Aug. 26, 1930. C. F. OSGOOD 1,774,035

ROCK DRILLING MECHANISM

Filed Dec. 26, 1922

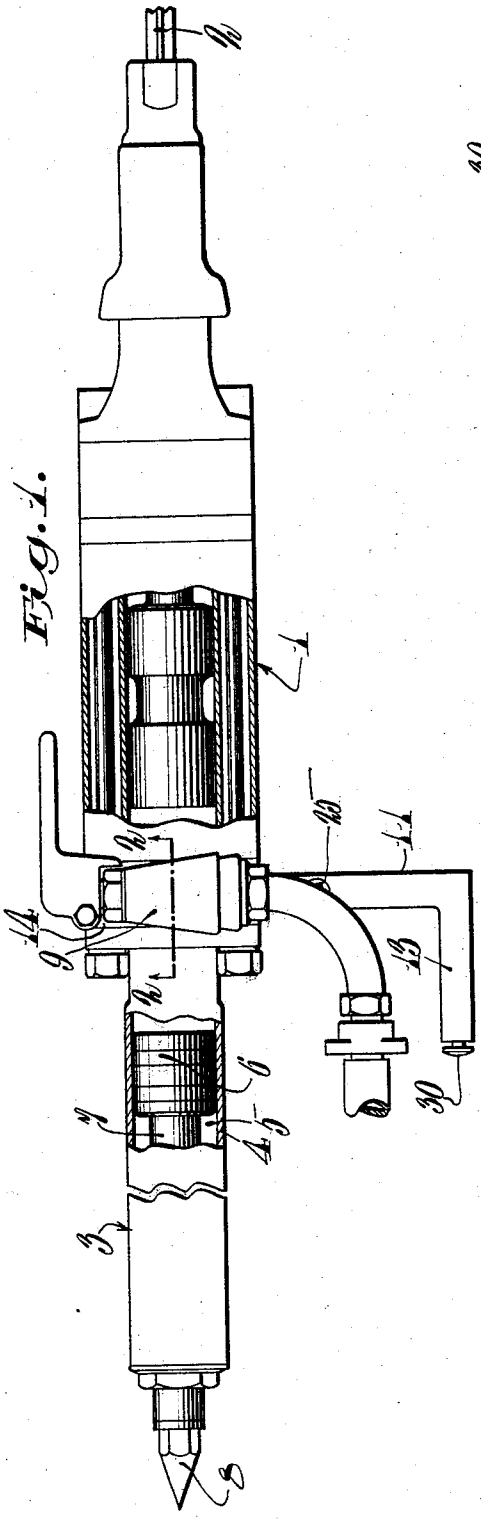


Fig. 1.

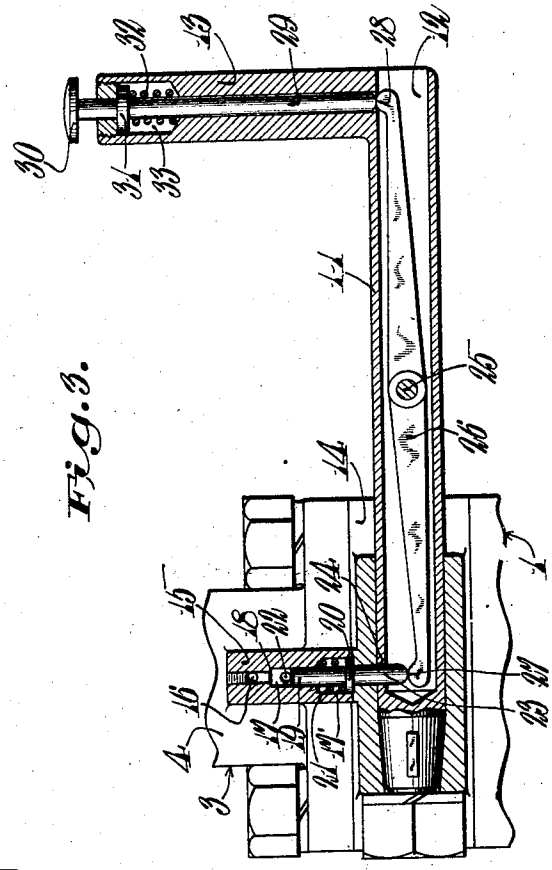


Fig. 3.

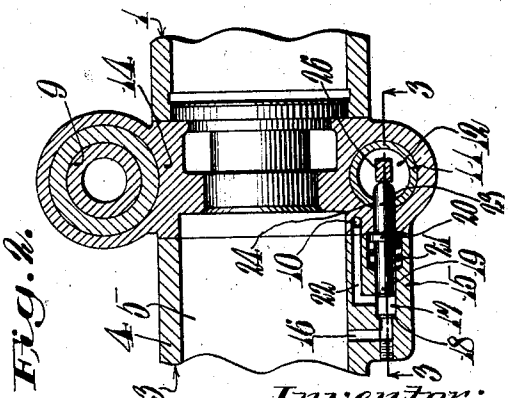


Fig. 2.

Inventor:
Charles F. Osgood.
by Horace L. Hodges
Attorney.

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UNITED STATES PATENT OFFICE

CHARLES F. OSGOOD, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO SULLIVAN MACHINERY COMPANY, A CORPORATION OF MASSACHUSETTS

ROCK-DRILLING MECHANISM

Application filed December 26, 1922. Serial No. 609,127.

My invention relates to rock drilling mechanisms, and more particularly to improved controlling mechanisms for that type of rock drilling mechanism known as a "stoper".

An object of my invention is to provide an improved rock drilling mechanism. Another object of my invention is to provide an improved feeding mechanism having improved controlling means. A further object of my invention is to provide an improved controlling means for pressure fluid feeding mechanisms especially adapted for use in that class of rock drilling work known as stoping and in which the control mechanism may be most conveniently located. Other objects and advantages of my invention will hereinafter more fully appear.

In the accompanying drawings I have shown for purposes of illustration one form which my invention may assume in practice.

In these drawings,—

Fig. 1 is a view partially in elevation and partially broken away, showing a drilling mechanism embodying my improved construction.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 2.

For purposes of illustration I have shown my improved feeding mechanism employed in connection with a percussive motor 1 of well-known form, which motor is adapted to impart a series of blows to a drill steel 2 and to be maintained in proper relation to a drill steel as the hole is deepened by a feeding mechanism 3 herein of well known form comprising a cylinder 4 having a bore 5 in which a piston 6 is disposed. As shown, this piston 6 is provided with a piston rod 7 and when the extremity of the latter, which is provided with an abutment engaging point 8, is fixed against some solid support, admission of air to the feed cylinder 4 will cause the same and the drill 1 to be advanced relative to the piston 6. Any suitable controlling valve 9 may be employed for the purpose of controlling the operation of the motor 1 and the supply of operating fluid to the feeding mechanism, a port 10 leading from the throttle valve 9 and being controlled by the latter.

I have herein provided improved controlling mechanism for the feeding mechanism which is adapted to render it possible to control the action of the feed very closely. A manual grasping handle 11 is arranged projecting laterally from the drilling mechanism at a point between the feeding mechanism and the rear end of the motor 1. This handle is made hollow as indicated at 12 and has a hand grip portion 13 turned at right angles to the body of the handle and into parallelism with the axis of the drilling mechanism. Arranged partially in an intermediate head 14 between the motor 1 and the feeding mechanism and partially in a boss 15 at the forward end of the feed cylinder 4 is a control valve controlling the supply of pressure fluid from the port 10 to a port 16 which opens into the upper end of the feed cylinder. This valve mechanism comprises a recess 17 having a valve seat 18 at its rearward end with which a valve member 19 reciprocable in the recess 17 is adapted to cooperate. The valve member 19 is provided with a shoulder or collar 20 upon which a spring 21, seated in an enlargement 17′ of the recess 17, presses. A passage 22 extends from its point of communication with the port 10 to a point adjacent the valve seat 18 and opens at right angles to the length of the recess 17 into the latter at a point so selected that the port 22 may be uncovered when the spring 21 has forced the valve member 19 to its extreme forward position. The port 16 opens through the middle of the valve seat 18. The valve member 19 is provided with a stem extension 23 projecting into the intermediate head 14 and through an opening 24 into the hollow interior of the handle 11. Within the handle 11 upon a transverse pivot 25 there is pivoted an oscillating lever 26 which at one end, as at 27, engages the stem 23, while at its other end 28 it is engaged by the stem 29 of a control button 30. The stem 29 is provided with a collar 31 against which a spring 32, located in a recess 33 in the portion 13 of the handle, coacts, the spring 32 holding the stem 29 in elevated position so that the valve 19 is normally maintained open. It will be understood that the button 30 may be operated by

the thumb or by a finger or in any other desired manner by the drill runner.

From the foregoing description the mode of operation of my invention as shown herein for illustration will be readily apparent. The drilling mechanism will be arranged in position to drill a hole. The throttle valve 9 will be opened to supply air to the port 10 and to operate the motor 1. By depressing the button 30 and so the stem 29, the lever 26 may be oscillated about its pivot 25 and caused to move the valve 19 to a position to close off communication between the ports 22 and 16, and so the strength of feed may be readily controlled, just enough air being admitted past the valve 19 to hold the drill up in position during spotting. It will be possible, after the hole is started, by releasing the button 30 to allow feed at substantially full air pressure and at any time by depressing the button 30 the supply of air to the feed cylinder may be interrupted and by reason of leakage, or expansion, should the feed be very rapid, the force of feed will be quickly reduced.

While I have in this application specifically described one form which my invention may assume in practice, it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a rock drilling mechanism, the combination with a hammer drill and a pressure fluid feeding device attached thereto, of a handle for supporting said drilling mechanism projecting laterally a substantial distance therefrom, means for controlling the admission of air to the feeding device including a member arranged adjacent the inner end of said handle and a pivoted lever cooperating with the same extending to a point adjacent the outer end of said handle, and manual means for actuating said lever to operate said control means.

2. In a fluid pressure tool, the combination with a hammer drill and a fluid pressure feeding device attached thereto, controlling means for said feeding device including a fluid supply port for admitting pressure fluid to said feeding device, a valve movable to interrupt said supply through said port, a handle having a grasping portion arranged parallel to the length of said drilling mechanism, and means arranged in and movable longitudinally of said last mentioned portion for controlling said valve.

3. A drilling mechanism comprising work performing means and pressure fluid operated feeding means therefor, a supporting handle projecting from said mechanism having a portion adapted to be grasped by the operator, and means including a valve remote from said grasping portion, and a pivoted lever cooperating therewith enabling the operator to control the flow of pressure fluid to the feeding means by but a single hand without removing said hand from said handle.

4. A drilling mechanism comprising a drilling motor and pressure fluid operated feeding means therefor, a supporting handle projecting from said mechanism adapted to be grasped by the operator, an element interposed between said motor and said feeding means having a fluid passage formed therein communicating with said feeding means for supplying pressure fluid thereto, and means including a valve adjacent said element for controlling said passage and a pivoted lever cooperating therewith and extending to a point adjacent the end of said handle for enabling the operator to control the pressure in said feeding means by but a single hand without removing said hand from said handle.

In testimony whereof I affix my signature.

CHARLES F. OSGOOD.