

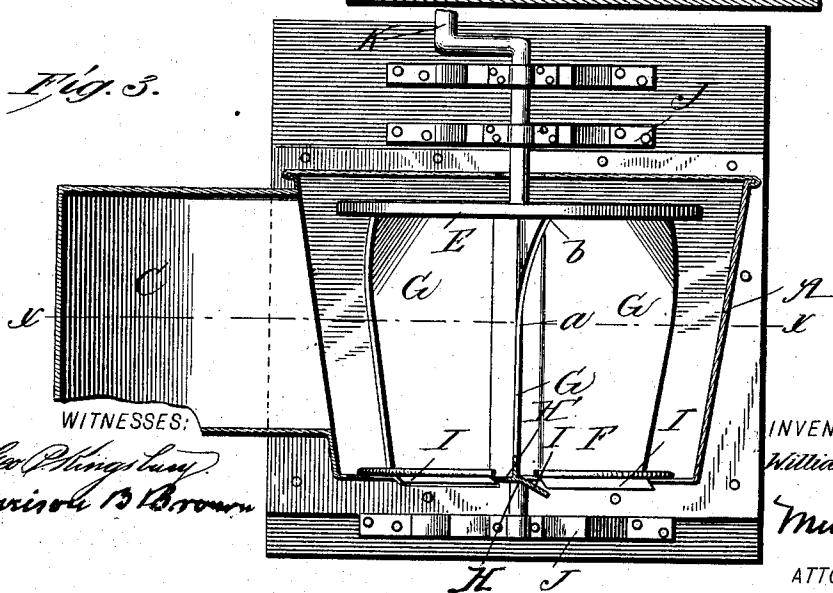
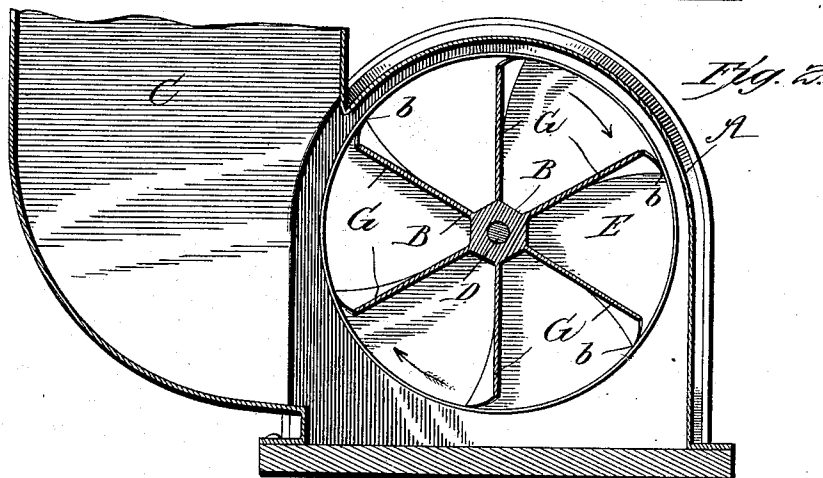
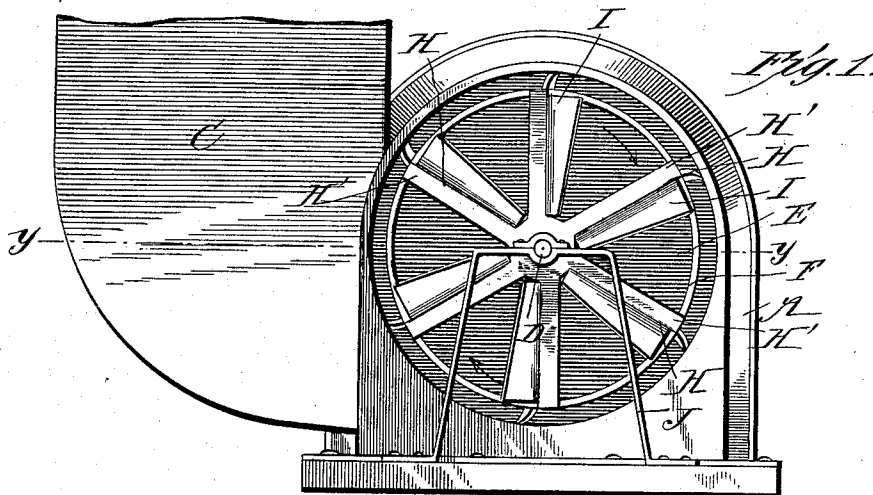
No. 717,339.

Patented Dec. 30, 1902.

W. BURROWS.
VENTILATING FAN.

(Application filed July 28, 1902.)

(No Model.)



WITNESSES:
Geo. H. H. H.
Harrison B. Brown

INVENTOR
William Burrows
BY
Munn & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM BURROWS, OF FIRECREEK, WEST VIRGINIA.

VENTILATING-FAN.

SPECIFICATION forming part of Letters Patent No. 717,339, dated December 30, 1902.

Application filed July 28, 1902. Serial No. 117,333. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BURROWS, of Firecreek, in the county of Fayette and State of West Virginia, have invented certain new and useful Improvements in Ventilating-Fans, of which the following is a specification.

The object of my invention is to provide an improved fan for ventilating mines; and the invention consists in a peculiarly-constructed fan of the rotary blower type, which I will now proceed to describe in detail, with reference to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view. Fig. 2 is a vertical longitudinal section on line X X of Fig. 3, and Fig. 3 is a horizontal section on line Y Y of Fig. 1.

My invention, broadly stated, involves peculiar air-forcing means contained in a special casing having connected with it a suitable exit-pipe.

The invention may be described in detail as follows:

A indicates the casing, B the fan-blower, and C the exit or delivery pipe. The blower B and the casing A are formed with increasing taper from end to end, as shown in Fig. 3. The fan or blower B is supported by a shaft D and has a closed end E and an open end F. The buckets G of the blower radiate from the shaft D and extend parallel therewith to a point *a* and then curve forward to *b*, at which latter point they join the closed end of the blower, as shown. The buckets G are supported at the open end of the blower by arms or spokes H, having outwardly-inclined blades I. It will be noticed that the said spokes H project, as at H', beyond the rear side of the buckets. The large end of the casing A is made air-tight, and the small end thereof has an opening conforming to the periphery of the reduced end of the blower B. In one side of the casing A an opening is made providing communication with the exit or delivery pipe C.

It is understood that the shaft D must have suitable supports, such as bearings J and that a crank K on the shaft D or other desired means must be provided for connecting the blower with some source of power.

It will be noticed that the opening in the side of my casing A, providing communication with the exit or delivery pipe C, extends substantially from front to rear of the casing. (See Fig. 3.) With the special opening just described obviously increased results are had over a reduced opening in the casing of a similar fan-blower, since by my construction the air is afforded free escape, and therefore less liable to be stored up to such degree as will preclude effective results.

While my blower is specially designed to be used in mines for drawing air from the drifts, obviously it is adapted for other uses. When used in a mine, the reduced or open end of the casing is located at the drift-opening and the exit-pipe extended to a point where the foul or impure air may be delivered. Now it is apparent that with the blower rotating in direction indicated by arrow air will be drawn from the drift with pressure according to rotation of the fan-blower through the open end of the casing and forced up the exit or delivery pipe. The action of the blower is assisted by the inclined blades I, which force air inwardly through the opening in the reduced end of the casing. The increasing inner space in the casing from its inlet permits expansion of the air, and consequently a more rapid discharge through the exit-pipe, and increased exhaust-pressure of air results in curving the buckets forward from *a* to *b*. Obviously a second blower may be employed at the outlet end of the exhaust-pipe, if desired; but under ordinary circumstances one blower of proper size will provide thorough ventilation.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a rotary blower, of a tapering casing having an enlarged closed end and an opening in its reduced end, an opening in one side of the casing extending substantially from front to rear thereof, a delivery-pipe conforming to the said opening in the casing, and a blower within the casing adapted to be rotated with effect to draw air into the casing and force it through the delivery-pipe, substantially as described.

2. In a blower of the character described and in combination, a tapering air-forcing

fan having a closed end and an open end, radial buckets curved forward at the closed end of the fan and substantially parallel therefrom to its open end, spokes at the open end of the fan having outwardly-inclined blades as shown, a tapering casing inclosing the fan having one end closed and the other end open, and a delivery-pipe providing open communication with one side of the casing, substantially as described.

3. In an air-exhausting apparatus of the character described, in combination, a tapering fan having a closed end and an open end, buckets curved forward at the closed end of the fan and parallel from said curved end to the open end of the fan, spokes supporting the

said buckets at the open end of the fan, projections from each spoke with one thereof extending beyond the rear side of each bucket, and the other extending in advance of each bucket and also inclined outwardly forming a blade adapted to gather air and force it inwardly, a tapering casing inclosing the fan having its larger end closed and an opening in its reduced end conforming to the size of the contiguous end of the fan, and an exhaust-pipe leading from the tapering side wall of the casing, substantially as described.

WILLIAM BURROWS.

Witnesses:

HORACE D. GAST,
JOS. C. HAMILTON.