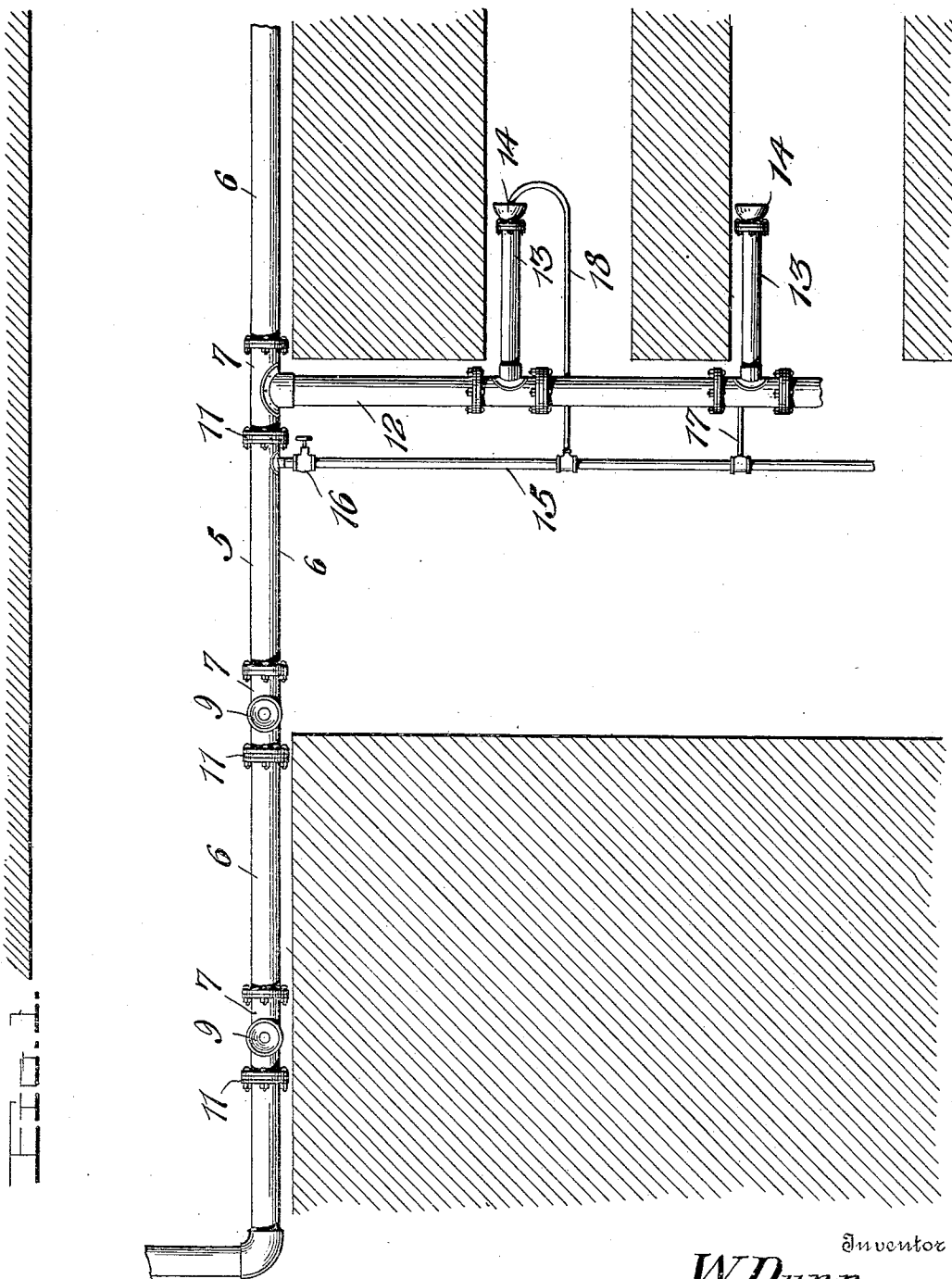


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APPLICATION FILED MAR. 14, 1910.

Patented June 28, 1910.

2 SHEETS—SHEET 1.



Witnesses

Chas. L. Griesbauer.
E. M. Ricketts.

Inventor

W. Dunn,

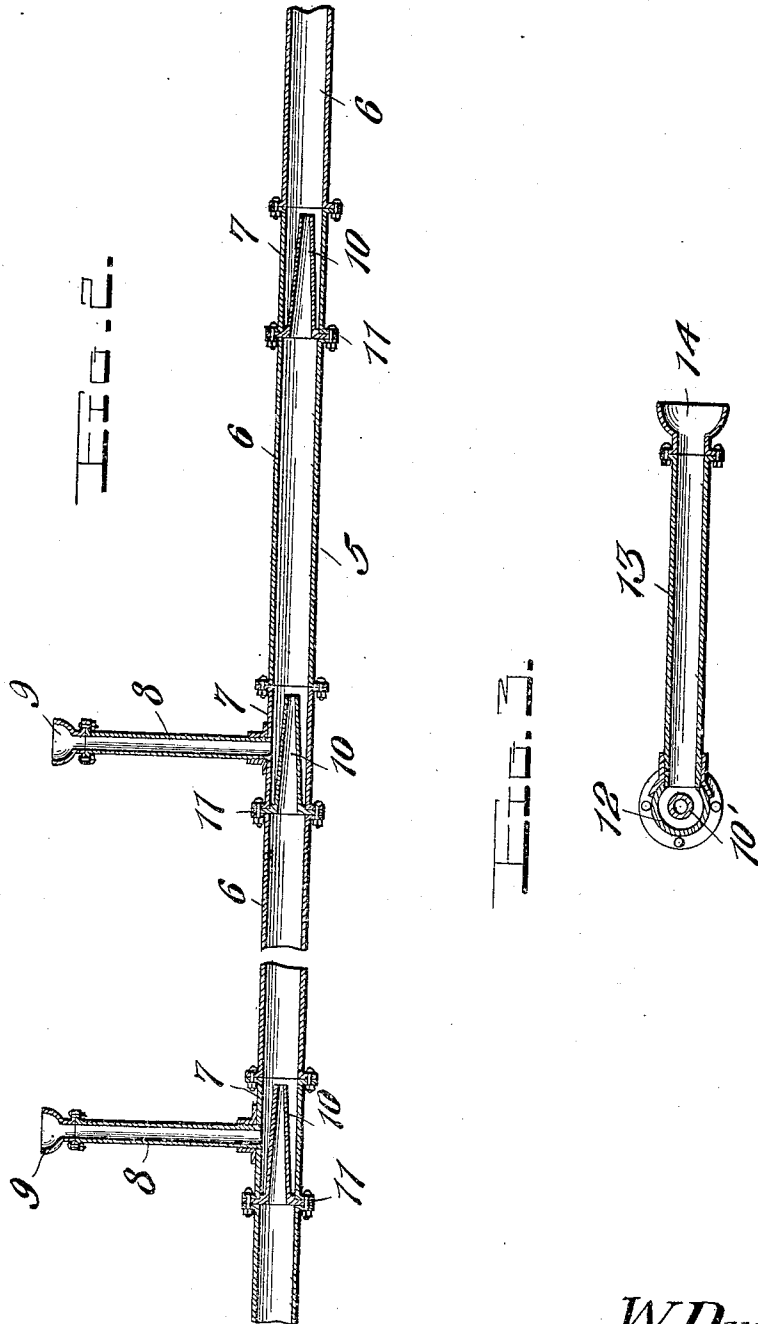
By Watson & Coleman,
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UNITED STATES PATENT OFFICE.

WILLIAM DUNN, OF WHEATLAND, PENNSYLVANIA.

MINE-VENTILATING APPARATUS.

963,002.

Specification of Letters Patent. Patented June 28, 1910.

Application filed March 14, 1910. Serial No. 549,327.

To all whom it may concern:

Be it known that I, WILLIAM DUNN, a citizen of the United States, residing at Wheatland, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Mine-Ventilating Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to apparatus for removing gases from mines and has for its object to provide an apparatus of this character which may be readily located in the passages and rooms of a mine to withdraw the gases and foul air therefrom and eliminate danger to the workmen from the explosion of said gases.

A further object of the invention is to provide a simple and inexpensive apparatus whereby compressed air or steam may be utilized for removing the gases from the mine by means of suction.

With these and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which:—

Figure 1 is a top plan view showing the apparatus arranged in a mine; Fig. 2 is an enlarged longitudinal section through the main line pipe; and Fig. 3 is an enlarged section through the branch line pipe and the conducting pipes which extend into the rooms of the mine.

Referring more particularly to the drawings, 5 indicates the main pipe which is adapted to be arranged in the main channel or passage of the mine and close to one of the walls thereof so that the same will be out of the way of the mule teams which haul the coal or other mine material. This main line pipe 5 is adapted to receive the compressed air, steam, or other fluid from any suitable source of supply, (not shown), and is preferably made up of a plurality of sections 6, which are connected by means of a short pipe section 7. This section 7, has centrally threaded therein a stand pipe 8, the upper end of which is enlarged or cupped as shown at 9. Between one end of the short pipe section 7, and one of the main line sections 6, the flange 11, of an injector nozzle 10, is secured by means of suitable bolts extending through this flange and through the flanges secured to the ends of the pipe sections

whereby the injector nozzle is rigidly secured in position. This nozzle extends substantially the entire length of the short connecting pipe sections 7, and its contracted end is positioned away from the inlet end of the main line pipe whereby the flow of the air or steam will be accelerated. Any desired number of these nozzles and stand pipes may be arranged in the main line passage of the mine, and in the accompanying drawings I have shown three such injector nozzles, one of which is arranged adjacent to the outlet or exhaust of the main line pipe. A branch pipe 12, communicates with the main line pipe adjacent to the last mentioned injector nozzle and extends at right angles thereto. This pipe is positioned in one of the branch passages of the mine which communicates with the rooms or chambers in which the miners work. This branch pipe also has a plurality of injector nozzles 10' arranged therein, the pipe being of similar construction to the main line pipe 5, and the nozzles secured therein in substantially the same manner. Laterally extending conducting pipes 13, communicate with the branch pipe 12 and extend into the rooms of the mine. The ends of these conducting pipes are cupped as shown at 14 similar to the stand pipes 8 and are adapted to conduct the flow of gases and foul air into the branch pipe from which it is discharged into the main line pipe and finally exhausted. This discharge of the gases is materially facilitated by the provision of the pipe 15, which is adapted to convey air or steam under high pressure into the pipe 5, in advance of the point at which the branch pipe communicates therewith. This additional supply of discharging fluid is controlled by means of a suitable valve 16, arranged in the pipe 15. A short pipe 17, also extends from the supply pipe 15 into one of the nozzles 10' arranged in the branch tube 12 to provide an additional supply of the fluid to this branch pipe. The pipe 12 may be connected to the source of fluid supply in any desired manner. Also, if desired, a second pipe 18 may extend from the pipe 15, into the open end of one of the conducting tubes 13 to assist in conducting the gases there-through.

From the above, it will be obvious that when the compressed air or steam is turned into the main line pipe, the gases will be drawn into the same through the stand pipes

owing to the suction created by the pressure of the fluid, as the gases are conveyed through the main pipe 5, they gradually accumulate and it will be obvious that the pressure of the fluid will gradually decrease as the gases increase. It is for this reason that the additional supply pipe 15 is provided which admits an additional supply of the conducting fluid into the main line pipe thereby insuring the discharge of the gases from the same. By providing nozzles in the pipe 5, the rapidity of flow of the discharging fluid as it passes each of the stand pipes is accelerated thereby insuring sufficient suction in the pipes to draw the gases and foul air into the same. Practically the same action takes place in the branch pipes 12, and the conducting tubes 13 which are arranged in the rooms of the mine. As these gases are somewhat heavier, however, than those which accumulate in the main channel of the mine, the pipes 17 and 18 are provided to assist the initial flow of the gases into the branch pipe. The fluid conducted by the pipes 17 and 18 being discharged under very great pressure.

From the foregoing it will be seen that I have provided an apparatus of comparatively simple construction which will very quickly clear the mine of all gases and foul air which often accumulate therein to such extent as to cause serious explosions and endanger the lives of the miners.

The apparatus may be quickly set up and will occupy but a small space. The cost of maintenance is comparatively small and it is also very durable and highly efficient in use.

While I have shown and described the preferable form of my invention, it will be understood that the same is susceptible of many minor modifications without departing from the spirit or sacrificing any of the advantages thereof.

What is claimed is:—

1. An apparatus of the character described comprising a main line pipe adapted to receive fluid under pressure, said pipe comprising a plurality of sections and con-

necting pipe sections therebetween, a stand pipe secured in each of said connecting sections, an injector nozzle secured between one end of the connecting sections and the pipe sections, said nozzle extending beneath the stand pipes, a branch pipe communicating with one of said connecting sections and extending at right angles thereto, conducting pipes extending from said branch pipe into the rooms of a mine, a nozzle secured in said branch pipe and at the point of connection of the conducting pipes therewith, an auxiliary fluid supply pipe communicating with the main line pipe, and a pipe extending from the auxiliary pipe and having its discharge end disposed in the open end of one of the gas conducting pipes, substantially as and for the purpose set forth.

2. An apparatus of the character described comprising a main line pipe adapted to receive fluid under pressure, said pipe comprising a plurality of sections and connecting pipe sections therebetween, a stand pipe secured in each of said connecting sections, an injector nozzle arranged in said last named sections extending substantially the entire length thereof, a branch pipe communicating with one of said connecting sections, conducting pipes extending from said branch pipe into the rooms of a mine, a nozzle secured in said branch pipe at the point of connection of the conducting pipes therewith, an auxiliary fluid supply pipe communicating with the main line pipe adjacent to the branch pipe, a valve therein to control the fluid supply, a discharge pipe extending from said auxiliary pipe having its open end positioned in one of the nozzles of the branch pipe, a second pipe extending from the auxiliary pipe and having its open end disposed in the open end of one of the gas conducting pipes, substantially as and for the purpose set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM DUNN.

Witnesses:

A. McLAUGHRY,
MARGARET KNAPP.