J. L. Vauclain,

Spark Arrester,

No. 33,114. Patented Aug. 20, 1861.

Fig. 1.

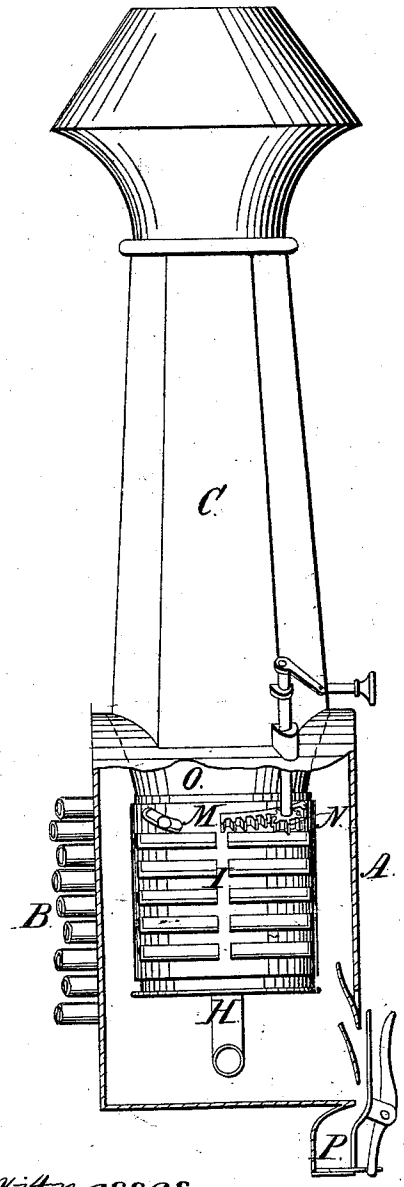
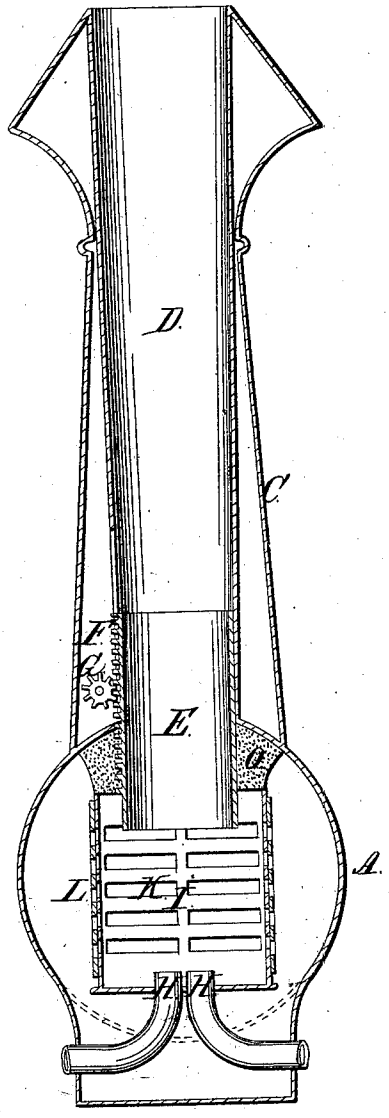


Fig. 2.



Witnesses.

Francis Millward

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Inventor.

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UNITED STATES PATENT OFFICE.

JAMES L. VAUCLAIN, OF LA FAYETTE, INDIANA.

LOCOMOTIVE SMOKE-STACK.

Specification of Letters Patent No. 33,114, dated August 20, 1861.

To all whom it may concern:

Be it known that I, JAMES L. VAUCLAIN, of La Fayette, Tippecanoe county, State of Indiana, have invented a new and useful Improvement in Locomotive Smoke-Stacks; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My invention relates to an arrangement of the draft and exhaust passages in a locomotive smoke stack, whereby the amount of draft is made subject to the control of the engineer without affecting the steam exhaust, which is left entirely free, so as to allow the steam its full efficiency at all times, and particularly to avoid the creation of back pressure in the cylinder by the act of increasing the draft; when the force of the engine is most in demand.

Figure 1 is a side elevation of a smoke stack and smoke jacket embodying my improvement, a portion of the inclosing plate being removed. Fig. 2 is a transverse section of the same.

A is the external shell of smoke box.

B are flues leading into the smoke box.

C is the external shell of stack, D exit flue, E adjustable throat to exit flue and constituting lower portion thereof. A rack F and pinion G under control of the engineer enable him to depress or elevate the throat E at will and thus by varying its proximity to the steam exhaust nozzles H, to modify the draft without any interference with the discharge of steam. Thus if the hood be lowered until its lower edge is but little above the nozzles, then the escaping steam will pass directly into escape flue and create a powerful draft. The object of such increase of draft is of course an increased efficiency of the engine, and where this is accomplished as in plans in use by contracting the exhaust orifice, this is partly counteracted; as such action tends to confine the escaping steam, and to create a pressure on the back of the piston which to the extent which it exists neutralizes just so much of the effective action of the live steam.

I is a perforated cylindrical box or screen through whose apertures the smoke must pass in reaching the throat E. These apertures may consist chiefly or wholly of latitudinal slots K which slots can be closed to any desired extent by means of a correspondingly perforated cylindrical register L operated by a rack M and pinion N under the control of the engineer. This arrangement of screen adjustable both as to size of individual apertures and of the entire area of smoke passage enables the engineer to graduate the screen so as to avoid the escape of sparks while it may also be employed as a very efficient damper when need be. An upper portion of the screen may consist of wire gauze O.

P is a trap for spent sparks.

I claim as new and of my invention herein—

1. The arrangement of a shifting throat E in combination with the exhaust steam and smoke passages substantially as and for the purposes set forth.

2. Providing the smoke passage of a locomotive with a screen I having apertures K closable by a register L under control of the engineer, as and for the purpose set forth.

In testimony of which invention, I hereunto set my hand.

JAMES L. VAUCLAIN.

Witnesses:

GEO. H. KNIGHT,

FRANCIS MILLWARD.