(No Model.)

A. KRAUSE.

METHOD OF DRILLING ROCK.

No. 372,154. Patented Oct. 25, 1887.

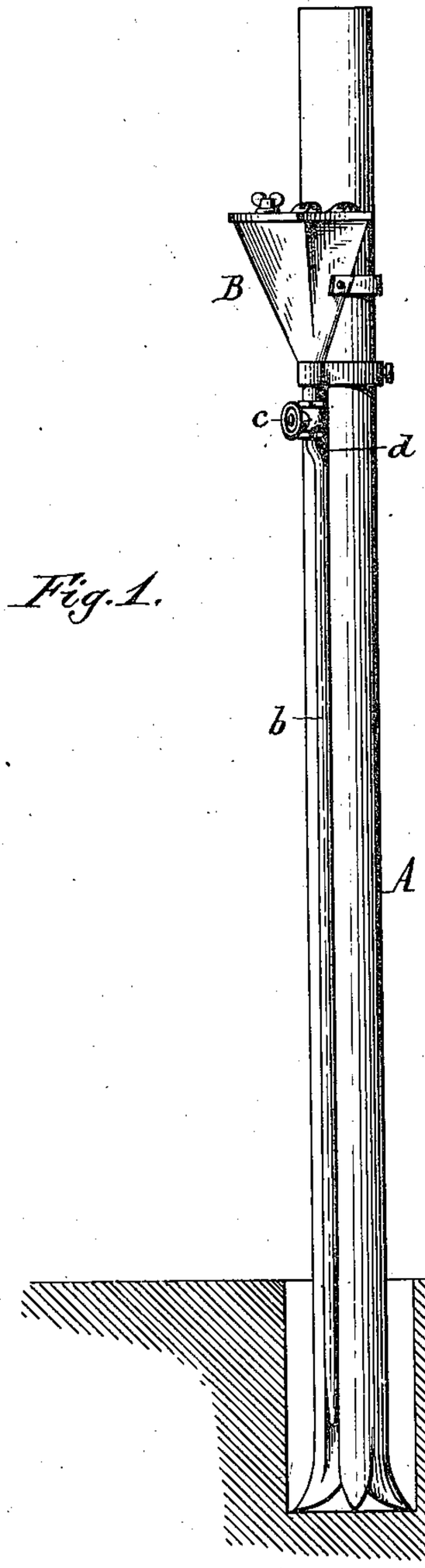
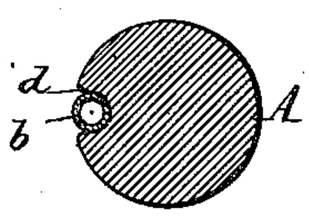


Fig. 1.

Fig. 2.



Theo. L. Popp.
Geo. J. Buchheit Jr.
} Witnesses.

A. Krause Inventor.
By Wilhelm Bonnet
Attorneys.

UNITED STATES PATENT OFFICE.

ALBERT KRAUSE, OF BUFFALO, NEW YORK.

METHOD OF DRILLING ROCK.

SPECIFICATION forming part of Letters Patent No. 372,154, dated October 25, 1887.

Application filed April 30, 1887. Serial No. 236,647. (No model.)

To all whom it may concern:

Be it known that I, ALBERT KRAUSE, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in the Method of Drilling Rock, of which the following is a specification.

This invention relates to an improvement in the art of drilling rock, and has for its object to facilitate the operation of pulverizing or breaking the rock by the drill.

My invention consists in introducing in the bore-hole during the operation of drilling a suitable acid, which disintegrates the rock and thereby enables the drill to penetrate the rock more easily.

In the accompanying drawings, Figure 1 is an elevation of a drill which can be used in practicing my invention. Fig. 2 is a horizontal section of the drill on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A represents the drill-rod, and B represents a reservoir attached to the upper portion of the drill-rod and provided with a discharge-pipe, *b*, which terminates near the lower end or bit of the drill.

c is a stop-cock applied to the lower end of the reservoir for the purpose of controlling the discharge of the acid from the reservoir into the bore-hole. The discharge-pipe *b* is preferably arranged in a vertical or longitudinal groove, *d*, formed in the side of the drill-rod.

In drilling limestone or rock containing carbonate of lime the reservoir is preferably supplied with muriatic acid, which acid is discharged in small quantities, preferably drop by drop, into the bore-hole through the pipe *b*. The acid attacks the rock, liberates the carbon dioxide, and disintegrates the rock, so that it is readily penetrated by the bit of the drill. Water is introduced into the bore-hole in the usual manner, whereby the chips are washed out and the soluble portions or salts are removed in a simple and expeditious manner, keeping the bore-hole and the bit of the drill free from accumulations. This also assists in facilitating and expediting the operation of drilling. As the rock is disintegrated by the acid, the bit of the drill is relieved from a large portion of the work and remains sharp for a much longer time, and penetrates the rock deeper at each blow than in the ordinary method of drilling. I prefer to employ muriatic acid in drilling in limestone formations on account of the cheapness of said acid; but any other suitable acid—for instance, sulphuric acid—may be used, if preferred, according to the nature of the rock in which the operation of drilling is carried on.

I do not wish to limit myself to the construction of the appliances whereby the acid is introduced into the bore-hole, because these appliances may be altered without departing from my invention. For instance, when the drill-rod is placed horizontally, the acid-reservoir may be elevated above the drill-rod, so that the acid is discharged from the end of the pipe *b* under pressure and injected into the bore-hole.

I claim as my invention—

The herein-described improvement in the art of drilling rock, which consists in introducing into the bore-hole during the operation of drilling a disintegrating acid, whereby the rock is softened and the drill is better enabled to penetrate the rock, substantially as set forth.

Witness my hand this 28th day of April, 1887.

ALBERT KRAUSE.

Witnesses:

FRED. C. GEYER,

THEO. L. POPP.