

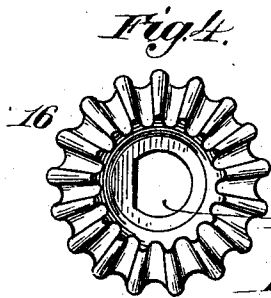
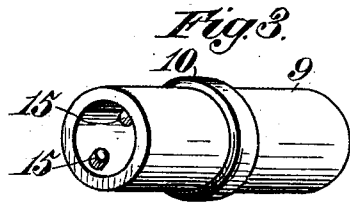
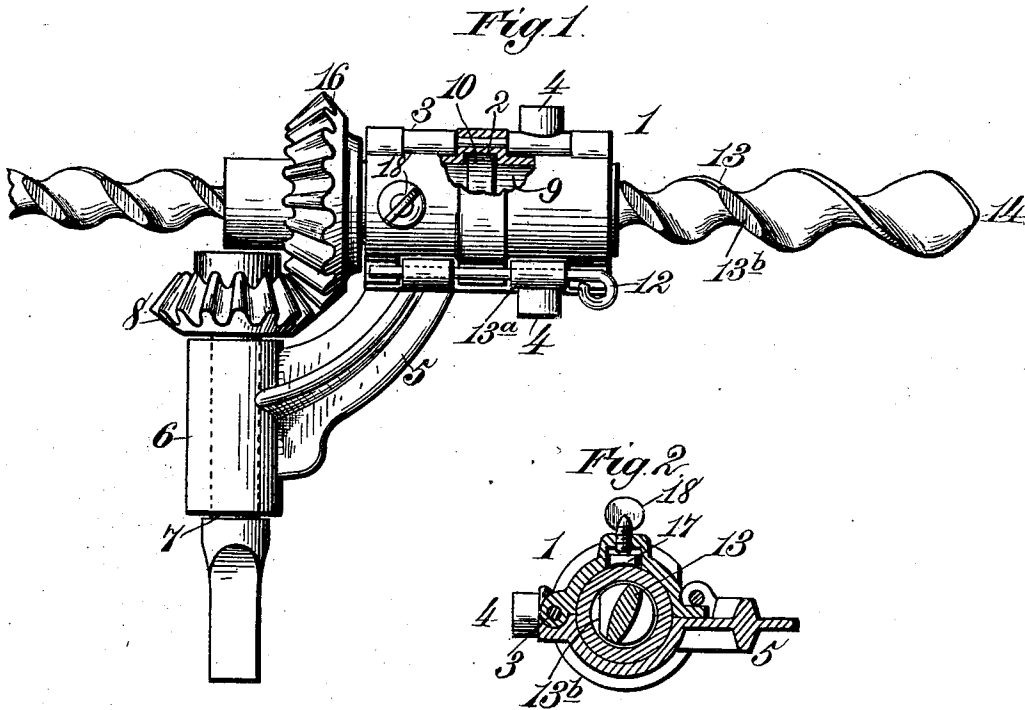
No. 668,593.

Patented Feb. 19, 1901.

A. WALKER.
MINING DRILL FOR COAL OR ROCK.

(Application filed June 14, 1900.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

ALEXANDER WALKER, OF WHATCHEER, IOWA, ASSIGNOR TO THE WHATCHEER DRILL AND MINERS TOOL CO., OF SAME PLACE.

MINING-DRILL FOR COAL OR ROCK.

SPECIFICATION forming part of Letters Patent No. 668,593, dated February 19, 1901.

Application filed June 14, 1900. Serial No. 20,361. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER WALKER, a citizen of the United States, residing at Whatcheer, in the county of Keokuk and State of Iowa, have invented new and useful Improvements in Mining-Drills for Coal or Rock, of which the following is a specification.

My invention relates to mining-drills for coal or rock.

One purpose of said invention is to provide a drill having a simple construction for feeding the auger without requiring the thread-bar and threaded boxing ordinarily used in coal and rock drills.

It is my purpose also to provide a mining-drill having a box-lining of a novel and simplified construction, whereby the auger is fed forward without the internal threading and externally-threaded feed-bar usually employed.

The novel features of my invention will be fully described hereinafter in the course of the following specification and will then be particularly pointed out and defined in the claim at the end thereof.

For the purposes of the following description reference is had to the accompanying drawings, in which—

Figure 1 is a plan view of a mining-drill in which my invention is embodied. Fig. 2 is a cross-section of the auger, taken close to the driving-pinion. Fig. 3 is a perspective view of the box-lining, showing its plain semicylindrical inner faces with the means for feeding the auger. Fig. 4 is a detail view showing the bevel-gear that operates the drill.

The reference-numeral 1 in said drawings indicates the boxing of a mining-drill, which is formed in two equal or semicylindrical sections, each having a central semi-annular groove or channel 2. The two parts are connected by a hinge 3, and upon one of them trunnions 4 are formed to enable the box to be supported in a drill-frame. A bracket-arm 5 also projects from it, having a bearing 6 at its end, in which is journaled the shaft 7 of a bevel-gear 8.

The numeral 9 indicates the one-piece box-lining, which has an external central rib 10 to engage the channel 2 in the boxing. This lining is wholly inclosed in the boxing, the

two halves of which are secured when closed by a pin 12, which engages lugs 13^a, projecting from the meeting edges of the boxing. The interior face of the latter and the exterior surface of the box-lining are perfectly plain or smooth except for the channels 2 and rib 10, which prevent longitudinal displacement of the box-lining within the boxing, but do not interfere with the rotary movement of the former.

The reference-numeral 13 indicates the auger, having a twist or spiral formation of the ordinary kind, one end being provided with the drill-point 14. It fits loosely within the box-lining 9, the interior face of which is perfectly smooth except at the forward end next the drill-point, where two buttons or studs 15 are provided, projecting from opposite sides and lying in the convolutions or spiral channel of the auger. These studs are preferably cast as integral parts of the box-lining, although we do not limit our invention to this specific construction.

Upon one side of the auger, from a point a little back of the drill to its opposite end, the spiral bar is flattened upon one side by removing or omitting segmental portions of the twists or spirals, as shown more clearly in Fig. 2. The bevel-gear 16, which operates the drill, is provided with a central opening 16^a of corresponding form, as shown in Fig. 4, and of such size as to permit the free longitudinal movement of the auger therein, while the latter is caused to turn in unison with said gear, which is arranged at the rear end of the boxing, where it meshes with the bevel-gear 8.

It is unnecessary to show and describe the drill-frame, which may be of any preferred form, that used in the present instance being substantially similar to the frame shown in the Letters Patent granted upon the 30th day of June, 1896, No. 563,087, which also shows a boxing and box-lining having the same general characteristics described in this application. In that patent, however, the box-lining was provided with an interior screw-thread engaging a threaded drill-bar, which was splined to the gear that imparted rotary motion.

In the operation of this invention there will

always be sufficient friction between the boxing and box-lining to prevent the latter turning in said boxing unless the drill-point encounters more than the average resistance to its operation. Under such circumstances the box-lining will partake more or less of the rotary movement of the auger, whereby its feed will be correspondingly retarded. By the construction I have described I avoid the necessity of cutting a thread in the box-lining, and by flattening the auger upon one side I am able to utilize its entire length, or practically so, in driving the drill. The operative connection also between the driving-gear and auger is much more permanent than the spline and groove usually employed.

The studs in the box-lining which engage the spiral of the auger are rounded or denuded of all angles that could cause rapid wear, and this form is preserved by continuance in use, so that the wear of the auger produced by them is very slight.

In order to increase the friction between the boxing and box-lining, and thus prevent a too-ready turning of the latter, I may employ a friction or wear block 17, which is seated in a recess in the boxing, as shown, said wear-block being carried by the end of a thumb-screw 18, which latter is tapped through the boxing. It will be understood that by turning the thumb-screw in the proper direction the wear-block may be brought to bear with more or less pressure, as desired,

upon the box-lining to prevent the latter from rotating too easily while working the drill.

While I have herein shown and described the auger as being flattened on one side only, I wish it to be understood that I may, if desired, flatten the same upon more than one side without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

In a mining-drill, the combination with a boxing of two hinged sections and an annular groove formed in its inner face, a lining therefor having a peripheral rib to prevent the longitudinal displacement thereof, a pair of studs formed integral with the inner face of said lining, and an adjustable wear-block arranged in said boxing, of a twisted auger operating through said lining and engaging said studs, said auger having each of its twists adjacent to its drill end cut away in a segmental manner flattening one side thereof, a bevel-gear connected to said auger, and means for operating said gear.

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

ALEXANDER WALKER.

Witnesses:

JAMES DAVISON,
ROBERT HALL.