

C. R. ANDERSON.
 COAL AUGER.
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938,941.

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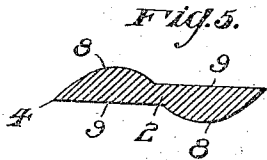
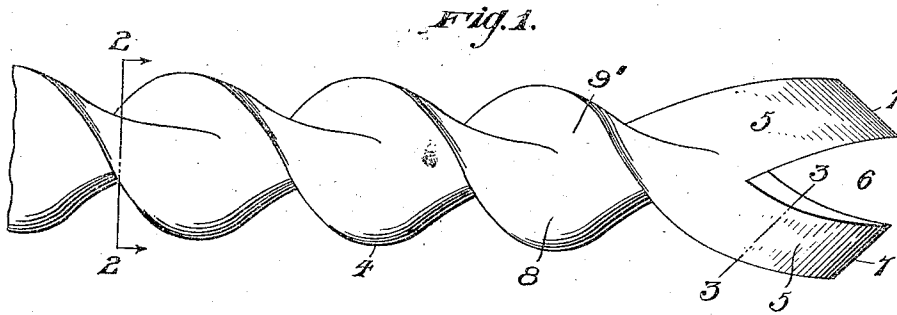


Fig. 4.

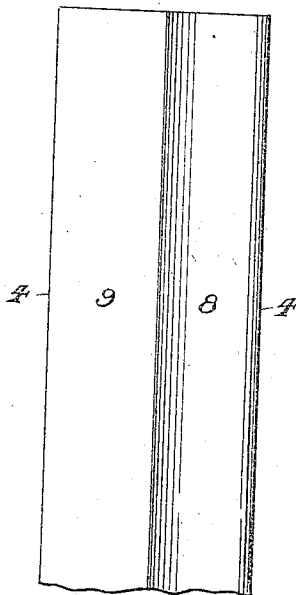


Fig. 2.

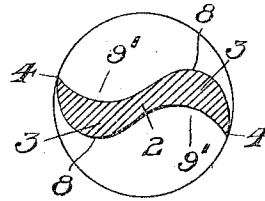
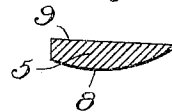


Fig. 3.



witnesses:
 Alex. S. Malon.
 J. P. [Signature]

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 By [Signature] atty

UNITED STATES PATENT OFFICE.

CECIL R. ANDERSON, OF BELLEVUE, PENNSYLVANIA.

COAL-AUGER.

938,941.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CECIL R. ANDERSON, a resident of Bellevue, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Augers, of which the following is a specification.

Augers for drilling coal are formed by twisting rolled blanks or bars, and the usual practice is to provide the same with an integral bit. This bit is formed by bifurcating the end of the auger and forming cutting edges of the extremities of the bifurcated part. The bifurcation is formed by removing the central portion of the drill for a distance inward from its extremity, the recess tapering inwardly so that if the metal were flattened out, *i. e.*, were not twisted, the recess would be V-shaped. As the bit wears off it is sharpened or renewed by extending the bifurcation, and this sharpening or renewing process is repeated from time to time as required until the auger is too short for further service.

In coal augers now generally used the metal is thickest at the longitudinal center thereof, and hence the extending inward of the bifurcation in the bit-sharpening or renewing process is a laborious operation; and furthermore, with the thickest part of the metal thus removed the bit is not as strong and durable as it should be. The present invention is designed to obviate these difficulties without detracting from the strength or utility of the auger by forming the metal thinner at the longitudinal center of the auger than in those portions at opposite sides of the center which enter into the formation of the spiral convolutions. Hence, the removal of the metal in forming and renewing the bit is less laborious than heretofore, and the thicker portions of the metal extend outward into the bit-forming wings, thereby giving to the latter a very substantial cross-sectional area.

In the accompanying drawings, Figure 1 is an elevation of a portion of a coal auger showing the bit formed thereon. Fig. 2 is a cross-section on line 2-2 of Fig. 1. Fig. 3 is a cross-section of one of the bit-forming wings taken on line 3-3 of Fig. 1. Fig. 4 is a view of a portion of a blank from which the auger is twisted, and Fig. 5 is a cross-section thereof.

Referring to the drawings, 2 designates the relatively thin longitudinal central por-

tion of the auger, and 3 are the thicker portions at opposite sides of part 2 and which enter the convolutions of the twist. The outer longitudinal extremities of the thicker portions 3 are reduced to provide the outer edges 4 of the twist.

Formed integral with the body of the auger is the bit or cutter element which consists of wings 5 separated by the incision 6, the extremities of the wings being sprung apart slightly so as to have a transverse area slightly greater than the body of the auger. Incision 6 is formed by cutting away the relatively thin central portion 2, which is accomplished with less labor and less waste of material than in those forms of twisted augers wherein the thickest metal is at the center. The thicker metal of the side portions 3 extends into and forms the bit wings 5, the outer end extremities of which are sharpened into the cutting edges 7.

The advantages of the invention are that the metal is thinnest at the point where it is removed to form the integral bit, thus saving time and material in the formation of the bit, and the thicker metal, at opposite sides of the longitudinal center, is utilized to provide bit wings of maximum strength and durability.

The preferred form of blank from which the auger is twisted, is shown in Figs. 4 and 5, the section of which illustrates rounded or convex longitudinal portions 8 on the opposite side faces of the blank and at opposite sides of the relatively thin longitudinal center thereof; each of the thicker or convex portions having an opposite flat surface 9 which form the concaves of the spirals when the auger is twisted. When a blank of this section is twisted, the flat faces 9 form the spiral concaves 9' which confine the borings within the auger, and operate as a conveyer to work them out of the hole, thus making the auger self-cleaning. Edges 4 provide clearance for the auger even where the hole is drilled slightly crooked and prevent the auger from sticking, at such time the edges acting as cutters or scrapers. Also, said edges serve to gather the cuttings into the spiral concaves of the auger, as above indicated. With only edges 4 engaging the wall of the hole, there is less friction than would result if the exposed surfaces were flat or blunt.

I claim:—

1. A coal auger having thin edges merg-

ing into the thicker portions forming the wings or convolutions of the twist, and such thicker metal being in turn thinned to form the longitudinal center of the auger.

- 5 2. A twisted coal auger in cross-section having a relatively thin central portion and thicker side portions forming the convolutions of the twist, the thicker side portions being of outwardly decreasing thickness and
10 providing relatively thin outer edges, one face of the spiral extending from the center of the auger to the thin outer edge being concave and the opposite face thereof extending to said edge being convex.
- 15 3. A twisted coal auger having the metal of its longitudinal center thinner than the metal of the twist at either side of the center and with the outer portions of such thicker parts thinned for the purpose de-
20 scribed, the metal at one side of the center—viewing the auger in cross-section—having one face concave and the other face convex,

and the metal at the other side of the center having like concave and convex faces disposed reversely to the faces first mentioned. 25

4. A twisted coal auger having the metal of its longitudinal center thinner than the metal of the twist at either side of the center and with the outer portions of such thicker parts thinned for the purpose de- 30 scribed, the metal at each side of the center—viewing the auger in cross section—having a concave and a convex face, the extremity of the auger bifurcated to form an integral bit with said thicker portions of the metal 35 extending into and forming part of the bit wings.

In testimony whereof I affix my signature in presence of two witnesses.

CECIL R. ANDERSON.

Witnesses:

ALEX. S. MABON,
J. M. NESBIT.