W. A. SMITH.

ROCK DRILL.

APPLICATION FILED JULY 23, 1917.

1,345,270.

Patented June 29, 1920.

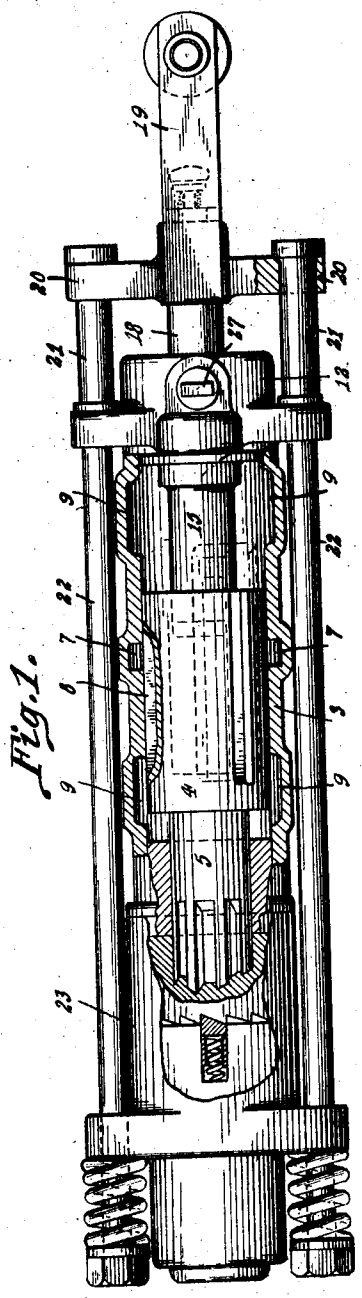


Fig. 1.

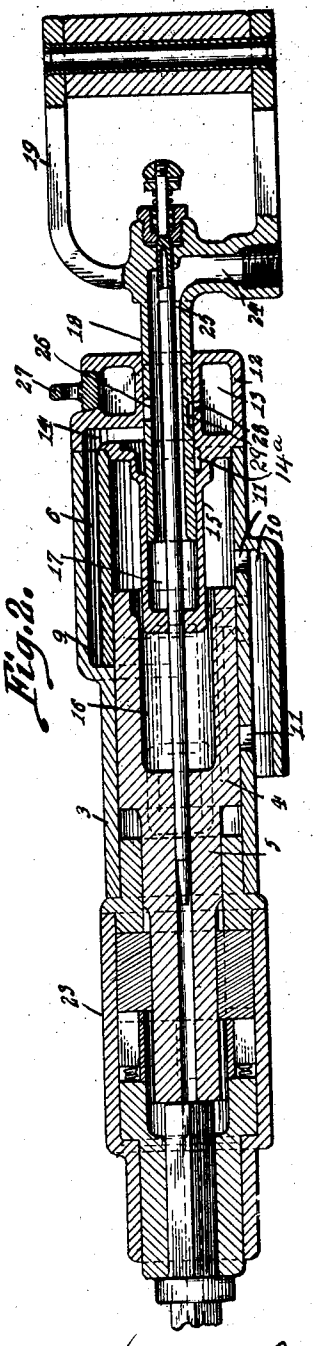


Fig. 2.

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WILLIAM A. SMITH, OF DENVER, COLORADO, ASSIGNOR TO THE DENVER ROCK DRILL MANUFACTURING COMPANY, OF DENVER, COLORADO, A CORPORATION OF DELAWARE.

ROCK-DRILL.

1,345,270. Specification of Letters Patent. Patented June 29, 1920.

Original application filed December 16, 1916, Serial No. 137,363. Divided and this application filed July 23, 1917. Serial No. 182,310.

To all whom it may concern:

Be it known that I, WILLIAM A. SMITH, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Rock-Drills, of which the following is a specification.

The present invention relates to fluid operated tools, preferably of the hammer type, and the primary object is to provide novel means of an effective character for controlling the supply of motive fluid to the tool, and also for delivering lubricant thereto.

This application is a division of application, Serial No. 137,363, filed December 16, 1916, now Patent 1,293,960, dated February 11, 1919.

In the accompanying drawings:—

Figure 1 is a plan view partially in section of one embodiment of the invention.

Fig. 2 is a longitudinal sectional view therethrough.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated the motor consists of a barrel or cylinder member 3 within which reciprocates a hammer piston 4 having an extension 5 of less diameter than the piston proper. Motive fluid is supplied to the piston chamber by a passageway 6 having at its front end lateral branches 7, which communicate with the interior of the cylinder on opposite sides of the piston and with longitudinal channels 8 cut in said piston, these channels terminating short of the ends of the piston as will be clear by reference to Fig. 1.

Formed on opposite sides of the cylinder member adjacent to the front and rear ends thereof, are recesses 9 with which the ends of the channel alternately communicate accordingly as the piston reciprocates. It will thus be seen that motive fluid entering the supply passage 6 will pass through the branches 7 and be alternately delivered through the channels 8 and recesses 9 to the front and rear ends of the piston to reciprocate said piston. The exhaust takes place through a passageway 10 formed in one side of the cylinder member and having ports 11 that are alternately covered and uncovered by the ends of the piston upon its reciprocation. The passageway 10 preferably delivers the exhaust forwardly and therefore away from the operator.

For the purpose of supplying motive fluid to the passageway 6, the following mechanism is employed. The cylinder member 3 is provided with a rear head 12 which is chambered as shown at 13, said chamber constituting a lubricant reservoir, and is furthermore formed with a passsageway 14 communicating with the passageway 6. The rear head 12 is also provided with an extension 15 that projects into the cylinder member, the piston being hollowed out as shown at 16 to accommodate said extension which has a rearwardly opening socket 17.

Slidably mounted in the rear head 12 is a tubular neck 18 which carries a handle 19. This handle, as shown in Fig. 1, has oppositely outstanding ears 20 slidable upon the rearwardly projecting ends 21 of side bolts 22 that connect the rear head 12 with the front head 23 of the motor, and thus clamp said heads upon the barrel 3. The portions 21 of the bolts, it will be observed, project beyond the parts which engage the rear head for the purpose of providing sliding mountings for the handle.

The handle is provided with a lateral inlet passageway 24 to which may be coupled the usual hose line, and this passageway is in communication with the bore 25 of the neck 18. The said neck is provided with a lateral port 26 that is movable into communication with the passageway 14 when the handle is moved toward the motor, said port being closed when the handle is in its outermost position. It will thus be seen that when the handle is pushed forwardly the port 26 will be brought into communication with the passageway 14, so that motive fluid supplied to the passageway will pass into the motor to operate the same. The rearward or outward movement of the handle is secured by the pressure of fluid which can enter the socket 17 of the extension 15.

The lubricant reservoir 13 can be supplied with lubricant through a port normally closed by a removable plug 27, and said lubricant reservoir furthermore has an outlet port 28 formed in the inner circular wall through which the neck 18 passes. The neck is provided with a lubricant receiving

pocket 29 that is in communication with the port 28 when the handle is in its outermost position and is in communication with the passageway 14 at 14^a when the handle is moved inwardly. Consequently it will be clear that lubricant received into the pocket when the handle is in its outer position will be delivered into the passageway 14 when the handle is pushed inwardly, and this lubricant will be carried by the motive fluid to the motor.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or scope of the invention.

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

1. The combination with a fluid operated motor including a cylinder member and a piston, said piston having its rear portion hollow, and said cylinder member including a rear head member provided with a forward extension received in the hollow of the piston and provided with a socket, of a handle having a neck slidable in the socket, and means controlled by the handle for supplying motive fluid to the motor.

2. The combination with a fluid operated motor including a cylinder member having a back head, and a piston operating in the cylinder member, said piston having its rear portion hollow, and said back head having a forward extension received in the hollow of the piston and provided with a rearwardly opening socket, of a handle having a tubular neck slidable in the socket, the inner end of said neck being open, a passageway opening into the socket, said neck having a port in one side movable into and out of communication with the passageway, and means for supplying motive fluid to the bore of the neck, said motive fluid entering the inner end of the socket and operating against the inner end of the neck.

3. The combination with a fluid actuated motor including a barrel having a rear head, said rear head being provided with an internal forwardly projecting socketed extension and a passageway for conducting motive fluid to the motor, of a handle having means for attaching a motive fluid supply tube thereto, said handle having a forwardly projecting tubular neck communicating with said supply connecting means, the neck being slidable in the extension and having a lateral port movable into and out of communication with the passageway, side bolts connecting the rear head to the barrel and projecting beyond the said rear head, and outwardly extending ears carried by the handle and slidable upon the projecting portions of the side bolts.

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

WILLIAM A. SMITH.

Witnesses:
J. F. CHAMBERS,
J. P. FLYNN.