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J. E. REDMOND

MINING BIT

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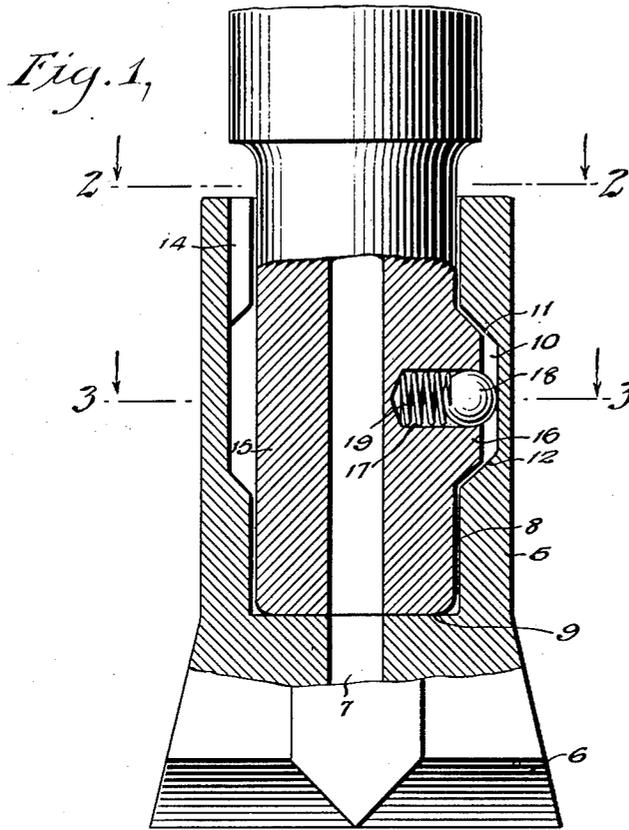
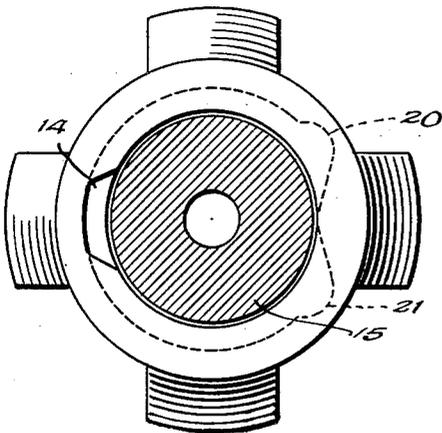


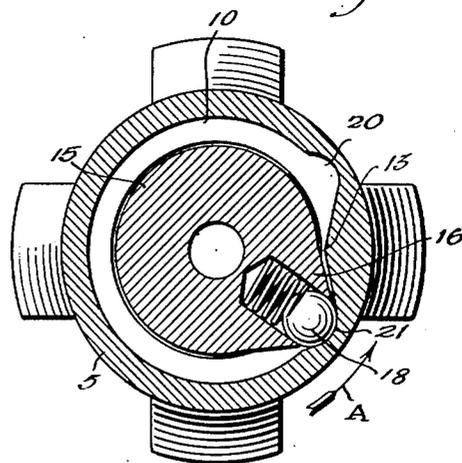
Fig. 2,



WITNESSES

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Fig. 3.



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JAMES EDWARD REDMOND, OF BUTTE, MONTANA, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO WILLIAM C. SIDERFIN, OF BUTTE, MONTANA.

MINING BIT.

Application filed June 16, 1923. Serial No. 645,848.

To all whom it may concern:

Be it known that I, JAMES EDWARD REDMOND, a citizen of the United States, and a resident of Butte, in the county of Silver Bow and State of Montana, have invented a new and Improved Mining Bit, of which the following is a full, clear, and exact description.

The present invention relates to new and useful improvements in drill bits.

It is one of the objects of the present invention to provide a new and improved construction for removably securing the drill bit to a drill shank.

It is a further object of the invention to construct a drill bit in such a manner that the bit and shank are capable of use with either right- or left-hand drilling machinery.

It is a further object of the invention to construct the drill bit and shank so that they cannot become accidentally disengaged one from the other.

It is a further object of the invention to construct the drill bit and shank in such a manner that there is a loose connection which serves to eliminate all jar and crystallization, and, at the same time, provide flexibility.

It is a still further object of the invention to construct the drill bit and shank in such a manner that no tools are required to remove the bit from the shank.

With the above and other objects in view, reference is had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the bit and shank formed in accordance with the present invention;

Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1.

Referring more particularly to the drawings, the reference character 5 designates the drill bit, formed with the usual star cutting face 6 and the usual passage 7 therethrough.

The bit 5 is formed with a socket 8, and the bottom wall of the socket forms the impact face 9 of the bit. The socket 8 is provided with an annular channel 10, which channel forms an upper annular shoulder 11 and a lower annular shoulder 12. The socket 8 has one of its side walls formed with a projecting portion 13, the purpose of which will be hereinafter described, and

diametrically disposed with respect to the projecting portion 13, the socket is provided with a longitudinally extending passage 14, said passage being positioned above the annular channel 10 and at substantially right angles thereto.

The reference numeral 15 designates a shank adapted to be received within the socket 8 of the body 6. This shank 15 is provided with a driving projection 16, adapted to engage either side of the projection 13 of the socket in the bit 5 in order to drive the bit, the side of the projection 13 engaged by the projection 16 determining the direction in which the bit 5 is driven. The shank 15 is provided with a recess 17, and mounted in said recess 17 is a ball 18. Interposed between the ball 18 and the bottom of the recess 17, is a coil spring 19, which tends to force the ball 18 outwardly of the recess 17. As more clearly shown in Figs. 2 and 3, the annular channel 10 of the socket is provided, adjacent the projection 13, with curved seats, there being two of these seats designated by the reference numerals 20 and 21.

The device operates in the following manner:

When it is desired to secure the bit 5 to the shank 15, the projection 16 of the shank is brought into register with the passage 14 of the bit and the shank is inserted into the socket, the projection 16 and the ball 18 passing into the annular channel 10 through the passage 14. When the shank has been inserted so that its lower end engages the bottom wall 9 of the socket in the bit, the driving projection 16 of the shank and the ball 18 will register with the annular channel 10. If, now, the shank is turned to the right or in a clockwise direction, the ball 18 will seat in the curved seat 20 and the driving projection 16 will engage the projection 13. If the shank 15 is moved to the right, the bit likewise will be moved to the right or in a clockwise direction and the seating of the ball 18 in the curved seat 20 will prevent the bit' overrunning the shank. If, however, the bit is turned to the right and the shank is turned to the left, the ball 18 will ride out of the curved seat 20 and into the curved seat 21. When the ball is engaged with this curved seat 21, the projection 16 engages the opposite side of the projection 13, and it will be noted

that with the parts in this position, the driving of the shank 15 to the left or in an anti-clockwise direction, will cause the bit 5 to rotate in an anti-clockwise direction, as shown by the arrow in Fig. 3. When it is desired to disconnect the bit from the shank, it is only necessary to disconnect the ball 18 from the curved seat with which it is engaged and rotate the bit until the driving projection 16 and the ball 18 register with the passage 14, when the bit and shank may be readily disengaged.

From the foregoing it is apparent that the present invention provides a new and improved drill bit and shank in which the shank is capable of driving the bit in either direction. Furthermore, the invention provides a construction by means of which the bit may be readily detached from the shank without the use of tools of any kind.

What is claimed is:

1. A drilling apparatus comprising a bit formed with a socket having an annular channel, a driving element formed in said annular channel, a curved seat formed on each side of said driving element, a shank adapted to be received in the socket of said

bit, a driving member formed on said shank and adapted to engage the driving element of the bit, and a ball carried by said shank and adapted to engage either of the curved seats on opposite sides of the driving element of the bit to rotate said bit in either clockwise or anticlockwise direction.

2. A drilling apparatus comprising a bit formed with a socket having a longitudinal channel and an annular channel having communication with each other, a shank adapted to be received within said socket, a projection formed on the shank and adapted to pass through said longitudinal channel and into said annular channel, a projection formed in the annular channel of the bit, said projections adapted to engage each other to cause the shank to drive the bit in either direction, a seat formed on each side of the projection in the annular channel, and a spring-pressed ball carried by the shank in the projection thereof, said spring-pressed ball being adapted to engage either of the seats to lock the shank against rotary movement relative to the bit.

JAMES EDWARD REDMOND.