

J. E. BLACKBURN.

ROCK DRILL.

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1,057,922.

Patented Apr. 1, 1913.

Fig. 1.

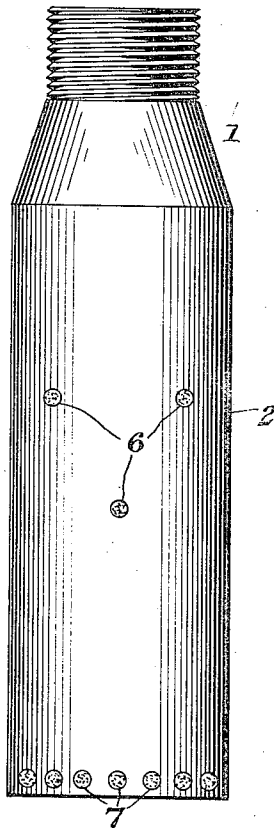
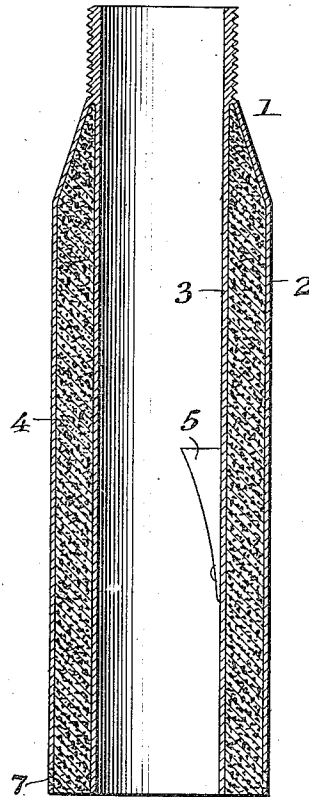


Fig. 2.



Witnesses

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ROCK-DRILL.

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To all whom it may concern:

Be it known that I, JULIAN E. BLACKBURN, a citizen of the United States, residing at Texarkana, in the county of Bowie and State of Texas, have invented new and useful Improvements in Rock-Drills, of which the following is a specification.

This invention has relation to drill points designed most especially for boring rocks, the purpose being the provision of a composite drill embodying an extremely hard substance in granular or other comminuted or broken up form and a binder for holding the particles together.

In accordance with this invention adamant either in the form of metal or mineral and in small or granular form is held together by a binder, such as Portland cement or other material, the adamant presenting sharp points or edges which are not easily dulled and operate quickly to remove the rock or other substance to be cut through in the operation of the drill.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawing, and pointed out in the appended claim.

Referring to the drawing, forming a part of the specification, Figure 1 is a side view of a drill point embodying the invention. Fig. 2 is a vertical central section of the drill point.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawing, by the same reference characters.

A drill point constructed in accordance with this invention comprises adamant in small particles and a binder having said particles of adamant embedded therein and held together thereby. The adamant may consist of any hard substance either of metal or mineral. The metal may consist of broken files or pieces of hardened steel. The mineral may consist of corundum, corundum spar or other extremely hard substance which will resist abrasive action. The size of the pieces or particles of the adamant may vary and will depend largely upon the size and the nature of the drill point. The binder found best adapted for the purpose consists of high grade or best quality of Portland cement which is mixed with water to a consistency to flow so as to enter the

spaces or interstices between the particles of the adamant. The adamant by reason of the irregular shape of its particles presents innumerable sharp edges which latter are not easily dulled because of the nature of the substance selected in the formation of the drill. The binder while serving to hold the particles together nevertheless wears away so as to expose the cutting edges or points of the adamant, thereby resulting in the formation of a drill which is practically self-sharpening and rapid in action.

In the specific formation of the drill it is hollow and in operation forms an annular cut, the core passing within the drill and being broken up into small particles by means of an inner projection so that such particles may be quickly removed by the water employed for washing out the bore and keeping the drill cool, thereby enabling the drill to be continuous in operation when cutting through strata of rock.

As shown most clearly in Fig. 2 of the drawings the drill point has a coupling end 1 which is externally threaded to make connection with a drill rod such as commonly employed in rock drilling. The body portion of the drill point comprises an outer shell or casing 2 and an inner shell or casing 3. These shells or casings 2 and 3 may be of any length and have a concentric arrangement, being spaced apart a proper distance so as to receive between them the composition such as adamant and a binder which forms the essential feature of the invention. The outer shell or casing 2 has a plurality of openings 6 midway of its ends and a plurality of openings 7 near its lower end or the cutting edge of the drill. These openings 6 and 7 admit of the composition coming flush with the outer side of the drill so as to resist the abrasive action and thereby prevent the rapid wearing away of the outer shell or casing. A projection 5 is provided upon the inner side of the inner shell or casing 3 and is of such formation as to readily break up the core passing through the drill when the latter is in operation. The projection 5 tapers toward its lower end and is of hardened steel so as to withstand the work for which it is intended. The two shells 2 and 3 are joined near their upper ends and are separated at their lower ends so as to expose the composition. When constructing the drill in accordance with the invention the annular space between the two shells is

filled with adamant such as herein indicated, after which the binding material is poured into the annular space and fills the interstices between the particles of adamant.
5 After the binding material has set or hardened the drill is ready for use in the manner well understood, the same being coupled to the lower end of the drill rod, the latter being rotated and the drill cutting an
10 annular channel, the central portion or core of the rock or other substance cut through passing upwardly into the center of the drill and being broken up by means of the projection or breaker 5, thereby enabling the
15 small particles to be removed from the bore by flooding the same in the manner well understood.

From the foregoing description, taken in connection with the accompanying drawing,
20 the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the

invention, together with the device which I 25 now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claim 30 appended hereto.

Having thus described the invention what is claimed as new, is:—

A drill comprising concentric shells and a composition filling the space formed between 35 said shells and comprising particles of adamant, and a binder having said adamant embedded therein, the outer shell having openings in its sides and near the cutting edge of the drill and having the composi- 40 tion extending through said openings.

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

JULIAN E. BLACKBURN.

Witnesses:

ALFRED MARSHAN,
E. B. GREER.