

L. C. MOONEY.
EXHAUST NOZZLE.

APPLICATION FILED AUG. 29, 1910.

1,062,724.

Patented May 27, 1913.

Fig. 1.

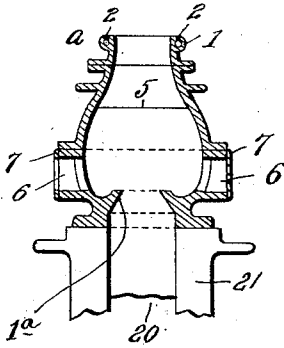
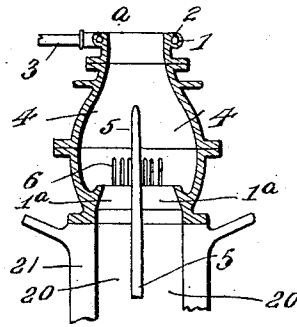


Fig. 2.



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UNITED STATES PATENT OFFICE.

LAWRENCE C. MOONEY, OF MONTGOMERY, ALABAMA.

EXHAUST-NOZZLE.

1,062,724.

Specification of Letters Patent.

Patented May 27, 1913.

Original application filed May 25, 1910, Serial No. 563,441. Divided and this application filed August 29, 1910. Serial No. 579,474.

To all whom it may concern:

Be it known that I, LAWRENCE C. MOONEY, citizen of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in Exhaust-Nozzles, of which the following is a specification.

This invention comprehends certain new and useful improvements in smoke arches or front ends and draft appliances for locomotives, and relates particularly to an improved construction and arrangement of exhaust nozzle designed to relieve excessive back pressure or compression in engine cylinders so as to increase the speed and power of the engines, and to also act effectively on the fire in the furnace.

With these and other objects in view that will more fully appear as the description proceeds, the invention consists in certain constructions and arrangements of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which—

Figure 1 is a vertical transverse sectional view of my improved exhaust nozzle, and Fig. 2 is a similar view taken at right angles to Fig. 1.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawing by the same reference characters.

This invention has to do particularly with exhaust nozzles, and discloses subject-matter forming part of a co-pending application for patent for a locomotive front end of which the present case is a divisional application, the former case being filed on or about the 25th day of May, 1910, Serial No. 563,441.

The body portion of my improved exhaust nozzle is provided at its upper end with a nozzle tip *a* formed with an annular passage 1 from which leads a circular series of upwardly facing orifices 2, the passage 1 being connected at any convenient point to a blast pipe 3, as best illustrated in Fig. 2, so as to discharge upwardly steam conveyed by said pipe from any suitable source. The lower part of the nozzle body is divided into two chambers 4 by a centrally disposed ver-

tical partition 5 extending upwardly from the base of the nozzle some distance into the body portion thereof, said chambers being connected respectively, by inlets or mouths 1^a with the cylinder exhaust ports 20, 20 in the saddle 21.

The inlets or mouths 1^a through the base of the nozzle are short and coped or contracted, as shown in Fig. 1, to increase the velocity of the steam in its passage through the nozzle. The upper end of the mouths 1^a are smaller or of less superficial area than the nozzle tip or discharge end *a* of the device, while the lower and larger ends of the contracted mouths are preferably of substantially the same diameter or area as the tip. The contracted upper end of the mouths 1^a open into the bulged or enlarged lower end of the body portion of the exhaust nozzle which gradually decreases in size toward the nozzle tip *a*, whereby, as the steam passes into the nozzle through the mouth 1^a, it will be first sharply compressed to increase its velocity, as stated, and then be instantly released in a stream, or column to pass with considerable speed and without frictional contact with the walls of the nozzle, out through the tip *a*.

The body portion of the nozzle is provided, just on a line with the contracted portions of the mouths 1^a with forwardly and rearwardly facing openings 6, which are covered by perforated plates 7, the position of these openings being such that they will be acted upon by the suction generated by the rapid upwardly moving column of steam at the point where the velocity thereof is greatest, thereby affording considerable assistance to the draft of the fire while the engine is in operation, as well as tending to draw the gases through the bottom flues so as to aid in consuming the fuel in the front end of the furnace.

From the above it will be noted that the principal feature of the invention resides in forming an exhaust nozzle, the opening into which is smaller or of less area than the outlet, with an intervening body portion of much greater area, so that the escaping steam may pass through the nozzle without frictional contact with its walls. Also in providing openings at the base of the nozzle extending forwardly and rearwardly through which gases may be drawn from the lower flues by the suction in the nozzle created by

the forcible and rapid movement of the escaping steam.

Having thus fully described the invention what is claimed as new is:—

- 5 An exhaust nozzle having a contracted inlet at its lower end, and a discharge tip at its upper end, the area of which is greater than the area of the inlet, the intermediate portion of said nozzle between the inlet and
10 the discharge tip being bulged outwardly to increase the internal area of said part from

inlet to outlet and prevent the frictional contact of passing steam with its walls, said body portion having oppositely disposed inlet openings near its base in line with the 15 contracted inlet.

In testimony whereof, I affix my signature in presence of two witnesses.

LAWRENCE C. MOONEY. [L. S.]

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
