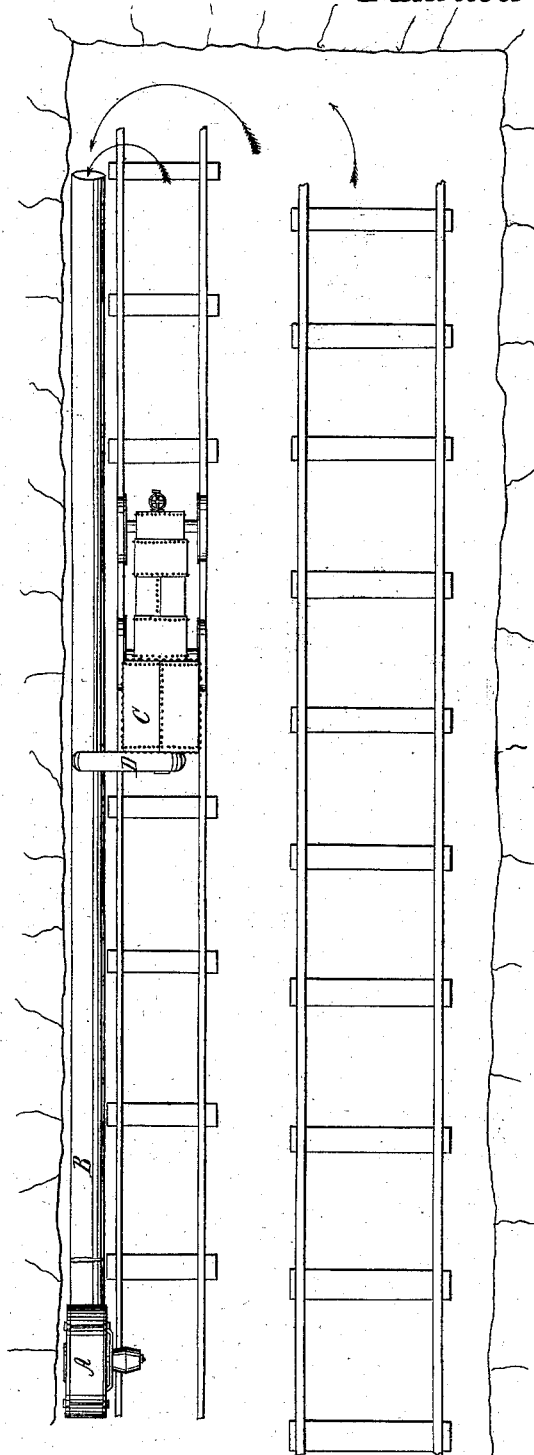


*H. Haupt,
Ventilating Mines,*

N^o 48,065.

Patented June 6, 1865.



*Witnesses;
A. H. H. H.
Jas L. Koonce*

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UNITED STATES PATENT OFFICE.

HERMAN HAUPT, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN VENTILATION OF MINES.

Specification forming part of Letters Patent No. **48,065**, dated June 6, 1865.

To all whom it may concern:

Be it known that I, HERMAN HAUPT, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Modes of Applying Steam-Power to Subterranean Operations; and I hereby declare that the following is a full, clear, and exact description of the same.

Heretofore it was deemed impracticable, if not impossible, to use steam-power in subterranean operations, on account of the products of combustion of the fuel used in keeping up steam in the generator and the exhaust-steam soon vitiating the atmosphere, so as to render it impossible for men to attend to the work.

The object of this invention, therefore, is to obviate the objections attending the use of steam machinery, and it has been accomplished by simple device consisting in the use of a pipe extending throughout the length of the gallery or tunnel, through which pipe air is drawn or forced by means of a fan or other means.

To enable others to make and use my invention, I shall now describe the manner in which the same is or may be carried into effect.

Referring to the drawing, which represents in horizontal section a gallery or tunnel having a double track for the drilling or mining machinery and steam-generator to advance upon with the progress of the work, A is a vacuum-fan, driven by steam or other power, placed outside or inside of a mine or tunnel, and connected with a pipe, B, through which the air is drawn. The pipe B, which extends up to the face of the work, or to any part of the gallery which it is necessary to ventilate, may be constructed of wood or metal. If of wood, it is put together with pieces like the staves of a barrel, the joints being coated with pitch or other cement or composition, to prevent leakage of air.

C is a boiler or steam-generator, which, instead of a smoke-stack or chimney, communicates with the vacuum-pipe, into which all the smoke, exhaust-steam, and vitiated air are drawn, and by means of which they are carried out and discharged outside the mine

or tunnel, at the same time creating a partial vacuum which establishes a current of fresh air flowing into the working. In the pipe D, which connects the steam-generator with the vacuum-pipe, dampers may be placed to regulate the intensity of the draft.

For the ventilation of side mines or galleries braced pipes connected with the main pipe are employed. The pipe need not be placed on the outside of the gallery or tunnel, but may be situated at any point intermediate between the generator and the outer end. The fan, however, would then be double acting—*i. e.*, be both a suction and forcing fan—the vitiated air being drawn to the fan, and is by it expelled or forced out at the end outside of the gallery.

In the drawing I have shown the pipe D connected with the exhaust-tube B at a point intermediate between the two ends. This, it will be seen, is not always convenient or practicable, because of the more or less perfect joint that it would be necessary to make between the said pipe and tube. The mode I recommend consists in placing the generator or the pipe D at the forward end of the tube B. No hermetic joint is necessary for the perfect operation of the apparatus. No further practical indications are deemed necessary, as every competent mechanic would know how to adjust the parts for operation in accordance with the principle of this my invention.

Having thus described my invention and the manner in which the same is or may be carried into effect, I claim—

The use, in mining, tunneling, and other subterranean operations, of steam-generators, in combination with a vacuum-pipe.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

HERMAN HAUPT.

Witnesses:

A. POLLOK,
EDM. F. BROWN.