(No Model.)

J. S. BIGELOW.

EXHAUST PIPE FOR LOCOMOTIVES.

No. 413,385. Patented Oct. 22, 1889.

Fig. 1.

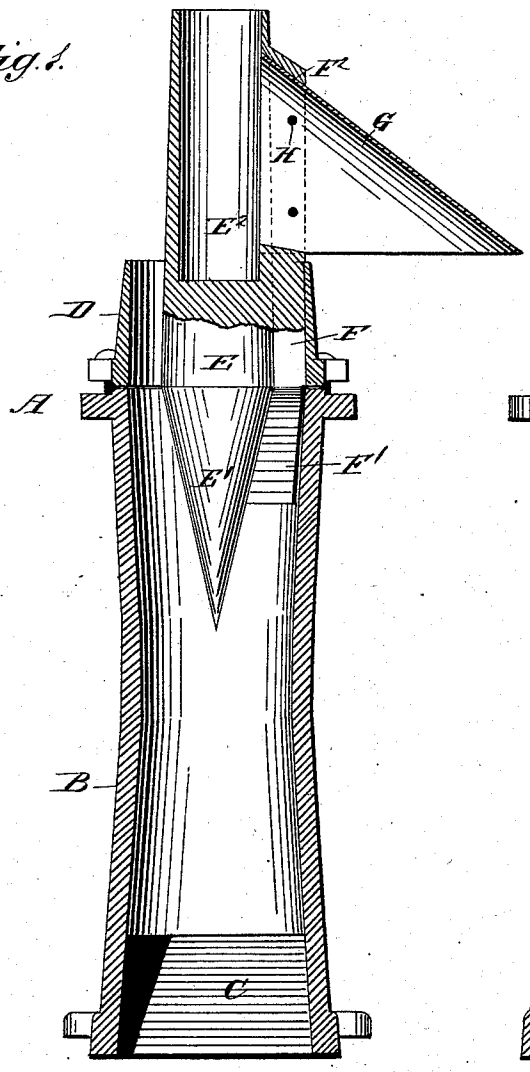


Fig. 2

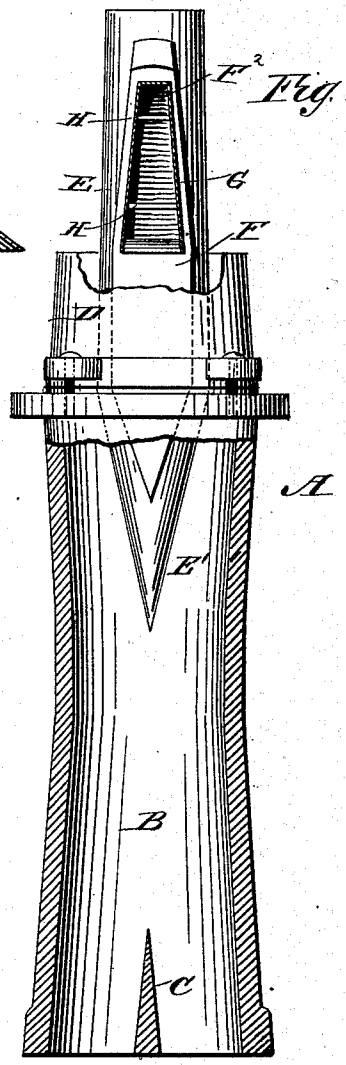
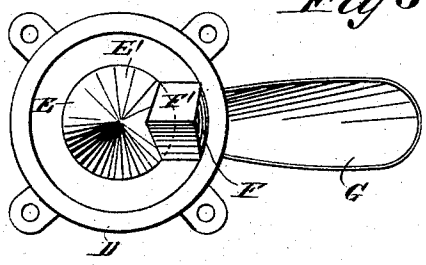


Fig 3



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UNITED STATES PATENT OFFICE.

JOHN S. BIGELOW, OF PHILLIPSBURG, NEW JERSEY.

EXHAUST-PIPE FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 413,385, dated October 22, 1889.

Application filed June 19, 1889. Serial No. 314,807. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. BIGELOW, of Phillipsburg, in the county of Warren and State of New Jersey, have invented a new and Improved Exhaust-Pipe for Locomotives, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved exhaust-pipe specially adapted for locomotives and serving to form a ready escape for the exhaust-steam to reduce back-pressure in the cylinders, at the same time increasing the draft in the boiler-flues, and consequently in the boiler-furnace.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a side elevation of the same at right angles to Fig. 1, with parts in section and parts broken off; and Fig. 3 is an inverted plan view of the nozzle.

The improved exhaust-pipe A is provided with a pipe B, preferably made in the shape of two cone-frustums, of which the top one is inverted, as is plainly shown in the drawings. The lower end of the pipe B is secured to the bed-plate of the locomotive by suitable bolts or other means, so that the exhaust from the two engines of the locomotive passes into the lower end of the said pipe. In this lower end of the pipe B is held a longitudinally-extending partition C, made wedge-shaped, as shown in Fig. 2, and dividing the lower end into compartments for the admission of steam from the two engines, respectively. On the upper end of the pipe B is secured a nozzle D by suitable bolts or other means, and in this nozzle is held a central post E, having on one side an offset F, connecting the post E with the inside of the nozzle D. The offset F is preferably cast on the inside of the nozzle; or it may be secured to the same by bolts or otherwise. The lower end E′ of the post E is formed in the shape of an inverted cone, the apex of which extends to nearly the middle of the pipe B. The post E tapers slightly, and is provided in its upper end, above the nozzle D, with the bore or recess E^2. The lower end F′ of the offset F is wedge-shaped and projects into the top of the pipe B, being located in line with the wedge-shaped partition C. The offset F also projects above the nozzle D, and is provided with an opening F^2, connecting with the recess E^2 in the post E. In this opening F^2 is held a downwardly-inclined hood G by suitable bolts H or other means, secured to the offset F. The hood G extends into the front end of the smoke-box of the locomotive-boiler, is open at its bottom, which extends horizontally, and is somewhat wider than the open end leading to the recess E^2.

The operation is as follows: The steam exhausting from the locomotive-engines into the compartments formed by the partition C passes upward into the nozzle D, around the central post E, and past the same into the smoke-stack. The upward movement of the steam causes a suction in the recess E^2, and consequently in the hood G, so that smoke from the smoke-box is drawn through the hood G into the recess E^2 and out of the same with the exhaust-steam. The post E offers very little resistance to the exhaust-steam on account of its cone-shaped end E′ and the wedge-shaped end F′ of the offset F. The resistance is also greatly lessened by the shape of the upper end of the pipe B.

It will be seen that as the exhaust-steam from each engine passes into a separate compartment in the lower end of the pipe B the steam will not react on the other engine, but will pass directly upward, being directed by the partition C. Thus the back-pressure in the cylinders is greatly reduced.

It will further be seen that as the smoke in the smoke-box is drawn into the post E and up through the same by the force of the exhaust-steam the draft in the boiler-flues, and consequently in the boiler-furnace, is greatly increased.

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

1. In an exhaust-pipe for locomotives, the combination, with a pipe set on the bed-plate,

of a nozzle secured to the upper end of said pipe, a post held centrally in the said nozzle and provided with a solid cone-shaped lower end and a recessed upper end, and a hood leading into said recess from the smoke-box, substantially as shown and described.

2. In an exhaust-pipe for locomotives, the combination, with the pipe B, provided with the transverse partition C, of the nozzle D, secured to the upper end of the said pipe B, the central post E, held in the said nozzle D and provided with a cone-shaped end E′, and the hood G, secured to one side of the said central post E and leading into the recess E^2 of the said post, substantially as shown and described.

3. In an exhaust-pipe for locomotives, the combination, with the pipe B, provided with the transverse partition C, of the nozzle D, secured to the upper end of the said pipe B, the central post E, held in the said nozzle D and provided with a cone-shaped end E′, the hood G, secured on one side of the said central post E and leading into the recess E^2 of the said post, and the offset F, connecting the central post with the said nozzle, substantially as shown and described.

4. In an exhaust-pipe for locomotives, the combination, with the pipe B, provided with the transverse partition C, of the nozzle D, secured to the upper end of the said pipe B, the central post E, held in the said nozzle D and provided with a cone-shaped end E′, the hood G, secured on one side of the said central post E and leading into the recess E^2 of the said post, and the offset F, connecting the central post with the said nozzle, the said offset F being provided with a wedge-shaped end F′ in line with the said partition C, substantially as shown and described.

JOHN S. BIGELOW.

Witnesses:
CALEB W. KITTELL,
JOHN ALPAUGH.