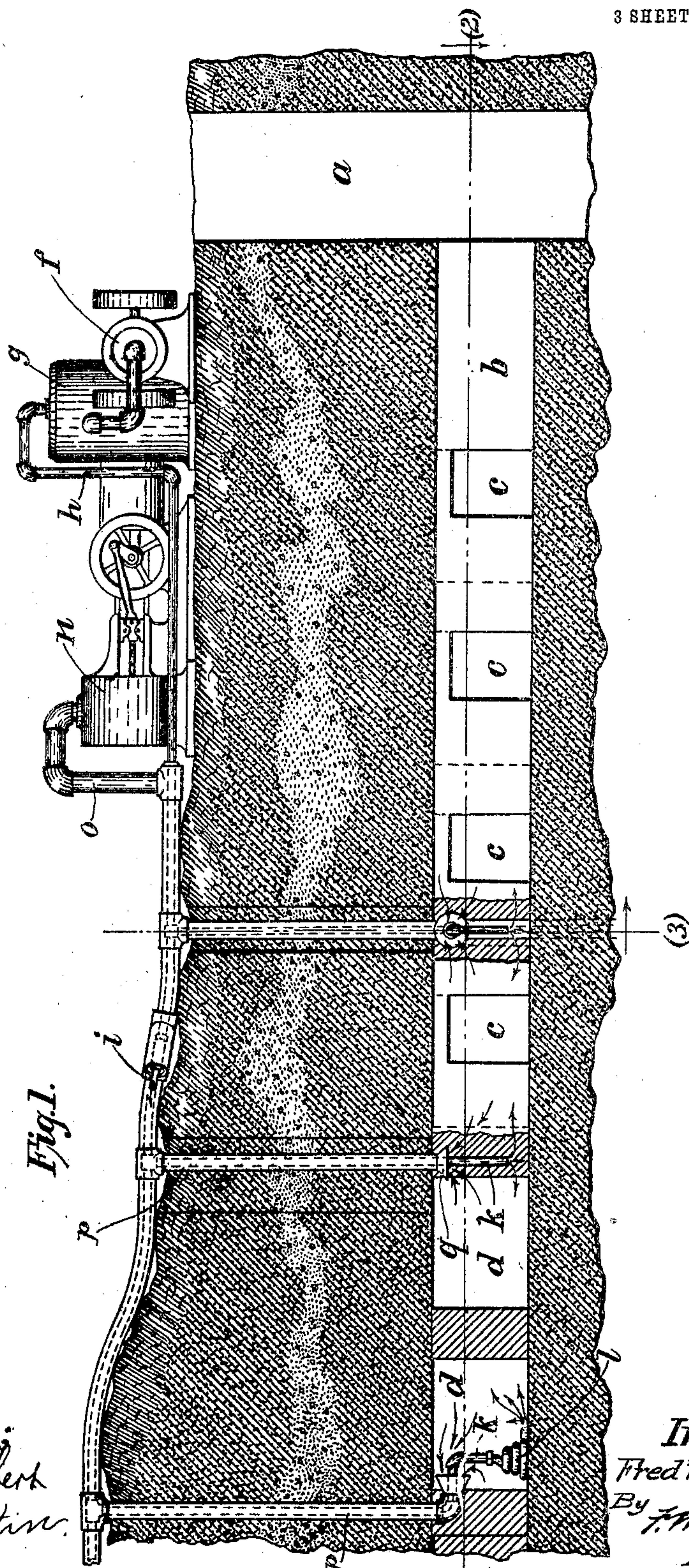


No. 794,384.

PATENTED JULY 11, 1905.

F. C. WEBER.
MINE VENTILATION.
APPLICATION FILED FEB. 26, 1904.

3 SHEETS—SHEET 1.



Witnesses:
Chas. H. Clark
A. Martin.

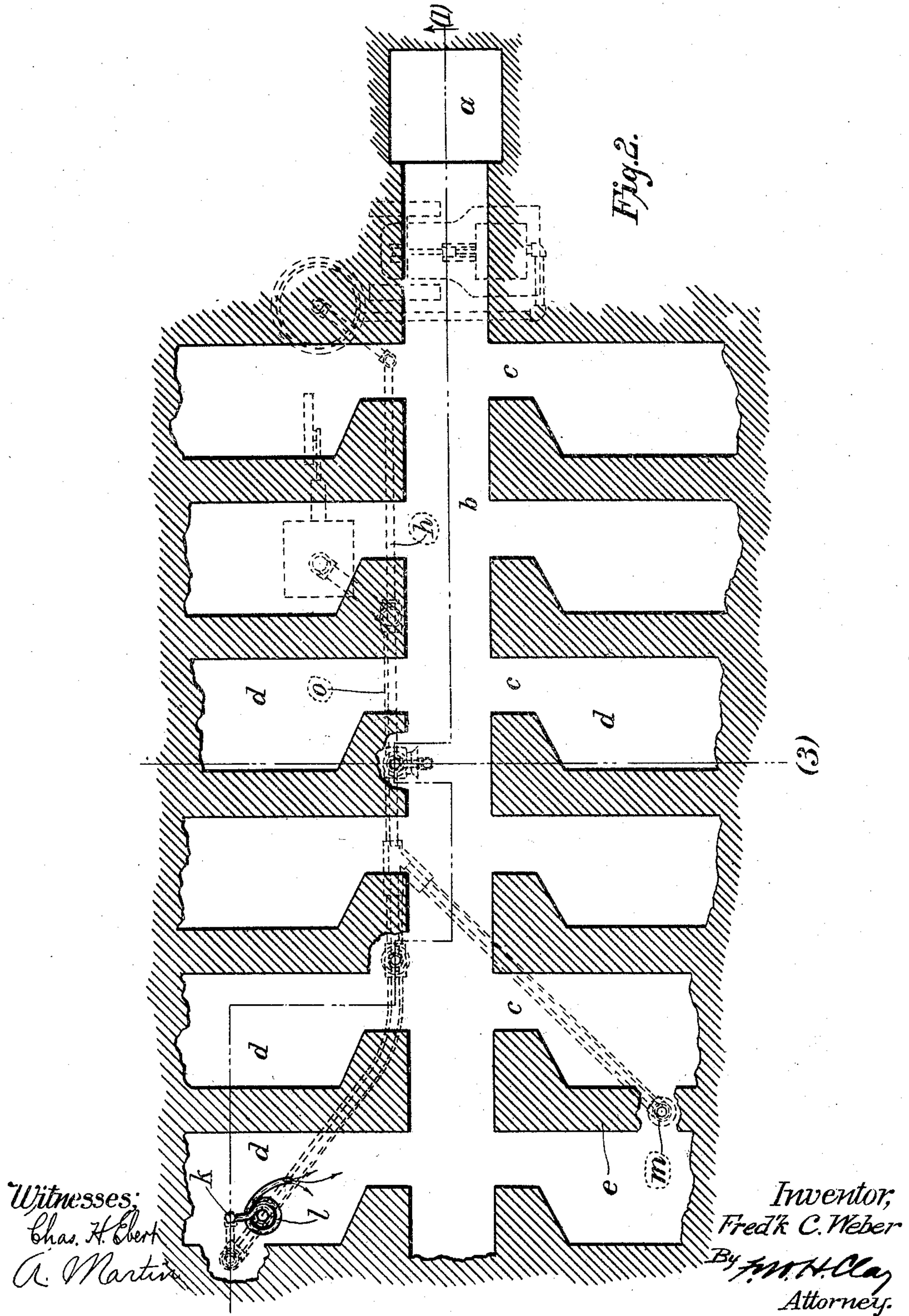
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Fred'k C. Weber
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3 SHEETS—SHEET 2.



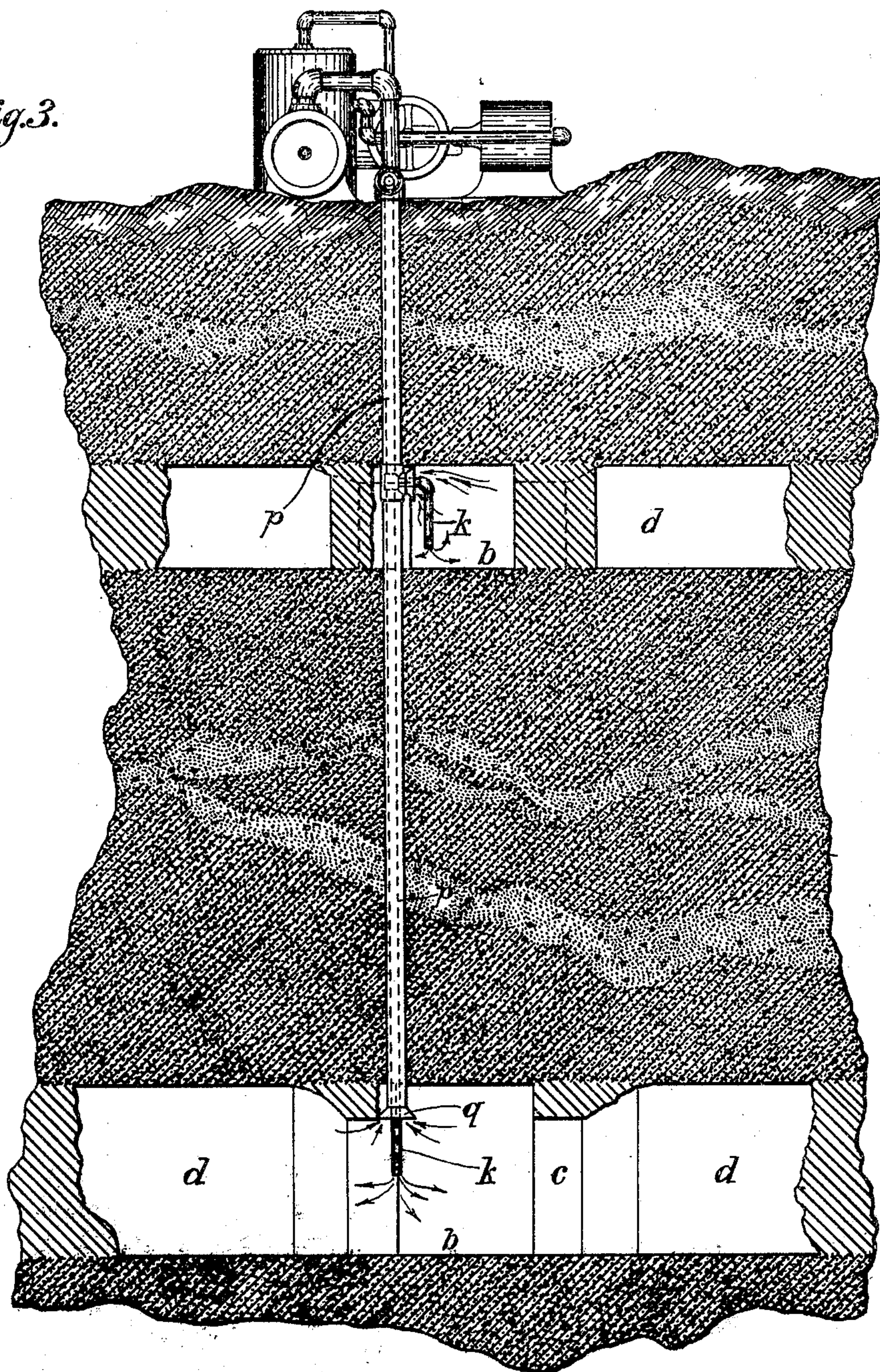
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK C. WEBER, OF PITTSBURG, PENNSYLVANIA.

MINE VENTILATION.

SPECIFICATION forming part of Letters Patent No. 794,384, dated July 11, 1905.

Application filed February 26, 1904. Serial No. 195,418.

To all whom it may concern:

Be it known that I, FREDERICK C. WEBER, a citizen of the United States, residing at Pittsburgh, in the State of Pennsylvania, have invented certain new and useful Improvements in Mine Ventilation, of which the following is a specification.

My invention relates to mine ventilation, and particularly to means for independently introducing and removing air from separate compartments, passages, or rooms of a mine, and to provide improved means for accomplishing this purpose.

The objects of the invention are to avoid the danger to miners involved in supplying all air through the single working shaft of the mine, to provide improved means for introducing air and removing gases independently from separate rooms in the mine, and particularly to provide means for avoiding some of the fatal effects of cave-ins or stoppage of the main shaft of the mine, and to generally increase the safety of mines. These objects, together with other advantages which will hereinafter appear, I attain by means of the construction illustrated in preferred form in the accompanying drawings, wherein—

Figure 1 is a broken vertical section taken along line 1 in Fig. 2 through the strata of the earth and coal and indicating a coal-mine with my apparatus supplied thereto. Fig. 2 is a horizontal section through the mine, taken on line 2 in Fig. 1; and Fig. 3 is a vertical section taken at right angles to the section in Fig. 1, being on the line 3 shown therein and indicating a coal-mine in which there are several levels of main entrances.

The main shaft *a* is illustrated as having main entries *c*, with passages or cross-entries *b* leading to the various rooms *d* of the coal-mine, these compartments being separated by cross-headings *e*. On the top of the ground near the shaft *a* I provide a compressor *f* and a supply-tank *g*, which is connected with a pipe *h* for supplying fresh air through the various branches *i* of the pipe leading to the several rooms hereinafter described. This pipe supplies air to outlets of various forms, such as the straight pipe *k* or the rubber hose

l, leading to any part of the mine desired or where the workman is placed, as indicated in Fig. 2; but it is particularly designed to introduce fresh air near the bottom of the several rooms and to dislodge gases in pockets. There is also supplied an exhaust-pump *n*, which connects with an exhaust-pipe *o*, which envelops the fresh-air pipe *i*, following the several inlet-pipes, as shown in Fig. 1, being laid with a main line on top of the ground and branches *p*, running through holes drilled for the purpose. This exhaust-pipe and its branches surround the fresh-air pipes *i*, and it will be seen that the foul-air outlets are situated near the tops of the various rooms or compartments in the mine. It will be seen that fresh air is thus continuously introduced near the bottom of the rooms and foul air drawn off through the top of the rooms through a pipe, and both pipes are contained in a single drilled opening in the ground.

The supply of fresh air and means of removal of the foul air and the gases are independent communications from the surface for each room or passage, so that in cases of cave-in or explosion or other accident which may stop the shaft or main entry the miner in his work-room may still have fresh air, while the foul gases may be drawn off from each space separately. It will be seen also that the main air-feed and exhaust are placed beyond danger of disturbance from accident in the mine, and the inlet of fresh air is located where it is hardly possible to shut it off by such accidents. The outlet for foul air and gases is always sufficiently near the point of inlet of the fresh air to make the circulation in each room or space independent. No accident in the shaft or main passage can entirely shut off the supply or the exhaust.

The holes drilled for the exhaust-pipes being the same as for the supply-pipes makes the apparatus inexpensive, especially since the great bulk of the piping is laid outside on the surface and does not require any trenches or stop-headings in the mine. The miner under all conditions has communication direct with the outside independent of the mine shaft or entries and in case of accident may

be indefinitely sustained with air and even fed through the drilled holes and the pipes *o*, and danger of being smothered by gases or stoppage by cave-ins is practically avoided.

5 It will be seen that wherever noxious gases are customarily collected in pockets they may be stirred up and removed, and in removing them they are not passed through other rooms or passages of the mine. While the primary

10 object of my invention is ventilation, it is to be observed that there are other uses of the apparatus. Thus in case of fires in the mine water may be introduced through these pipes, or such gases as will smother the fire, as used in

15 chemical fire apparatus, may be introduced. The fire may be first extinguished and the mine then cleared up and ventilated before any necessity of descending into it, and this may be done when the shaft is stopped up.

20 The air from the pipes *i* in ordinary course may be used for running drills in the separate rooms. A fan-blower may also be employed, as usual, when desired to assist in ventilating and cooling.

25 It will be understood that I do not limit the apparatus to any particular disposition of the pipes in reaching the separate rooms, and various obvious modifications will occur to those familiar with the art.

30 Having thus described my invention and illustrated its use, what I claim as new, and de-

sire to secure by Letters Patent, is the following:

1. The combination with a mine having a shaft, a main passage, and a series of rooms 35 communicating with the main passage, of a system of air-supply pipes and exhaust-pipes laid on top of the ground outside the mine and shaft, and having separate branches immediately tapping each of the rooms inde- 40 pendently of the shaft and main passage.

2. The combination with a mine having a shaft, a main passage, and separate rooms therein, of a supplementary ventilating device therefor, comprising an air-compressor and 45 an air-exhauster outside the mine, mains and feed-pipes leading from the same and lying outside the mine, branches from the said mains carried through the ground independently of the shaft and main passage and tapping each 50 of said rooms, and the branches of the supply-pipe from the compressor being enveloped by the branches of that to the exhauster, substantially as described.

In testimony whereof I have hereunder 55 signed my name in the presence of the two subscribing witnesses.

FREDERICK C. WEBER.

Witnesses:

F. W. H. CLAY,
CHAS. H. EBERT.