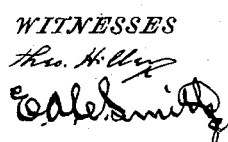


J. COLLIER.
COAL DRILL.

Patented Aug. 28, 1894.



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UNITED STATES PATENT OFFICE.

JOHN COLLIER, OF JUSTUS, OHIO.

COAL-DRILL.

SPECIFICATION forming part of Letters Patent No. 525,093, dated August 28, 1894.

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To all whom it may concern:

Be it known that I, JOHN COLLIER, a citizen of the United States, residing at Justus, in the county of Stark and State of Ohio, have
5 invented certain new and useful Improvements in Coal-Drills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of
10 this specification, and to the letters of reference marked thereon, in which—

Figure 1, is an isometrical view of the drill. Fig. 2, is vertical section through line *xx*, Fig. 1. Fig. 3, is a sectional view, showing a portion
15 of the power shaft, and illustrating the handle attached thereto. Fig. 4, is a face view of the sliding clutch. Fig. 5, is a front face view of the sprocket worm wheel.

The present invention has relation to coal
20 drills, and it consists in the different parts and combination of parts hereinafter described and particularly pointed out in the claim.

Similar letters of reference indicate corresponding parts in all the figures of the draw-
25 ings.

In the accompanying drawings A, represents the bar which may be formed of any desired length, and is supported at its rear end in the ordinary manner. Upon the bar
30 A, is located the frame B, which frame is moved forward upon the bar A, as hereinafter described. The rear end of the frame B, is provided with the yoke *a*, to which yoke is journaled the power shaft *b* said power shaft
35 having securely attached thereto the beveled gear wheel *c*, which beveled gear wheel meshes with, and communicates rotary motion to the beveled gear wheel *d*, which beveled gear wheel is securely attached to the
40 drill shaft C. The front or forward end of the drill shaft C, is provided with an ordinary socket, which is to receive the drill D, which drill may be of the form shown, or it may be of any other desired form or kind, in-
45 asmuch as the drill proper forms no particular part of the present invention, except that a drill of some kind must be employed to carry out the object and purpose of the machine. The front or forward portion of the
50 drill shaft C is formed somewhat larger in diameter than the portion of said shaft contained in the frame B, and as shown it is pro-

vided with the worm *e*, which worm communicates rotary motion to the wheel *f*, which wheel in turn communicates rotary motion
55 to the shaft *g*, said shaft *g* being properly journaled to the frame B, and is located substantially as shown in Fig. 1. The bottom or lower end of the shaft *g*, is provided with the worm *h*, which worm communicates rotary
60 motion to the wheel *h'*, which wheel *h'* is loosely mounted upon the shaft E, said shaft being properly journaled to the flanges F, which flanges are formed upon the bars G, said bars being securely held in proper posi-
65 tion by means of the clamping bolts *k* or their equivalents.

In the drawings but one flange G is shown in Fig. 1; but it will be understood that two flanges, such as G are to be employed, and lo-
70 cated upon opposite sides of the chain H. One end of the shaft E is screw-threaded, upon which screw-threaded portion is located the screw-threaded nut I, and as shown, said screw-threaded nut is provided with the
75 hooked arms *k'*, which arms are for the purpose hereinafter described. Upon the inner side of the screw-threaded nut I, is located the spider J, which spider is provided with the grooved flange *k''*. The spider J, is pro-
80 vided with the angular aperture *k'''*, which angular aperture is for the purpose of receiving an angular portion of the shaft E.

The wheel *h'* is provided upon its outer side with the lugs *h''*, which lugs are for the
85 purpose of engaging the arms of the spider J, and thereby cause the wheel *h'* to rotate the shaft E, during the time the arms of the spider are engaged with the lugs *h''*.

To the bar A, is attached the chain H, 90 which chain is formed of a length to correspond substantially with the length of travel designed to be given to the frame B. The chain H is securely attached to the bar A, by means of the hooks K. 95

The sprocket wheel K' is securely attached to the shaft E, and is so located that it will engage with the links of the chain H. The front or forward end of the bar A is provided with the detachable extension K², said exten- 100 sion being for the purpose of providing a means for attaching the front or forward end of the bar A to the vein of coal, calculated to be drilled, which attachment is made by

forming a hole in the vein of coal of sufficient size to receive the extension K^2 , which extension is securely fastened by a wedge driven into the hole formed in the coal upon the under side of the extension.

For the purpose of preventing any accidental displacement of the extension K^2 , after it has been properly adjusted, the metal points m are provided.

For the purpose of setting the drill proper, together with its bar A at an angle, the extension K^2 is provided with the flanges n , which flanges are provided with the notches n' , which notches receive the pin n^2 , said pin being securely attached to the bar A ; and for the purpose of preventing any disengagement of the flanges n , the pin p is provided.

For the purpose of providing a means for detaching the bar A , the flanges n , are provided with the removable pin p' and for the purpose of providing for different angles, a series of apertures, such as p^3 , may be provided. In use the bar A , together with its different parts are properly adjusted, and the drill D brought into contact with the coal to be drilled, at which time rotary motion is communicated to said drill, and the frame B , moved forward, by means of the feed mechanism above described. After the drill D has been entered the desired depth, the wheel h'

is thrown out of gear by rotating the nut I until the spider J , has become disengaged from the flanges or lugs h^2 , at which time the frame B is free to be moved backward. It will be understood that the links of the chain H , provide teeth which provide the proper engagement for the sprocket wheel K' .

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination of the bar A , having attached thereto a link-chain, the frame B , mounted upon the bar A , and provided with the yoke a the power shaft b provided with the beveled gear wheel c , the drill shaft C provided with the gear wheel d , the worm e meshing with the wheel f , the shaft g , provided with the worm h , the wheel h' loosely mounted upon the shaft E , the sprocket wheel K' meshing with the chain, and means for throwing the drill shaft in and out of gear with the chain, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN COLLIER.

Witnesses:

E. A. C. SMITH,
F. W. BOND.