

The simplicity of American machines is said to render unnecessary the employment of expensive skilled labor in their operation, and since the drill points never require sharpening, only two workmen are needed to keep the same in steady operation, and make all necessary repairs.

This drill is said to penetrate rock faster than by any other known method, to perform a greater amount of work more cheaply than it can be otherwise done, to make perfectly cylindrical holes, to bore at a depth of five or six hundred feet as rapidly as when near the surface, to bore in any direction or angle, (a very important consideration), and lastly to bring out a solid core of the rock through which the drill is passing.

The following is a description of the American Prospecting Diamond Drill. It consists of an upright boiler, to one side of which is firmly bolted the case iron frame which supports the engine and swivel drill-head, gears and screw-shaft with the drill passing through it. The engine may be an oscillator of from five to seven horse-power. The screw shaft is made of hydraulic tube from five to seven feet in length, with a deep screw cut on the outside; it also carries a spline, by which it is feathered to its upper sleeve-gear. This gear is double, and connects by its lower teeth with the beveled driving-gear, and by its upper teeth with the release gear. The release gear is feathered to the feed-shaft at the bottom of which is a fractional gear, fitting to the lower gear on the screw-shaft, which has one or more teeth less than the frictional gear, whereby a differential feed is produced. This frictional gear is attached to the bottom of feed shaft by a friction nut, thus producing a combined differential and frictional feed, which renders a drill perfectly sensitive to the character of the rock through which it is passing, and maintains a uniform pressure upon the same. The severe and sudden strain upon the cutting-points incidental to drilling through soft into hard rock with a positive feed is thus avoided. The drill-rod (passing through the screw-shaft) consists of a tubular boring-rod, made of lapweld tube, with the bit or boring-head screwed on to one end.

The Annular or Hollow Boring-Bit is a steel thimble about four inches in length, having three rows of black diamonds in their