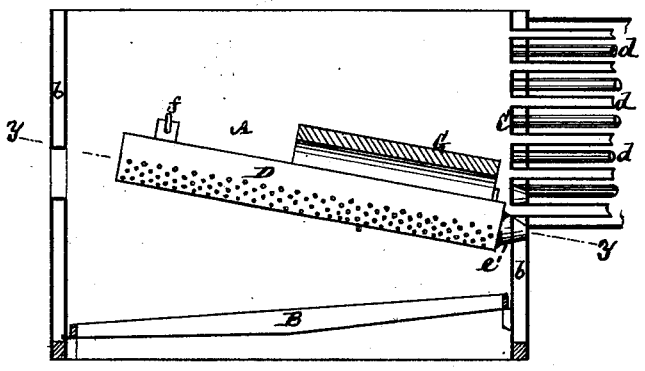


Fig. 2.

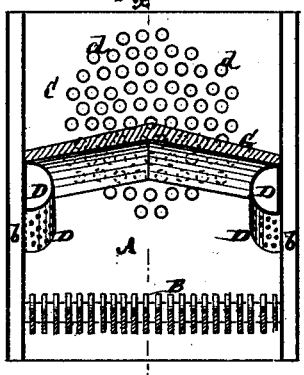


Fig. 3.

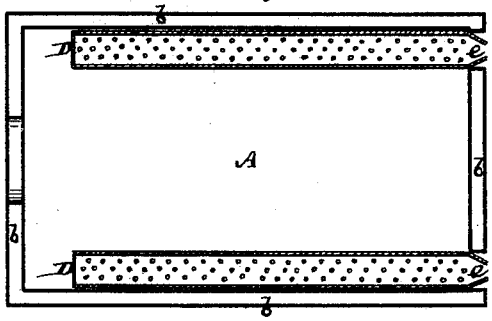
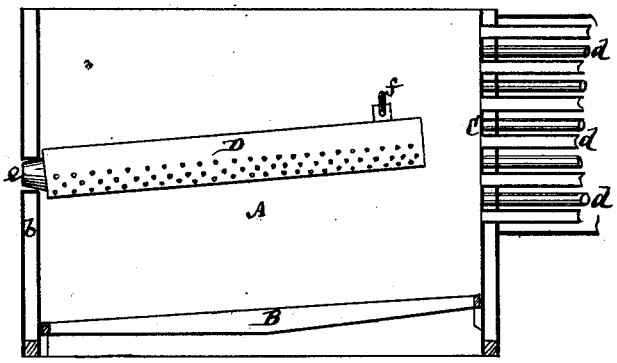


Fig. 4.



Witnesses:

Henry Sibley

Fred. Haynes

Inventor:

Daniel S. Olds

by his Attorneys

Brown & Allen

UNITED STATES PATENT OFFICE.

DANIEL S. OLDS, OF STAMFORD, CONNECTICUT.

IMPROVEMENT IN SMOKE-CONSUMING FURNACES FOR BOILERS.

Specification forming part of Letters Patent No. **206,123**, dated July 16, 1878; application filed April 18, 1878.

To all whom it may concern:

Be it known that I, DANIEL S. OLDS, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Smoke-Consuming Furnaces for Boilers, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention is more particularly designed to be applied to the furnaces of locomotive-engine boilers.

The invention relates principally to that description of smoke-consuming devices in which atmospheric air is distributed in jets or numerous fine streams over the fire, for the purpose of consuming the combustible gases and particles of carbon suspended therein.

The invention consists in independent pipes or distributers, having nozzles at one end to enter hollow thimbles to admit air, and constructed with flat sides to lie snug against the sides of the fire-box, and being provided with lugs at their other ends, whereby the said pipes or distributers may be attached by simple bolts or hooks to the ordinary boilers already in use.

Figure 1 represents a longitudinal vertical section on the line *x x* in Fig. 2 of the fire-box of a locomotive-engine boiler having my invention applied; Fig. 2, a vertical transverse section of the same through the arch in the fire-box; Fig. 3, a longitudinal section at an inclination to the horizon on the line *y y*; and Fig. 4, a vertical longitudinal section, showing the air-distributing tubes as communicating through the opposite end of the fire-box to that through which they are represented as opening in Fig. 1.

A is the fire-box, having water-walls *b b*. B is the grate, and C the tube-sheet, through which the smoke-tubes *d* of the boiler communicate with the fire-box.

D D are the tubes which provide for the distribution of air to consume the smoke. These tubes are arranged internally along opposite sides of the fire-box, and are independent of the latter, which may accordingly be of ordinary construction. Said tubes are placed at any desired height above the grate, and extend throughout the length, or as nearly the whole length, of the grate as may be desired, and are perforated throughout their lower portions to obtain a perfect distribution of air near the surface of the fire throughout the greater part of the length of the grate. It is preferable not to perforate them above, as air issuing upward from them would cool the crown-sheet of the fire-box. These tubes D D, being independent attachments to the fire-box, have their one or receiving end *e*, which is left open, reduced, and constructed to pass through openings in either end wall of the fire-box, whereby not only air is supplied to the perforated tubes for distribution over the fire, but the tubes are supported at their one end by the walls of the openings or passages in the end wall of the fire-box, which they enter. Supports or fastenings *f*, which may be simple hooks or other devices attached to either side walls of the fire-box, serve to support the tubes D D at or near their closed ends.

G is the arch, which serves to keep small particles of coal or fuel from entering and choking the upper smoke-tubes *d*. The back edge of this arch is sufficiently removed from the tube-sheet to allow of any small particles of coal or fuel which pass above it to fall onto the grate below. Said arch, which may be formed of brick or slabs, is sustained in place and supported on opposite sides by the side walls of the furnace and the tubes D D, which thus form abutments for the arch.

I claim—

The independent semi-cylindrical pipes or distributers D, having nozzles *e*, and constructed with flat sides to lie against the sides of the fire-box, and having lugs, whereby they may be attached by bolts or hooks *f* in an ordinary boiler, as and for the purpose described.

DANIEL S. OLDS.

Witnesses:

FRED. HAYNES,

VERNON H. HARRIS.