

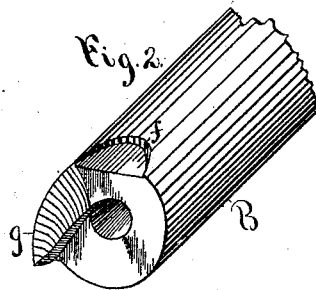
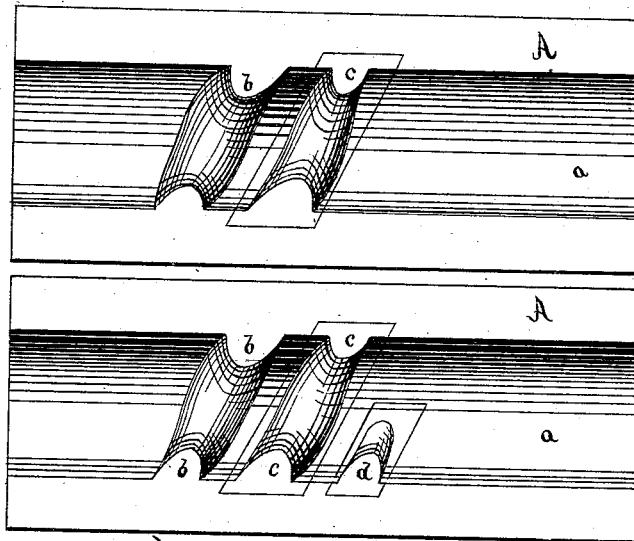
P. W. MYERS & C. E. ANDREWS.

DIE FOR HEADING AUGER BLANKS.

No. 264,470.

Patented Sept. 19, 1882.

Fig. 1.



Witnesses.

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Fig. 3.

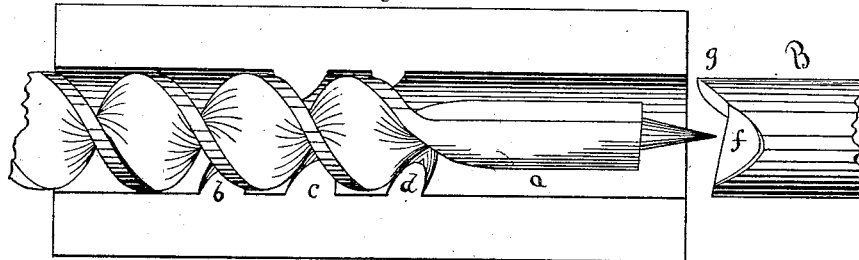


Fig. 4.

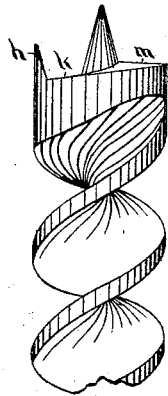
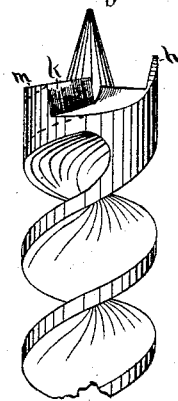


Fig. 5.



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# UNITED STATES PATENT OFFICE.

PATRICK W. MYERS AND CHARLES E. ANDREWS, OF FORESTVILLE, CONN.

## DIE FOR HEADING AUGER-BLANKS.

SPECIFICATION forming part of Letters Patent No. 264,470, dated September 19, 1882.

Application filed February 24, 1879.

*To all whom it may concern:*

Be it known that we, PATRICK W. MYERS and CHARLES E. ANDREWS, both of Forestville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Dies and Headers for Forging Auger-Blanks, of which the following is a specification.

Our invention consists in dies for holding and forming auger-blanks having semicircular grooves and oblique teeth, first, of a short tooth having its end in the bottom of one of the grooves, as hereinafter described; second, in the peculiar-shaped header, as hereinafter described; and third, of the header having siderecess, shouldered projection, and spirally-inclined face, in combination with dies having holding and forming teeth in semicircular grooves, as hereinafter described.

In the accompanying drawings, Figure 1 is a face view of holding and forming dies, which embody our invention. Fig. 2 is a perspective view of the header employed in connection with said dies, which header also embodies our invention. Fig. 3 is a face view of one of the dies with a proper blank placed in it for heading, and showing also the end of the header in proper position. Fig. 4 is a side elevation of a headed auger-blank as forged by said dies and header, and Fig. 5 is a like view of the opposite side of the same.

A A designate the two halves of the holding and forming dies, the same being formed with a semicircular groove, *a a*, extending longitudinally through each half, but with oblique teeth or ridges *b b c e d*, extending across a portion of said grooves, in the directions shown, in such manner that when the two halves of the dies are placed together said ridges or teeth form an internal thread in the cylindrical die. We prefer to make these dies of cast-iron, except that some of the teeth should preferably be of steel. In the latter case suitable mortises are made in the castings obliquely to the longitudinal axis of the semicircular grooves, and a piece of steel is snugly driven into each of said mortises, so as to be even or flush with the back side of the dies, and the face side formed to fit the twist of the blank to be produced, as shown in Fig. 1. By mak-

ing the main portion of the dies of cast-iron and the teeth, which are subjected to the greatest strain, of steel, subsequently inserted, the dies can be produced at far less cost than can solid steel dies, and they are much more durable than dies made of cast-iron throughout. So little strain comes upon the ridges *b b*, which are merely holding threads, that they are quite durable when made of cast-iron, and for large-sized augers or bits even the threads *c c* may be of cast-iron. The tooth *d* extends only about half-way across the semicircular groove in its die, and has one end at the bottom of said groove near the middle. This end of the tooth *d* serves as a guide in putting the blank into the die in its proper position. Although this short tooth is desirable and important for some uses, yet we do not wish to confine ourselves to its use as essential to all parts of our invention. The semicircular grooves extend forward of the teeth quite a distance, and, when the dies are placed together, the grooves in front of the teeth form a cylindrical chamber or female die of a depth fully equal to the length of the portion of the blank, which, when in proper place for heading in the die, protrudes in front of the teeth. The front teeth are preferably so set in the die as to gradually come nearer together as they approach the front end of the die, so as to narrow the grooves in the twist of the blank and bring them up to a more abrupt angle near the head, as shown in the headed blank, Figs. 4 and 5.

B designates the male header, which is cylindrical in form and of a diameter which will fill or nearly fill the cylindrical chamber at the front end of the dies. The end of this header has a tapering hole in it to admit the point of an auger-blank. Upon one side a rounded recess, *f*, extends up a short distance to form the cutting-spur of the auger-blank. By the side of this recess there is a projection, *g*, on the end of the header, which projection rounds gradually on one side and terminates quite abruptly on the other side, so as to form a shoulder, which extends tangentially from the mouth of the tapering hole. The face of the header not occupied by the projection *g* is in the form of a spiral incline. These dies are designed to be placed in any suitable machine where they

can be opened and closed handily and firmly, and the header is designed to be set in the same machine with its recess and projection in a certain fixed relation to the dies, hereinafter described, and at the same time so that the header may be forced forward and enter the cylindrical chamber in the dies to any desired depth. Any ordinary machinery for this purpose may be employed. The exterior of the die-blocks should be adapted to the machine in which they are to be held, and the rear end of the shank of the header will also be adapted to fit the holding-socket of the machine. These dies are designed for use in heading and forming blanks for augers or auger-bits having a double-grooved twist, but only one cutting-lip and spur. A blank is first prepared with any desired shaped shank and a twisted portion of any desired length. Upon the front end of said twisted portion there is a flat portion. At the end of the flat portion we prefer to form a pointed tip; but said tip may be formed under the action of the header. The blank shown in Fig. 3 has the requisite amount of stock in the flat portion to form a blank with an inch head. This portion, exclusive of the pointed end, is about seven-eighths of an inch wide by three-eighths thick and an inch and a half long. The twisted portion was, before twisting, drawn out to make it thinner and wider, and is generally left in the finished auger of a little smaller diameter than the head. It is better to make the twisted portion of the blank a little full, so that the dies cannot be closed quite together without swaging the blank a little, whereby when it is brought to a proper heat, placed and gripped between the dies, it may be held firmly without liability to run backward or move under the action of the header. This unheaded blank is placed in the die which has the short tooth *d*, and with the side of the flat portion at the end of the twisted part brought up against the end of said tooth in the position shown in Fig. 3. The dies are then firmly forced together and the header advances, being so set that when the blank is in the position shown in Fig. 3 the recess *f* will come directly in front of the edge of the flat portion of the blank, as shown. The male header then advances against the end of the blank, which is inclosed and protected by the cylindrical female portion of

the dies, and upsets it into the form shown in Figs. 4 and 5, the lip *h* being formed in the recess *f*, the notch *k* by the projection *g*, and its spirally-inclined end by the spiral incline on the face of the header. The front side of the teeth *d c e* give shape to the front ends of the grooves or twist in the blank. This headed blank is afterward milled out on the broken lines in Fig. 5, to continue the groove and open it into the notch *k*, while the highest point *m* of the spirally-inclined end is formed into the cutting-lip of the finished bit, which lip is sometimes called the "floor-lip."

We are aware that dies having teeth back of a cylindrical chamber for use in heading auger-blanks with a header having a square end and chamfered corners on two sides are old, and we hereby disclaim the same; also, that gripping-dies, which fit the twist of the auger, are shown in a prior patent, as in combination with a female header the roof of which had two spirally-inclined faces and two radial shoulders, the same being designed for only slightly heading a twisted blank by so gripping the blank that a part of the twist protruded beyond the anvil-face of the gripping-dies. These dies and header are also disclaimed.

We claim as our invention—

1. In dies for holding and forming auger-blanks having the semicircular grooves and oblique teeth, the short tooth *d*, having its end in the bottom of the groove, substantially as described, and for the purpose specified.
2. The cylindrical male header B, having recess *f*, the central hole, the single spirally-inclined face, and the single projection *g*, which terminates said incline, substantially as described, and for the purpose specified.
3. The cylindrical male header B, having recess *f*, spirally-inclined face terminating in the single projection *g*, in combination with the dies having semicircular grooves and holding and forming teeth back of the cylindrical chamber at the mouth of said grooves, substantially as described, and for the purposes specified.

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