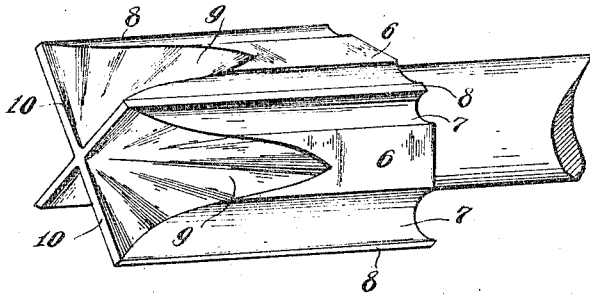


A. S. MEGUIRE.  
 ROCK DRILL BIT.  
 APPLICATION FILED JAN. 8, 1912.

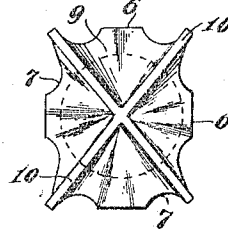
1,036,673.

Patented Aug. 27, 1912.

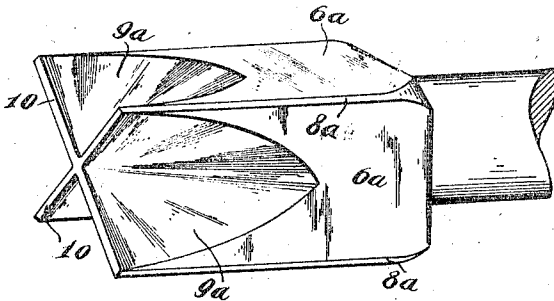
*Fig. 1.*



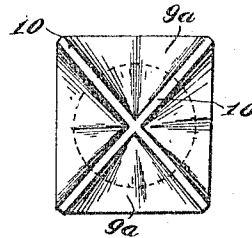
*Fig. 2.*



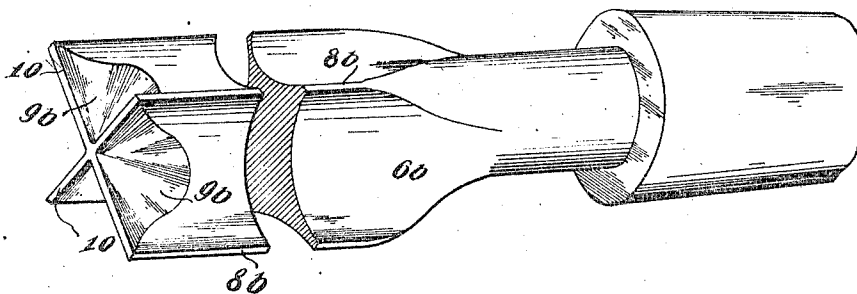
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses:

Mr. Harold Cushman.  
 M. A. Milord

Inventor:

Abijah S. Meguire  
 by Lewis Benjamin Atty.

# UNITED STATES PATENT OFFICE

ABRAHAM S. MEGUIRE, OF CHICAGO, ILLINOIS.

## ROCK-DRILL BIT.

1,036,673.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed January 8, 1912. Serial No. 669,919.

To all whom it may concern:

Be it known that I, ABRAHAM S. MEGUIRE, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rock-Drill Bits, of which the following is a specification.

This invention relates to improvements in rock drill bits and the especial object of the improvements which form the subject matter of this application is to produce a bit that will have an efficient cutting edge without reducing the diameter of the head and hence maintain a uniform size or diameter of the hole produced by the drill.

A further object is to provide a bit that will be strong as well as durable and which will not require frequent sharpening. In bits commonly used the cutting edges are usually V-shaped in cross section and the extremities or corners soon wear away and become rounded until they are worn down to the width of the base of the angle which forms the cutting surface with the result that they do not cut the rock but merely pound or pulverize it and as the diameter of the bit is greatest at the apex of the cutting edge the wearing away of these points materially diminishes the diameter of the hole produced by the bit so that it gradually grows smaller as it goes deeper into the rock unless of course fresh bits are used from time to time.

The primary object of my invention is to provide a bit that will avoid the objections common to the bits now in use and especially one that will maintain its cross diameter and effective cutting surface throughout practically the entire life of the bit and thus avoid the necessity of sharpening with its incident heating and reheating which as is well known impairs the quality of the metal and results in a very inefficient tool.

In the accompanying drawing which forms a part of this application, I have illustrated a preferred and modified form of my invention in the following views:—

Figure 1 is a perspective view of my preferred form of bit with a portion of the drill rod shown attached thereto in any suitable manner; Fig. 2 is an end view of the bit shown in Fig. 1; Fig. 3 shows a slightly modified form of bit embodying my invention; Fig. 4 is an end view of the bit shown

in Fig. 3; and Fig. 5 is a perspective and sectional view of another modified form of my invention showing a different manner of attaching the bit to the stock or rod.

My improved bit may be made of any suitable material and of any desired size or general shape in cross section.

Referring to Figs. 1 and 2, it will be seen that the general cross sectional area of my improved bit is rectangular in that it is formed at its heel portion with four flat faces 6. Flanking these flat faces and extending substantially the length of the bit are grooves 7 the sides of which extend from the edges of the flat portion 6 on one side to ribs 8 which extend longitudinally throughout the length of the bit. Four recesses 9 are formed between the ribs 8, said recesses starting in the flat faces 6 and extending forwardly and flaring outwardly to the extreme outer end of the bit with gradually increasing depth. These recesses terminate in intersecting diagonal cross ribs 10 which at their extreme outer ends are substantially the thickness of the longitudinal ribs 8.

It will be apparent that in a bit constructed as above described the effective cutting edges or ribs 8 will be maintained until the bit is practically used up. It will also be obvious that as the ribs 10 at the end of the bit are worn away the recesses 9 will maintain effective cutting surfaces at the ends of the bit though not as sharp as the edges of a new tool unless the recesses 9 are maintained at their normal depth by re-grinding from time to time as the tool becomes worn.

Referring to Figs. 3 and 4, the ribs 10 at the end of the bit are identical in arrangement, size and cutting efficiency with those shown in Fig. 1 except that as the grooves 9<sup>a</sup> are made deeper the ribs are thinner and hence the cutting efficiency at the end of the bit is prolonged for a greater length of time than with the form shown in Fig. 1. The ribs 8<sup>a</sup> which extend longitudinally at the corners of the rectangular block which forms the bit shown in Fig. 3 are without the channels or grooves 7 but it will be obvious the ribs or cutting edges 8<sup>a</sup> will be maintained throughout practically the entire life of the bit. It will be seen that with the exception of the area of the recesses 9<sup>a</sup> and the absence of the channels or grooves

7 the bit shown in Figs. 3 and 4 is substantially identical with the design shown in Figs. 1 and 2.

Referring to Fig. 5 the ribs 10 at the end 5 of the bit are identical with those shown in Figs. 1 and 3, but the recesses 9<sup>b</sup> are shallower and do not extend longitudinally the distance of the recesses 9 and 9<sup>a</sup>. The sides 6<sup>b</sup> of this bit are made concave throughout 10 substantially their entire width and length and are flanked by the longitudinal ribs 8<sup>b</sup> which correspond in form and function to the ribs 8, 8<sup>a</sup>, of the designs above described. The concave faces 6<sup>b</sup> are substantially an extension or merging of the 15 grooves 7 of the design shown in Fig. 1. It will be apparent that the presence of the longitudinal ribs 8<sup>a</sup> and 8<sup>b</sup> will prevent the bit from being deflected laterally in its operations as they form a longitudinal bearing 20 or guide for the tool in the socket or hole which is being drilled, and therefore serve to maintain the bit in the plane at which it is started in the rock being drilled. In addition to serving as means for maintaining the integrity of the longitudinal ribs 8, 8<sup>a</sup>, 8<sup>b</sup>, the recessed sides of the bit 25 serve as clearances for the rock particles which result from the operations of the bit. The particular design or formation of bit 30 within the scope of my invention will be determined largely upon the character of the rock that may be operated upon, that is to say for some forms of rock one design of bit will be more efficient than another in that 35 the cutting portion will be either sharper or stronger than any other forms. In all of the forms disclosed herein, there are present parallel cutting edges which extend longitudinally throughout the entire length of the 40 bit and thin cutting wings which are equal in length to the greatest width or cross diameter of the body of the bit. These wings are formed by the metal left between 45 the several grooves or depressions 9, 9<sup>a</sup>, and 9<sup>b</sup>. As shown in Fig. 1, the wings extend

inwardly from the edges 10, the full depth of the grooves 9, the walls of the latter being convex. In Fig. 3, the walls are concave throughout, while in Fig. 5, the walls 50 are concavo-convex. In Figs. 1 and 3, the grooves extend inwardly a substantial distance, while in Fig. 5, the grooves 9<sup>b</sup> terminate a short distance from the edges 10. These differences in contour are mainly matters 55 of degree or extent. In all cases the cross-sectional area of the wings gradually increase as the extremity of the bit is worn away. As my bit is primarily intended for use with reciprocating drills with merely 60 incidental rotary movement, the walls of the grooved portions gradually wear away with the other portions, so they recede and thus the effectiveness of the wings is prolonged though in lessening degree. 65

The bits shown in Figs. 1 and 3 may be connected with shanks or drill-bars in any suitable manner either by inserting the bar or shank in a socket formed in the bit, or 70 inserting a portion of the bit in a socket in the bar, such connection however forms no part of this invention.

Having thus described my invention, what I claim is:—

A drill bit substantially rectangular in 75 cross section and having thin cutting ribs with parallel side walls and extending longitudinally thereof with recesses in the sides of said bit between said ribs, said recesses 80 being deepest at the cutting end of the bit and of gradually diminishing depth rearwardly or toward the heel of the bit, and having transverse cutting ribs at the outer 85 end of the bit, said ribs having their cutting edges at right angles to the cutting edges of the longitudinal ribs.

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

ABIJAH S. MEGUIRE.

Witnesses:

M. A. MILORD,

WM. HAROLD EICHELMAN.