

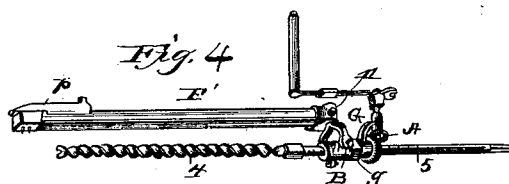
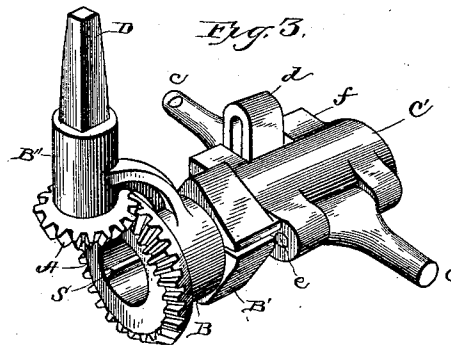
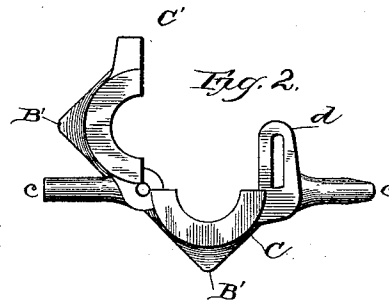
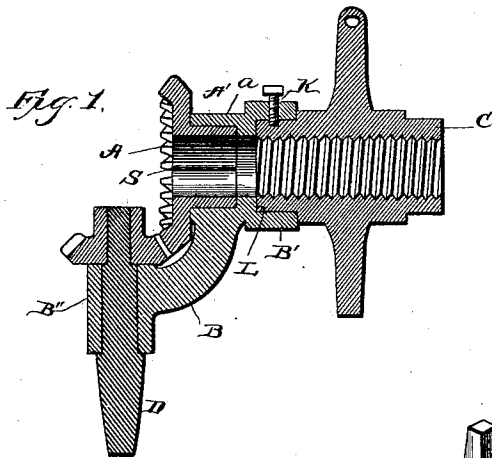
(No Model.)

2 Sheets—Sheet 1.

M. HARDSOEG.
COAL OR ROCK DRILLING MACHINE.

No. 484,425.

Patented Oct. 18, 1892.



Witnesses:

M. M. Rheem
E. M. Mordemann

Inventor:

Martin Hardsocg, Jr.
Butterworth Hall & Brown
His Attys

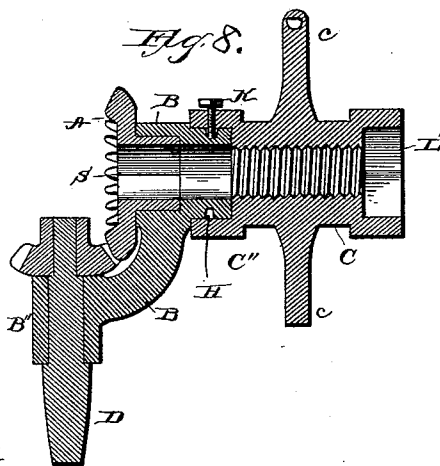
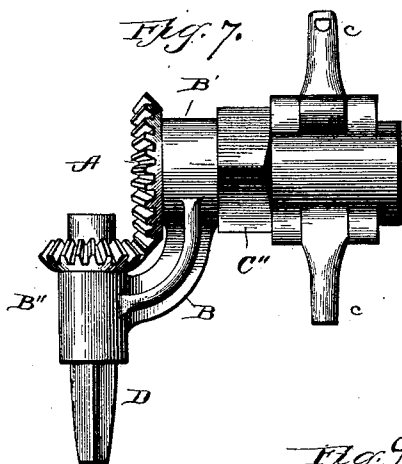
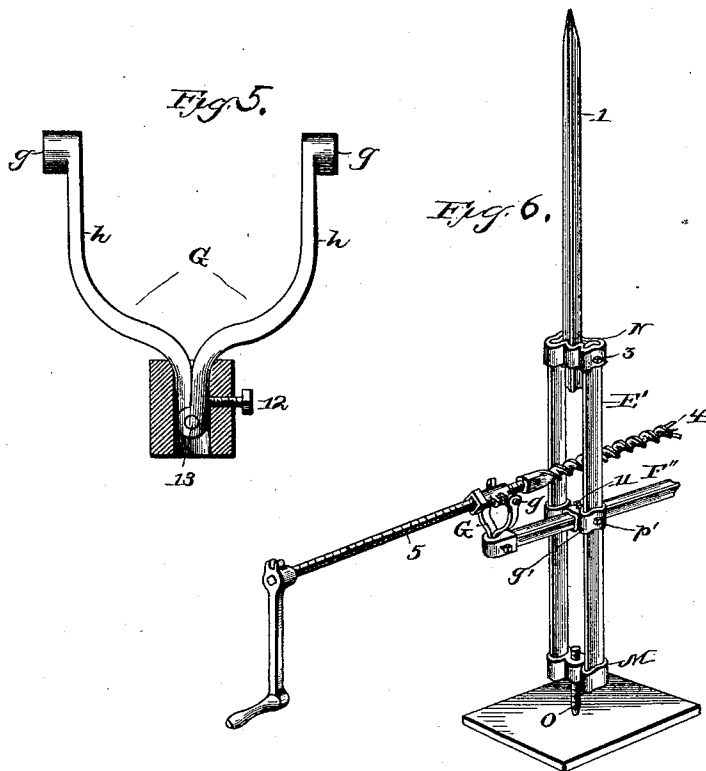
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UNITED STATES PATENT OFFICE.

MARTIN HARDSOEG, OF OTTUMWA, IOWA.

COAL OR ROCK DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 484,425, dated October 18, 1892.

Application filed August 30, 1890. Serial No. 363,534. (No model.)

To all whom it may concern:

Be it known that I, MARTIN HARDSOEG, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented new and useful Improvements in Coal and Rock Drilling Machines, of which the following is a specification.

My invention relates to coal and rock drilling machines, and involves means and arrangements for attaching removably the gearing and rotating mechanism to the clamping device which carries and directs the movements of the feed bar and drill, and also mechanism for supporting the drilling mechanism with vertical and horizontal adjustment. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a sectional view of the frame carrying the gearing and of the clamp for carrying the screw-threaded feed-bar, with its nut-head held in the housing or boxing of the frame. Fig. 2 represents an end view of the clamp and housing, the upper or dorsal part being thrown back and supported upon its hinge. Fig. 3 is a perspective view of the clamp and its housing or boxing attached to the frame and gearing by means of the nut-head of the frame held in the housing or boxing. Fig. 4 is a view of a side elevation of the supporting-frame with means for vertical adjustment, and the feed-bar and drill supported therein. Fig. 5 is a view of a telescoping adjustable grip-bar carrying a bifurcated bracket to support the drill and rotating mechanism. Fig. 6 is a perspective view of another form of grip-bar carrying a bifurcated bracket and the drill and rotating mechanism and means for adjusting the bracket thereon. Fig. 7 is a view of the bifurcated bracket hinged so as to spread, and of the socket in which it is held in normal position. Fig. 8 is a perspective view of the supporting-frame and feed-bar and drill in the bracket. Fig. 9 is a perspective view of the frame and gearing attached to the clamp by means of the nut-head and housing.

Letter A represents the two beveled wheels or gearing, and D the crank-shaft to which the smaller beveled wheel is attached, supported in the bearing B'', which is integral

with the frame B B'. The larger beveled wheel is provided with a hollow hub A', which is set in the bore or circular opening of the frame B B' and acts as a journal for it, and it is held in place by the presence of the smaller beveled wheel. The interior bore of the larger beveled wheel is provided with a feather or spline S, which engages in a longitudinal groove *t* in the feed-bar 5, causing the feed-bar to rotate with the wheel when the former is inserted. The bearing B'' is integrally connected with the frame B B' by an arm, as shown.

The frame B B' is provided with an enlarged housing or boxing L to receive and hold the nut-head of the clamp C C', and the two are held in locked position by the set-screw K, as shown in Fig. 1, or by a pin or staple, as may be preferred; or the clamp may be provided at one or both ends with an enlarged housing or boxing to receive and hold the nut-head which may be constructed upon the frame, and the two may be held in place by a set-screw K, as shown in Fig. 10, or by a pin or staple; or the clamp may be provided with a clamping housing or boxing whose jaws open and close with the jaws of the clamping device to receive and hold the nut-head with which the frame is provided, as shown in Figs. 3 and 11. In the latter case the housing or boxing is provided with a chamber nicely fitted and adjusted to hold the nut-head, as shown.

The nut-head and the housing or boxing to receive it are constructed in the form of a square or with many sides or any other shape, so as to enable them to hold each other firmly, and also to enable proper adjustment, as may be required in operation.

The threaded screw-clamp C C', provided with its housing or boxing or with a nut-head, is preferably constructed in two parts hinged together, so that it may easily open and close to enable the insertion or removal of the screw-threaded feed-bar 5. The jaws of the clamp are fastened by the projection of an open ear *d*, which passes between two lugs *f* of the opposite jaw, and are held by a wedge-shaped key inserted in the opening of the ear *d*. The lower jaw of the clamp is also provided with arms *c c* to be affixed in the frame of the supporting mechanism.

My invention relates to uniting detachably the clamp or feed-bar holder to the frame by means of a nut-head and a boxing or housing, which may be constructed convertibly upon
 5 the frame and the boxing or housing, or vice versa, respectively. In this latter construction the nut-head is inserted in the housing or boxing and the latter is provided with openings *k k*, through which is inserted
 10 a double or yoked key *K'*, passing immediately behind the projection of the nut-head and firmly holding them in place with reference to each other, the nut-head and the chamber of the boxing or housing being square or poly-
 15 gonal in shape. The key *K'* is easily withdrawn and the frame removable from the clamp or feed-bar holder.

The feed-bar 5 and the drill are connected by any of the well-known means employed
 20 for that purpose, the feed-bar being provided with a male screw-thread of proper diameter to fit the screw-thread of the clamp and with a longitudinal groove *t* to receive and engage with the spline.

25 The grip-bar *F''*, Fig. 8, is adapted to be adjusted in a sliding collar *p'* and fastened with a set-screw. It may be constructed of telescoping tubes or otherwise made capable of greater adjustment.

30 The bracket *G* is hinged at 13 and its two arms *h h* are curved, so that when in normal position their lower extremities will settle down into a socket and be firmly held by a set-screw 12. Their opposite extremities are
 35 provided with bearings into which the arms of the clamp *c c* may be easily introduced and held or removed by freeing the set-screw and spreading the arms of the bracket. The bracket is supported and adjustably held upon
 40 the grip-bar *F''*.

The frame *E'* is constructed of two upright bars held firmly and parallel by permanent or movable collars *M* and *N*. It is provided
 45 with a sliding collar *g*, which may be elevated or lowered and fastened by the set-screw *p'*. This sliding collar is provided near its center with an opening or bearing, into which is introduced an adjustable grip-bar *F''*, which is fastened by the set-screw 11.

50 The cross-collars or cross-bars of the frame *M* and *N* are provided with openings or bearings. That at *M* is screw-threaded to admit the screw-threaded pin *o* with a lever 6, that at *N* either circular or many sided to admit the pin or rod *l*, which may be made of
 55 telescoping tubes set by set-screws 2 3, as shown in Fig. 4, or of one bar and tube or of one piece of bar or tube and held by a set-screw 3, as shown in Fig. 8.

60 From the foregoing description of the various parts it will be seen that one feature of my invention relates to the manner of attaching the frame that carries the rotating mechanism to the screw-threaded clamp, which is
 65 done by inserting the nut-head, which is constructed integrally with one, and the housing or boxing, which is constructed integrally

with the other—a feature that is entirely new in drilling-machines. This feature of my invention consists in attaching the gearing-
 70 frame to the screw-threaded clamp by means of a nut-head integral with one and a housing or boxing to receive and hold it integral with the other.

Heretofore in drilling-machines the gear-
 75 ing-frame and screw-threaded clamp have usually been made integral or secured together rigidly, or, if made in separate pieces, have not been secured together firmly with means of adjustment, as shown in my inven-
 80 tion. In many instances the screw-threaded clamp has been attached to a frame supporting the drilling mechanism, while the gearing was attached to the same by various devices. In other instances the frame which carries
 85 the gearing has been so constructed that the arms of the screw-threaded boxing rested in arms or projections of the frame which carries the gears; but in my invention the main
 90 body of the screw-threaded clamping device is attached within, upon, or around the extension of the main body of the frame that carries the gearing—a feature which it is be-
 95 lieved is not found in any other machine, and which permits the drill and feed-bar to be used with or without the gearing mechanism, as shown in Fig. 8. While this may be done
 100 with a number of other machines, yet with those which have the gearing-frame and screw-threaded clamp of one solid piece of material, the miner or operator is compelled
 105 to buy the complete machine with gear, while with the construction shown in my invention he need not purchase the gearing unless de-
 sired, and the gearing can be subsequently purchased and attached, as required.

One great advantage of securing the gear-
 110 ing-frame to the screw-threaded clamp by means of the nut-head and housing or boxing is that the former may be fitted upon the latter at any desired angle with refer-
 115 ence to the bracket or bearings that support the screw-threaded clamp. Ordinarily I prefer the nut-head and the housing or boxing that receives it to be square, which will admit of an adjustment at an angle of ninety
 120 degrees. By changing the square to a hexagon or octagon still slighter adjustments can be made. If a drill-hole is required down
 125 near the bottom of a mine, the frame may be adjusted to the clamping device at such angle as will enable the crank of the gearing
 130 mechanism to be operated without contact with the floor or wall of the mine, Fig. 6. Heretofore these grips have been made of solid bars; but the objection to that construction
 135 is that they cannot always be set the proper depth into the coal, and after the drill has moved forward until the crank-handle comes in contact with the outer end of the grip-bar it is found the drill or auger cannot drill its
 140 full length. Where the augers or drills are not of proper length, it is desirable to move the bearings for the rotating mechanism for-

ward or backward on the grip-bar. With a solid grip-bar this cannot be done; but with a telescoping grip-bar, Fig. 5, or an adjustable grip-bar F'', Fig. 8, this can be done.

5 The telescoping or adjustable grip-bars may be constructed of circular cylindrical tubes or of bars of any particular sectional form or shape.

Another feature of my invention relates to what is commonly known as the "upright" or "post" for supporting the drilling mechanism. While the drilling mechanism can be adjusted vertically in the notches of the post-frame, it cannot be horizontally adjusted with reference to the coal or material to be drilled, and my invention provides for both, and is illustrated in Fig 8. The obvious advantages of this arrangement are that while the drilling mechanism may be lowered or elevated, as desired, if the augers or drills are not of sufficient length the drilling mechanism can be adjusted to suit their length, and where it is desirable to drill a deeper hole than could be done with the ordinary post 20 the horizontal grip-bar F'' may be moved and fixed in the collar g', nearer the substance to be drilled, and the auger or drill can then be drilled deeper into it.

Another improvement upon coal and rock drilling machines relates to the bracket, which, resting upon the grip-bar, carries and supports the drilling mechanism. Heretofore this bracket has been constructed of one solid piece of metal or of two arms or parts firmly 30 bolted together. In my improvement the two bifurcated arms are pivotally attached on hinges at their lower extremities, so as to be easily spread or closed, thus enabling arms of the clamp that carries the drilling apparatus 40 to be readily introduced or removed from the bracket.

Having thus described the several parts of my invention, I now describe the mode of operation. The support is placed in the desired position, having reference to the depth of the hole to be drilled, its height from the floor, and the length of auger employed. If the frame E E is employed, it is placed at the required distance from the wall. The screw-threaded 50 pin O, provided with a lever 6, is located upon a firm portion of the floor or a plate or slab and the point of the adjustable rod or telescoping tubes 1 are set against the ceiling. The feed-bar 5 is inserted through the bore 55 of the frame of the gearing, the jaws of the clamp are closed around it, and the frame and the clamp attached by means of the nut-head and gearing. The arms cc of the clamp are then set in the bifurcated bracket and the 60 drill placed against the material to be drilled.

The operation of the crank upon the crank-shaft D communicates rotary motion to the feed-bar and drill, which advance by means of the male screw-thread of the feed-bar working in the female screw-thread of the 65 clamp C C'. The direction of the drill either vertically or laterally is permitted by the bearings in the bracket and the arrangement of the support.

Having described my invention and its mode of operation, what I claim, and desire to secure by Letters Patent, is—

1. In a drilling-machine, the combination of a screw-threaded hinged two-jawed clamp provided with arms upon opposite sides thereof, each of said jaws provided integrally at one or both ends with a corresponding jaw having a polygonally-shaped recess therein for a housing, means to hold the jaws of said clamp closed, with a frame provided with a 80 flanged polygonally-shaped head adapted to fit the recessed chamber of said housing, a bevel-wheel with its hub journaled movably in the body of said frame and the interior bore of said hub provided with a spline, and 85 a screw-threaded feed-bar provided with a longitudinal groove to engage said spline, and means to rotate said wheel, all substantially as shown.

2. In a drilling-machine, the combination 90 of a screw-threaded hinged two-jawed clamp, each jaw provided integrally at one or both ends with a corresponding jaw having a polygonally-shaped recess therein for a housing, means for holding the jaws of said clamp 95 closed, with a frame provided with a flanged polygonally-shaped nut or head adapted to be received and held in the recessed chamber of said housing, all substantially as shown.

3. In a drilling-machine, a screw-threaded 100 hinged two-jawed clamp, each jaw provided integrally at one or both ends with a corresponding jaw having a polygonally-shaped recess therein for a housing, adapted when closed to receive and hold in place a poly- 105 gonally-shaped nut or head, and means for holding the jaws of said clamp closed, all substantially as shown.

4. In a drilling-machine, a bifurcated hinged bracket provided with bearings to carry a 110 drill and feed-bar and rotating mechanism, in combination with a collar provided with a slot to receive the hinged extremities of said bracket detachably and a set-screw to hold and fix the same in position, all substantially 115 as shown.

MARTIN HARDSOCK.

Witnesses:

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