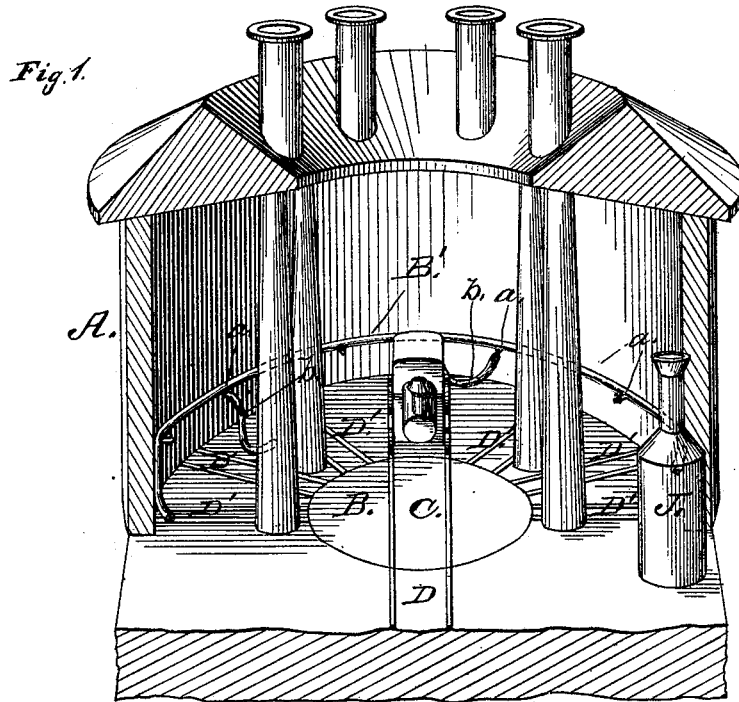


J. D. IMBODEN.

Means for Accelerating the Draft of Boiler-Fires.

No. 220,381.

Patented Oct. 7, 1879.



WITNESSES

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F. J. Masi.

INVENTOR

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John D. Ambodeu,
by E. W. Anderson
his ATTORNEY

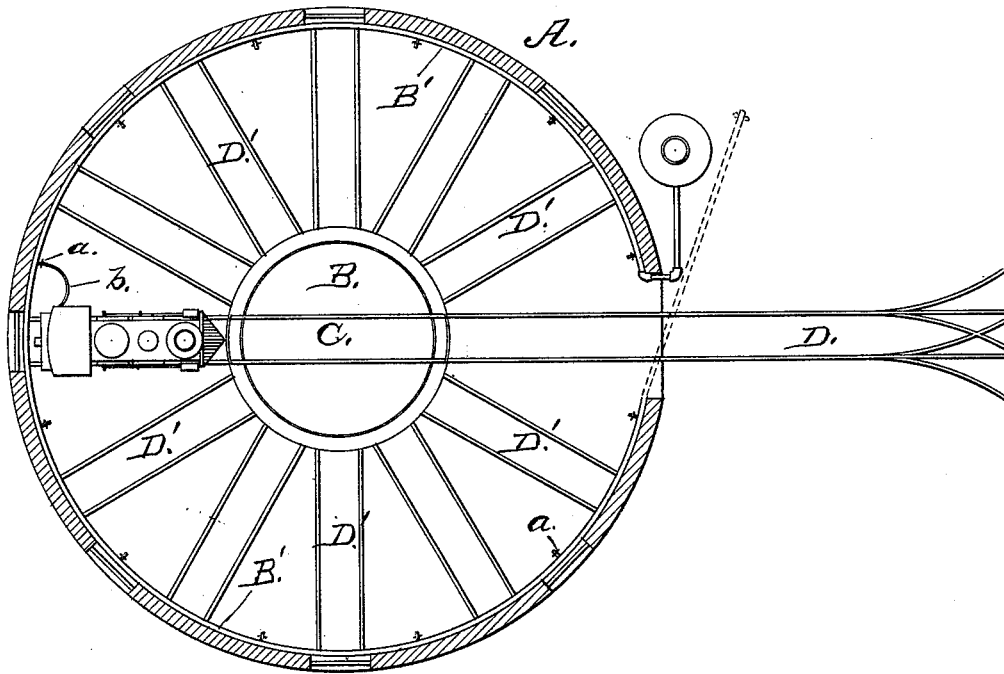
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Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN D. IMBODEN, OF RICHMOND, VIRGINIA, ASSIGNOR TO HIMSELF AND
HENRY B. HAYS, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MEANS FOR ACCELERATING THE DRAFT OF BOILER-FIRES.

Specification forming part of Letters Patent No. **220,381**, dated October 7, 1879; application filed
August 30, 1879.

To all whom it may concern:

Be it known that I, JNO. D. IMBODEN, of Richmond, in the county of Henrico and State of Virginia, have invented a new and valuable Improvement in Means for Accelerating the Draft of Boiler-Fires; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a perspective section of a "round-house," showing my invention applied. Fig. 2 is a horizontal section of the same.

This invention has for its object the creation of a powerful artificial draft through the furnace and tubes or flues of steam-boilers when cold and being "fired up" in the round-house or other buildings at stations and terminal points on railways or on steamboats.

By the present system of firing, the furnace is nearly filled with dry kindling-wood, which is ignited and allowed to burn with no other aid to combustion than the natural draft created by the fire thus had until the water boils and a few pounds pressure of steam is generated. Then the cock of the blower-pipe, terminating in the smoke-box of the boiler, is opened, and the jet of steam so stimulates the draft that the coals used as fuel can be thrown into the furnace and, being ignited in a few minutes, steam is rapidly gotten up. The time expended in "firing up" a cold engine so that it can be run out of the round-house varies from three-quarters of an hour to an hour and a half, and the quantity of wood consumed in order to generate sufficient steam to actuate the engine and ignite the coal is about one-quarter of a cord.

The object of my invention is to get up steam and ignite the coal with an expenditure of less than one-half the quantity of wood, and in a period varying from twenty to thirty minutes.

The nature of the invention consists in creating in the furnace and flues of the boiler an artificial draft at the moment of lighting the kindling-wood, or thereabout, by connecting

the blower-pipe at a convenient point in its length, preferably in the cab, with some other boiler than that being fired up, so as to produce an instantaneous draft without waiting for the generation of steam in said boiler. By this means a draft is created of such intensity that a very small quantity of wood suffices to ignite the coal, which, being supplied with oxygen in excess, or in sufficient quantity, burns with intense fierceness in a few moments, and causes steam to be generated very rapidly.

In carrying out my invention at stations and terminal points, I shall illustrate its ready application in connection with a round-house, A. This structure is provided with a turntable, B, having a track, C, upon which the engine is run from the service or main track D, and by means of which it may be shunted or shifted to any of the radiating tracks D', that constitute stalls for the reception of one or more engines.

The roof of the house may be of any desired form, having vents or escape-orifices for the passage of smoke and steam.

In some convenient part of the round-house, either under the floor or flagging overhead, but preferably three or four feet from the floor, is run a small metallic pipe, B', of about one inch in diameter. This pipe is carried past each of the engine-stalls, and is provided in rear of or conveniently near each stall with a simple stop-cock and nipple, *a*. To the nipple of each cock is coupled a flexible or other pipe, *b*, of sufficient length to reach and be coupled to a corresponding nipple permanently inserted in the blower-pipe of the engine, and also provided with a simple stop-cock.

I do not confine myself to any special form of coupling.

The fire having been kindled in the furnace of the engine, and the supply-pipe being connected to the nipples aforesaid, it is only necessary to open the cocks to inject a strong jet of steam into the fire-box, thus creating an upward draft of great intensity, and causing an instantaneous ignition of the coal without any appreciable amount of kindling material, and without waiting for the generation of steam in the boiler being fired up.

When the round-houses are near the repair-

shops, the pipe B may be connected to its boiler and the steam-draft derived therefrom, or in some cases a locomotive coming into the round-house to rest, and having a head of steam, may have a nipple leading into its steam-space, to which the circuit-pipe B' may be temporarily connected by a flexible pipe or otherwise.

Upon roads doing an extensive business, and where many engines are fired up, I prefer to use a small independent boiler, J, in which steam may be kept up at all hours, and the supply or circuit pipe kept full of steam. It should be protected from loss of caloric by a proper insulating material. In this supply-pipe are provided, at proper intervals, drain-cocks to let off the water arising from condensation. Should compressed air be preferred as a creator of draft, the same system of pipes, cocks, nipples, and couplings may be used, or the steam-jet and air-blast may be used in combination, the latter being conducted under

the furnace by suitable pipes. This, however, is not deemed of practical advantage, as the simple, cheap, auxiliary steam-jet blower will produce sufficient draft and create the desired saving of time and fuel.

What I claim as new, and desire to secure by Letters Patent, is—

A steam-supply pipe provided with cocks and nipples, and deriving its steam from an auxiliary boiler, and the connecting-pipes coupled to said nipples, and adapted to be removably coupled to the blower-pipe of an engine, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN DANIEL IMBODEN.

Witnesses:

JOHN M. ROBB,
WILLIAM F. ROBB.