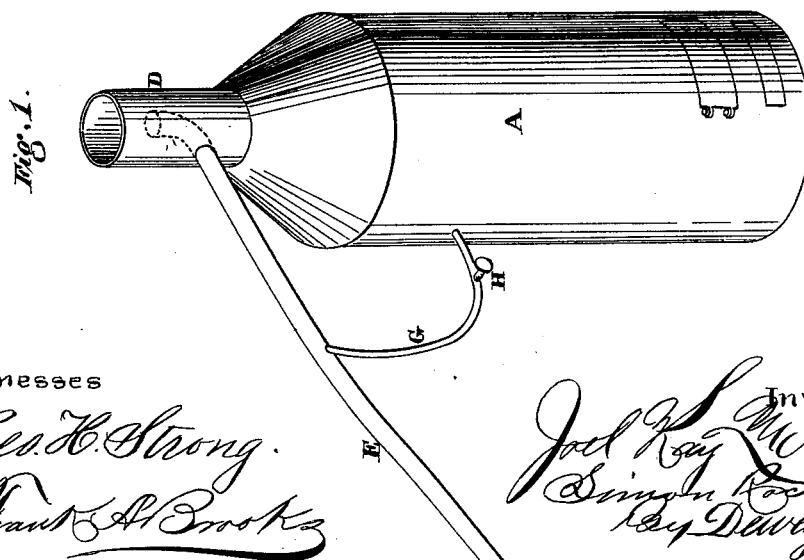
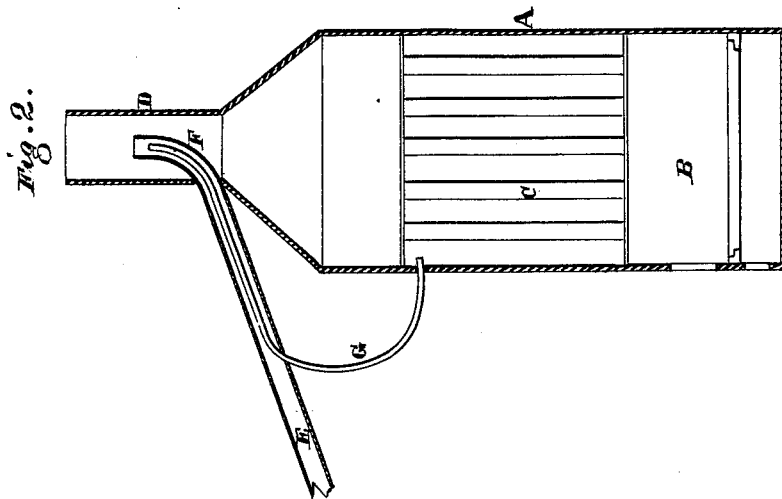


J. KAY & S. ROCKEFELLER.
Ventilating Apparatus for Mines.

No. 220,387.

Patented Oct. 7, 1879.



Witnesses

Geo. H. Strong.
Frank A. Brooks

Inventors

Joel Kay
Simon Rockefeller
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UNITED STATES PATENT OFFICE.

JOEL KAY AND SIMON ROCKEFELLER, OF BODIE, CALIFORNIA.

IMPROVEMENT IN VENTILATING APPARATUS FOR MINES.

Specification forming part of Letters Patent No. **220,387**, dated October 7, 1879; application filed March 3, 1879.

To all whom it may concern:

Be it known that we, JOEL KAY and SIMON ROCKEFELLER, of Bodie, county of Mono, and State of California, have invented a Ventilating Apparatus for Mines; and we hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to certain improvements in apparatus for ventilating mines, tunnels, and other excavations or chambers in which foul air, gases, or vapors are liable to accumulate; and it consists in the employment of a steam-boiler, into the chimney or stack of which a pipe or tube is led from the point which is to be ventilated. This pipe turns upward within the stack; and a steam-pipe is led from the boiler into the pipe, discharging toward or up the chimney or stack, so as to create a draft which will draw the air or gases through the tube, and discharge it to be carried out by the draft in the chimney or stack.

Referring to the accompanying drawings for a more complete explanation of our invention, Figure 1 is a view of our apparatus. Fig. 2 is a vertical sectional elevation.

A is the boiler of a steam-engine, having the fire-box B and heating-flues C, and D is the chimney or stack.

In the present case an upright boiler is shown; but it will be manifest that any form of steam-boiler might be employed.

E is a tube which leads from the drift or chamber to be ventilated, and opens into the

chimney, being turned up, as shown at F, so that it will discharge up the chimney.

A pipe, G, leads from the steam-space within the boiler into the tube E, and may extend to near its outlet. A cock, H, controls the flow of the steam through this pipe, and the draft may thus be increased or decreased.

When steam is allowed to flow through this pipe it produces a strong draft in the tube E, and all the foul air, gases, powder-smoke, or vapor which may be within the drift or chamber will be drawn out, and its place supplied with fresh air, which may be introduced by suitable pipes.

By this apparatus the ventilation may be more readily and thoroughly secured than by any device now in use.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

The improvement in ventilating apparatus for mines, consisting of the steam-generator A, with its furnace and stack D, and the steam-pipe G and cock H, in combination with the tube E, leading from the mine and turned up within the stack at F, substantially as and for the purposes herein described.

In witness whereof we have hereunto set our hands.

JOEL KAY.
SIMON ROCKEFELLER.

Witnesses:

FRANK OWEN,
JNO. L. BERRY.