(No Model.)

S. R. EARLE.

STEAM AND AIR INJECTOR.

No. 493,257. Patented Mar. 14, 1893.

Fig. 1.

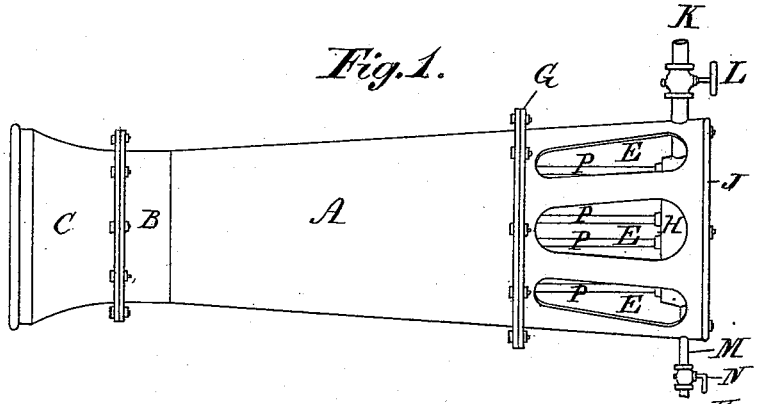


Fig. 2.

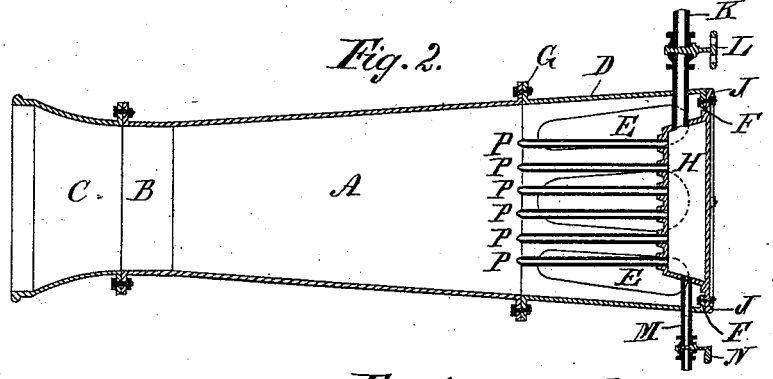
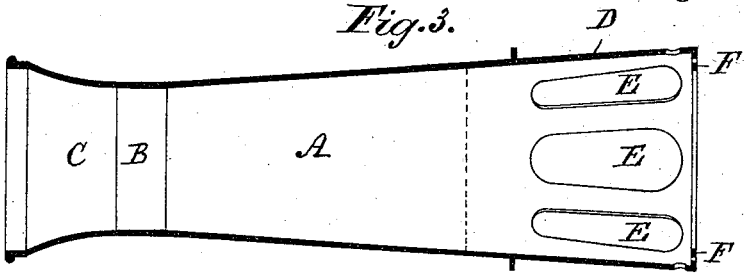


Fig. 3.



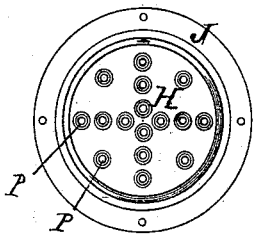


Fig. 4.

Witnesses:
John Grist
H. C. Hersey.

Salyer R. Earle
Inventor:
By Henry Grist
Attorney.

UNITED STATES PATENT OFFICE.

SALYER REED EARLE, OF BELLEVILLE, CANADA.

STEAM AND AIR INJECTOR.

SPECIFICATION forming part of Letters Patent No. 493,257, dated March 14, 1893.

Application filed June 20, 1892. Serial No. 437,276. (No model.)

To all whom it may concern:

Be it known that I, SALYER REED EARLE, of Belleville, in the Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Steam and Air Injectors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1, is a longitudinal elevation of my improved injector. Fig. 2, is a longitudinal vertical section of the same. Fig. 3, is a longitudinal vertical section of the shell of the injector showing the sections cast integrally or in one piece, and Fig. 4, is a view or elevation of the inner end of the steam chest removed from the injector.

My invention relates to injectors feeding steam and air combinedly to furnaces for the better combustion of fuel, and has for its object to improve the construction whereby but little noise in operation is produced, and greater efficiency obtained.

My invention consists in the construction and combination of parts composing the injector, as will hereinafter be described and specified in the claim.

The shell or body of the injector consists of a section A, tapering slightly from one end to a short neck B, and thence having a flaring mouth C, which may be straight, as shown in the drawings, or curved, according to the position of the injector with respect to the furnace or the space to be occupied, and D, is the exterior end or exposed section of the injector or larger end having circumferentially, air apertures or openings E, and provided with an inwardly turned flange F, and said section D, has at the opposite end an outwardly turned flange G, which bolts to a corresponding flange on the exterior of section A, which latter flange sets against the exterior face of the wall of the furnace through which the injector is inserted, or if desired, the sections may be cast together integrally or in one piece, as shown in Fig. 3, or two sections may be cast integrally and one added.

H, is a steam chest preferably cast in one piece, and having a plate or flange J, to bolt to the flange F, whereby the steam chest will close the larger or exposed end of the injector, and said steam chest be within the same.

K, is a pipe from a source of supply to convey steam into the steam chest, said pipe passing through the circumference of the injector, whereby the outer end of the steam chest is kept intact or without penetration, and said pipe is provided with a cut off valve L.

M, is a pipe from the steam chest to discharge water of condensation, and said pipe is provided with a stop cock N.

The steam chest H, has perforations in which are inserted tubes P, which extend past the air inlets or openings E, whereby steam issuing from said tubes will induce a current of air through said inlets E, and be injected with the steam into the furnace to promote combustion. The air entering the injector will be dried by the heat from the steam tubes P, and thereby produce intensity of combustion

Instead of inserting the injector through the wall of a furnace, the injector may be foreshortened to about the dotted line shown in Fig. 3, and inserted through the ash-pit door of the furnace of marine boilers and other furnaces, and steam supplied to the steam chest through a flexible pipe, whereby the door can be swung open with the injector in place, to allow ashes to be removed.

If desired, the steam tubes P, may be arranged in concentric circles, instead of the manner shown in Fig. 4.

I claim as my invention—

The combination with the tapering shell or tubular body of the injector, having air inlets E, in the circumference of the larger end, of the steam chest H, within said end, said steam chest having a circumferential plate or flange J, bolted to the shell whereby said steam chest closes the larger end of the injector, said steam chest having a series of tubes P, surrounded collectively by said air inlets E, and a steam pipe K, passing through the circumference of the shell of the injector into the steam chest, whereby the exposed end of said steam chest is kept intact or without penetration, as and for the purpose set forth.

SALYER REED EARLE.

Witnesses:
HENRY CARRÉ,
FRANCIS S. WALLBRIDGE.