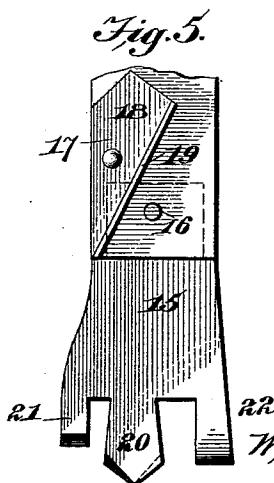
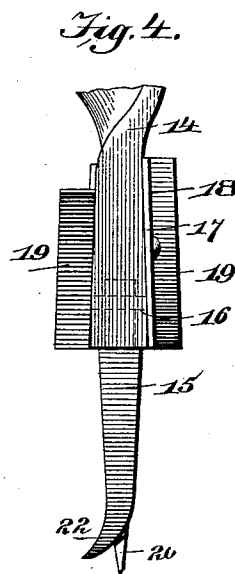
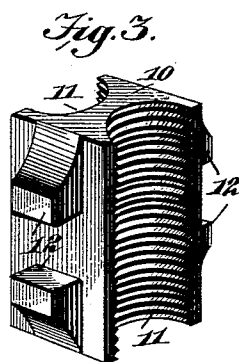
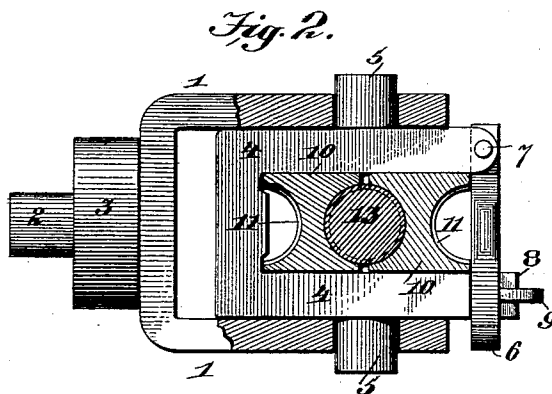
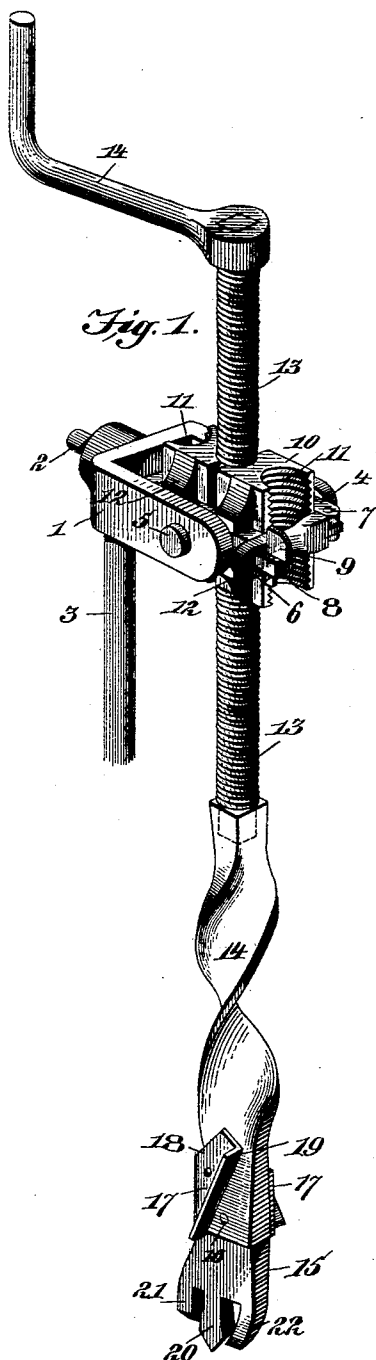


(No Model.)

W. BYNON.
DRILLING MACHINE.

No. 573,808.

Patented Dec. 22, 1896.



Witnesses

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V. B. Hillyard.

By *his* Attorneys,

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UNITED STATES PATENT OFFICE.

WILLIAM BYNON, OF AUDENRIED, PENNSYLVANIA.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 573,808, dated December 22, 1896.

Application filed July 11, 1896. Serial No. 598,854. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BYNON, a citizen of the United States, residing at Audenried, in the county of Carbon and State of Pennsylvania, have invented a new and useful Drilling-Machine, of which the following is a specification.

This invention relates to machines for drilling coal, rock, and similar substances preparatory to blasting.

An object of the invention is the provision of a bit which will readily penetrate a bed of coal, forming a comparatively smooth bore for the reception of the charge, and which will clear the bore of chips and particles and obviate choking.

A further object of the invention is to prolong the usefulness and life of the feed-nut without adding to the cost of the machine, said nut being made in sections and each section having screw-threads in its opposite faces whereby the section can be reversed to bring a new screw-thread into position when the other is worn.

Other objects and advantages are sought to be attained and will appear as the nature of the invention is unfolded, reference being had to the following description and the views of the accompanying drawings.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a drilling-machine for attaining the objects of this invention. Fig. 2 is a top plan view, partly in section. Fig. 3 is a detail view of a half or section of the feed-nut. Fig. 4 is a side view of the lower portion of the drill. Fig. 5 is a front view of the parts illustrated in Fig. 4.

Corresponding and like parts are referred to in the following description and indicated in the several views of the drawings by the same reference-characters.

The yoke 1 is provided at its closed end with an integral journal 2, which obtains a bearing in a staff or support 3, by means of which the machine is held in position. A frame 4 is pivotally supported in the yoke and

has trunnions 5, which obtain bearings in openings formed in the side or parallel members of the yoke. The frame 4 is of rectangular shape and is open at one end, which end is closed by a bar 6, having pivotal connection at 7 with a terminal of the frame, and having its opposite end apertured for the passage therethrough of a reduced terminal 8 of the frame, a pin or key 9 passing through an opening in the reduced end 8, so as to hold the bar 6 locked.

The feed-nut is composed of halves or similar sections 10, each having screw-threads 11 in its opposite faces, and provided at the opposite sides with pairs of lugs 12, between which the side bars of the frame 4 pass, so as to hold the sections or parts 10 against vertical displacement when fitted to the frame. When the bar 6 is thrown outward, so as to disclose the open end of the frame 4, the feed-nut sections can be moved outward and disengaged from the frame, thereby admitting of the halves or sections 10 being reversed, so as to bring a new set of screw-threads into position after the other set has become worn or otherwise unfitted for further service.

The feed-screw 13 operates in conjunction with the feed-nut to advance the drill 14 to its work and is rotated in any convenient way, and, as shown, is supplied with a crank-handle 14 for this purpose. The drill 14 is fitted to the feed-screw in any convenient way, and its lower end is formed with a socket to receive the shank of a point 15, which is secured to the drill by a pin or fastening 16, passing through the socket of the drill and the shank of the point. Clearers 17 are secured to the opposite sides of the drill 14 adjacent to the point 15, and consist of plates having a portion bent substantially at right angles, forming wings 18 and 19, the wings 18 lying against the sides of the drill and the wings 19 projecting at right angles therefrom and extending in an oblique direction with respect to the length of the drill, whereby the chips and cuttings are caused to move upward when the drill is in operation. The inclination of the wings 19 corresponds approximately to the pitch of the twists of the drill and forms in effect a continuation thereof.

The point 15 is formed at its lower or active end with a middle cutter 20 and side cutters

21 and 22 of unequal length and shorter than the middle cutter. The cutter 21 is straight and projects slightly from one side of the point, so as to enlarge the bore. The cutter 5 22, which is longer than the cutter 21, curves to one side of the plane of the point and removes the coal or substance being drilled from the bottom of the bore in such a manner as to provide a smooth cut and bore. 10 The middle cutter 20 is located to one side of the longitudinal center of the drill, and is arranged nearer the cutter 21, so that the resistance of the combined action of the cutters 20 and 21 will equal the resistance of the cutter 22, thereby insuring the drill advancing 15 to the work without lateral draft.

It will be observed that the frame 4 has pivotal connection with the yoke, thereby admitting of the drill moving in a plane at right 20 angles to a plane passing through the trunnions 5, and the yoke 1 has pivotal connection with the support 3, whereby the drill is adapted to swing in a plane parallel with a plane passing through the trunnions. By 25 this means the drill has a varied range of movement without necessitating the shifting of the support 3.

Having thus described the invention, what is claimed as new is—

30 1. In a drilling-machine, the combination

of a frame, a feed-nut removably fitted to the frame and composed of halves or sections, each section provided in its opposite faces with screw-threads, and adapted to be reversed, means for securing the sections in the 35 frame, and a feed-screw bearing a drill and operating in connection with the screw-threads of the feed-nut sections to advance the drill to its work, substantially as specified.

2. In a drilling-machine, the combination 40 with a frame open at one side, and a bar for closing the open side of the frame, of a feed-nut removably fitted to the frame and composed of sections, each section having screw-threads in its opposite faces and provided 45 with pairs of lugs to engage with the top and bottom sides of the frame and adapted to be reversed, and a feed-screw carrying a drill and adapted to operate jointly with the screw-threads of the feed-nut sections, substantially 50 in the manner set forth for the purpose described.

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

WILLIAM ^{his} X BYNON.
mark

Witnesses:

S. S. SIMPSON,
J. M. ROBINSON.