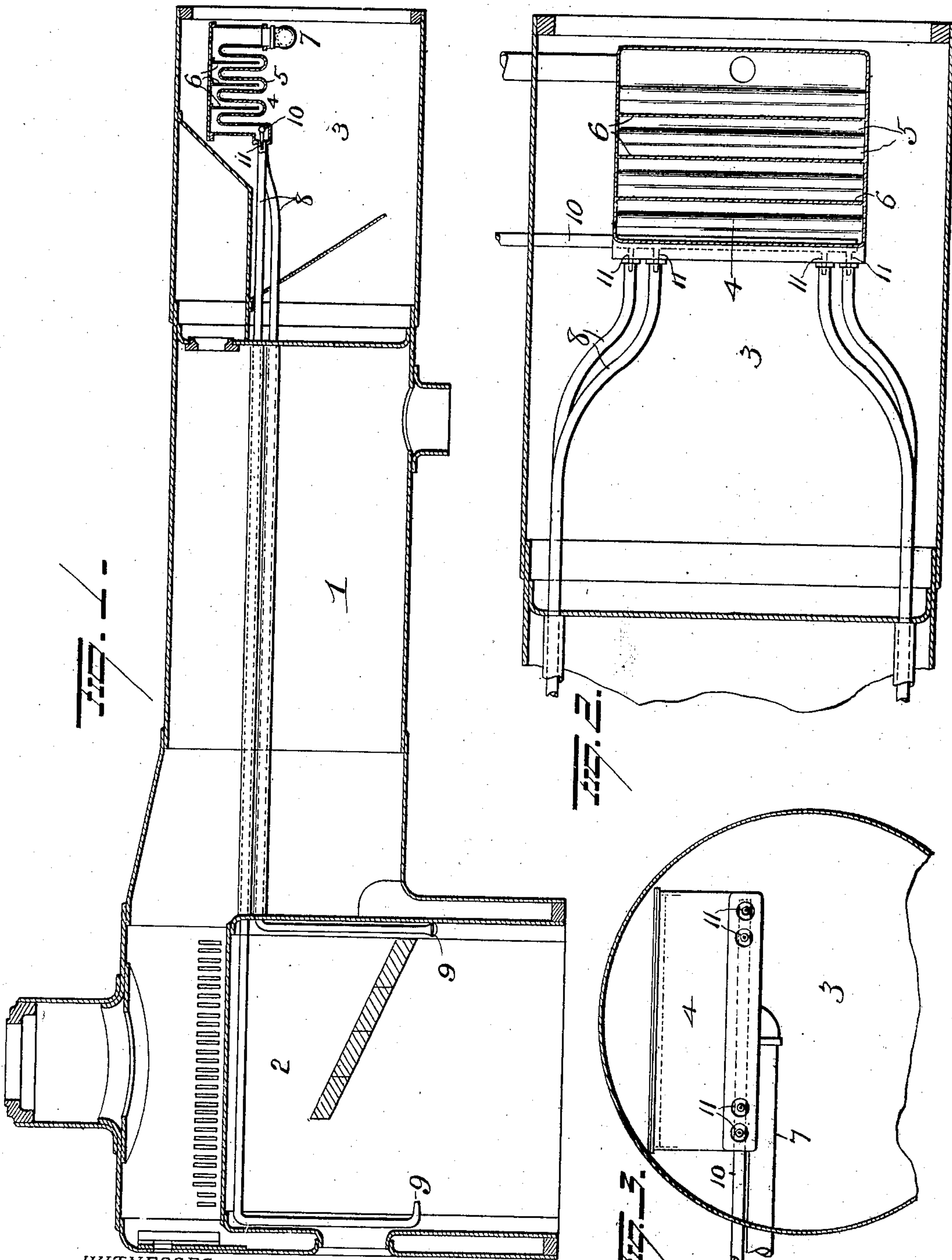


No. 736,066.

PATENTED AUG. 11, 1903.

F. P. BUSIEL.  
AIR FEEDING APPARATUS FOR LOCOMOTIVES.  
APPLICATION FILED NOV. 28, 1902.

NO MODEL.



WITNESSES

E. J. Nottingham  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

FRANK P. BUSIEL, OF BOSTON, MASSACHUSETTS.

## AIR-FEEDING APPARATUS FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 736,066, dated August 11, 1903.

Application filed November 26, 1902. Serial No. 132,956. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK P. BUSIEL, a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Air-Feeding Apparatus for Locomotives; 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.

My invention relates to an improved air-feeding apparatus for locomotives or for other forms of steam-boiler furnace, and it serves as a smoke-consumer and fuel-economizer, the object of the invention being to provide improvements of this character in which air is heated in the smoke-box of the engine and injected by steam into the combustion-chamber or the fire-box and elsewhere to best consume the smoke and save fuel.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in longitudinal vertical section of a locomotive in which my improvements are illustrated. Fig. 2 is a view in horizontal section of a portion thereof; and Fig. 3 is a view in transverse section of the smoke-box, showing my improved air-heater therein.

1 represents a locomotive-boiler, 2 the fire-box or combustion-chamber, and 3 the smoke-box. While I have shown an ordinary form of locomotive, my improvements are equally as well adapted for use in a great variety of locomotives or boiler-furnaces, and I do not wish to be confined to any one.

In the smoke-box 3 my improved air-heater 4 is located and comprises a casing having a corrugated or wavy bottom 5, and a series of baffle-plates 6 project down into the compartments of the bottom and form a continuous circuitous channel or passage exposed throughout its length to the action of the heat. An air-inlet pipe 7 extends through the side of the smoke-box and communicates with the air-heater at one end and at the opposite end of the heater a series of pipes 8 communicate therewith and extend through the tubes of the boiler to the fire-box or com-

bustion-chamber and discharge the air through suitable nozzles 9 behind the bridge-wall and about the fire-box, as may give the best combustion.

To induce or compel a flow of the hot air from the heater through pipes 8, a steam-pipe 10 projects into the heater and is made with injectors or nozzles 11, projecting into the pipes 8, and, when discharging steam thereinto, serves to inject the air into and through the pipes. This steam-pipe is connected with the boiler and is provided with a suitable valve in convenient reach of the engineer, so that he can regulate the steam-supply and thereby govern the supply of hot air.

My improvements are especially adapted for employment in any of the well-known forms of locomotives or furnaces and may be placed in old ones as well as new.

The pipes and heater may of course be provided with any suitable protection against the intense heat, and the pipes may be otherwise arranged as may be found to produce the best results according to the locomotive or furnace.

A great many changes might be made in the general form and arrangement of the parts described without departing from my invention, and hence I do not confine myself to the precise construction set forth, but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the fire-chamber and smoke-chamber of a furnace, of a box in the smoke-chamber having a corrugated bottom, baffle-plates depending from the top of said box and entering the corrugations of the bottom, an air-inlet pipe communicating with one end of said box and means connecting the other end of said box with the fire-chamber.

2. The combination with the fire-chamber and the smoke-chamber of a furnace, of a box located in the smoke-chamber, said box having a corrugated bottom and baffle-plates depending from the top and entering said bottom, an air-inlet pipe communicating with one end of said box, a series of pipes communicating with the other end of said box and extending to the fire-chamber, and a series of



steam-injectors located within said box and projecting into said series of pipes.

3. The combination with the fire-chamber, smoke-chamber, boiler and boiler-tubes, of a  
5 box located in the smoke-chamber, said box having a corrugated wall and baffle-plates projecting from the opposite wall and entering said corrugations, an air-inlet pipe communicating with one end of said box, a series of  
10 pipes communicating with the other end of the box and extending through said boiler-tubes to the fire-chamber and steam-injectors located within said box and projecting into said series of pipes.

15 4. The combination with a locomotive or steam-boiler furnace, of an air-heater in the smoke-box having a corrugated wall and baf-

fle-plates entering the corrugations to form a circuitous air-heating passage, an air-inlet at one end thereof, air-pipes communicating 20 with the opposite end thereof and extending through the boiler-tubes and directing the hot air into the combustion-chamber, and a steam-pipe projecting into the outlet end of the air-heater and having injector-nozzles projecting 25 into the air-pipes to compel the passage of hot air therethrough.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANK P. BUSIEL.

Witnesses:

EDWARD D. TUCKES,  
A. S. PENNOCK.