

D. S. WAUGH.
 DRILLING MACHINE.
 APPLICATION FILED SEPT. 25, 1909.

1,003,018.

Patented Sept. 12, 1911.

2 SHEETS—SHEET 1.

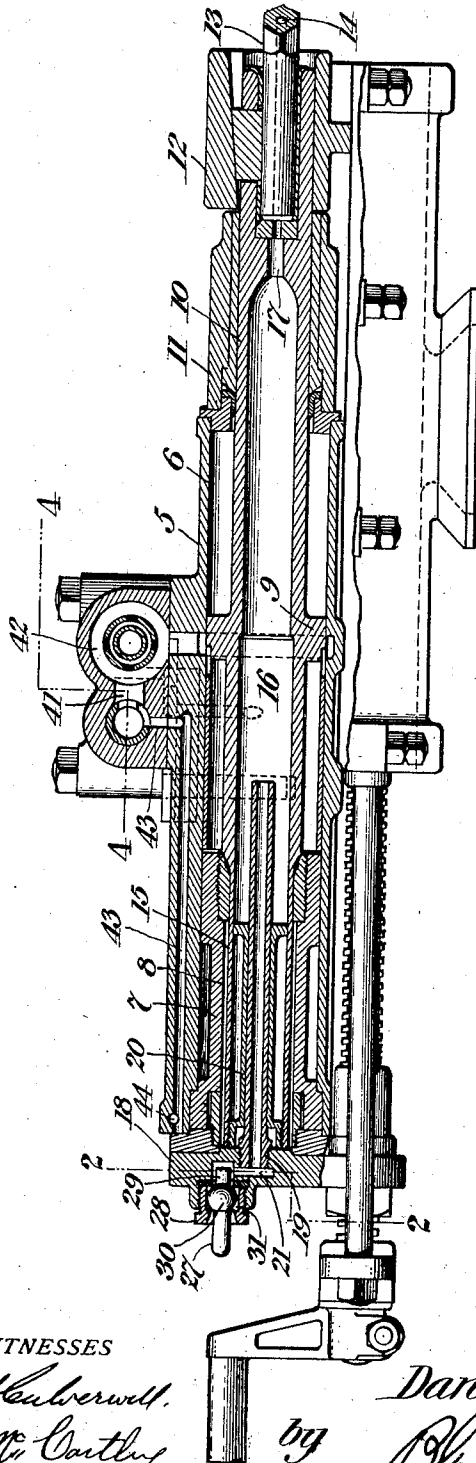


Fig. 1.

WITNESSES

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INVENTOR,

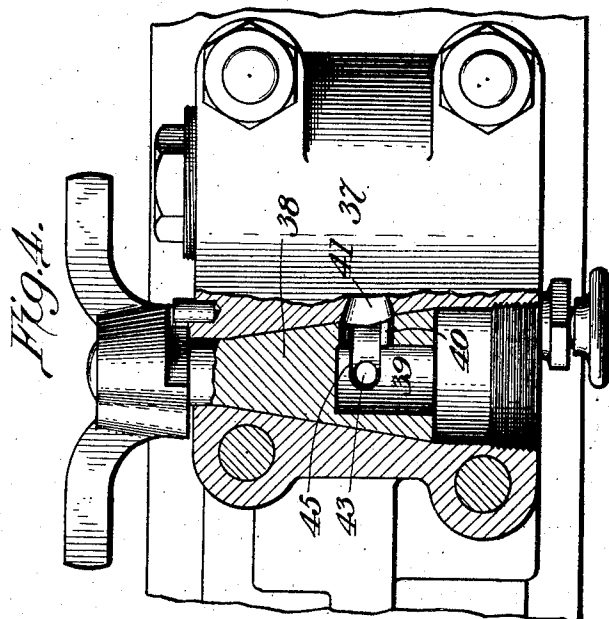
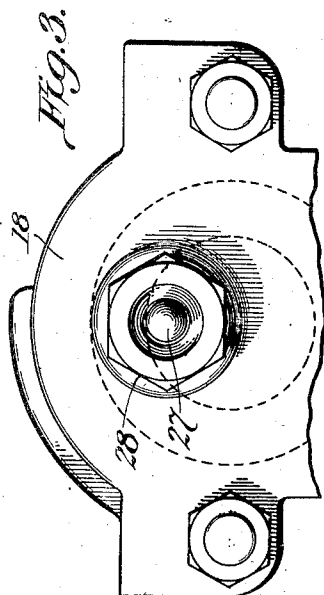
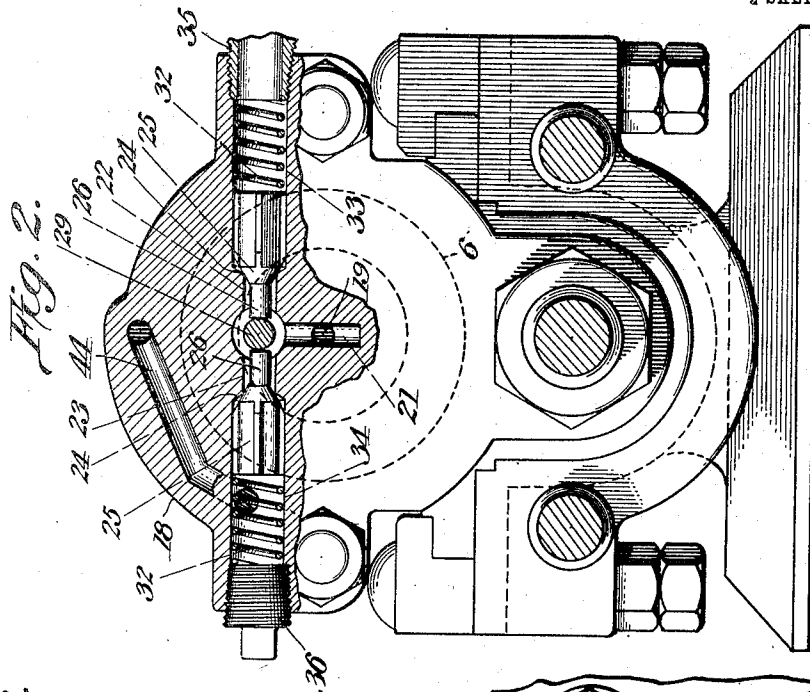
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2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

DANIEL SHAW WAUGH, OF DENVER, COLORADO, ASSIGNOR TO THE DENVER ROCK
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DRILLING-MACHINE.

1,003,018.

Specification of Letters Patent.

Patented Sept. 12, 1911.

Application filed September 25, 1909. Serial No. 519,542.

To all whom it may concern:

Be it known that I, DANIEL SHAW WAUGH, 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 Drilling-Machines, of which the following is a specification.

The present invention relates more particularly to means for conducting a cleansing agent to the drill hole, as the same is being made by the machine, and the primary object is to provide simple and effective mechanism, whereby either a liquid or a gaseous cleansing agent can be supplied to the drill hole, said mechanism not interfering in any manner with the operative parts of the machine, and occupying practically no additional space on the exterior of the drill.

The preferred form of construction is illustrated in the accompanying drawings, wherein:—

Figure 1 is a vertical longitudinal sectional view through a fluid pressure operated drilling machine, showing the hole-cleaning mechanism. Fig. 2 is a sectional view on the line 2—2 of Fig. 1 and on an enlarged scale. Fig. 3 is a detail rear elevation of the upper portion of the cylinder member, illustrating the valve operating device. Fig. 4 is a horizontal sectional view on the line 4—4 of Fig. 1.

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

It is believed to be unnecessary to enter into a detailed description of the motor disclosed, as the same constitutes the subject-matter of a co-pending application, Serial No. 519,543, filed September 25, 1909. Suffice it to state that the same consists of a cylinder member 5 having a piston chamber 6, the rear portion of which is reduced by the insertion of a sleeve or plug 7 having a bore 8 that constitutes an extension of the said piston chamber that is of less diameter than the same. A reciprocating piston 9 operates in the piston chamber 6, and has a rod or neck 10 projecting through the front head 11 of the cylinder member. Carried by the projecting end, is a chuck 12, in which the usual drill bit or steel 13 is secured, said bit having a longitudinal passageway 14 for the cleansing fluid. The piston 9 has a reduced rear extension 15, which operates in the bore 8 of the plug or sleeve 7, and said

piston furthermore is tubular in form. In other words, it is provided with a longitudinal passageway 16, the front end of which is reduced to a port 17 that is in communication with the passageway 14 in the drill bit.

The rear end of the cylinder member is closed by a suitable head 18, and threaded or otherwise secured in this head is a tube 19 that projects longitudinally within the cylinder member, and into the passageway 16 in the piston. A packing sleeve or gland 20, secured in the reduced extension 15 of the piston, snugly surrounds and is slidable upon the tube 19. The head 18 has a chamber 21 that communicates with the outer end of the tube 19, and two oppositely disposed supply ports 22 and 23 in turn communicate with the chamber 21. These ports are surrounded at their outer ends by valve seats 24, coacting with which are outwardly movable valves 25 that have inwardly extending stems 26 disposed in opposition to each other.

An actuating device, in the form of a lever 27, is fulcrumed in a plug 28, screwed into the end of the head 18, and the inner end 29 of this lever is disposed between the stems 26. It will be observed that the fulcrum of said lever is in the form of a ball 30 operating in a socket 31 in the plug, and the outer arm of the lever projects through an opening formed in the outer end of said plug. Consequently by swinging the outer end of the lever in opposite directions, it will be obvious that either valve may be opened. The valves, however, are normally maintained in closed positions by coiled springs 32 that bear against their outer ends, and are located in chambers 33 and 34.

A water supply is conducted from any suitable source, into the chamber 33 by means of a nipple or coupling 35, threaded into the outer end of said chamber, while the outer end of the chamber 34 is preferably closed by a plug 36.

Motive fluid for actuating the piston is supplied from any suitable source to a valve casing 37 located upon one side of the cylinder member, and the supply of this motive fluid to the piston is controlled by a rotary initial or throttle valve 38 having a chamber 39 in one end and a lateral port 40 that is movable into and out of communication with a supply port 41 leading to the automatic valve

42 of the motor. A motive fluid-conducting channel 43 leads from the valve casing 37 longitudinally through one wall of the cylinder member, and has a lateral terminal portion 44 communicating with the chamber 34. The valve 38 furthermore has a slot 45, which registers with the inlet end of the passage 43.

Air or other gaseous fluid, under pressure, being supplied to the motor, the chamber 39 is constantly charged with it, whether the throttle valve 38 is in its open or closed position, and this gaseous fluid has at all times access to the passageway 43, because of the slot 45. Therefore the gaseous fluid will at all times be under pressure in the chamber 34, while water or other liquid-cleansing fluid will be in the chamber 33. Whenever therefore the operator desires to clean the drill hole, he has only to move the outer end of the actuating device or lever 27 in one direction or the other, whereupon one or the other of the valves 25 will be opened, and the gaseous or liquid fluid consequently will pass into the chamber 21, through the tube 19, the passageway 16 in the piston, and port 17, and thence through the passageway 14 and the drill bit 13 to the drill hole.

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 sacrificing any of the advantages of the invention.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is:—

1. In drilling mechanism, the combination with a motor including a cylinder member having a rear head and a hollow piston operating in the cylinder member, of a tube connected to the head for conducting a cleansing agent into the piston, means connected to the head for supplying liquid and gaseous cleansing agents to the tube, which includes oppositely disposed ports, oppositely arranged valves for respectively controlling said ports, and an actuating device pivoted on the head and movable in opposite directions to operate either valve independently of the other.

2. In drilling mechanism, the combination with a motor including a cylinder member having a rear head that is chambered, of a hollow piston operating in the cylinder member, a tube connected to the head and communicating with the chamber, said tube extending into the piston, means for conducting liquid and gaseous cleansing agents into opposite portions of the chamber, which comprises oppositely arranged controlling valves for said agents having stems projecting into the chamber, and a lever fulcrumed on and projecting from the rear side of the head, said lever having an exposed actuating end and also having an end located in the chamber between the valve stems.

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

DANIEL SHAW WAUGH.

Witnesses:

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WILLIAM H. LEONARD,
HERBERT E. FISKE.