No. 715,657. Patented Dec. 9, 1902.

G. W. GRIFFITHS.

DRILL.

(Application filed Nov. 21, 1901.)

(No Model.)

Fig. 1.

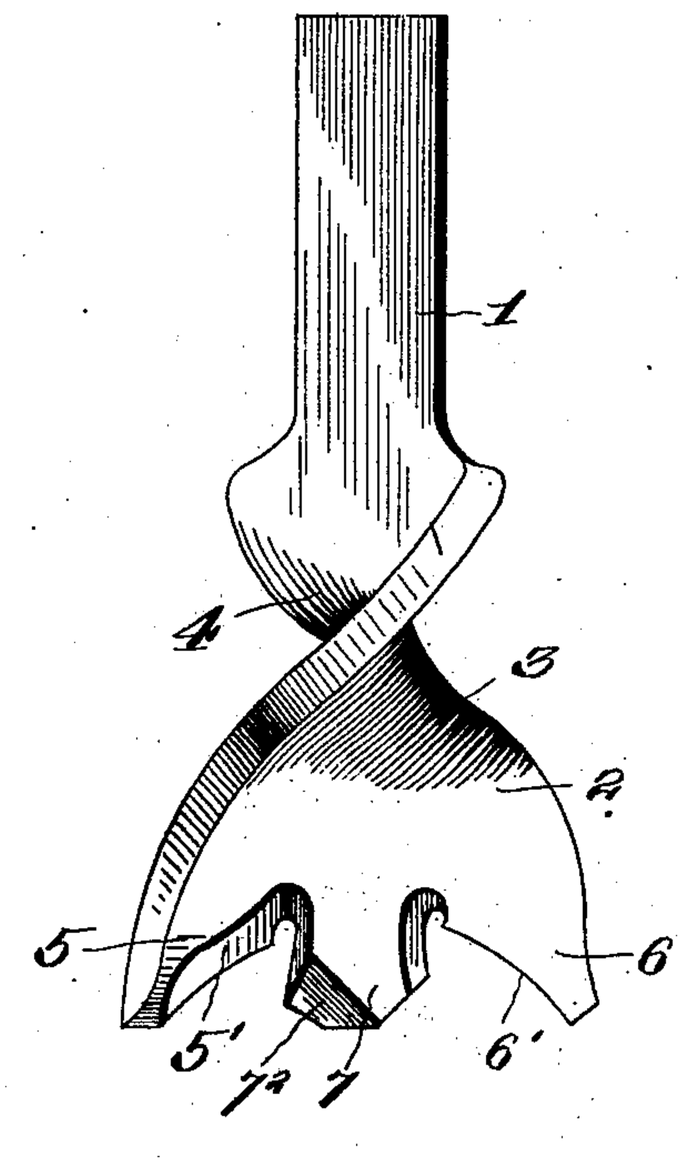


Fig. 2.

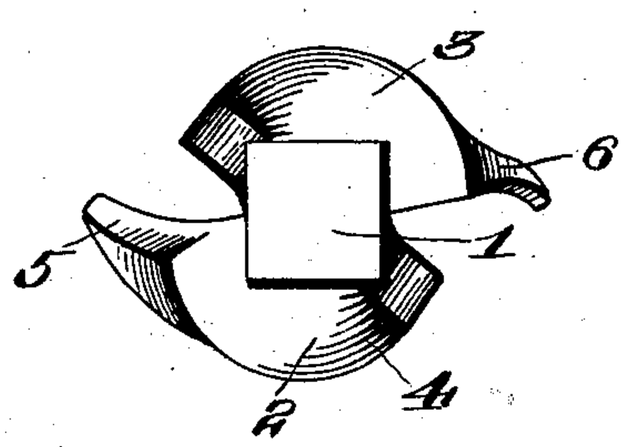
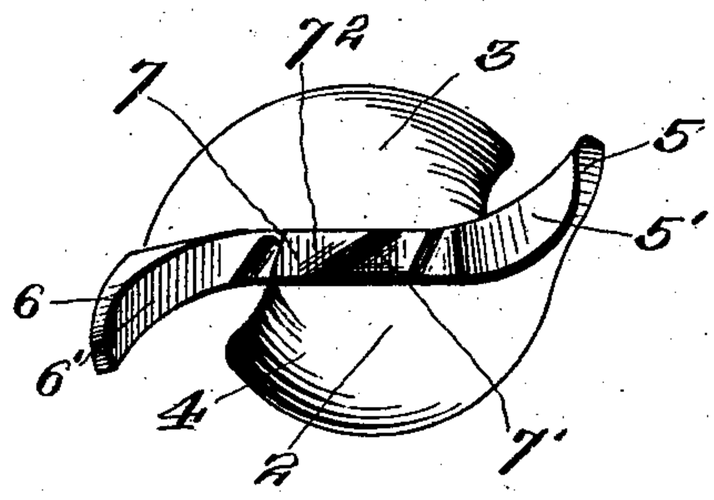


Fig. 3.



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UNITED STATES PATENT OFFICE.

GRIFFITH W. GRIFFITHS, OF MOREA COLLIERY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GEORGE E. LEES.

DRILL.

SPECIFICATION forming part of Letters Patent No. 715,657, dated December 9, 1902.

Application filed November 21, 1901. Serial No. 83,141. (No model.)

To all whom it may concern:

Be it known that I, GRIFFITH W. GRIFFITHS, a citizen of the United States, residing at Morea Colliery, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Drills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved drill-bit for drilling holes in coal and slate to receive the charge of powder or dynamite used in blasting.

The object of the invention is to provide a drill-bit which shall be simple of construction, durable in use, and comparatively inexpensive of production and by means of which the power required for drilling is decreased and the grinding of the coal into dust almost, if not entirely, avoided.

In mining coal the greater part of the miner's time is consumed in drilling, and the desideratum is to provide a drill-bit which will enable this work to be more conveniently and expeditiously performed and a larger amount of coal to be mined in the day's work and which will at the same time act without grinding the coal into dust. All the bits now in use, so far as I am aware, fall far short of this want, as they exert a scraping action, causing the coal and slate to be ground into dust and rendering the operation of drilling a slow and laborious one. Furthermore, the inhalation of this dust by the miners produces in the course of time asthma and other pulmonary troubles and compels the miner to frequently leave his work to rid his lungs and nostrils of the inhaled irritant. The prime purpose of my invention is to obviate these difficulties and objections by providing a drill-bit which exerts a clear cutting instead of a scraping action and which is so constructed as to facilitate the discharge of the cuttings and clearance of the tool, enabling the miner to drill with less expenditure of time and power and with freedom from discomfort.

To this end the invention consists in a drill-bit embodying certain novel features of construction, which will be hereinafter described and claimed, and which are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a drill-bit constructed in accordance with my invention. Fig. 2 is an end elevation of the same, and Fig. 3 is a bottom plan view.

The bit comprises in its construction a shank 1 of suitable form for connection with a drill-chuck, which shank carries the cutting-blade 2, the construction of which constitutes the subject-matter of this invention.

As shown in the drawings, the blade 2 consists of a comparatively thin broad plate and has a spiral twist, forming two clearance-passages 3 and 4 for the discharge of the cuttings, each commencing at one edge of the broad side of the blade, or at one side of the axis of the blade, thence crossing the blade to the other side of its axis, and finally extending across the opposite broad side of the blade and terminating at its upper or eduction end in a plane parallel with its lower or induction end, so as to discharge at the base of the shank 1, the two passages thus formed extending from opposite sides and in reverse directions, so as to simultaneously take up the cuttings on both sides of the center of the blade, resulting in their quick discharge and the prevention of choking. The blade has at its lower edge and formed integral therewith two end cutters 5 and 6 and a central cutter 7, whose lower edges terminate substantially in the same plane. The said two end cutters incline toward the opposite sides of the tool and are beveled upon their opposite faces, as indicated at 5′ 6′, so as to cut at both sides while the bit is turning. The central cutter 7, on the other hand, has two reversely-beveled surfaces $7'$ 7^2, forming a like number of cutting edges, one of which coöperates with the cutter 5 and the other with the cutter 6 and acts to cut out the core formed by said cutters 5 and 6.

In operation when the bit is turned the end cutters 5 and 6 cut in a circular path, forming a groove and a central core, which core is cut out by the central double cutter 7, the cuttings being discharged through the clearance-passages 3 and 4. The action of the bit in cutting out the particles instead of scraping away the coal adapts it to operate quicker

and with less expenditure of power than the ordinary form of bit, and as little or no dust is created by the cutters the miner is enabled to carry out the work until completed without discomfort. Actual use demonstrates that the bit may be operated at one-half the power required to operate the drill-bits now in common use.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation, and advantages of my invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

A drill-bit having a web, twisted to form a pair of oppositely-disposed spiral blades, and formed at its cutting end with a centering-point, the spiral blades having reversely-disposed cutter-points at their outer ends and outer edges, forming integral prolongations partaking of the curvature of the blades spirally, said cutter-points having inner sides forming reëntrant curves, the chords of which are oblique to the axis of the bit and converge upwardly, the curved inner sides of the cutter-points being respectively oppositely beveled to form cutting edges at the faces of the blades, and the blades being notched between the centering-point and cutter-points, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GRIFFITH W. GRIFFITHS.

Witnesses:
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