Feb. 14, 1933. C. P. BASCOM ET AL 1,897,785

DRILL FOR MINING PURPOSES

Filed June 24, 1929

Fig. 1.

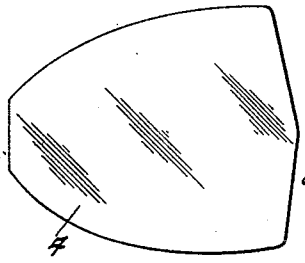


Fig. 2.

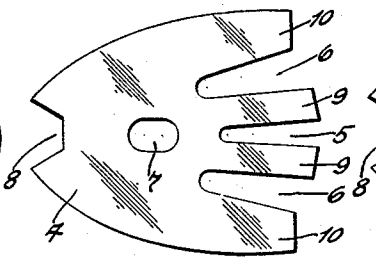


Fig. 3.

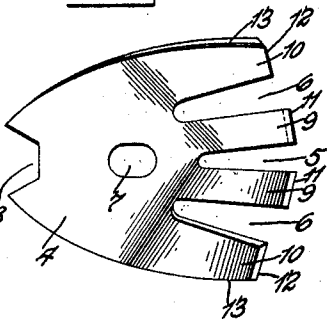


Fig. 4.

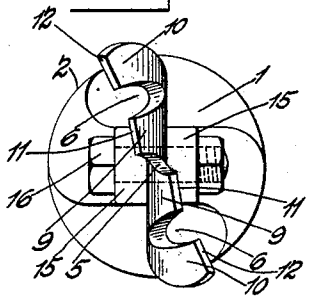


Fig. 5.

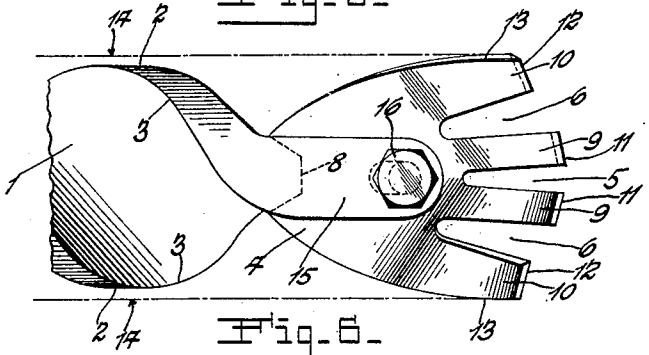
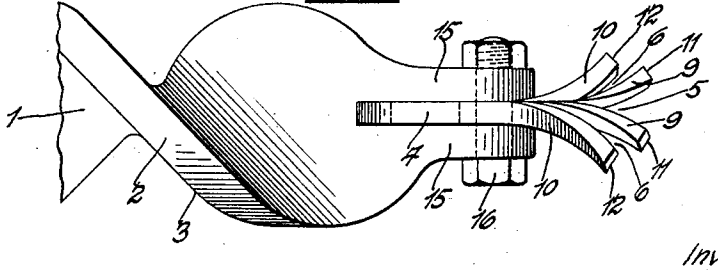


Fig. 6.



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UNITED STATES PATENT OFFICE

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DRILL FOR MINING PURPOSES

Application filed June 24, 1929. Serial No. 373,111.

This invention relates to drills for mining purposes.

An object of the invention is to provide an improved drill bit for use in connection with mining drills and composed of a plate or blade notched at its forward end to provide a pair of central prongs or tines and a pair of lateral prongs or tines twisted spirally, and also flexed so that the terminal portions of the central prongs or tines extend to opposite sides of the plane of the plate or blade and the pair of lateral prongs or tines also extend to opposite sides of the plane of the plate or blade and beyond the planes of the central prongs or tines.

Another object of the invention is to provide a drill bit of the character and type and embodying the construction mentioned and in which the side edges of the lateral prongs or tines are approximately parallel for a distance from their forward ends and in which the forward ends of said lateral prongs or tines are on inclined planes different from the inclined planes of the central prongs or tines.

Other objects will appear from the following description, reference being made to the accompanying drawing which illustrates the foregoing and other features of the invention and in which

Fig. 1 is a side elevation of a plate or blade shaped appropriately for the formation of our improved drill bit.

Fig. 2 is a side elevation of the plate or blade after it has been notched to provide the prongs or tines and formed with a central hole for the fastener by which the drill bit is attached to the drill.

Fig. 3 is a side elevation of the drill bit after the prongs or tines have been twisted or flexed.

Fig. 4 is an outer end elevation of our improved drill bit in connection with the screw.

Fig. 5 is a side elevation of the drill bit in connection with the screw showing also the parallel relationship of the side edges of the lateral prongs or tines and the extent of the width of the drill bit in excess of the spiral drill stem.

Fig. 6 is a side edge elevation of the device in connection with the drill stem.

The drill stem 1 is of spiral form and has wide peripheral edges 2 which are approximately equi-distant radially from the axis of the screw and which are of such width that they present comparatively wide bearing surfaces to engage against the wall of the hole being drilled in the mineral to guide the drill in an approximately straight line. There is a tendency for the drill to be deflected from a straight line during the drilling of a hole because of the fact that the mineral often varies as to hardness. The presence of the wide peripheral edges 2 substantially prevents this deflection or zigzagging or varying of the drill from a straight line. This stem is characterized by sharp corners 3 at the forward edges of the sides 2 and these sharp corners are effective to cut or break protruding points of the mineral that may have escaped the bit.

The improved bit shown is made from a plate or blade having the initial form of the plate or blade 4 shown in Fig. 1. Next, a central notch 5 and two deeper lateral notches 6 are formed in the forward end of this plate or blade, the notch 5 being midway between the lateral side edges and the notches 6 spaced approximately equi-distant from the notch 5. A hole 7 is formed intermediate of the ends and of the side edges of the plate or blade and a notch 8 is made in the rear end of said plate or blade.

The notches 5 and 6 form at the forward end of the plate or blade two central prongs or tines 9 of duplicate length and form, and two lateral prongs or tines 10 which are duplicates of each other and are of shorter length than the prongs or tines 9. The prongs or tines 9 are bent and flexed to curved shape and are also twisted spirally about different axes, as shown in Figs. 4 and 6, one of said prongs 9 being curved and bent laterally beyond the plane of one side of the plate or blade 4 and also twisted spirally about its axis, and the other prong or tine 9 being curved and bent laterally beyond the plane of the other side of the plate or blade 4 and also twisted spirally about its axis. This

provides relatively wide beveled cutting edges 11 on the forward ends of the prongs or tines 9. These cutting edges 11 extend the full width of the prongs or tines 9 at a slight angle of inclination to the plane of the axis of the drill. The prongs or tines 10 are also curved and bent in opposite directions, that is to say, toward opposite sides of the plane of the plate or blade 4 and are curved further than the prongs or tines 9 so that the beveled cutting edges 12 at the ends of the prongs or tines 10 are in advance of the cutting edges 11. Each of the prongs or tines 10 is twisted spirally about its axis as shown. The cutting edges 12 extend the full width of the prongs or tines 10 and incline but in different planes of inclination than the cutting edges 11. This construction is such that the cutting edges 13 of the prongs 10 are directed forwardly instead of laterally. This is a desirable arrangement as a better cutting operation is obtained.

Preferably, the lateral forwardly directed cutting edges 13 of the prongs or tines 10 are straight and parallel for about one-half of the length of said prongs or tines 10, being in panes indicated by the lines 14 (Fig. 5) which are spaced apart a greater distance than the diameter of the spiral stem 1. That is to say, the lines 14 indicating the planes of the edges 13 are spaced apart a greater distance than the distance from the wide surfaces 2 at one side of the stem diametrically to the wide surface 2 at the opposite side of the stem. Thus, the distance between the cutting edges 13 is greater than the diameter of the stem 1. The parallel lateral cutting edges 13 extend parallel with the axis of the bit and the stem for some distance from the forward end of the prongs 10. These lateral cutting edges function to cut most of the projections from the wall of the hole being drilled, so that the loose material will be discharged freely along the spiral stem 1. Any projections that are not removed by the cutting edges 13 will be removed by some portion of the edge 3.

This construction permits the improved drill to operate freely. When the bit is attached to a stem of the construction shown the stem is guided in a straighter line than is the case in other drills with which we are familiar. The drill operates with less effort and with less variation and cuts a hole which is easily cleaned by operation of the drill. The bit is attached to the forward end of the stem 1 by inserting the rear end of the bit between the jaws 15 until the hole 7 is in registration with the hole through the jaws. In this adjustment the bit is fastened to the drill stem by a bolt 16 extending through the jaws 15 and through the hole 7 in the bit while the side walls of the notch 8 engage opposite sides of the guiding portion of the drill stem.

We contemplate such variations as may be found desirable and we do not restrict ourselves in unessential particulars, but what we claim is:

A bit for a mining drill comprising a plate, a prong at each side of the forward end of said plate and bent laterally on opposite sides of said plate and twisted spirally, and longitudinal forwardly extended and directed cutting edges on the outer edges of said prongs extending rearwardly from the front ends of said prongs in planes parallel with the longitudinal axis of the bit for relatively a considerable distance and about one-half of the length of said prongs.

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