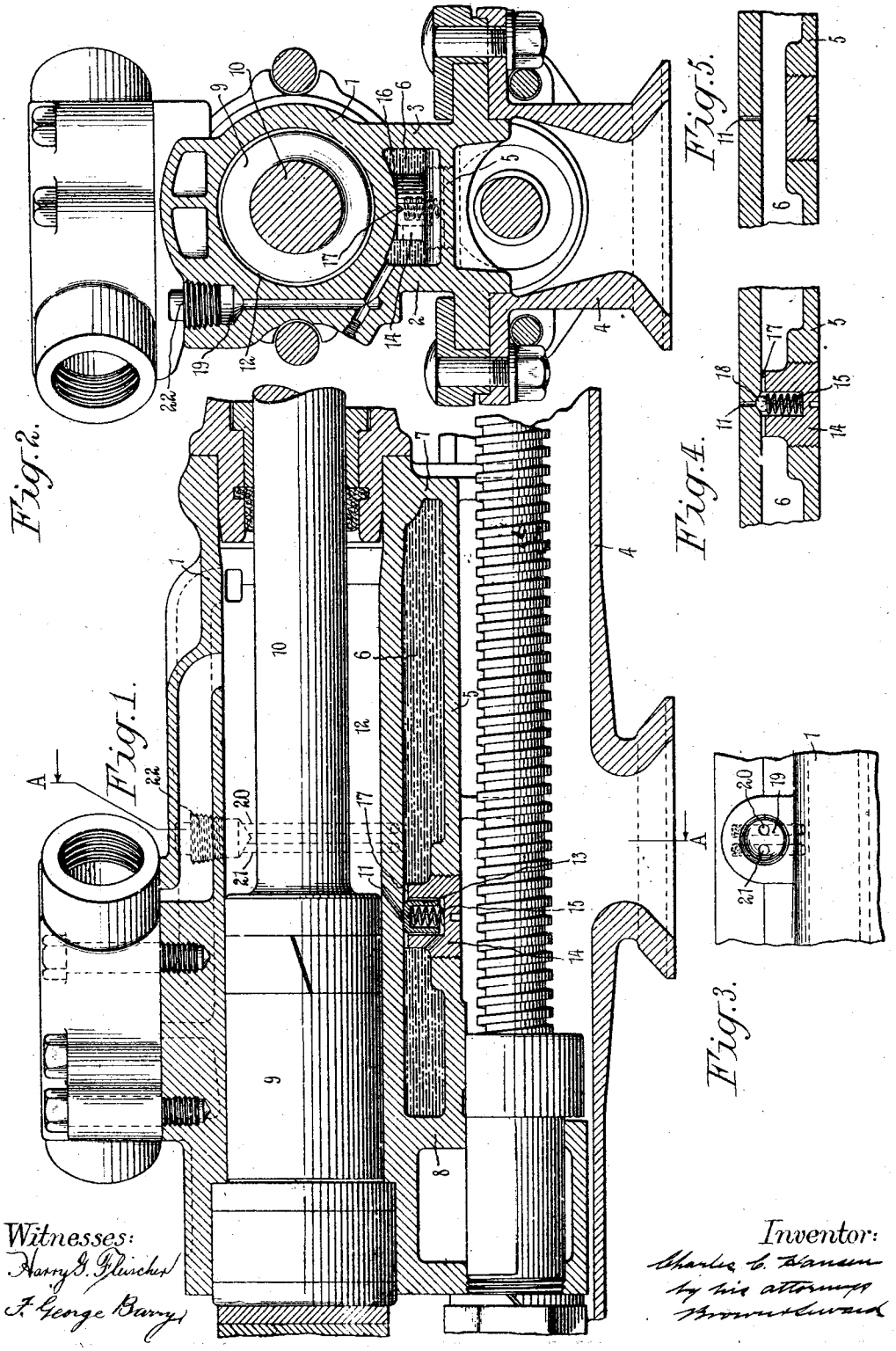
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ROCK DRILL.

APPLICATION FILED JULY 7, 1911.

**1,066,901.** **Patented July 8, 1913.**



Witnesses:
Harry G. Fleischer
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Inventor:
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Brownell & Brownell

# UNITED STATES PATENT OFFICE.

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## ROCK-DRILL.

1,066,901. Specification of Letters Patent. Patented July 8, 1913.

Application filed July 7, 1911. Serial No. 637,277.

*To all whom it may concern:*

Be it known that I, CHARLES C. HANSEN, a citizen of the United States, and resident of Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Improvement in Rock-Drills, of which the following is a specification.

This invention relates to rock drills and has for its object to provide the rock drill cylinder with an oil reservoir therein, said oil reservoir being in communication with the piston chamber.

The object of this invention is more particularly to utilize the space which commonly exists between the cylinder guides at the bottom of the cylinder as an oil reservoir by extending a bottom for the reservoir between said guides thereby not only utilizing the space as mentioned above but also materially strengthening the cylinder at this point where it is subjected to great strains.

In the accompanying drawings, Figure 1 represents in longitudinal vertical section so much of a rock drill cylinder as will give a clear understanding of my invention. Fig. 2 is a cross section taken in the plane of the line A—A of Fig. 1, Fig. 3 is a detail plan view showing the separate filling and vent holes for the reservoir, and Figs. 4 and 5 are detail longitudinal sections showing modified forms of the means for establishing communication between the reservoir and the piston chamber.

The cylinder is denoted by 1 and its guides by 2, 3, and its supporting shell by 4. A horizontal partition 5 extends longitudinally of the cylinder between the guides 2 and 3, said partition forming the bottom for an oil reservoir 6. Transverse partitions 7 and 8 serve as front and back walls respectively of the oil reservoir 6.

The rock drill piston is denoted by 9 and its rod by 10. A port 11 leads from the oil reservoir 6 to the piston chamber 12, which port is preferably so arranged that it will be alternately opened to the opposite sides of the piston 9 as the piston approaches the limits of its forward and backward strokes. A spring pressed valve is preferably provided for normally closing this port 11, which valve may be made in various forms. For instance, in the form shown in Figs. 1 and 2 a cup-shaped valve 13 is shown as mounted in a plug 14 screwed into the bottom 5 of the reservoir, a spring 15 being provided for holding the valve 13 closed. The inner end of the plug 14 is preferably screwed into tight engagement with a lug 16 on the inner cylinder wall, channels 17 being provided for bringing the interior of the reservoir into communication with the port 11 when the valve is opened. In Fig. 4 a spring pressed ball valve 18 is shown instead of the cup valve 13 shown in Fig. 1. In Fig. 5 no valve is shown at all for this port 11.

The means for filling the reservoir shown herein comprises a filling hole 19 in the top of the cylinder at one side thereof, from which filling hole there lead independent filling and vent passages 20, 21, through the walls of the cylinder to the oil reservoir 6. A screw plug 22 serves as a closure for the filling hole 19. In filling the reservoir 6, the oil is poured into the hole 19 and the oil will flow through one of the passages into the reservoir while the air from the reservoir will escape through the other passage. As the rock drill is operated, a slight amount of oil will be permitted to escape from the reservoir into the piston chamber as the piston 9 uncovers the port 11. Where a valve is used, the jar of the machine is sufficient to uncover the port 11 enough to allow the necessary oil to pass into the piston chamber. The ease with which this valve may be opened by the jar of the machine, can be controlled by the tension of its closing spring.

It is evident that various changes might be resorted to in the construction and arrangement of the several parts without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the structure herein set forth, but

What I claim is:—

1. A rock drill cylinder having therein a work piston, its chamber, an oil reservoir and a port leading from the reservoir to the piston chamber into position to be alternately opened to the opposite sides of the piston as it reciprocates.

2. A rock drill cylinder having therein a work piston, its chamber, an oil reservoir, a port leading from the reservoir to the piston chamber into position to be alternately opened to the opposite sides of the

piston as it reciprocates and an automatic check valve for opening and closing said port.

3. A rock drill cylinder having therein a work piston, its chamber, an oil reservoir, a port leading from the reservoir to the piston chamber into position to be alternately opened to the opposite sides of the piston as it reciprocates and an automatic check valve for opening and closing said port, said check valve being opened and closed by the jar due to the operation of the drill.

4. A rock drill cylinder, guides along the bottom of the same, transverse and longitudinal partitions connecting said guides to form together with the bottom wall of the cylinder and said guides, an oil reservoir, said cylinder having therein a work piston, its chamber, and a port leading from the reservoir to the piston chamber in position to be uncovered by the piston as it reciprocates.

5. A rock drill cylinder, guides along the bottom of the same, transverse and longitudinal partitions connecting said guides to form, together with the bottom wall of the cylinder and said guides, an oil reservoir, said cylinder having therein, a work piston, its chamber, a port leading from the reservoir to the piston chamber in position to be uncovered by the piston as it reciprocates, and an automatic check valve for opening and closing said port.

6. A rock drill cylinder, guides along the bottom of the same, transverse and longitudinal partitions connecting said guides to form, together with the bottom wall of the cylinder and said guides, an oil reservoir, said cylinder having therein a work piston, its chamber, a port leading from the reservoir to the piston chamber in position to be uncovered by the piston as it reciprocates, and an automatic check valve for opening and closing said port, said check valve being opened and closed by the jar due to the operation of the drill.

7. A rock drill cylinder, guides along the same, said cylinder having therein a work piston, its chamber, an oil reservoir located at the bottom of the cylinder between said guides, a port leading from the reservoir to the piston chamber, and an oil filling hole in the cylinder having a passage leading to the reservoir.

8. A rock drill cylinder, guides along the same, said cylinder having therein a work piston, its chamber, an oil reservoir located at the bottom of the cylinder between said guides, a port leading from the reservoir to the piston chamber, and an oil filling hole in the cylinder having separate passages leading to and from the reservoir.

9. A rock drill cylinder having an oil reservoir therein located at its bottom between its guides, a port leading through the top wall of the reservoir into the piston chamber, a plug inserted through the bottom wall of the reservoir opposite said port and a valve for said port carried by said plug.

10. A rock drill cylinder having an oil reservoir therein at its bottom between its guides, a port leading through the top wall of the reservoir into the piston chamber and a plug inserted through the bottom wall of the reservoir into contact with the top wall thereof, said plug having channels for bringing the reservoir into communication with said port.

11. A rock drill cylinder having an oil reservoir therein at its bottom between its guides, a port leading through the top wall of the reservoir into the piston chamber, a plug inserted through the bottom wall of the reservoir into contact with the top wall thereof, said plug having channels for bringing the reservoir into communication with said port, and a valve for said port carried by said plug.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this twenty ninth day of June 1911.

CHARLES C. HANSEN.

Witnesses:
F. GEORGE BARRY,
C. S. SUNDGREN.