

(No Model.)

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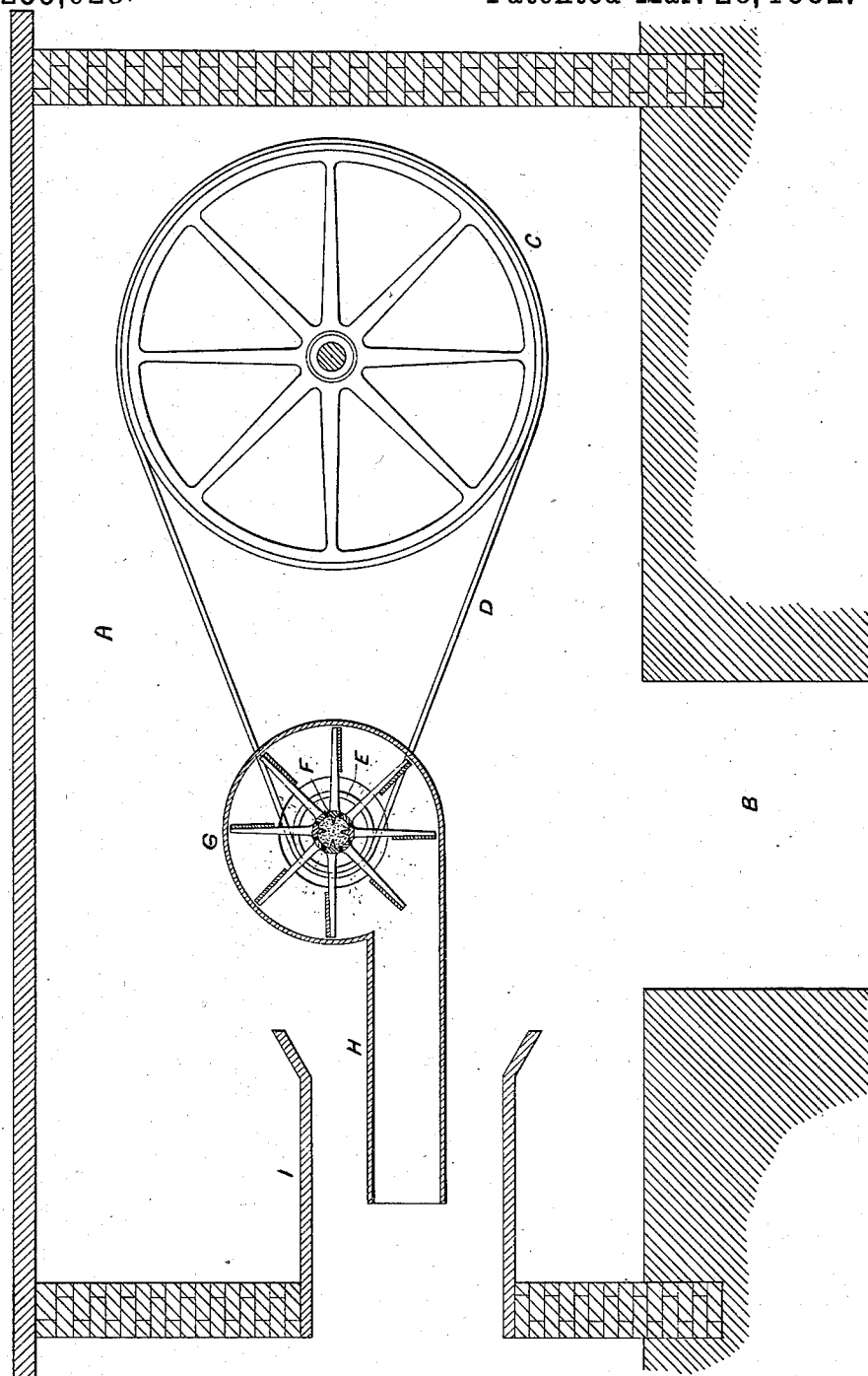
S. W. HUDSON.

VENTILATING APPARATUS.

No. 255,628.

Patented Mar. 28, 1882.

Fig. 1.



WITNESSES

Wm. A. Skinkle,
Chas. J. Danner

INVENTOR

Samuel W. Hudson.

By his Attorneys

Baldwin, Napkins, & Pyle

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

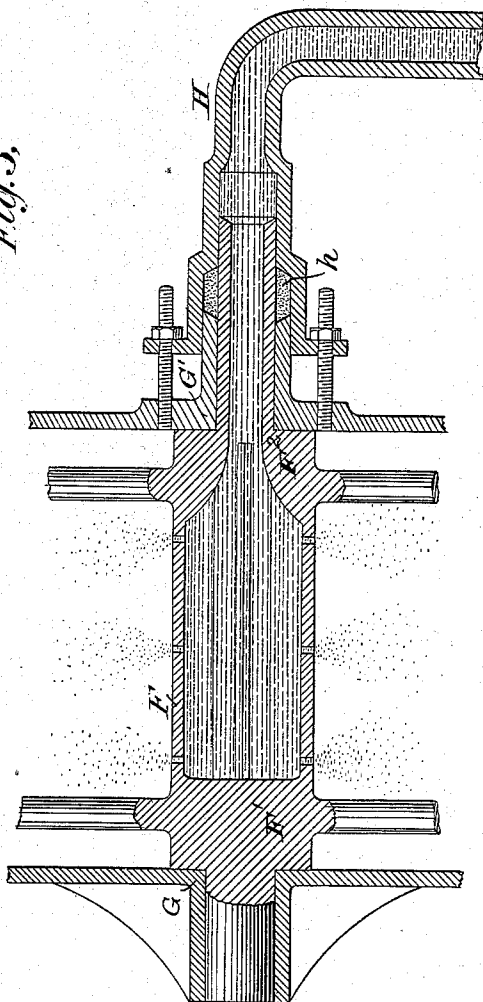
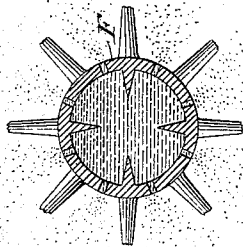


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL W. HUDSON, OF HUDSONDALE, PENNSYLVANIA.

VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 255,628, dated March 28, 1882.

Application filed December 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. HUDSON, of Hudsondale, in the county of Carbon and State of Pennsylvania, have invented an Improved Ventilating Apparatus, of which the following is a specification.

My invention is designed more especially for the ventilation of mines, but may of course be used for various similar purposes.

The invention, broadly stated, consists in creating a ventilating-draft in mines or other places by means of a blast apparatus placed in a closed room or chamber with which the shaft of the mine communicates, the blast-pipe of the apparatus leading out of the chamber and being so arranged that the blast will entrain or draw out with it the air in the chamber, thus creating a rarefaction or partial vacuum therein, which causes the air from the mine constantly to rise to counteract or correct it. By this means, thus generally stated, a constant ventilating-draft through the mine is insured and a complete ventilation accomplished.

In the accompanying drawings, which illustrate my invention, arranged in the form now best known to me, Figure 1 is a transverse section through my organization of apparatus. Fig. 2 is a detail view, showing the manner of introducing water into the blast apparatus; and Fig. 3 is a detail sectional view of the hollow fan-shaft and its bearings.

The room, chamber, or compartment A within which the blast apparatus is placed, communicates directly with the ventilating-shaft B of the mine or other place to be ventilated. Within this chamber a driving-pulley, C, is mounted in bearings and driven from without by any suitable power. A belt, D, extends from this driving-pulley to a smaller pulley, E, mounted on the shaft F of the blast apparatus, which shaft is mounted in suitable bearings within the chamber.

A blast-fan of any usual construction, except as hereinafter specified, on the shaft F, is provided with a suitable cover, G, and blast-pipe H. The blast-pipe H projects into a larger pipe, I, which extends from the exterior of the chamber back into it, as shown in the drawings.

From this organization of the apparatus it

will be perceived that when power is applied and the blast-fan operated the blast, rushing through the pipe H, will entrain or draw into the pipe I air from within the compartment, thus creating a partial vacuum or rarefaction therein. The air from the mine, constantly rising to correct this vacuum, creates a uniform draft through the mine and insures its thorough ventilation.

In order to render the apparatus more efficient I introduce a jet of water into the blast apparatus. The water is broken up and thoroughly mingled with the air discharged through the blast-pipe H. The specific gravity of the blast is by this means made greater and its velocity and momentum increased. It will therefore draw more air from the chamber into the pipe I, and consequently with the same power I am enabled to produce a greater vacuum than would otherwise be the case.

In Figs. 2 and 3 of the drawings I have shown the manner of introducing the jet of water. The shaft F is made hollow and is perforated within the cover of the blast-fan, so that the water is thrown out by centrifugal action. In order to expel the water with considerable force I may place within the shaft small fans, which extend from the sides of the pipe inwardly radially. One end, F', of the hollow fan-shaft is closed and turns in a suitable bearing, G. The other end, F², is hollow and turns in a bearing, G'. This end of the shaft is prolonged and extends into the water-supply pipe H, the joint between the shaft and pipe being packed at h. The water-supply pipe may enter into the closed chamber at any desired point, the joint being made tight.

The water may be supplied from an elevated tank, and the supply-pipe provided with a stop-cock, so that any quantity of water with any desired head may be introduced. However, the water-supply tank need not be elevated, as the centrifugal action in the shaft F will be sufficient to draw in the supply of water from a moderate distance.

I am aware that it is not new, broadly, to ventilate a mine by creating a partial vacuum in a chamber with which the mine communicates.

Having thus described my invention, what I

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claim, and desire to secure by Letters Patent, is—

1. The combination of the ventilating-shaft of a mine, the closed chamber placed over or in communication with the shaft, a blast apparatus situated within the chamber, its blast-pipe, and the pipe or opening into which it projects, the parts being arranged substantially as and for the purpose set forth.
2. The combination of the blast apparatus, its blast-pipe, a pipe, I, into which the blast-pipe projects, and a water-inlet within the blast apparatus, substantially as set forth.

3. The combination of the ventilating-shaft, the closed chamber, the blast apparatus, its blast-pipe, the pipe into which the blast-pipe projects, the hollow perforated shaft of the blast apparatus, and mechanism for driving the blast, substantially as set forth.

In testimony whereof I have hereunto subscribed my name this 25th day of November, A. D. 1881.

SAMUEL W. HUDSON.

Witnesses:

GEO. R. HERRICK,
E. O. DAVIDSON.