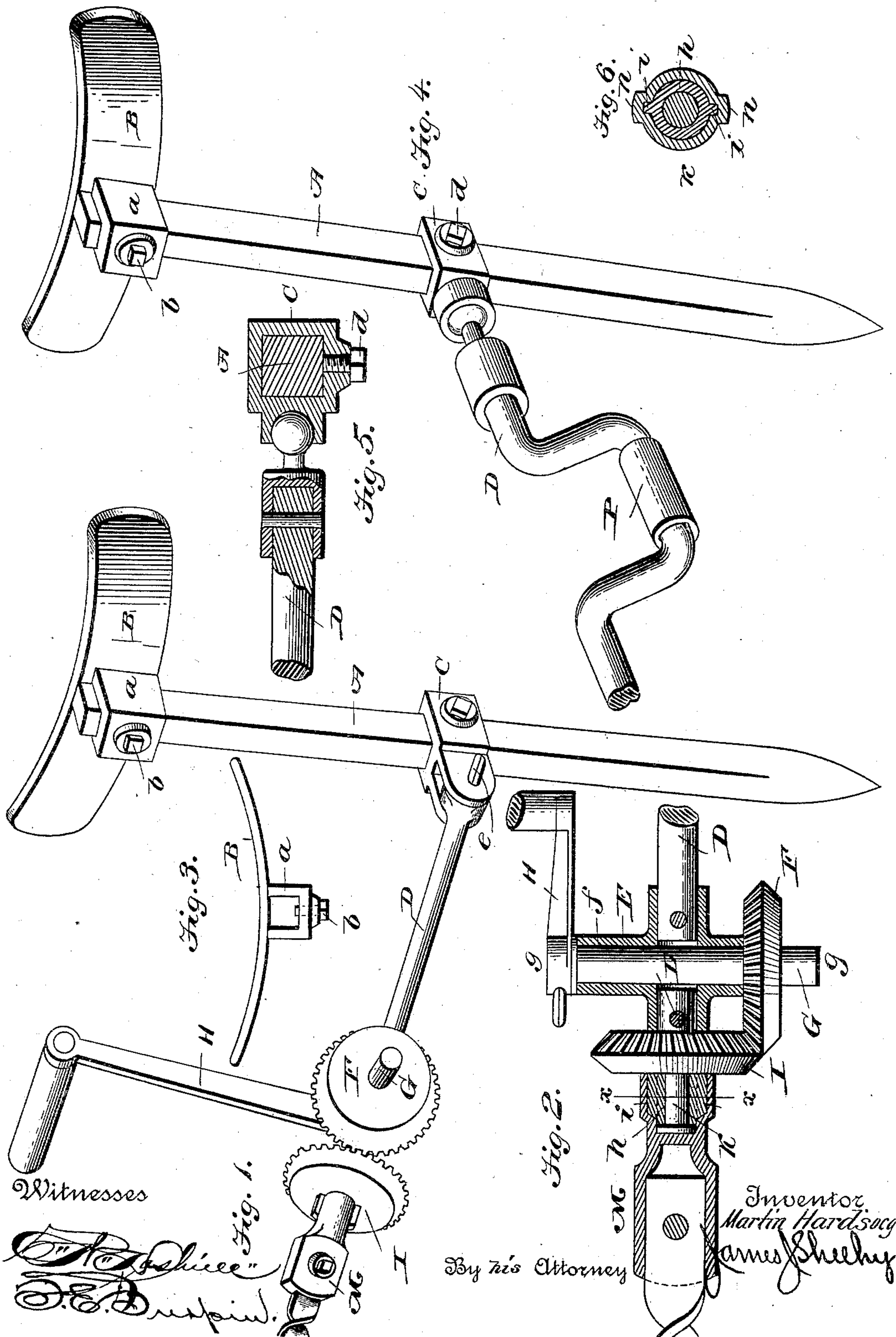


(No Model.)

M. HARDSOOG.
COAL MINING MACHINE.

No. 426,618.

Patented Apr. 29, 1890.



Witnesses

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UNITED STATES PATENT OFFICE.

MARTIN HARDSOCC, OF OTTUMWA, IOWA.

COAL-MINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 426,618, dated April 29, 1890.

Application filed November 4, 1889. Serial No. 329,109. (No model.)

To all whom it may concern:

Be it known that I, MARTIN HARDSOCC, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented certain new and useful Improvements in Coal-Mining Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to improvements in coal-mining machines, and is more particularly adapted for use in mining soft coal, or coal in which great power is not required to bore or drill the holes.

The invention will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a perspective view of my improved coal-mining machine with the auger or drill partly broken away and showing the parts in a position ready for operation. Fig. 2 is a sectional detail view showing the socket to receive the drill or auger and the means for connecting the same with the power-gearing. Fig. 3 is a plan view of the cross-bar or bearing removed. Fig. 4 is a perspective view of the anchor-bar with the adjustable cross-bar in position and showing a stock or brace in a modified form. Fig. 5 is a sectional detail view of the stock shown in Fig. 4, with the anchor-bar in cross-section; and Fig. 6 is a sectional view taken in the plane indicated by the dotted line xx of Fig. 2.

Referring by letter to the said drawings, A indicates the anchor-bar, which is here shown as of a rectangular form in cross-section, although it may be cylindrical, polygonal, or other suitable form. This anchor-bar, which is preferably formed from stout metal, has its lower end tapering, so that it may be easily plunged into the floor of a mine or other part thereof, and is of any suitable length.

B indicates a cross-bar, which is preferably of a curvilinear form, so that it may not be disagreeable or uncomfortable when placed against the operator. This cross-bar is provided on one side with a loop a , adapted to receive the anchor-bar, so that said cross-bar may be moved up and down upon the anchor-

bar and secured in the desired position. This loop a is provided with a screw-tapped aperture to receive a bolt b , adapted to impinge against the anchor-bar, so as to secure the cross-bar at a desired point.

C indicates a movable and adjustable bracket, which is also adapted to receive the anchor-bar and be adjusted up and down thereon. This bracket is provided with a screw-tapped aperture and carries a bolt or screw d , similar to that of the loop in the cross-bar, and is designed for a similar purpose.

In Fig. 1 of the drawings I have shown this adjustable bracket as being bifurcated, and the rear end of the operating-rod secured to the bifurcated portion in a hinged manner by means of a pin e , while in Fig. 4 of the drawings I have shown this bracket as having a socket adapted to receive a ball carried by one end of the operating bar or brace, and thereby form a ball-and-socket joint, the anchor-bar serving in either case to sustain the operating bar and drill together with its operating mechanism.

In using the ball-and-socket joint—such as shown in Figs. 4 and 5 of the drawings—I have found it unnecessary to employ power-gearing, as when a straight bar is used, and a hinged joint effected between the bracket and the bar.

D indicates the operating-bar. This bar, as shown in Fig. 1 of the drawings, carries at its forward end a casting E, provided with a journal-aperture f , which is adapted to receive a rotative shaft G. This shaft G, which passes through the casting E, has fixed to it near one end a bevel-gear F, and its opposite ends, as g , are adapted to receive a crank-arm H. This crank-arm is removably secured to the rotative shaft G by a screw or other suitable means, whereby the said crank-arm may be used interchangeably upon either end of the shaft, according to the location of the machine in a mine, thereby adapting it for right and left hand use.

I indicates a beveled pinion or gear, which meshes with the gear F, and receives motion therefrom. This gear I is supported in the casting E, at approximately right angles to the gear F, and is provided with a rigid hub

h, carrying splines *i* at diametrical points, for a purpose which will be presently explained.

K indicates a shaft, which is headed at its forward end, and secures the pinion I to the casting E. This shaft K passes through the hub *h* and also through the pinion I, and is secured to the casting E by means of a bolt L.

M indicates the socket, which is adapted to receive an auger or gear. This socket has its rear end provided at points coincident with those of the splines on the hub of the gear I, and is adapted to receive the latter. By having these splines on the hub it will be seen that when the socket has been driven upon the hub and the recesses *n* therein brought over the splines, the said socket will be made to turn at the turning of the power-gear.

In the modification referred to and illustrated in Figs. 4 and 5 of the drawings, the socket for the drill-auger is placed upon the forward end of the bar D, and the said bar is cranked, as shown at P, whereby it may be given a rotary movement when grasped by the operator.

In operation the miner plunges the point of the anchor-bar into the floor of the mine or wall thereof, with the cross-bar bearing against his breast or other part of the body. He then adjusts the slide-bracket to the desired altitude, after which, by grasping the crank H or the crank P and turning the same, the drill or auger will be forced into the coal.

By the hinge-joint at the bracket the operating mechanism may be moved vertically to any desired angle of inclination, while with ball-and-socket joint a lateral, vertical, and horizontal adjustment may be had without resetting the bracket upon the anchor-bar, and by this form of anchor-bar a great leverage may be obtained in the manipulation of the machine.

Having described my invention, what I claim is—

1. A hand implement for mining soft coal, consisting, essentially, of the anchor-bar A, having its lower end pointed to penetrate the floor or wall of the mine, the cross-bar B, movably secured on the upper end of the anchor-bar, said cross-bar being adapted to bear against the operator, and the rotatable drill or auger flexibly and adjustably secured to the anchor-bar, substantially as specified.

2. A hand implement for mining soft coal, consisting of an anchor-bar, a cross-bar secured to the upper end of said anchor-bar and adapted to bear against the operator, and the rotatable drill or auger, and the bracket adjustably secured to the anchor-bar and hinged to the auger, substantially as specified.

3. A hand implement for mining soft coal, consisting of an anchor-bar having its lower end reduced or pointed, a cross-bar on the upper end of said anchor-bar adapted to bear against the operator, a brace, and an adjustable bracket on the anchor-bar, and a ball-and-socket joint connecting said brace to the bracket, substantially as specified.

4. A hand implement for boring soft coal and other substances, consisting of an anchor-bar, a cross-bar secured to the upper end of said anchor-bar and adapted to bear against the operator, and the rotatable drill or auger, and the bracket adjustably secured to the anchor-bar and hinged to the gearing apparatus that rotates the auger, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

MARTIN HARDSOCK.

Witnesses:

W. A. WORK,
J. S. SURBAUGH.