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A. SCHMIDT

2,679,382

ROCK DRILL

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Fig. 1

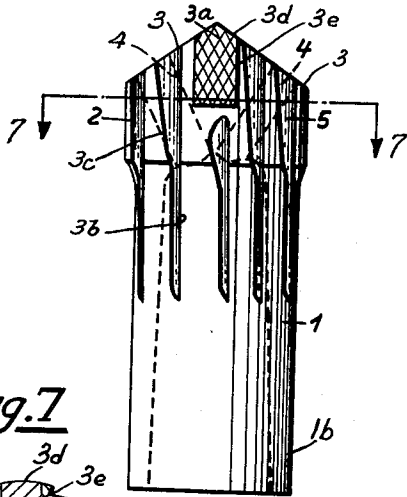


Fig. 5

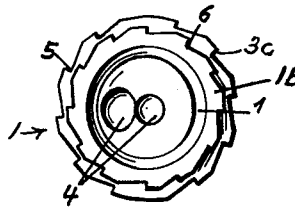


Fig. 3

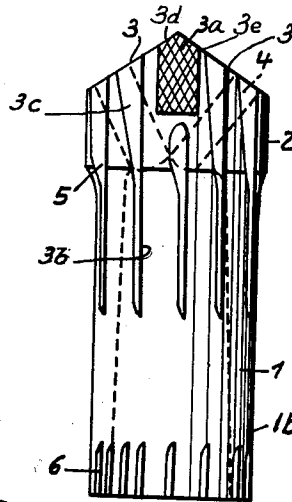


Fig. 7

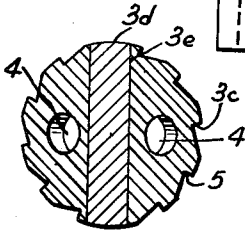


Fig. 2

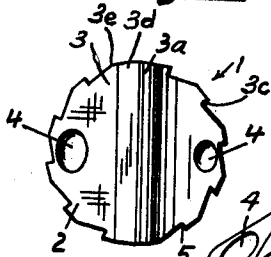


Fig. 4

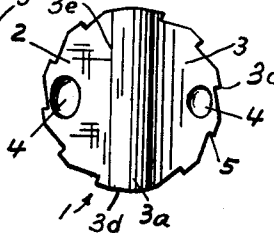
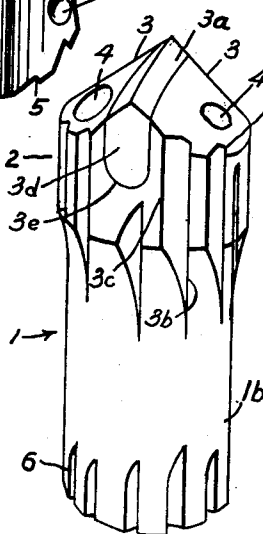


Fig. 6.



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UNITED STATES PATENT OFFICE

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ROCK DRILL

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5 Claims. (Cl. 255—64)

1

This invention relates primarily to rock drills. In drilling rock the powdered or ground off particles, known as "dust" in the trade, frequently clog up the hole and to a considerable extent choke the spaces between the cutting edges of the drill and the wall of the hole, a condition which prevents effective drilling. This condition has been known to become so serious, drills have been broken off and difficulty has been experienced in fishing them out, and in many instances drills have been lost.

According to my invention I provide the free end of the drill with a bit and spaced apart cutting edges on the periphery, and openings adjacent the bit, the openings communicating with the hollow head, to admit suction in the hole to draw out rock dust from around the cutting edges in the drilling operation.

Therefore the object of the invention is broadly to provide a drill head which will effectively cut away the rock material and permit carrying off the rock dust, to avoid choking or clogging the hole while drilling, and thus free the bit of undue friction and binding.

A further object of the invention is to provide elongated spaced apart cutting teeth so constructed and arranged that rock dust can be drawn between the teeth and thus free the teeth to operate freely in the hole.

In the drawings:

Figure 1 is a side elevation of the drill head.

Figure 2 is a plan view of the same.

Figure 3 is a side elevation of a slightly different form of drill head.

Figure 4 is a top plan view of the bit end of the drill head of Fig. 3;

Figure 5 is a bottom plan view of the drill head of Fig. 3;

Figure 6 is a perspective view of the drill head of Figure 3; and

Figure 7 is a transverse sectional view on the line 1—7 of Fig. 1.

Referring more particularly to the drawing the reference numeral 1 indicates a circular drill bit having a hollow body portion 1b, which is provided with a circular head or bit portion 2. It will be noted from a study of Figs. 1 and 3 that the body portion 1b is of smaller diameter than the head or bit portion 2 to provide a clearance for the chips loosened by the head or bit portion 2 during drilling.

The head or bit portion 2 has sides 3 that taper downwardly from the center line of the head or bit portion. A recess 3c is provided in the head or

2

bit portion at the center line thereof to receive the transversely extending rib 3d having the cutting edge 3a thereon.

The head or bit portion 2 is provided with one or more openings 4 which may be of different sizes and the openings 4 communicate with the interior of the hollow body portion 1b. The openings 4 are connected to a source of suction by means of the hollow body portion 1b to remove rock dust from around the head or bit portion 2.

Formed on the periphery of the circular drill bit 1 by means of spaced slots, which are cut longitudinally of the drill bit 1, are the elongated cutting edges 5. The bottoms of the slots forming the cutting edges 5 are parallel with the longitudinal axis of the drill bit 1 as shown at 3b. The slots taper or diverge for a short distance from the lower ends of the slots outwardly toward the forward or cutting edge of the drill bit 1 as shown at 3c.

Viewing Figs. 2 and 4, it will be noted that the cutting edges 5 and the slots provide a saw tooth effect so that the cutting edges 5 cut into the rock and shed chips and dust past the head or bit portion 2 into the clearance provided by the smaller body portion 1b.

The dust or chips that do not pass rearwardly of the head or bit portion 2 through the slots is readily drawn away from the cutting edge 3a and cutting edges 5 through the openings 4, thus leaving the hole clean and free for the cutting edges to operate.

As shown in Fig. 4 the rearmost end of the body portion 1b may be provided with a second set of cutting edges 6, so that in case chips of rock or dust tend to choke the hole after the same passes through the slots, it will be ground or broken up to a size to permit it to be withdrawn from the hole by suction.

With a drill bit constructed as described the rock will be ground away rapidly, and as it falls in the hole the dust and chips will gather in the slots between the teeth and be readily withdrawn from the hole.

What I claim is:

1. A circular hollow drill head having a bit portion at one end, said bit portion being tapered at its forward end to form a transverse cutting edge, said drill head also having a hollow body portion of smaller circumference than the bit portion to form a clearance space rearwardly of the bit portion, openings in the bit portion communicating with the hollow body portion, a plurality of series of spaced apart elongated teeth formed on the periphery of the hollow body por-

3

tion and the bit portion and extending longitudinally of the drill head, each of said teeth having a longitudinally extending cutting edge, and a diverging tapered portion on each tooth extending from the smaller body portion of the drill head to the tapered end of the bit portion.

2. A circular hollow drill head as in claim 1 wherein the hollow body portion at the end remote from the bit portion is provided with a second set of longitudinally extending teeth similar to the teeth at the end having the bit portion thereon.

3. A circular drill head having a bit portion at one end, said bit portion being tapered at its forward end to form a transverse cutting edge, a series of spaced apart elongated teeth formed on the periphery of the drill head and extending along the periphery of the head to the taper of the bit, each of said teeth having a longitudinal cutting edge and a portion extending from the base of the cutting edge to the periphery of the drill head.

4. A circular drill head as in claim 3 wherein

4

said drill head is provided with a hollow body portion and openings are formed in the bit and communicating with the hollow body portion.

5. A circular drill head as in claim 3 wherein a second set of teeth are provided that extend inwardly from the end of the drill head opposite to the end of the bit portion.

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