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J. B. BAKER

2,052,019

SEPARABLE DRILL BIT

Filed Dec. 26, 1931

Fig. 1.

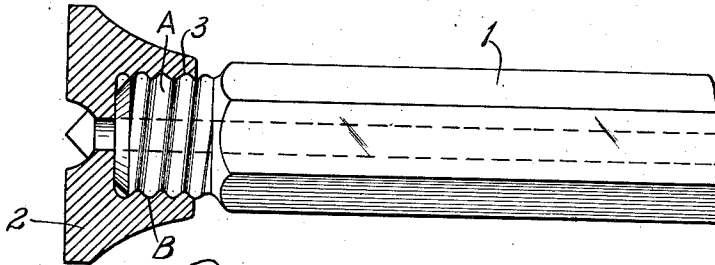


Fig. 2.

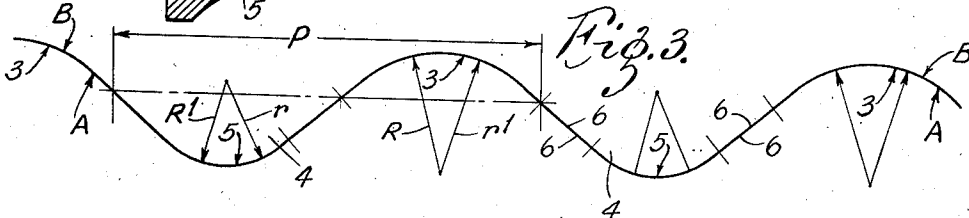
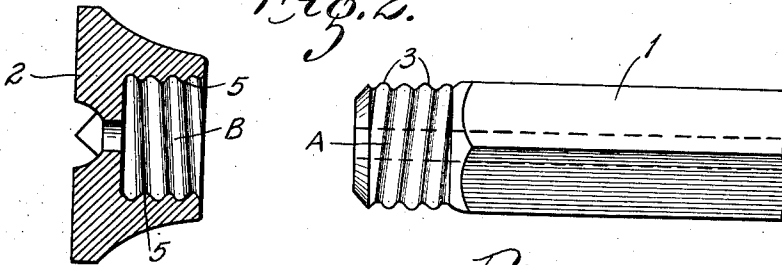


Fig. 4.

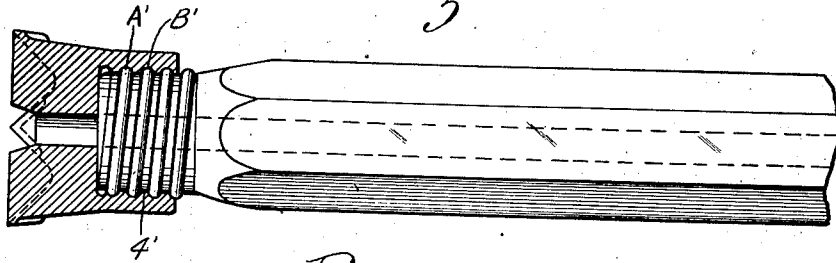


Fig. 5.

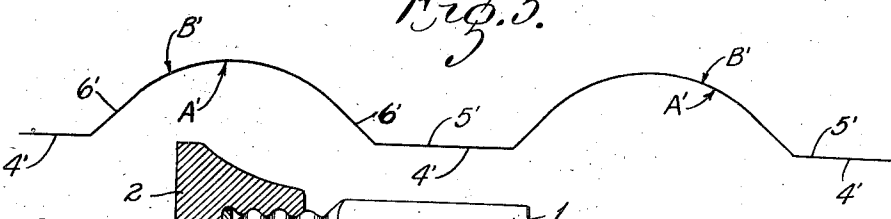
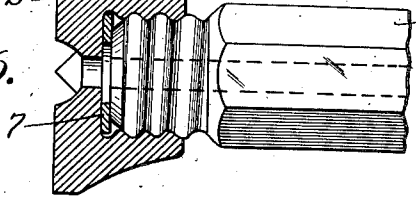


Fig. 6.



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UNITED STATES PATENT OFFICE

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SEPARABLE DRILL BIT

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Application December 26, 1931, Serial No. 533,256

2 Claims. (Cl. 255—64)

My invention relates to separable drill bit constructions, and has for its principal objects to increase the strength and durability of such constructions and to prevent their threads from binding and jamming.

The invention consists principally in a separable drill bit construction whose threads have a substantially sinuous contour but in which the sides of the threads are provided with flattened bands. The invention further consists in the separable drill bit and in the parts and combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawing,

Fig. 1 is an elevation of a drill rod and separable bit provided with threaded portions embodying my invention, the bit being shown in section, Fig. 2 is a similar view showing the parts separated.

Fig. 3 is an enlarged diagrammatic view showing the thread contours,

Figs. 4 and 5 are views similar to Figs. 1 and 3 of a modified thread construction, and

Fig. 6 is a view similar to Fig. 1 showing a washer at the end of the drill rod.

Great difficulty has been found in making threaded bits which will not bind upon the threaded end of the drill rod. Various thread structures have been devised, such as a thread having a substantially continuous curved contour. In all previous constructions, however, repeated impact tends to flatten out portions of the sides of the threads and pack the metal into the spaces at the crest and hollows of the threads, thereby causing the parts to become tightly jammed together and frequently causing the parts to break. According to my invention, the tendency for the middle portions of the threads to become flattened is obviated and the parts continue to be separable under the most severe usage.

The drawing illustrates the usual hexagonal drill rod 1 having a threaded end A cooperating with the threads B of an interiorly threaded bit member 2. The threads A and B have a generally curving contour. One thread, illustrated as being the thread A of the drill rod has the crest 3 thereof provided with a radius of curvature R that is greater than the radius of curvature R' of the base portion. Thus, the crest 3 of the thread A of the drill rod is wide and flat as compared with the curve of the base portion of the thread and as compared with the trough 4 between the base portions of the threads A. The crest 5 of the other thread B has a shorter radius of curva-

ture r than that r' of the base portion of the thread B.

Both threads A and B are provided with flattened bands 6 along their sides. The width of these flattened bands or zones 6 is preferably a little less than one-third of the linear surface distance from the center of the crest of the thread to the center of the trough between threads.

By reason of the differences in curvature of the different portions of the thread, the threads A and B are not symmetrical with reference to the diametrical pitch line P. In other words the pitch line does not bisect the thread contour.

In the modification shown in Figs. 4 and 5 the trough between the threads A' of one member is filled out to form a flat surface 4' beginning approximately at the bottom of the flattened bands 6' of adjacent threads. The crests 5' of the cooperating threads b' of the other member are correspondingly flattened.

As shown in Fig. 6, an annular washer 7 may be interposed between the end of the drill rod 1 and the bit 2. This washer serves to cushion the blows and accommodates any inaccuracies in the shape of the end of the drill rod and the end of the bore of the bit.

The above described thread construction does not bind or jam under the most severe usage. The threads are not battered out of shape and hence the threads do not bind. The difference in curvature at the crest and at the base of the threads permits compensation for difference in the strength of the materials of which the drill rod and bit are made.

What I claim is:

1. A separable drill bit construction comprising a threaded drill rod and an interiorly threaded bit thereon, the radius of curvature of the outer portions of said threads being different from the radius of curvature of the inner portions of said threads, thereby giving the thread a profile different from the profile of the space between threads and the thread of one member conforming to the space between threads of the other member.

2. A separable drill bit construction comprising a threaded drill rod and an interiorly threaded bit thereon, the radius of curvature of the outer portion of the thread of said drill rod being greater than the radius of curvature of the inner portion of said thread and the thread of said bit being shaped to conform to the space between threads of said rod.

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