

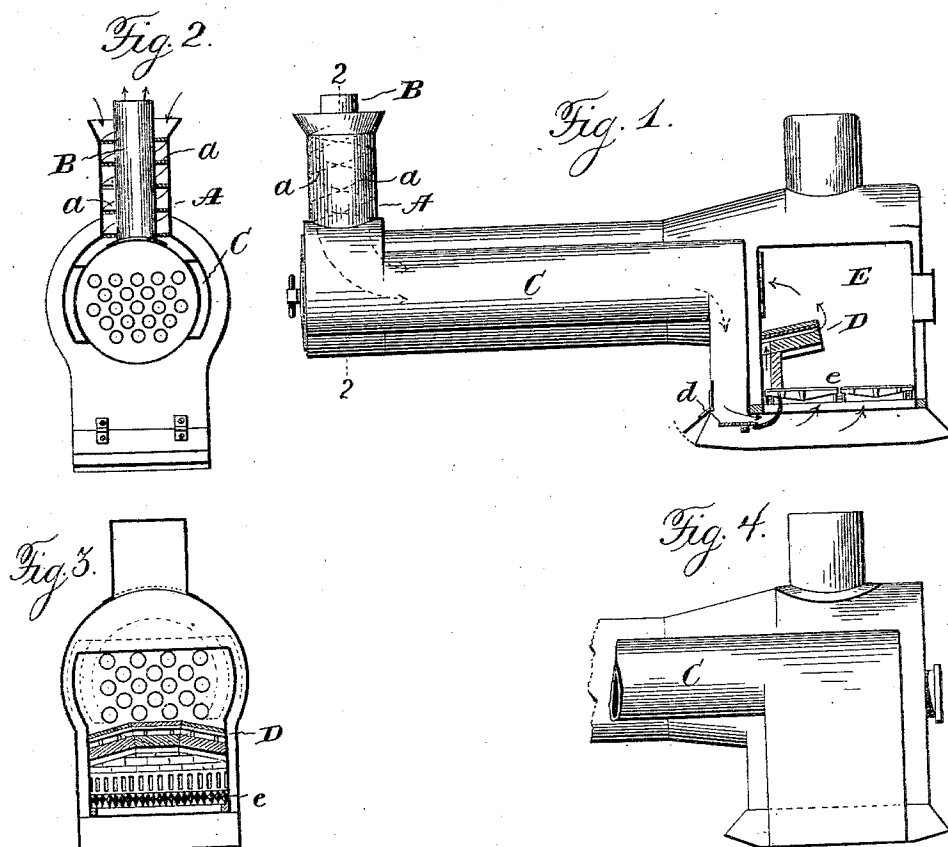
(No Model.)

J. ALVES.

MEANS FOR SUPPLYING HOT AIR TO BOILER FURNACES.

No. 566,645.

Patented Aug. 25, 1896.



Witnesses:
Jas. Hutchinso.
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UNITED STATES PATENT OFFICE.

JOHN ALVES, OF MELBOURNE, VICTORIA.

MEANS FOR SUPPLYING HOT AIR TO BOILER-FURNACES.

SPECIFICATION forming part of Letters Patent No. 566,645, dated August 25, 1896.

Application filed June 18, 1895. Serial No. 553,216. (No model.)

To all whom it may concern:

Be it known that I, JOHN ALVES, engineer, a subject of the Queen of Great Britain, residing at No. 17 Market Buildings, Flinders Lane, Melbourne, in the British Colony of Victoria, have invented an Improved Method of and Apparatus for Supplying Hot Air or a Mixture of Hot Air and Steam to Boiler and other Furnaces, of which the following is a specification.

This invention relates to improved means for supplying hot air to boiler-furnaces, and has for its object to enable a maximum heating effect to be obtained from the fuel.

The invention consists in the arrangement of an outer tube or suction-flue around the smoke-stack or chimney, so that said flue communicates with a hollow bridge-wall at the back of the fire-box. Said outer tube or suction-flue is fitted with a number of spirally-arranged plates forming a spiral passage around the chimney-stack, so that the air passing down the same will be thoroughly mixed and heated before being delivered into the furnace.

The hollow bridge-wall above referred to is formed with a grating along the front of its lower end and has a hollow perforated portion projecting forwardly into the furnace. The bridge-piece is protected with fire-brick and a valve or damper is provided for regulating the air supplied to it.

Having now generally described and ascertained the nature of my invention, I will proceed to more particularly describe it with the aid of the accompanying drawings, wherein—

Figure 1 is a side elevation of a locomotive-boiler fitted according to my invention, the fire-box being shown in section. Fig. 2 is a vertical transverse section on the line 2 2 of Fig. 1. Figs. 3 and 4 are respectively a vertical sectional view and a view in side elevation, showing a slight modification.

Referring to Figs. 1 and 2, the reference-letter A indicates the outer tube or suction-flue, which is arranged around the smoke-stack or chimney C, running along each side of the boiler and communicating by means of a vertical passage with the hollow bridge-wall D of the furnace, while *a a* indicate the spirally-arranged plates which operate to form a spiral passage around the chimney B in the space between it and the outer tube A, for the purpose described.

In order to carry out my invention, the fire-

box E must be closed in, excepting where it communicates with the flues C, leading to the tube A, so as to exclude any air except that which has passed around the chimney B and along the sides of the boiler and thereby been heated. A valve *d* is fitted in the passage leading from the flues C to beneath the grate-bars *e* to regulate the admission of the heated air to the hollow bridge-wall and the ash-pit, respectively, said valve being preferably so arranged as to insure about one-third of the air passing to the hollow bridge-wall D and the remaining two-thirds through the fire-bars.

In the arrangement shown in Fig. 1 the flues C pass down under the boiler, at the rear end thereof, in front of the fire-box E. In some locomotives, however, where the crank travels close up to the fire-box and there is not sufficient space to admit of this arrangement, the flues C may be constructed as shown in Figs. 3 and 4, that is, they may be extended back onto the fire-box and thence down the sides thereof, from whence they communicate with the hollow bridge-wall and the ash-pit in the manner before described. I prefer to provide two spiral plates *a* around the chimney B and to arrange each of the passages so formed that it will communicate with each of the flues C.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In a boiler-furnace, the combination of the smoke-stack, a suction-tube encircling the smoke-stack, a partition arranged to form a spiral passage between the smoke-stack and the suction-tube, said spiral passage opening at its top into the atmosphere to form an entrance for natural draft, flues arranged on each side of the boiler and communicating at their forward ends with said spiral passage, a vertical flue connecting the rear end of said flues with the rear end of the ash-pit, a hollow bridge-wall arranged in the fire-box and communicating at its lower end with said vertical flue, and a valve for regulating the admission of the air heated in the spiral passage to the hollow bridge-wall and the ash-pit respectively, substantially as described.

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Witnesses:

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