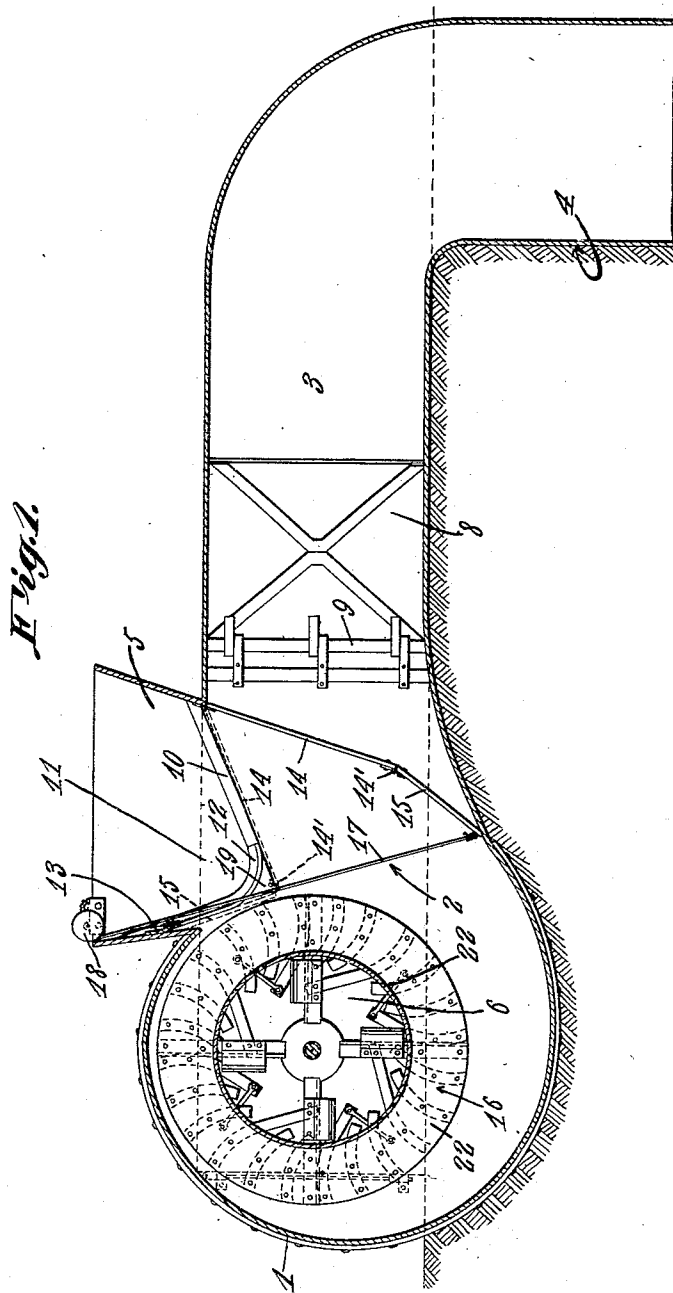


D. F. LEPLEY,
VENTILATING APPARATUS FOR MINES.
APPLICATION FILED SEPT. 19, 1917.

1,297,191.

Patented Mar. 11, 1919.

2 SHEETS—SHEET 1.



Witnesses

J. P. Smith
H. A. Mitchell

D. F. Lepley, Inventor

by

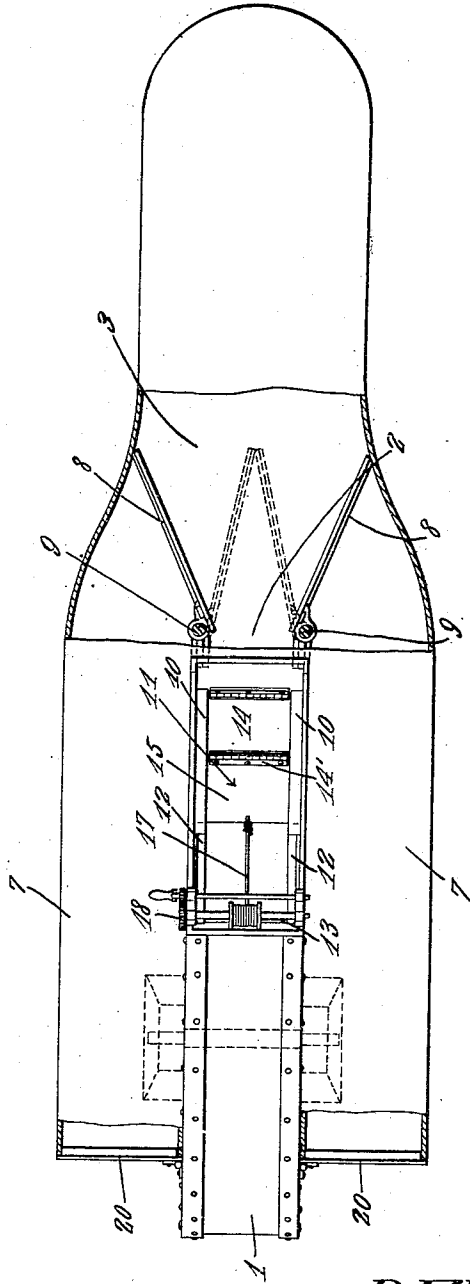
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Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

DANIEL F. LEPLEY, OF CONNELLSVILLE, PENNSYLVANIA.

VENTILATING APPARATUS FOR MINES.

1,297,191.

Specification of Letters Patent.

Patented Mar. 11, 1919.

Application filed September 19, 1917. Serial No. 192,164.

To all whom it may concern:

Be it known that I, DANIEL F. LEPLEY, a citizen of the United States, residing at Connellsville, in the county of Fayette and State of Pennsylvania, have invented a new and useful Ventilating Apparatus for Mines, of which the following is a specification.

This invention relates to ventilators particularly designed for use in ventilating mines, it being more especially an improvement upon the structure shown in Patent No. 720264 issued to me on February 10, 1903.

Heretofore it has been the practice to dig an extensive excavation for the accommodation of an air chamber located beneath the wind boxes placed on the surface of the ground, such an arrangement being shown in my patent before mentioned. One of the objects of the present invention is to do away with this excavation and arrange all parts of the ventilating mechanism above the surface of the ground, thereby materially reducing the cost of installation.

Another object of the invention is to provide an exhaust stack having a novel arrangement of reversing doors whereby the delivery of air will be practically the same whether the fan is being used for forcing air into a mine or for exhausting it therefrom.

A still further object is to provide improved means for deflecting the course of the air leaving the fan casing the deflecting door employed for this purpose having means whereby it can be placed in either of two positions quickly and without necessitating stopping the operation of the fan and without requiring men to enter the air chamber to properly position parts.

A further object is to provide guides for the deflecting door which will form an airtight connection between the door and the walls of the structure.

With the foregoing and other objects in view which will appear as the description proceeds the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention is shown.

In said drawings:—

Figure 1 is a vertical longitudinal section through ventilating apparatus embodying the present improvements, the parts being shown, in full lines, arranged to create a suction from the main shaft and, in dotted lines to directly blast the air into the shaft.

Fig. 2 is a plan view of the structure shown in Fig. 1, certain parts being broken away and the gates being shown by full lines, in position to establish communication between the main shaft and the peripheral outlet of the fan casing, and by dotted lines, to establish communication between the main shaft and the air intakes of the fan casing.

Referring to the figures by characters of reference, 1 designates a fan casing or housing the outlet 2 of which opens into an air conduit 3 mounted on the foundation of the apparatus and which conduit is of greater width than said outlet of the fan casing and opens downwardly into the shaft 4 of the mine to be ventilated. The top of the outlet portion of the fan casing opens into the base 5 of a stack which can extend upwardly any distance desired.

The fan casing is provided at each side with an air inlet opening 6 and arranged at each side of the fan casing and in communication with these inlet openings are air boxes 7 the forward ends of which converge toward each other and open into the conduit 3. Gates 8 are mounted to swing about vertical axes 9 located at the ends of the side walls of the fan casing or, in other words, at opposite sides of the outlet 2 of said casing. These gates can be swung by any suitable means provided for that purpose and are adapted either to close communication between the conduit 3 and the air boxes 7, as shown by full lines in Fig. 2; or to come together at their free edges, as shown by dotted lines in Fig. 2, and thus close communication between the outlet 2 of the fan casing and the conduit 3 and open communication between said conduit and the air boxes.

No particular means has been shown for actuating the gates, but it is to be understood that any preferred means can be used. Secured to the side walls of the fan casing close to the point of connection between said casing and the base 5 of the stack are sealing cleats 10 which can be made of wood and which are inclined downwardly and back-

wardly from the front end of the top outlet opening of the fan casing. These inclined cleats 10 extend to the curved lower ends of cleats 12, which can be formed of metal, and which are inclined upwardly and rearwardly and come against the back wall of the base 5 of the stack. A metal strip 13 is arranged transversely upon said wall of the base of the stack and extends throughout the width thereof, said strip being inclined downwardly away from the wall at a slight angle and constituting a sealing strip hereinafter pointed out.

Hingedly connected to the front wall of the top opening 11 is one member 14 of a sectional door, and hingedly connected as at 14¹ to this section 14 is the end section 15 of the door. These sections are so proportioned that when the door is in its normal or lowermost position the section 14 will extend downwardly partly across the outlet 2 of the fan casing so as to constitute practically a continuation of the front wall of the base 5 of the stack. At the same time the other section 15 of the door will bear against the bottom of the fan casing at an angle to the section 14. Thus communication between the interior of the fan casing and the outlet 2 is cut off and air projected by the fan 16 in casing 1 will be deflected upwardly along curved lines to the base of the stack. A cable 17 or the like is connected to the free end of the section 15 of the door and extends upwardly to an operating element 18 which is in the form of a windlass or the like. Thus by taking up the cable or other flexible connection 17 the section 15 will first swing upwardly relative to the section 14 and without coming against the rotating fan until said section 15 comes substantially into line with the flexible member 17. A further pull upon the member 17 will result in the member 14 being drawn tightly against the cleats 10 while the member 15 will be drawn upwardly against and be deflected by the curved lower portions of the cleats 12 until positioned under the strip 13 and will then become wedged between the strip 13 and the adjacent wall of the base 5 of the stack. Thereafter filling blocks 19 may be placed between the curved portions of the cleats 12 and the angle formed by the members 14 and 15 of the door so as thus to seal the door and prevent leakage of air from the fan casing into the stack. With the door thus held in raised position the air, instead of being blown upwardly into the stack as before described, will be directed through the outlet 2 into the conduit 3.

With the foregoing construction and arrangement of door the area of both outlets can be made practically the same and air will flow as freely into the stack as into the conduit. Furthermore, it is possible to adjust the door without necessitating stopping the

rotation of the fan. Nor is it necessary for men to enter the conduit to adjust and secure the door.

Obviously by shifting the gates 8 laterally against the outer sides of the conduit so as to cut off communication between said conduit and the air boxes 7 and by then raising the door 14—15 so as to cut off communication with the stack, air will be directed by the fan 16 from the boxes 7 and the intakes 6 to the conduit 3 and thence downwardly into the mine shaft. Air can be supplied to the boxes 7 by opening doors 20 which are located at the rear ends of the boxes. Should it be desired to ventilate the mine by sucking the air from the shaft, the gates 8 should be adjusted so as to come together to form a V and thus close communication between the conduit and the outlet 2. The door 14—15 can then be lowered to the position indicated by full lines in Fig. 1, and when the doors 20 are closed the rotating fan will suck air through the openings 6 from the air boxes 7 and the conduit 3 and force the air outwardly and upwardly into the stack.

Ventilating mechanism such as described is particularly advantageous because it is practically entirely above ground, can be quickly installed without the loss of time and the expenditure incident to the formation of an excavation such as heretofore required. Furthermore, the parts can be readily adjusted without stopping the operation of the fan and to meet any varying conditions which would necessitate a change in the method of ventilation.

What is claimed is:—

1. In a ventilating apparatus the combination with a fan casing having an end outlet and a top outlet, of downwardly converging cleats upon the side walls of the top outlet, a sectional door hingedly connected to the top of the end outlet, means for elevating the door to position its sections against the respective cleats to close the top outlet, and a sealing strip extending along one wall of the outlet and cooperating with said wall to form a pocket for the reception of the free end portion of the door when raised to closed position.

2. A ventilating apparatus including a fan casing having a top outlet and an end outlet, a door hingedly connected to the top of the end outlet and including hingedly connected sections, said door normally bearing against the bottom of the casing to close the end outlet and direct air from the casing to the top outlet, cleats converging downwardly upon the side walls of the top outlet, a sealing strip extending transversely of one wall of the top outlet, and means for swinging the sectional door upwardly to open the end outlet and to position the sections of the door against the respective cleats to seal the top outlet, the free end of

the door being insertible between the sealing strip and the wall to which it is connected.

5 3. A ventilating apparatus including a fan housing having a top outlet and an end outlet, a door hingedly connected to the top of the end outlet and including hingedly connected sections, the free end of the door normally bearing against the bottom of the casing to close the end outlet and direct
10 air from the casing to the top outlet, front and back cleats converging downwardly upon the side walls of the top outlet, the back cleats having their lower portions
15 curved to constitute deflecting means, a sealing strip extending transversely of one wall of the top outlet, and means for swinging the sectional door upwardly to open the end outlet and to elevate the free end of the
20 door against and along the deflecting portions of the cleats, said door sections being movable against the respective cleats to seal the top outlet, the free end of the door being
25 deflected into engagement with the sealing strip.

4. The combination with a fan casing having an end outlet and a top outlet, of front and back cleats upon the sides of the top outlet and converging downwardly, a curved deflector between the cleats at each side of the outlet, a sectional door adapted to close the end outlet, means for shifting the door to open the end outlet, said door, during such movement being partly folded, being drawn at its free end against the deflectors, and brought to position against the front and back cleats, a sealing strip upon one of the walls of the top outlet forming a pocket for the reception of the free end of the door when raised against the cleats, and
35 sealing blocks insertible between the deflectors and the angle portion of the raised door.
40

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.
45

DANIEL F. LEPLEY.

Witnesses:

IVY E. SIMPSON,
P. A. ROCKELLI.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."