(No Model.) 2 Sheets—Sheet 1.

M. EVANS.

SMOKE CONSUMING FURNACE.

No. 531,367. Patented Dec. 25, 1894.

Fig. 1.

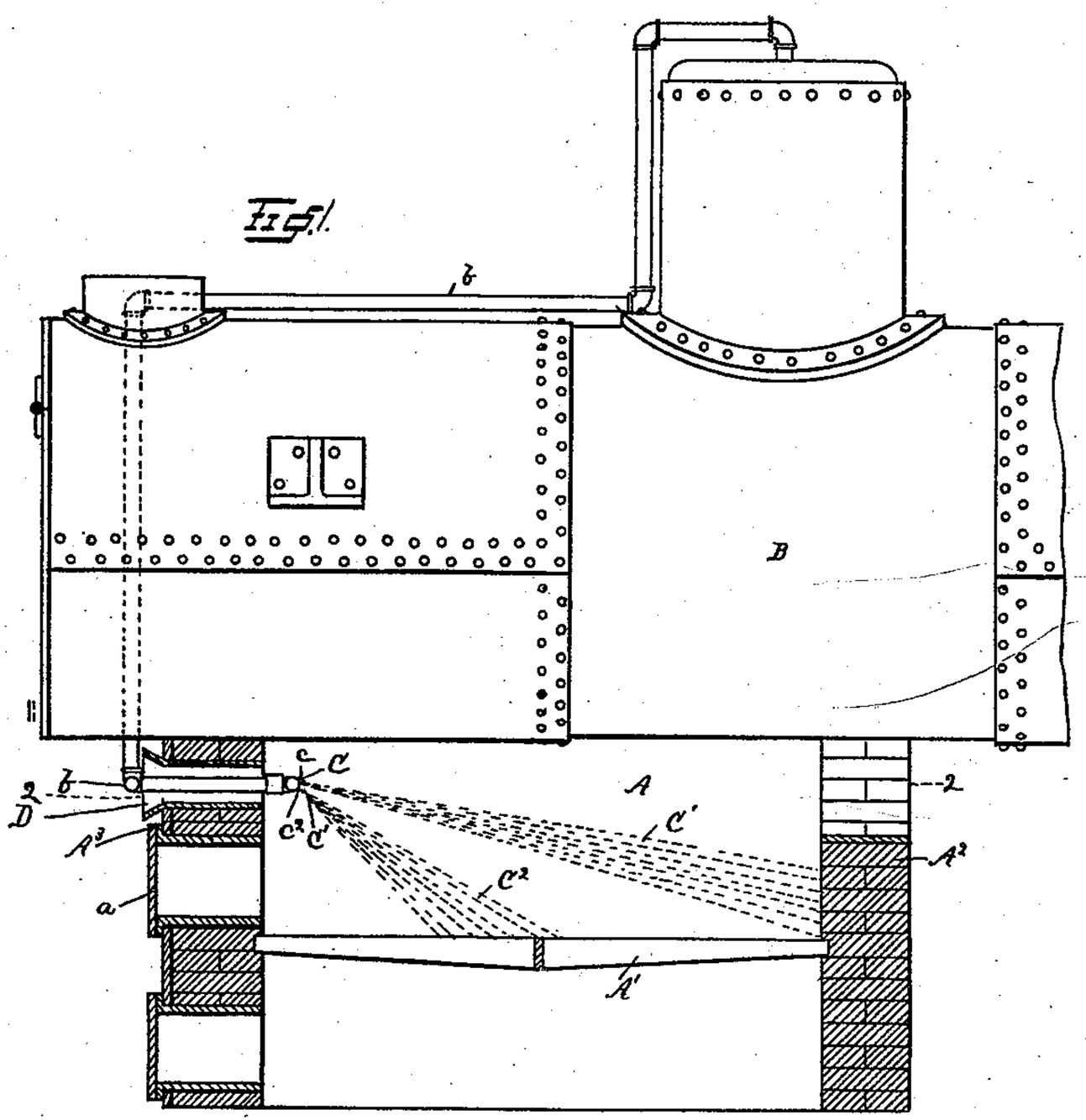
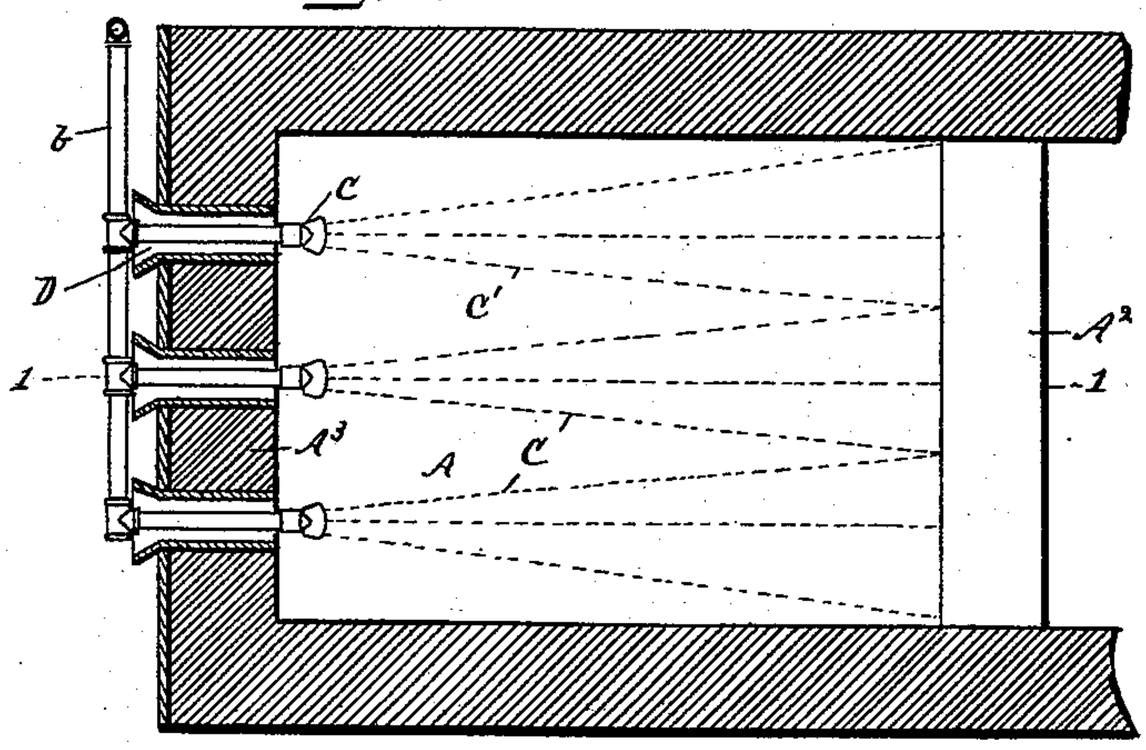


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

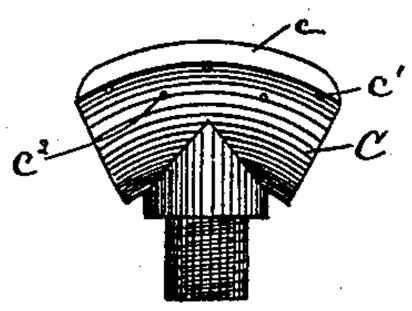
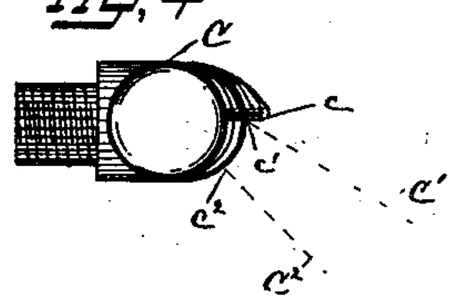


Fig. 4



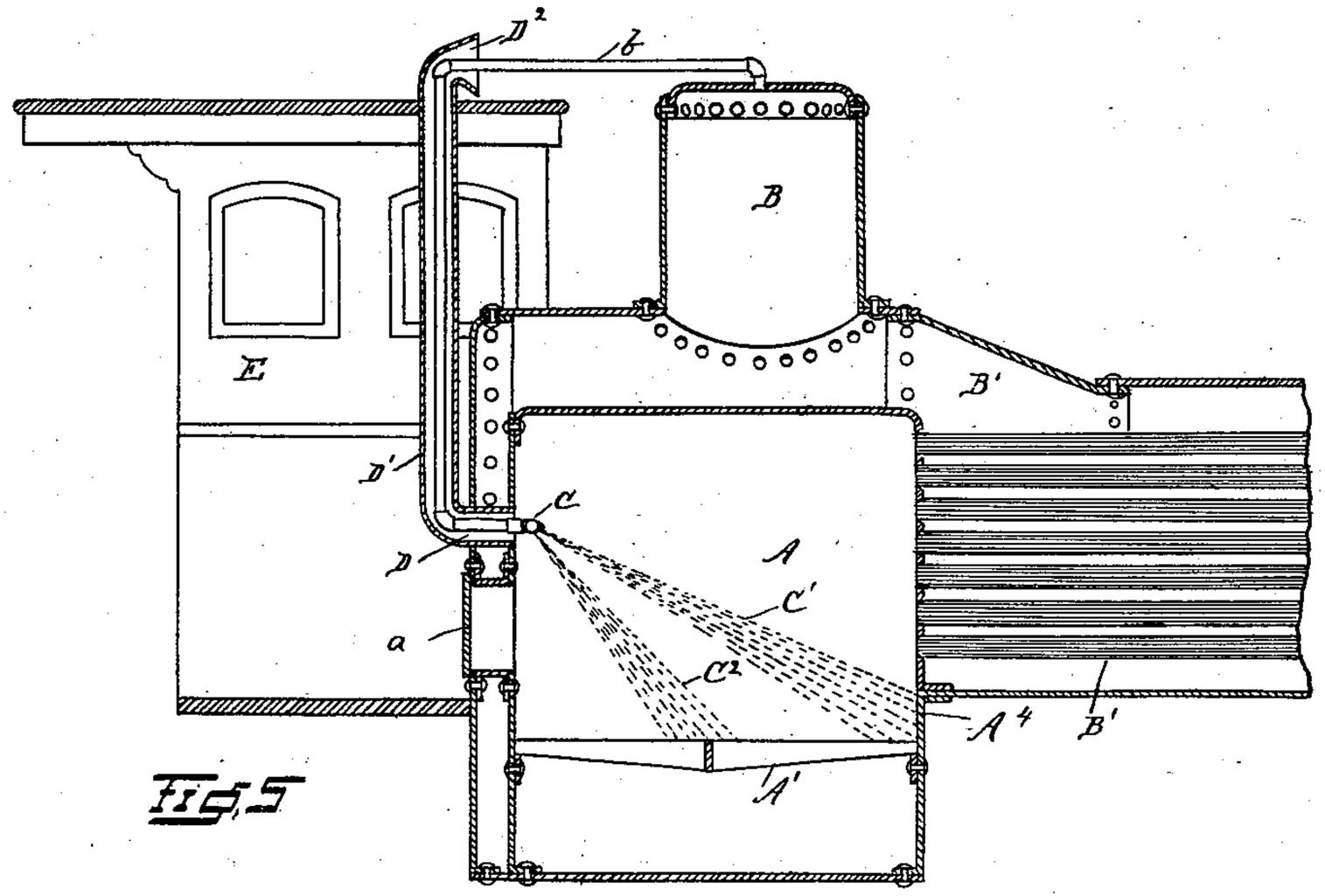


Fig. 5

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UNITED STATES PATENT OFFICE.

MORRIS EVANS, OF ERIE, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO C. McCREARY AND K. GIESELER, OF SAME PLACE.

SMOKE-CONSUMING FURNACE.

SPECIFICATION forming part of Letters Patent No. 531,367, dated December 25, 1894.

Application filed February 15, 1894. Serial No. 500,255. (No model.)

To all whom it may concern:

Be it known that I, MORRIS EVANS, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Smoke-Consuming Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to smoke consuming furnaces, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a longitudinal section of a furnace on the line 1—1 in Fig. 2 with a boiler in elevation thereon. Fig. 2 is a horizontal section on the line 2—2 in Fig. 1. Fig. 3 is an enlarged plan of the jet nipple. Fig. 4 is an enlarged side elevation of said nipple. Fig. 5 shows my invention adapted to a locomotive furnace.

A marks the furnace; A′, the grates; A^2, the bridge wall of the furnace; A^3, the front wall; *a*, the furnace door, and B a boiler on said furnace. Connected with the steam portion of the boiler is a pipe, *b*, which extends through the front of the furnace and terminates in a jet nipple, C, just inside of the furnace wall. Leading out through the furnace wall directly back of the nipple (the steam pipe, *b*, preferably passing through it) is an air duct, D. The jet nipple has two rows of jet orifices, *c′* and c^2, from which are forced two planes of jets, C′ and C^2. The nipples are in the form of arcs, so that the jet orifices may be drilled straight through the walls and their direction still be divergent so as to spread the jets sufficiently to cover the whole width of the furnace. The jet orifice, *c′*, is so placed that the jet, C′, (which I term the smoke consuming jet) is directed against the rear wall of the furnace at or in close proximity to the meeting of the wall and the grate. In order that the direction of this jet may be more accurately directed to the proper point on the rear wall, a deflector lip, *c*, is placed on the jet nipple just above the jet orifices, *c′*. It is found that this deflector lip deflects the steam jet with greater accuracy and uniformity than has been found possible by the use of the jet orifices alone. The jet, C^2, (which I term the agitating jet) is directed below the jet, C′, so as to strike the grate at about midway between the front and rear walls. It is not essential that the direction of this jet be so accurately adjusted as the jet, C′, and it may be directed to different parts of the furnace without a very manifest difference in the results.

In Fig. 5, the device is shown adapted to a locomotive furnace. The jets are here directed in substantially the same direction as has been heretofore described, the jet, C′, being directed against the rear wall, A^4, of the furnace below the flues, B′, at a point at or in close proximity with the meeting of the rear wall and the grate. When used on locomotives, I connect the air ducts, D, by means of a duct, D′, passing through the cab, E, with a funnel, D^2, directed toward the front of the locomotive, so that when the locomotive is in motion, its movement will assist the steam jets in forcing the air into the furnace. When this duct is used, the steam pipe is preferably passed through it, so that the air may be heated to some extent by the steam pipe.

What I claim as new is—

1. In combination with a smoke consuming furnace, a jet nipple having a plurality of series of jet orifices, the jets of each series being laterally divergent with relation to each other.

2. The combination with a smoke consuming furnace, of a jet nipple having a series of jet orifices therein, and an outwardly extending deflecting lip, *c*, thereon adjacent to the jet orifices of said series.

In testimony whereof I affix my signature in presence of two witnesses.

MORRIS EVANS.

Witnesses:
K. GIESELER,
C. McCREARY.