June 10, 1947. J. B. BAKER, JR 2,421,826

SEPARABLE DRILL BIT

Filed April 9, 1945

Fig. 1.

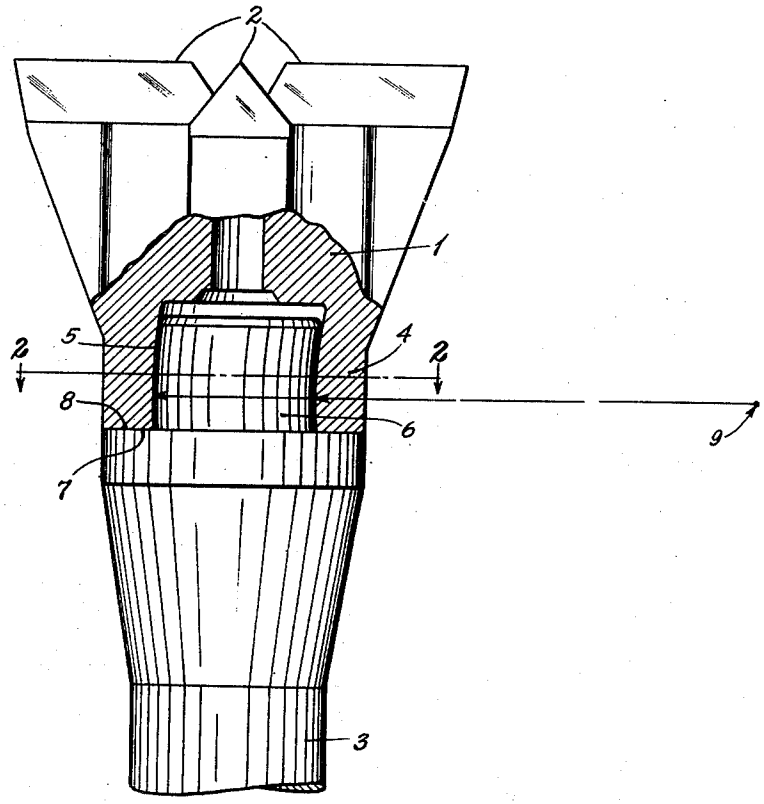
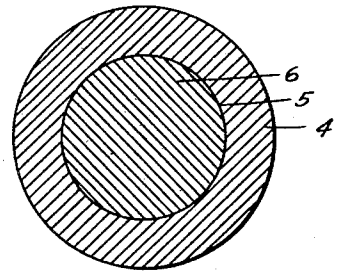


Fig. 2.



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SEPARABLE DRILL BIT

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2 Claims. (Cl. 287—126)

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My invention relates to separable drill bits, particularly adapted for rock drilling and of the type wherein the bit body has a central bore at the end remote from the cutting edges adapted to receive a projecting pin on a drill rod, the end of the bit body having a flat face adapted to seat against a shoulder on the drill rod at the base of said pin. Bits and drill rods of this general type are commonly provided with inter-engaging threads or with cams, keys or other special securing devices. All of such prior constructions involve danger of breakage of weak parts and danger of binding of the parts to such an extent that separation is prevented.

The present invention is concerned with overcoming disadvantages, such as those above mentioned, and its principal object is a connection between the bit and drill rod, which is very strong, which is simple to manufacture, which eliminates separate fastening devices, which will provide automatic positive inter-engagement of the parts and which, at the same time, will permit easy separation of the parts, when desired, without creating any risk of accidental disengagement of the parts.

The invention consists principally in making the projecting pin of the drill rod and the bore of the bit body of constant circular section throughout, but with an endwise or longitudinal curvature of relatively large radius. The invention further consists in the separable drill bit and in the parts and combinations of parts hereinafter described and claimed.

In the accompanying drawing,

Fig. 1 is a side elevation of a separable drill bit and rod embodying my invention, the rear portion of the bit body being shown in longitudinal section to illustrate the endwise curvature of the drill rod pin and the bore of the bit body; and

Fig. 2 is a cross-sectional view on the line 2—2 in Fig. 1.

The drawing illustrates a drill bit comprising a body 1 having any desired number and arrangement of cutting or drilling edges 2 and a drill rod 3 to which the bit body 1 is separably secured. The rear or skirt portion 4 of the bit body has a central bore 5 extending longitudinally of the body and the drill rod 3 has a projecting pin 6 extending into said bore. The rear or skirt portion of the bit body has a flat face 7 that abuts against a flat shoulder 8 on the drill rod 3 at the base of said pin 6.

The pin 6 and the bore 5 of the bit body are of constant circular section throughout, the diameter of the pin 6 being such as to fit snugly within said bore and the pin being shorter than the bore, so as to avoid contact between the end of the pin and the bottom of said bore.

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The pin 6 and bore 5 are both curved endwise or longitudinally on a large radius of curvature, the center 9 of such curvature being located forwardly of the plane of the drill rod shoulder 8.

Obviously, the bit may be slipped over the pin 6 by alining the two curvatures and then swinging the bit 1 and moving it endwise over the pin until the rear face 7 of the bit skirt is seated against the shoulder 8 on the drill rod. Relative rotation of the drill rod 3 and bit 1 will obviously lock the parts together. The location of the center of curvature of the pin and bore forwardly of the shoulder 8 on the drill rod eliminates any tendency of one side of the bit to pull away from the drill rod shoulder during locking movement. The parts may be disassembled by reversing the assembling steps.

The above described construction has important advantages besides its obvious simplicity and strength of construction and ease of manufacture. Locking of the parts is automatic regardless of the direction of rotation of the drill rod. Special fastening devices are dispensed with. Accidental separation of the parts in the drill hole is prevented because of the impossibility of tilting the bit off of the stud until the bit and drill rod are removed from the drill hole. Separation of the parts when removed from the drill hole is quite simple.

What I claim is:

1. A separable drill bit construction comprising a hollow bit having a bore for receiving the end of a drill rod, a rod having a shoulder against which the end of said bit abuts and a projecting pin extending into said bore, said bore and said pin being of constant circular section throughout their length and being curved endwise on an arc of long radius, the center of said arc being located forwardly of the plane of said shoulder.

2. A drill rod for a separable bit having a shoulder against which the end of said bit abuts and a projecting pin of circular section throughout its length and curved endwise on an arc of long radius, the center of said arc being located forwardly of the plane of said shoulder.

JOHN B. BAKER, JR.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
534,152	Heinkel et al.	Feb. 12, 1895
2,122,244	Brown	June 28, 1938
1,998,759	Horton et al.	Apr. 23, 1935