Sept. 30, 1930. E. T. LEDNUM 1,777,277

MOISTENING APPARATUS FOR MINE VENTILATION

Filed May 31, 1927

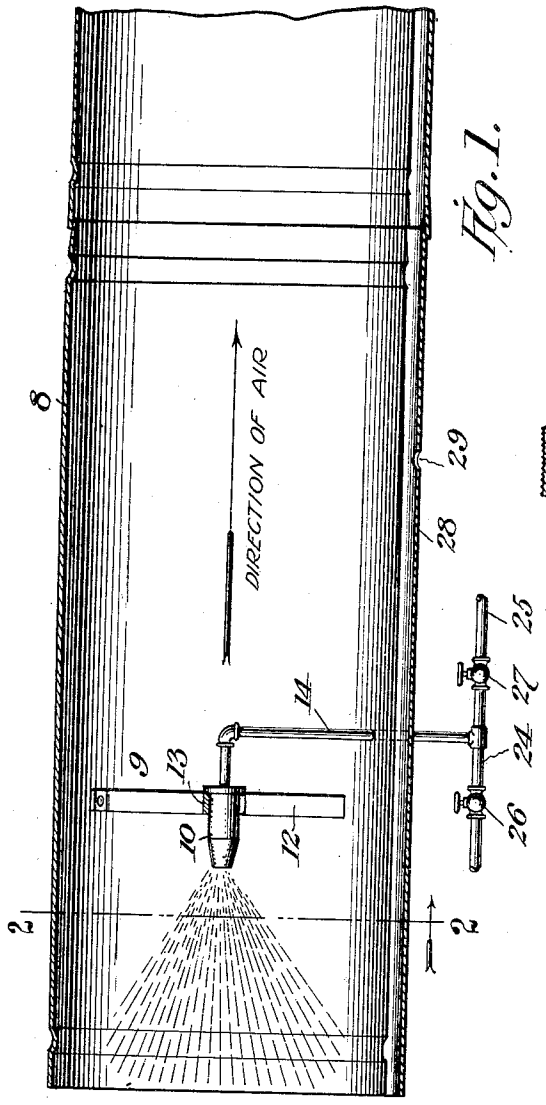


Fig. 1.

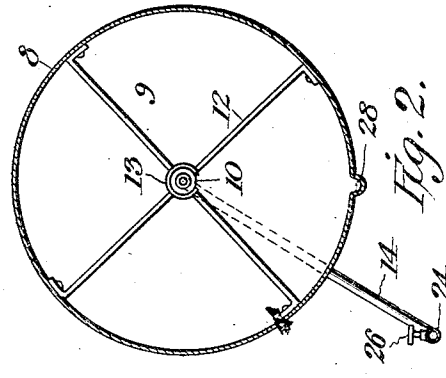


Fig. 2.

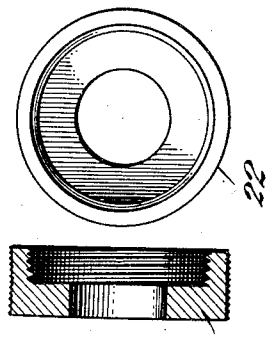


Fig. 7.

Fig. 6.

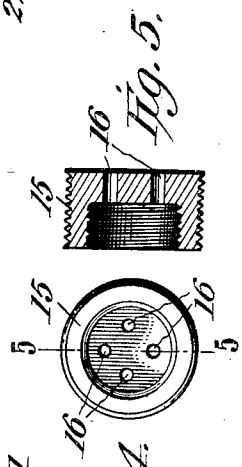


Fig. 5.

Fig. 4.

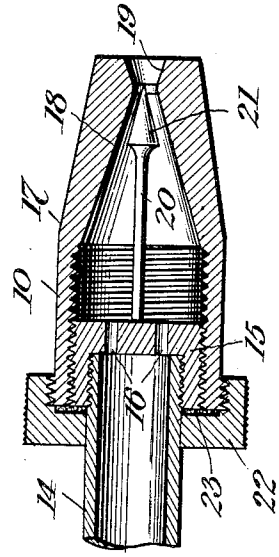


Fig. 3.

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UNITED STATES PATENT OFFICE

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MOISTENING APPARATUS FOR MINE VENTILATION

Application filed May 31, 1927. Serial No. 195,505.

The present invention relates more particularly to ventilation equipment for mining, tunnel work and the like, and the object is to provide means of a novel character by which the air supplied in underground workings will be moistened, thus moistening the fine dust particles ordinarily present and causing them to settle from the air, while at the same time lowering the temperature and contributing generally to the protection of the safety, health and welfare of the miners and other workmen.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view through a portion of a ventilator, showing the novel structure,

Figure 2 is a cross sectional view on the line 2—2 of Figure 1,

Figure 3 is a longitudinal sectional view of the spray nozzle,

Figure 4 is a front elevation of the head of such nozzle,

Figure 5 is a sectional view on the line 5—5 of Figure 4,

Figure 6 is a sectional view through the cap of said nozzle and

Figure 7 is a view in elevation of the same.

A section of a mine ventilating conduit is shown in Figures 1 and 2, it being understood that this is part of the equipment for directing air into the workings or underground chambers of a mine or the like. The section, which is designated 8, is preferably a sheet metal tube which is coupled in a line leading from the fan to the point of delivery. This section 8 has located within it a suitable support 9 for a spray nozzle 10. The support 9 preferably consists of a spider 12 supporting a centrally disposed split collar 13. In this collar is detachably fitted the nozzle 10 that is clamped in position by the yielding action of the collar.

A supply pipe 14, extending through one side of the conduit section 8, is connected to the nozzle 10. The nozzle consists of a head 15 threaded on the end of the pipe, and provided with a plurality of orifices 16 in communication with the bore of the pipe. Adjustably threaded on the head 15, is a nozzle hood 17 having an outwardly tapered bore 18, from which extends an outwardly flared discharge orifice 19. A stem 20, fixed to the head 15, is provided with a conical valve element 21 that is located in the outer end of the tapered bore 18 and is adapted to project into the orifice 19 when the hood is screwed rearwardly upon the head 15. A cap 22 is screwed upon the rear end of the hood 17 and surrounds the pipe 14. Interposed between this cap and the head 15 and nozzle hood 17 may be packing as indicated at 23. The pipe 14 is supplied with both air and water, supply pipes 24 and 25 leading from any suitable sources of supply (not shown) being connected to said pipe 14. These pipes 24 and 25 are also provided with controlling valves 26 and 27. The lower side of the conduit section 8 is preferably provided with a gutter 28 having a drain opening 29.

In using this device, the nozzle preferably is faced against the direction of the air current. Air and water in the desired proportions are admitted to the pipe 14, and flowing therefrom through the openings 16 will be sprayed from the hose nozzle as indicated in Figure 1. The character of this spray can be readily determined by varying the position of the hood with respect to the valve element 21. In fact said element may be used to entirely close the discharge orifice of the nozzle if desired. With this construction the ventilating air delivered to a mine is moistened, thus causing it to moisten the dust particles, so that they will gravitate. At the same time the air is cooled and the result of the moistening means is to add to the comfort and welfare of the workmen.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim, is:

1. In a mine ventilating means, the combination with a tube section having open ends for coupling into a line leading from a fan to the point of delivery, of a split collar within the tube and between its ends, substantially radial spider arms connected to different parts of the collar on opposite sides of the split and to different sides of the tube section within the ends thereof, a nozzle fitted into and clamped by said collar, and a supply conduit extending through the side wall of the tube between its ends and connected to the nozzle.

2. In a mine ventilating means, the combination with a substantially cylindrical short metal tube having means at its ends for coupling into a line leading from a fan to the point of delivery, said tube having a longitudinal outset rib on its lower side forming an internal longitudinal gutter and an opening through said rib providing a drain outlet, a support located within the tube and between its end, a nozzle mounted on the support, and means extending through the side wall for supplying water to the nozzle.

In testimony whereof, I affix my signature.

EDMUND T. LEDNUM.