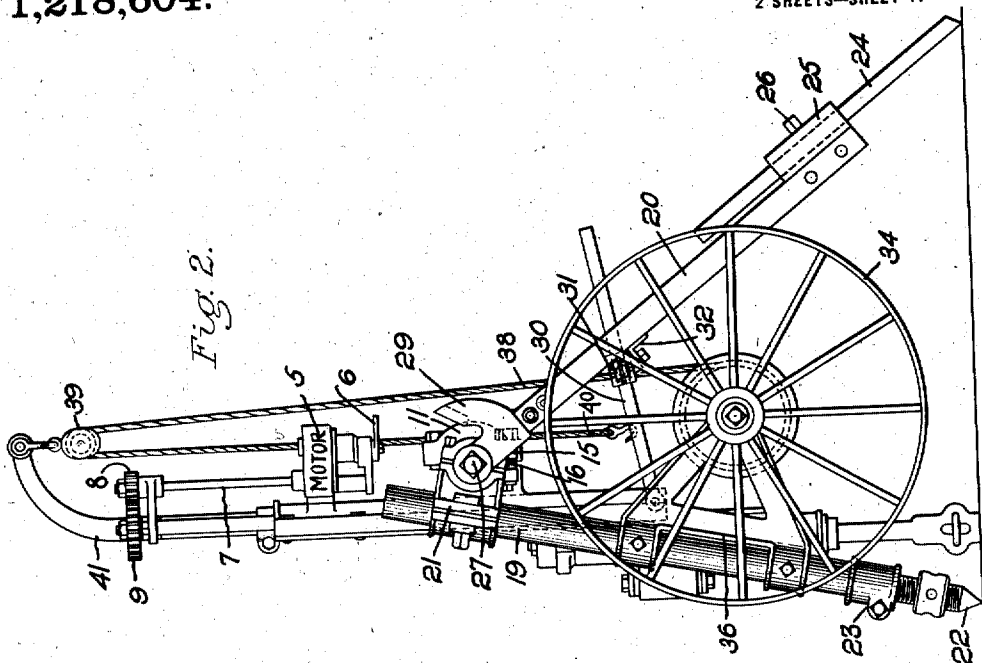
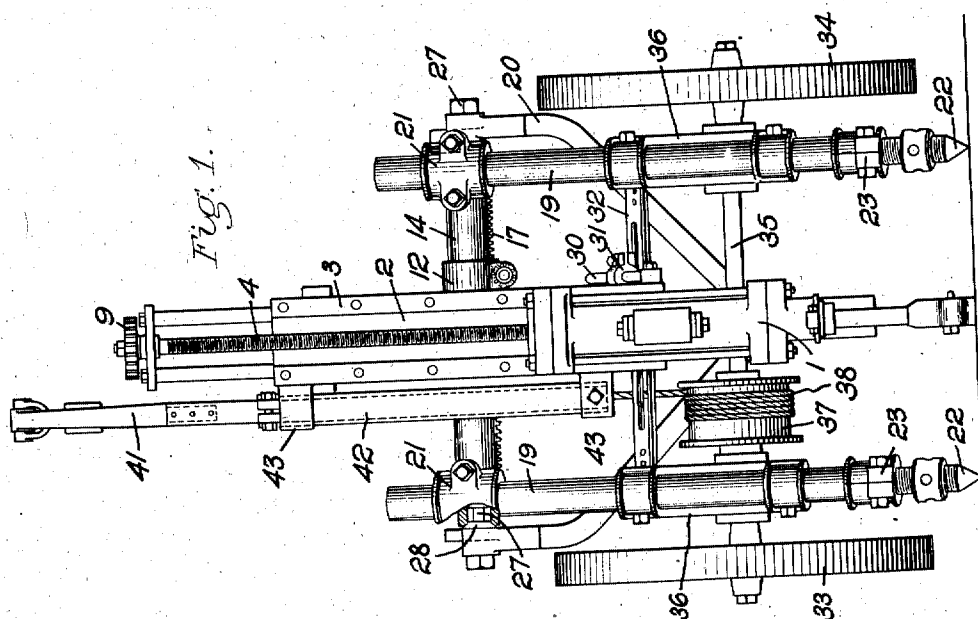


D. J. O'ROURKE & F. D. HOLDSWORTH.
 ROCK DRILL SUPPORT.
 APPLICATION FILED SEPT. 21, 1911.

Patented Mar. 6, 1917.
 2 SHEETS—SHEET 1.

1,218,604.



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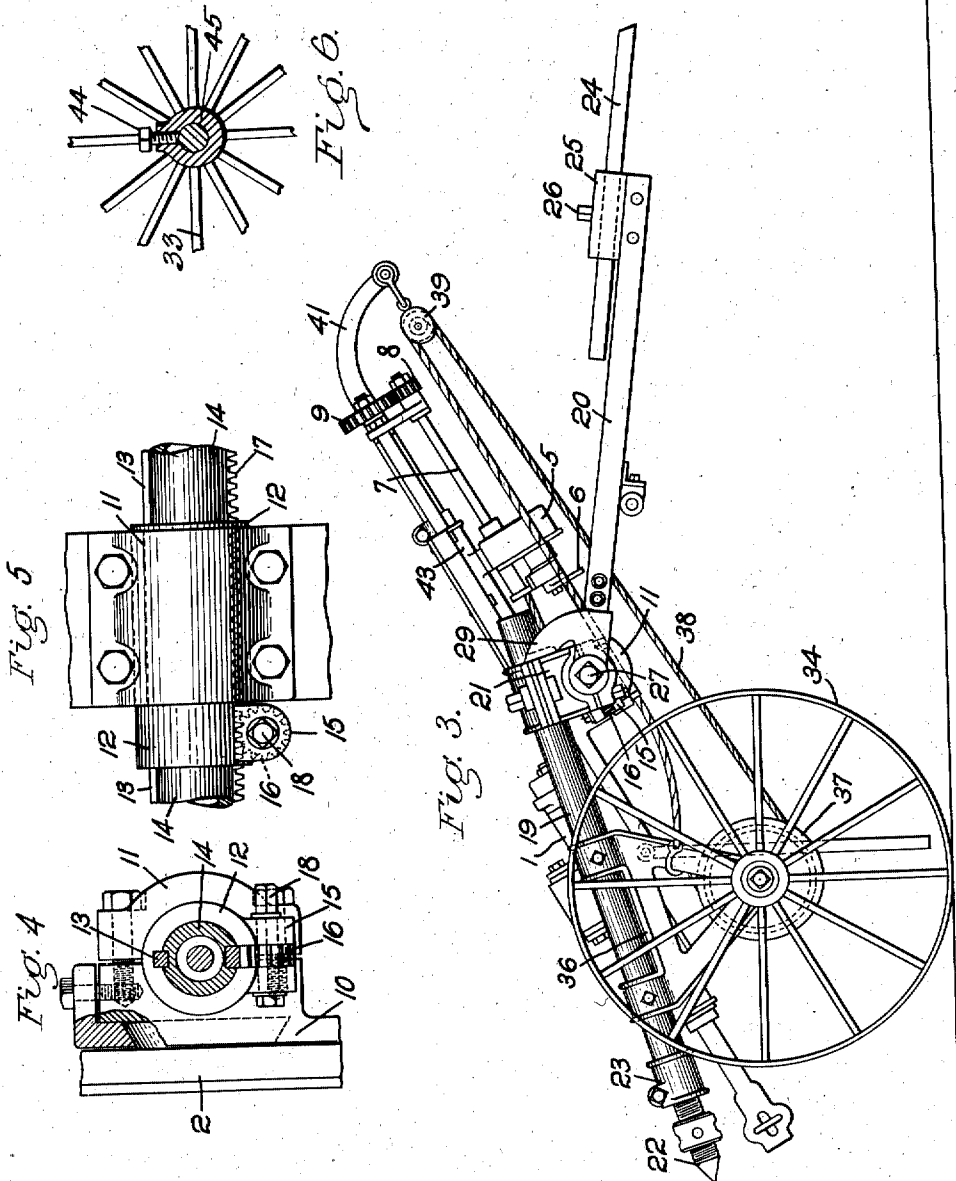
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Witnesses.

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UNITED STATES PATENT OFFICE.

DANIEL J. O'ROURKE AND FRED D. HOLDSWORTH, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNORS, BY MESNE ASSIGNMENTS, TO SULLIVAN MACHINERY COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ROCK-DRILL SUPPORT.

1,218,604.

Specification of Letters Patent.

Patented Mar. 6, 1917.

Application filed September 21, 1911. Serial No. 650,602.

To all whom it may concern:

Be it known that we, DANIEL J. O'ROURKE and FRED D. HOLDSWORTH, both citizens of the United States, residing at Claremont, county of Sullivan, State of New Hampshire, (whose post-office addresses are care of Sullivan Machinery Co., 30 Church street, New York, N. Y., and Claremont, New Hampshire, respectively,) have invented an Improvement in Rock-Drill Supports, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to rock drills and rock drill supports, being more particularly intended to provide a drill having a long tool feed while still providing an apparatus capable of being readily and easily moved and operated in spite of the increased size and weight resulting from the greater length of feed.

To avoid loss of time due to the frequent changing of the drill steel, it is desirable to increase the length of feed in a rock drill. When the length of feed is increased, however, the length of the shell, feed screw and other parts must also be increased so that it becomes heavier and more difficult to move particularly since this increase in weight requires a corresponding increase in weight of the supporting tripod. We have provided in the herein described embodiment of our invention a drill having a length of feed much in excess of that ordinarily employed and have utilized in connection with it a drill support of such a nature that the entire apparatus can be rolled about the quarry bottom from one point to another while capable of being quickly placed upon its supporting legs and effectively operated thereon.

The invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a front elevation of a rock drill and its support embodying one form of our invention, such drill being set in position for operating.

Fig. 2 is a side elevation of the same machine.

Fig. 3 is a side elevation of the same machine when in condition for being moved to another point.

Fig. 4 is a sectional detail showing the attachment of the shell to the supporting bar; and

Fig. 5 is a rear elevation of the shell clamp.

Fig. 6 is a cross section of the hub of the wheel 33 and axle 35 showing one form of means for clamping said wheel to said axle.

Referring to the drawings and to the embodiment of our invention therein disclosed, we have shown for illustrative purposes a pressure-fluid-actuated rock drilling engine 1 which may be of any usual or ordinary construction mounted upon a shell 2 which may also be of any ordinary or usual construction except that its guide ways 3 are lengthened to provide for an abnormally great length of feed. The feed screw 4 is provided for moving the drill toward or from the work, such feed screw being also of a correspondingly greater length than usual.

In order to save the increased time and labor required for using the long feed screw, provision is preferably made so that the feed screw can be motor driven, this being effected in the illustrated machine by means of the pressure-fluid reversible motor 5 secured to the back of the shell and having the controlling handle 6. Such motor has the driving shaft 7 connected to turn the feed screw through the spur gears 8 and 9.

To support the shell the latter is secured to a saddle 10 of usual construction, the saddle in turn being clamped by the cap piece 11 to the sleeve 12 which latter is grooved to engage with the key or feather 13 carried by the transverse supporting bar 14. The sleeve projects beyond the saddle clamp at one side and has a depending portion 15 in which is journaled a spur gear 16 meshing with the teeth of a rack 17 on the underside of the supporting bar 14.

The spur gear is secured to a shaft 18 to the outer end of which a crank handle may be applied to turn the gear. Means are thus provided whereby the drill shell may be clamped in any desired position of angular

adjustment about the sleeve 12 and in that clamped position may be moved as required along the supporting bar by turning the gear 16.

5 To support the bar the latter is provided with supporting legs which herein comprise a pair of front legs 19 and a back leg or brace 20, the three forming a tripod support for the drill. The front legs, which
10 may be made of heavy piping to decrease the weight, are secured each to the bar 14 by means of clamps 21 and are provided at their lower ends with adjustable points 22 threaded into the nuts 23 which latter are
15 split so that they may be clamped to prevent the screws from turning after they have been adjusted.

The front legs 19 may be held at any desired angle by means of the back leg 20, which latter may be tipped to different inclinations about the supporting bar 14 and is also provided with an adjustable point 24 secured in the socket 25 on the back leg by means of a set screw 26. The inclination
20 of the front legs may be varied by adjusting the length of the point 24 in or out of its socket.

The back leg or brace at its upper ends is made Y-shaped, each end being clamped
30 to the adjacent front leg clamp 21 by means of a bolt 27 passing entirely through the supporting bar 14. The upper ends of the back leg brace are provided with conical heads 28 which fit conical recesses in the clamps 21 so that the bolt may be loosened
35 and the legs adjusted to various angular positions.

In order to prevent the legs from opening or spreading too far, the upper ends of the
40 back leg brace are each provided with a stop lug 29 which is adapted to engage with the adjacent clamp 21 when the legs are spread open and prevent the back leg from swinging beyond a certain point in relation to the
45 front legs.

Preferably means are provided for bracing the lower end of the drill shell, such means being herein embodied in the brace rod 30 which is swiveled to the back side
50 of the shell, such rod being adjustably fixed in the clamp 31 mounted upon a transverse angle iron 32 secured to the back legs.

To provide means for moving the drill from one point to another a wheeled support is also provided, such support having
35 the wheels 33 and 34 so located between the front legs and back leg that, when the latter are spread or opened, the drill settles down upon its wheel support and may be tipped to
60 the position shown in Fig. 3 and readily trundled from one point to another. The wheels 33 and 34 are mounted on the axle 35 which latter is free to revolve in the castings 36, the latter adjustably clamped each
65 to one of the front legs 19 so that the posi-

tion of the wheels may be adjusted along the legs.

When it is required to move the drill from one point to another, the drill having been rolled upon its wheel support as described, the back leg can be swung to the position
70 shown in Fig. 3, bringing the stop 29 against the clamp 21 and the back leg used as a pole by the operator to push the apparatus ahead of him. The stop 29 also prevents the upper
75 part of the drill with the feed screw rotating mechanism from striking the ground should the apparatus be dropped. In this position the front legs are above the apparatus and projecting forwardly and down-
80 wardly so that when the point has been reached where the drill is to be used it can be set in position by merely tipping it forward on the points 22 and adjusting the back leg to give it the required inclination
85 and stability.

In order to facilitate lifting the long and heavy drill steel from the drilled hole when it is required to change steels or after the hole has been drilled, means are preferably
90 provided upon the apparatus itself whereby the drill steel can be mechanically lifted from the hole. For this purpose we have herein provided the rope winding drum 37 adapted to wind in the rope or cable 38, the
95 latter passing up and through the sheave 39 and having a depending end 40 adapted to be fastened to the projecting end of the steel and lift the same from the hole when the drum is turned. The sheave 39 is supported upon the curved upright arm 41, having
100 telescopic connection with a second upright member 42, the latter being clamped in the brackets 43 secured at the side of the drill shell. By means of the telescopic joint
105 the arm 41 can be adjustably raised or lowered to accommodate different lengths of steels.

The rope winding drum 37 may be turned by any desired means, but for simplicity we
110 have herein shown the same as fixed upon the axle 35. The wheels 33 and 34 are normally free to revolve upon the axle, but when it is desired to withdraw a steel from the drill hole one of the wheels, for example
115 the wheel 33, may be set up tight on the axle in any suitable way or manner as by tightening a clamping screw bolt 44, for example Fig. 6, which has screw threaded engagement with a threaded hole extended through
120 the hub 45 of said wheel 33, the inner end of said screw bolt engaging the axle 35, and said wheel 33 can then be used as a crank wheel to turn the drum 37 and wind in the rope or cable 38. The wheels may be en-
125 tirely removed from the axle if required during the drilling operation.

In utilizing the drill steel lifting attachment, the cut having been finished with a given drill steel, the drill shell is shifted
130

along the supporting bar 14 to the right hand side thereof as viewed in Fig. 1. The drill steel having been previously detached from the chuck the curved arm 41 is then swung over the drill steel and the end of the rope or cable 38 fastened thereto and the steel hauled up from the hole. A fresh steel can then be inserted and the drill shell shifted back and the drill attached to the fresh steel.

While we have herein shown for purposes of illustration one specific embodiment of the invention, it is to be understood that the same is not limited to the constructional details of the parts herein disclosed, but that extensive deviations may be made from the illustrated embodiment without departing from the spirit of the invention.

Claims:

1. The combination with a rock drill of a working support therefor, comprising oppositely inclined angularly adjustable legs on which the drill may be raised or lowered, and a wheeled support also connected to said drill and located to receive the weight of the drill when the latter is lowered by spreading the legs.
2. The combination with a rock drill of a support therefor comprising angularly adjustable inclined supporting legs, and a pair of rotatable supporting wheels upon an axle between the legs and adapted to be lowered to receive the weight of the drill when the legs are spread.
3. The combination with a rock drill of a tripod support comprising a pair of front legs and a back leg and a pair of rotatable supporting wheels upon an axis between the front and back legs, said wheels being normally off the ground when the drill is in operative position, but adapted to be lowered and receive the weight of the drill when the legs are spread.
4. The combination with a rock drill of a supporting shell therefor, a support about which said shell may be clamped to different positions of angular adjustment, angularly adjustable supporting legs for said shell support, and shell supporting wheels, said wheels being on a different axial line from said shell support and located normally to be above the ground but adapted to be dropped thereto and receive the weight of the drill when said legs are spread.
5. The combination with a rock drill of a leg support therefor, said support being adjustable to hold the drill at different inclinations, supporting wheels for said drill, a rigid frame securing said wheels to said leg support, and means for fixing said leg support to hold said wheels above the ground or for tipping the same to drop said wheels upon the ground to support the drill.
6. The combination with a rock drill of a leg support comprising a pair of front

legs, a drill supporting bar extending between said legs, a pair of wheels, a wheel axle, a rigid frame securing said axle to said legs and a back leg brace adjustably secured to said supporting bar whereby said legs may be tipped to lower said wheels upon the ground to raise said wheels therefrom.

7. The combination with a rock drill, of a support therefor including angularly adjustable inclined supporting legs, a brace connection extending between said support and certain of said legs, and a pair of rotatable supporting wheels disposed between the legs and adapted to be lowered to receive the weight of the drill when the legs are spread.

8. The combination with a rock drill, of a support therefor comprising angularly adjustable inclined supporting legs, one of said legs being movable and adapted to form a tongue, and a pair of rotatable supporting wheels disposed between the legs and adapted to be lowered to receive the weight of the drill when the legs are spread.

9. The combination with a rock drill, of drill carrying means, a support for the latter including angularly adjustable supporting legs, and wheels carried on said support and normally located above the ground but adapted to be dropped thereto and receive the weight of the drill when said legs are spread.

10. The combination with a rock drill of the legs 19, the supporting bar 14, wheel supports 36, wheels 34, axle 35, and back leg brace 20.

11. The combination with a rock drill of a leg support therefor, wheels secured to said leg support, said drill being adapted to be tipped to rest upon said legs or said wheels at will, and said leg support including a combined brace and pole member pivotally connected to said support at a point above said wheels, and a stop on said member limiting the movement thereof.

12. The combination with a rock drill having a leg support, supporting wheels on which the drill may be supported when said leg support is tipped and a second leg support, of a drill shell and a brace member between the lower end of the shell and said second leg support, said wheels being located between the legs of said two leg supports.

13. The combination with a rock drill of a support, means connected to said support for moving the drill bodily from place to place, means to shift the drill laterally upon said support to clear the drill-steel, and means carried by the drill and operatively connected to said drill-moving means for lifting the drill-steel from the cut, after the drill is shifted.

14. The combination with a rock drill of a wheel support, a leg support, either of said

supports being separately usable at will, and steel lifting means operated by said wheel support.

15. The combination with a rock drill of
5 a leg support, a wheel support, either of said supports being separately usable at will, a transverse supporting bar, a drill shell adjustable longitudinally thereof, and steel
10 lifting means for withdrawing a steel from the cut operatively connected to said wheel support.

16. The combination with a rock drill, of drill feeding means; a drill support; means to shift the drill laterally upon the latter; a
15 wheel support and a leg support, either said wheel support or said leg support being separately usable at will; a cable winding drum supported by the drill and rotatable by said

wheels; a cable secured to said drum for lifting a steel from the cut, after the drill 20 has been shifted; cable guiding means; and means for holding said cable guiding means at an elevated position above the apparatus.

In testimony whereof, we have signed our names to this specification, in the presence 25 of two subscribing witnesses.

DANIEL J. O'ROURKE.
FRED D. HOLDSWORTH.

Witnesses for Daniel J. O'Rourke:

ARTHUR HOFFMAN,
JOS H. BROWN, Jr.

Witnesses for Fred D. Holdsworth:

GEORGE W. PELMAN,
D. W. CLARK.

It is hereby certified that in Letters Patent No. 1,218,604, granted March 6, 1917, upon the application of Daniel J. O'Rourke and Fred D. Holdsworth, of Claremont, New Hampshire, for an improvement in "Rock-Drill Supports," errors appear in the printed specification requiring correction as follows: Page 3, line 38, claim 3, for the word "axis" read *axle*; same page, line 72, claim 6, after the word "ground" insert the word *or*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of March, A. D., 1918.

[SEAL.]

R. F. WHITEHEAD,
Acting Commissioner of Patents.

Cl. 255-451.