(No Model.)

J. T. SNYDER.

ROCK AND COAL DRILL OR AUGER.

No. 558,994. Patented Apr. 28, 1896.

Fig. 1.

Fig. 4.

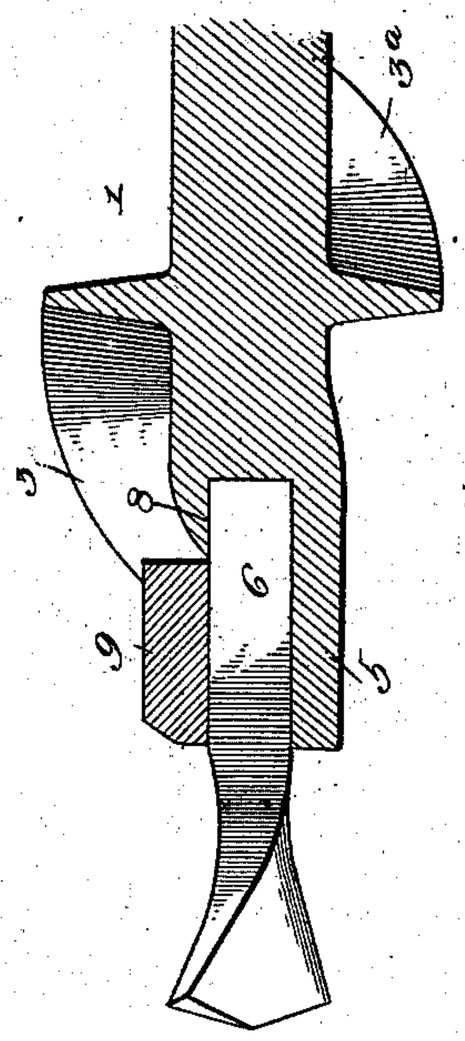


Fig. 6.

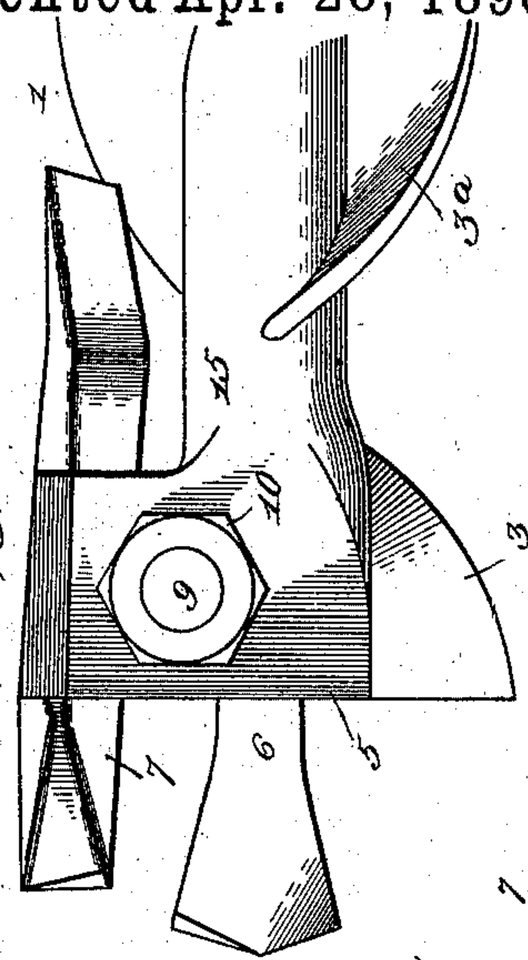


Fig. 7.

Fig. 3.

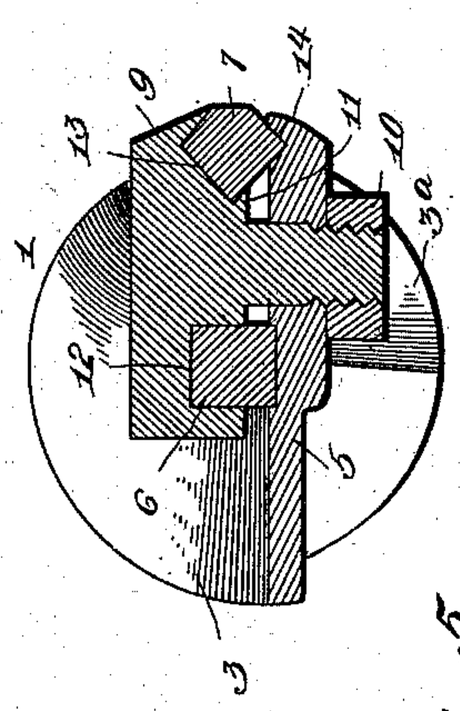


Fig. 5.

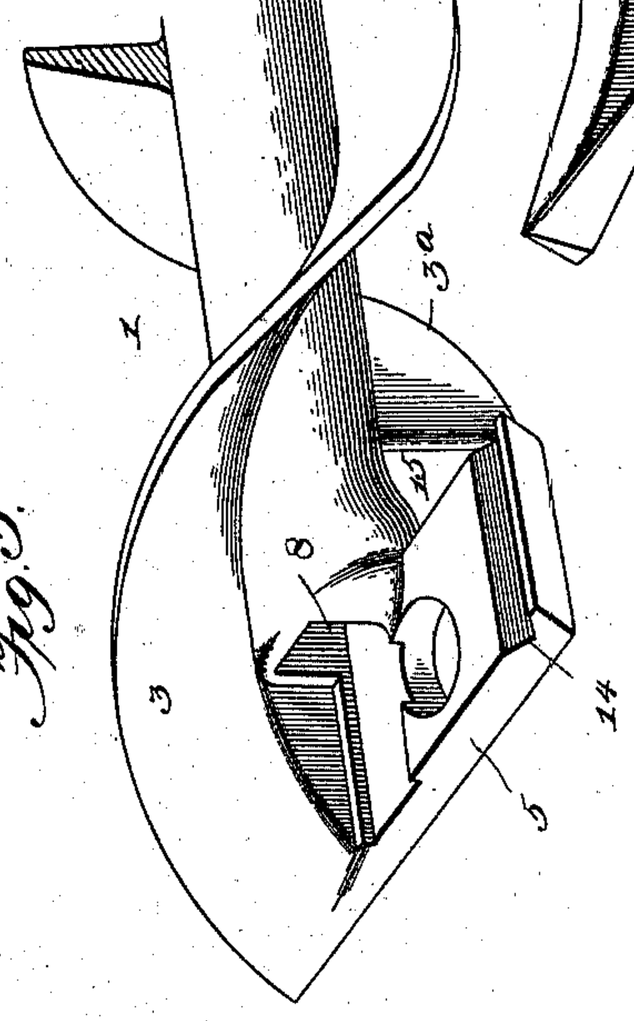
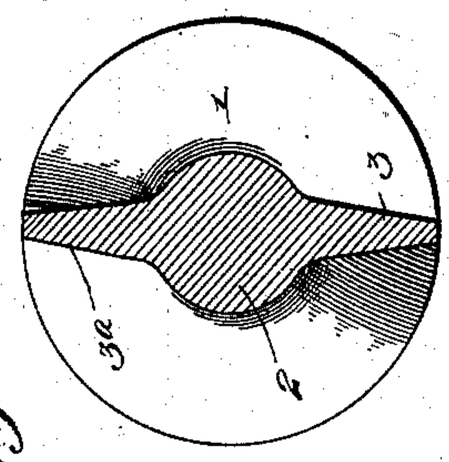


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN T. SNYDER, OF LUZERNE, PENNSYLVANIA.

ROCK AND COAL DRILL OR AUGER.

SPECIFICATION forming part of Letters Patent No. 558,994, dated April 28, 1896.

Application filed June 25, 1895. Serial No. 554,022. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. SNYDER, a citizen of the United States, residing at Luzerne, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Rock and Coal Drill or Auger, of which the following is a specification.

The invention relates to improvements in drills or augers.

The object of the present invention is to improve the construction of drills and augers for mining-machines for operating on coal and the like, and to enable the borings, when boring a hole in a downward direction, to be carried backward or outward from the cutters to avoid clogging the latter and interfering with the drilling and to render the auger self-clearing in drilling such holes.

A further object of the invention is to improve the construction of the cutters, and to enable the same to be readily removed, quickly replaced, and firmly clamped in operative position.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of an auger constructed in accordance with this invention. Fig. 2 is a transverse sectional view of the same, illustrating the construction of the twisted blades or flanges. Fig. 3 is a transverse sectional view of the front end of the auger, illustrating the manner of mounting the cutters. Fig. 4 is a detail sectional view of the front end of the auger, taken longitudinally of the central cutter. Fig. 5 is a detail perspective view of the front end of the auger, the cutters being removed. Fig. 6 is a detail view of the auger, the cutters being in position. Fig. 7 is a detail perspective view of the reversible side cutter.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates an auger, consisting of a central longitudinal rounded stem or core 2 and a pair of spirally-twisted blades or flanges 3 and 3^a, having a long pitch disposed at diametrically-opposite points on the central core or stem, and extending around the same from the front or outer end thereof to a socket 4 at the inner end of the auger. The spirally-twisted blades or flanges are adapted to cause the borings severed by the cutting devices at the front or outer end of the auger to be fed or carried backward as soon as made, thereby clearing the cutting devices and preventing them from becoming clogged and greatly facilitating drilling.

The front end of the auger is provided with a flat integral plate or extension 5, projecting laterally from one side of the auger and adapted to support a central cutter 6 and a side cutter 7. The central cutter 6 is provided with a squared or polygonal shank, which is received in a rectangular or polygonal socket 8, formed in the outer end of the central core or stem 1.

The side cutter 7 is provided with a central rectangular or polygonal shank and has an angularly-disposed cutting-point at each end, and it is adapted to be reversed when one point becomes worn to present the other point to the coal.

The beveled face at the rear end of the reversible side cutter is arranged substantially parallel with the adjacent portion of the twisted blade to provide an intervening space for the purpose of clearing the auger and facilitating its cutting action.

The central and side cutters are detachably clamped to the flat plate or extension 5 of the front end of the auger by a substantially T-shaped bolt 9, having a threaded portion passing through a perforation of the extension of the auger and engaged by a nut 10, located on the same. The bolt 9 has an enlarged head, which is substantially T-shaped in transverse section, and which is provided with a central elongated portion 11, interposed between the central and side cutters. The head at opposite sides of the central portions 11 is provided with recesses or grooves forming flanges 12 and 13, located at the outer side of the central and side cutters. The groove or recess for the reception of the central cutter is rectangular, and the groove or recess which forms the flange 13 and which receives the side cutter is angular or V-shaped, to receive one edge of the shank of the side cutter, and the flat plate or extension 5 is provided with a corresponding groove 14, which forms an

outer flange for engaging the side cutter. The bolt firmly clamps the cutters in operative position and renders them detachable and enables them to be quickly removed when desired.

The twisted blade or flange 3 extends to the extreme front end of the auger, and its front edge is substantially flush with the front edge of the extension or plate 5. The other blade or flange 3^a terminates short of the front end of the auger to provide a space 15 between it and the side cutter to afford a passage-way for the borings.

It will be seen that the twisted blades or flanges of the auger are adapted to convey the borings away from the cutters to prevent the latter from clogging, even when the auger is boring in a downwardly direction, and that the central and side cutters are firmly and securely clamped detachably to permit the side cutters to be readily reversed and to enable either cutter to be readily removed and replaced.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

1. In an auger, the combination of a central stem or core, cutters mounted at the front end thereof, and a pair of spirally-twisted blades or flanges arranged on the stem or core at diametrically-opposite points, one of the blades or flanges extending to the extreme front end of the body of the auger and the other blade or flange terminating short of the front extremity of the other blade to provide an intervening clearing-space at the rear of the cutters, substantially as described.

2. In an auger, the combination of a core, a pair of spirally-twisted blades arranged on the core at diametrically-opposite points, one of the blades extending to the extreme front end of the body of the auger, and the other blade terminating short of the front end of the body of the auger to provide an intervening clearing-space, the transverse plate or extension located in advance of the core and extending laterally therefrom at a point diametrically opposite the front end of the extended blade, and a central and a side cutter mounted on the plate or extension, substantially as described.

3. In an auger, the combination of a core provided at its front end with a longitudinal socket, a spirally-twisted blade extending around the core and terminating at one side of the front end thereof, the plate or extension located in advance of the core and extending laterally from the same at a point opposite the front end of the blade, a central cutter arranged on the plate or extension and having a shank fitting in the socket of the core, and a side cutter mounted on the plate or extension and having its rear end terminating in advance of the adjacent point of the blade and having its adjacent beveled face arranged substantially parallel with the blade to provide a clearing-space, substantially as described.

4. In an auger, the combination of a core, a spirally-twisted blade extending around the core and terminating at one side of the front end thereof, the plate or extension located in advance of the core and extending laterally from the same at a point opposite the front end of the blade, a central cutter mounted on the plate or extension, and a side cutter mounted on the plate or extension and terminating at its rear end in advance of the adjacent portion of the blade and having its adjacent beveled face arranged substantially parallel with the blade to provide an intervening clearing-space, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN T. SNYDER.

Witnesses:

WM. J. PARRY,

ELIJAH BLAINE.