

G. W. RICHARDSON.
Exhaust-Nozzles for Locomotives.

No. 136,619.

Patented March 11, 1873.

Fig. 1.

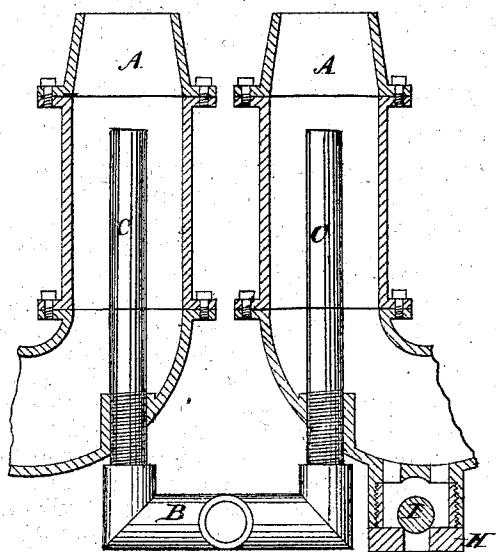


Fig. 3.

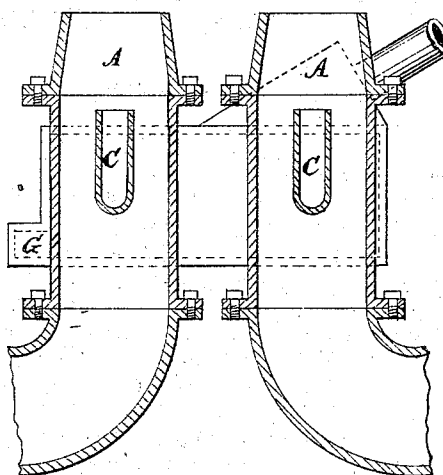


Fig. 7.

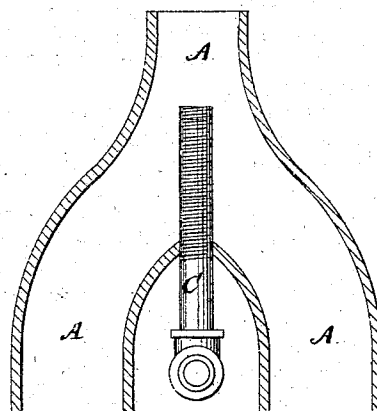


Fig. 2.

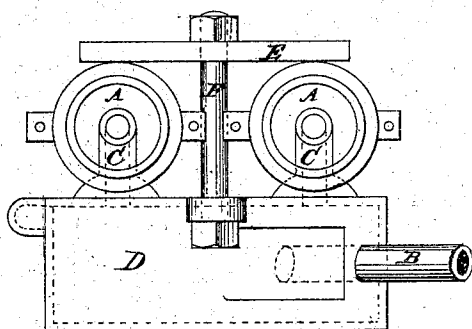


Fig. 6.

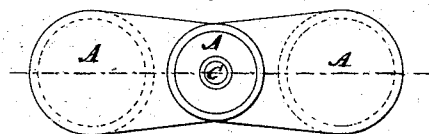


Fig. 5.

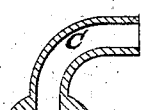
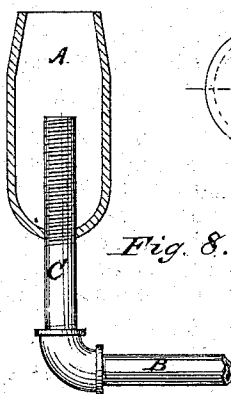


Fig. 8.



Witnesses:

Wm. H. Poor.

Fred. W. Richardson.

Inventor:

Geo. W. Richardson

UNITED STATES PATENT OFFICE.

GEORGE W. RICHARDSON, OF TROY, NEW YORK.

IMPROVEMENT IN EXHAUST-NOZZLES FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. 136,619, dated March 11, 1873.

To all whom it may concern:

Be it known that I, GEO. W. RICHARDSON, of the city of Troy, county of Rensselaer and State of New York, have invented certain Improvements in Locomotive-Engines, of which the following is a specification:

My invention consists in the introduction of a blower-pipe or blower-tip within the exhaust pipe or pipes of a locomotive-engine, through which steam or air shall pass into and out of the exhaust pipe or pipes to prevent the passage of sparks and cinders from the smoke-arch down through the exhaust-pipes into the steam-chests and cylinders, when running with the steam shut off or while reversing the engine, so as to protect the valves and their seats, and the cylinders and packing, from the great wear which is caused by the said sparks and cinders.

Figure 1 is a vertical section of a set of exhaust-pipes as commonly used in locomotive-engines, with blower pipes or tips introduced, embodying my invention. Fig. 2 is a plan of a set of exhaust-pipes having a distributing-box attached, together with blower-pipes, blower-tips, and drip-pipe. Fig. 3 is a vertical section of Fig. 2 through the dotted line *x x*, the distributing-box, blower-pipe, and drip-pipe being indicated in full and dotted lines. Fig. 4 is a plan of the end of the blower-tip in Fig. 2 and Fig. 3, which fits against the distributing-box. Fig. 5 is a vertical section of this same blower-tip. Fig. 6 is a plan of an exhaust-pipe as used when both cylinders exhaust through one pipe, with blower-tip attached. Fig. 7 is a vertical section of the same through the dotted line *y y*. Fig. 8 is a vertical section of the same through the dotted line *z z*.

A is the exhaust-pipe of a locomotive-engine, constructed and applied in the ordinary way. B is a blower-pipe, conducting steam from the boiler in the ordinary way. It would be well to take the steam from near the top of the dome, so as not to work water at any time, as the blower should be in operation slightly or enough to keep sparks out from the exhaust while the engine is switching or shifting cars, for it is frequently reversed at such times. C is the blower-tip, connected

with the blower-pipe B, and passing through the wall of and into the exhaust-pipe A. In Figs. 1, 7, and 8 it is screwed into the elbow of the blower-pipe B, and through the wall of the exhaust-pipe A at its bend. In Figs. 2 and 3 it is put through the wall of the exhaust-pipe at its side, the opening through the wall being reamed with a ball-reamer so that the joint is balled on the side next to the exhaust-pipe A, and flat on the side next to the distributing-box D, while the whole is held in place and the joints made tight by the fastening-plate E and bolts F. The blower-tip C should be central with the exhaust-pipe A, and should terminate below its mouth. The distributing-box D may be used, as in Figs. 2 and 3; or it may be dispensed with, as in Figs. 1, 7, and 8. When the distributing-box D is used the drip-pipe G should be attached to it to carry away the water of condensation.

The blower, constructed and applied as described, should be used as follows: Just before closing the throttle the engineer should always open the blower slightly, and keep it so opened until the engine stops, or until the throttle is again opened. At all times when the engine is switching or shifting cars the blower should be left open slightly, or enough to keep the sparks from passing through the exhaust into the steam chest or cylinder.

An automatic throttle may be used to open and close the blower.

To supply air to the exhaust-pipe while the blower is in operation, and thereby obviate any tendency to a vacuum in the exhaust-pipe, another pipe, H, furnished with a vacuum valve, I, may be attached to the exhaust-pipe A, and open into it below the blower-tip C, or at its lower portion.

What I claim as my invention is—

The tip or tips of a blower-pipe within the exhaust pipe or pipes of a locomotive-engine, substantially as and for the purpose hereinbefore set forth.

GEO. W. RICHARDSON.

Witnesses:

WM. H. POOR,
FRED. W. RICHARDSON.