

When rock-dusting was actively revived in the United States in about 1924, a number of coal companies built rock-dust distributors in their own shops. One of the first commercial distributors was placed on the market in June 1924. Others followed shortly afterward, but only three companies now are actively merchandising rock-dusting machines that have been approved by the Bureau of Mines.

The first permissible machine - that is, approved by the Bureau of Mines as safe in a gassy or dusty atmosphere - was approved November 5, 1926, and a second machine was approved on December 28, 1926. Shortly afterwards another machine, known as a high-pressure model, was developed to force dust through a hose so that trackless entries could be rock-dusted. The first high-pressure machine was approved on July 2, 1927.

Two types of rock-dust distributors are used in the United States. Low-pressure dusters are used for application of dust on mine openings having tracks, and high-pressure machines are used principally for dusting areas not accessible to the low-pressure machines. Construction of both types of machine is similar in many respects. A modified V-shaped hopper of varying length contains the dust. Generally, a screw conveyor in the bottom of the hopper carries the dust to the front end of the hopper and allows it to fall into a mixing chamber. The fine dust tends to form an arch, and consequently a constant feed is not always obtained; this condition is overcome by using agitators. One type of distributor uses a steel shaft 1-5/8-inch in diameter provided with a number of steel prongs. As the shaft revolves, the prongs cause the dust to fall onto the screw conveyor. Other models have two screw conveyors rotating in a direction opposite to that of the feed conveyor. Some of the earlier models of low-pressure dusters deliver dust into an airduct at the bottom of the machine along the full length of the hopper. Back pressure was formerly prevented by placing a cover on the machine. The later type machines use the mixing chamber, which is placed at the front end of the hopper. As the dust falls into the chamber, it is mixed with the air and is forced through the discharge in a fluid mass.

Low-Pressure Distributors

A number of low-pressure machines still in use are provided with a flexible wire-reinforced hose about 4 to 6 inches in diameter and approximately 4 feet long. A handle near the discharge end allows the operator to direct the air-dust stream towards the roof and rib or crosscuts to obtain suitable coating of the surfaces. Usually enough dust spills to coat the roadway.

Another low-pressure duster is provided with a fixed discharge nozzle having two modified cones, one placed within the other in such a manner that dust is discharged around the periphery at the base of the two cones. A modified fishtail discharge nozzle is employed by a third type of low-pressure duster. This machine is designed to make two trips over the same

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