

J.H. SETCHEL

Assignor to self and

J. DURAND.

Blast-Protector.

116873

PATENTED JUL 11 1871

Fig. 1.

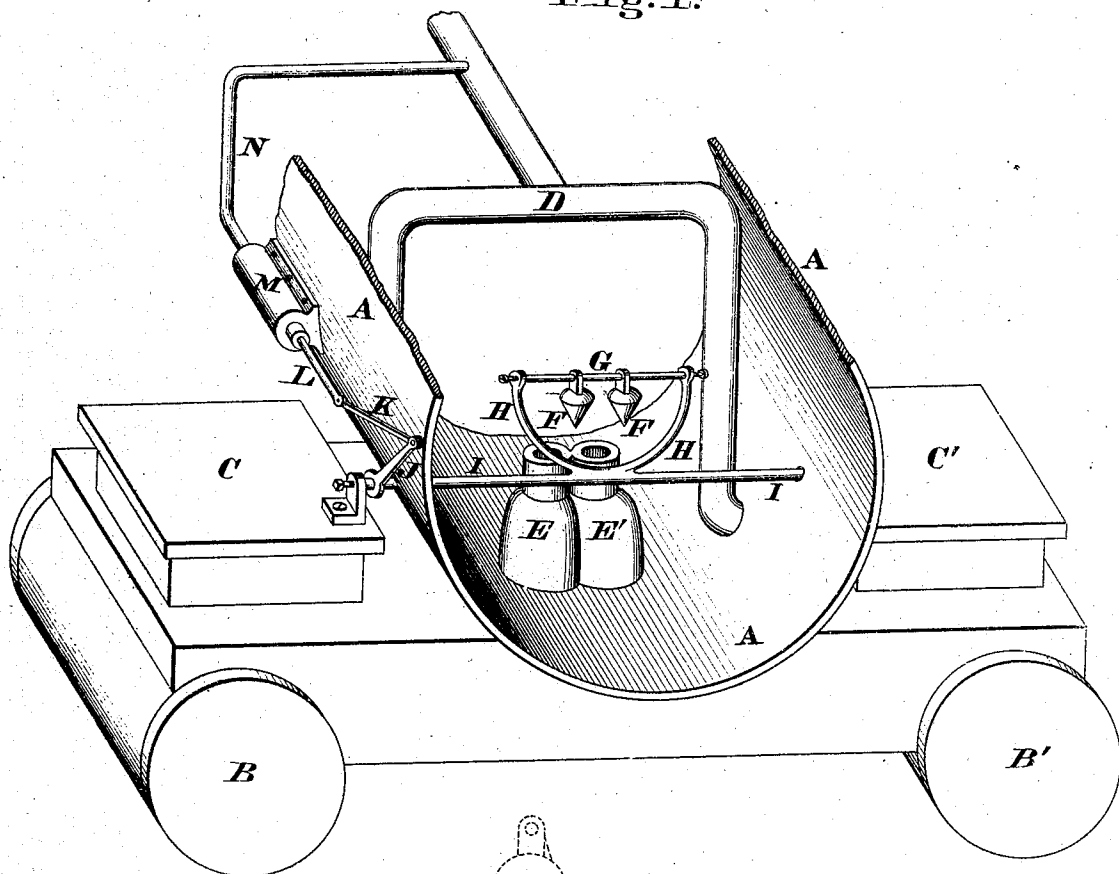
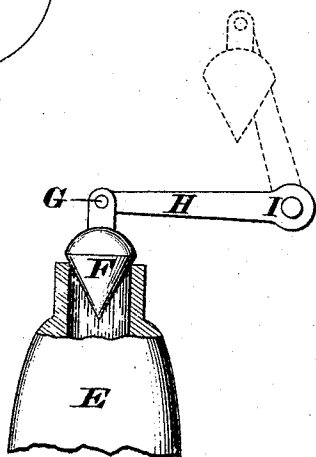


Fig. 2.



Attest.
J. H. Layman,
Notary Public.

J. H. Setchel

INVENTOR.

By Knight Bros.
Atty.

UNITED STATES PATENT OFFICE.

JOHN H. SETCHEL, OF CINCINNATI, ASSIGNOR TO HIMSELF AND JOHN DURAND,
OF XENIA, OHIO.

IMPROVEMENT IN BLAST-PROTECTORS FOR EXHAUST-NOZZLES.

Specification forming part of Letters Patent No. 116,873, dated July 11, 1871.

To all whom it may concern:

Be it known that I, JOHN H. SETCHEL, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Blast-Protector, of which the following is a specification:

This is an improvement in locomotives and other steam-engines which exhaust into their chimneys; and consists in a device for protecting the exhaust-nozzles of such engines against the entrance of cinders and ashes, which are now so injurious in their action on the wearing-surfaces of the valve and piston. This object I accomplish by means of valves or stoppers, which act automatically to close the nozzles on the closure of the throttle, and to freely open the nozzle the instant that the throttle is opened without depending upon or offering any resistance to the issuing force of the exhaust steam.

Figure 1 is a perspective view of my device in position, the blast-nozzle being open. Fig. 2 is a partially-sectionized elevation of a nozzle in its closed condition.

A represents part of an ordinary locomotive smoke-arch; B B', the steam-cylinders; C C', the valve-chests; D, a portion of steam-pipe; and E E', the exhaust-nozzles. In locomotive-engines as now constructed the particles of cinders which remain suspended in the smoke-arch after the closure of the throttle are liable, by the pumping action and condensation within the cylinder, to be drawn therein so as to seriously clog the action of the valve and piston and rapidly destroy their wearing-surfaces. To remedy this defect I provide the mouth of each blast-nozzle with a conical stopper, F, of brass or other suitable metal. Each stopper depends freely from a rod, G, which is pivoted in arms H that project from a rock-shaft, I, the latter being journaled horizontally athwart the arch in bearings exterior to the same. Extending from the rock-shaft I is another arm,

J, connected by pitman K and rod L with a small piston within a cylinder, M, whose rear end communicates by pipe F with the steam-pipe D.

At the instant of starting the engine a portion of the steam liberated by the throttle passes into the rear end of the small cylinder M, and, pressing outward the piston L, acts through the rod K, pitman J, and rock-shaft I H G to instantly elevate the stoppers F entirely clear of the blast-nozzles. On the closure of the throttle the stoppers F instantly close by simple gravitation, or by the action of a spring, their pointed conical form enabling them to easily find and reach their seats, and even to force away in so doing any cinders that may have accumulated about their nozzles. It will be seen that the stoppers F are lifted by the action of the live steam entirely clear of the blast-issue, to which they oppose no resistance, they not depending for their action thereon.

While describing the preferred form, I reserve the right to vary the same as circumstances may render desirable—for example, the small cylinder may take steam from the steam-chest and may operate by a pulling instead of a pushing action.

I claim herein as new and of my invention—

1. The provision at the blast-issues of a locomotive or other engine, of conical stoppers F, released from said issues by the action of the live steam, substantially as set forth.

2. In the described combination with the blast-issues, the arrangement of the conical stopper or stoppers F, rock-shaft I H G, rods J K, piston L, and cylinder M, which communicates with the live-steam pipe.

In testimony of which invention I hereunto set my hand.

Witnesses: JOHN H. SETCHEL.
GEO. H. KNIGHT,
JAMES H. LAYMAN.