

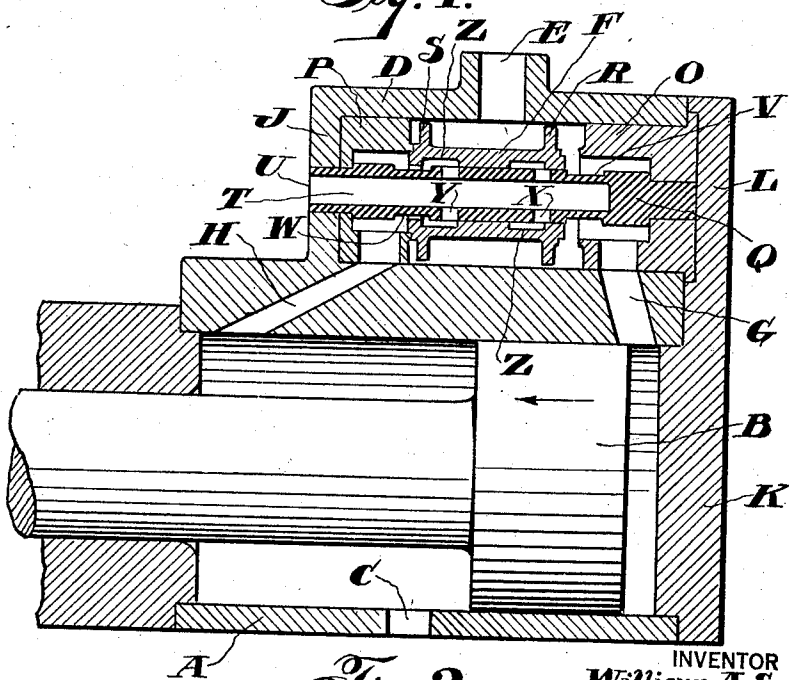
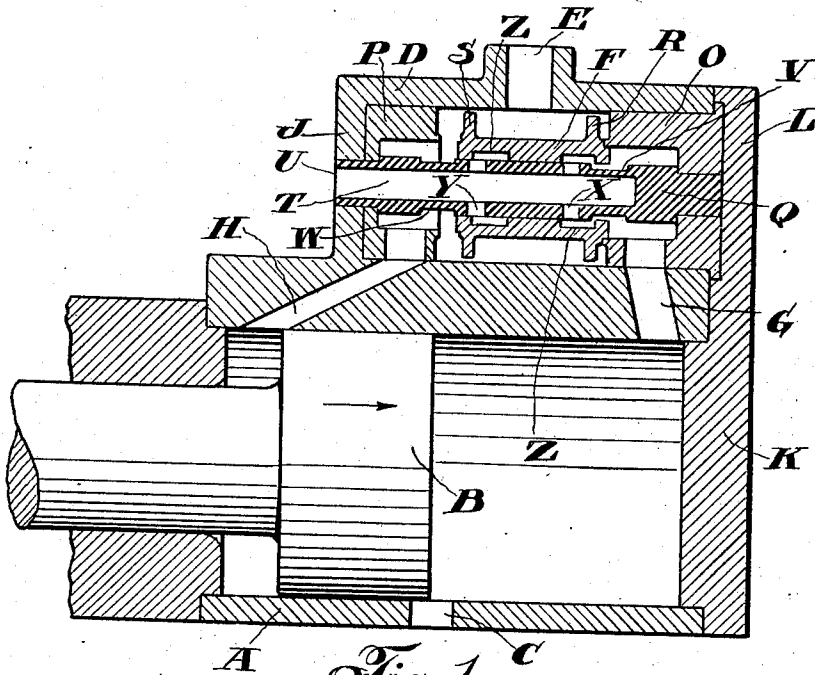
June 29 , 1926.

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1,590,261

ROCK DRILL VALVE

Filed June 30, 1925



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Patented June 29, 1926.

1,590,261

UNITED STATES PATENT OFFICE.

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ROCK-DRILL VALVE.

Application filed June 30, 1925. Serial No. 40,518.

This invention relates to fluid actuated rock drills, but more particularly to the distributing valve.

The objects of the invention are to enable the cylinder to be provided with a main exhaust and an auxiliary exhaust for both ends of the cylinder passing out to atmosphere through a hollow center pin within the valve.

The invention is shown in one of its preferred forms in the accompanying drawings, in which—

Figure 1 is a diagrammatic sectional elevation of so much of a rock drill as will serve to illustrate the invention, and

Figure 2 is a similar view with the piston and valve in a different position.

Referring to the drawings, the cylinder A is provided with the piston B reciprocating therein and in this instance the cylinder is formed with a piston controlled main exhaust port C.

The valve chest D has the inlet E and the valve F for controlling the supply of pressure fluid to each end of the cylinder through the inlet ports G and H, which in this instance, also form auxiliary compression relief ports controlled by the valve.

The valve chest may be of any suitable construction, but in this instance for convenience is shown as a part of the cylinder A and is closed at the forward end J. The back head K of the rock drill conveniently forms the opposite head L of the valve chest. Valve bushings O and P are inserted in the valve chest and the valve F is preferably hollow and slides on the hollow center pin Q.

The valve F is provided with the end heads R and S shown in the form of flanges which leave restricted passages for the pressure fluid between the peripheries of the heads and the inside of the valve chest. In the operation of the valve, the pressure fluid passes over one end head or the other of the valve to the cylinder.

The central bore T of the center pin is open at the end U to atmosphere and the pin is provided with the recessed portions V and W and the ports X and Y. The valve is also formed with the internal recessed portions Z.

In the operation of the device, let it be assumed that the piston is at the forward end of its stroke and is returning rearward-

ly as indicated in Figure 1. The valve F is in its rearmost position and pressure fluid supplied at the inlet E passes over the forward head S of the valve through the restricted passage formed between the valve head and the chest and from thence passes around the center pin Q through the inlet port G to the forward end of the cylinder to drive the piston rearwardly. After the piston has closed the main exhaust C in its rearward travel, compression in the rearward end of the cylinder is relieved through the inlet port G which becomes a compression relief port open to atmosphere through the rearward ports X of the valve and the bore T of the center pin Q.

When the piston has passed the main exhaust port C as indicated in Figure 2 ready for the return forward stroke, the pressure in the forward end of the cylinder has been dropped and the live pressure fluid from the inlet will have moved the valve to the position indicated in Figure 2, thus supplying pressure fluid behind the piston to drive it forwardly. The supply port H to the front end of the cylinder then becomes a compression relief port open to atmosphere through the forward ports Y in the center pin of the valve.

This improved construction provides a simple and convenient way of relieving compression in the cylinder without auxiliary relief valves since both the supply of pressure fluid to the cylinder and the auxiliary exhaust are controlled by the distributing valve itself.

I claim:

1. In a fluid actuated rock drill, the combination of a cylinder and reciprocating piston, a main piston controlled exhaust port, a valve casing, a hollow fluid actuated inlet valve in said casing, a hollow center pin for the valve, auxiliary compression relief ports for the cylinder, and means controlled by the valve for passing the auxiliary exhaust through the said hollow center pin.

2. In a fluid actuated rock drill, the combination of a cylinder and reciprocating piston, a main piston controlled exhaust port, a valve casing, a hollow fluid actuated inlet valve in said casing, having a body portion and end heads over which heads the pressure fluid passes to the ends of the cylinder, a hollow center pin for the valve, auxiliary compression relief ports for the cyl-

inder, and means controlled by the valve for passing the auxiliary exhaust through the said hollow center pin.

3. In a fluid actuated rock drill, the combination of a cylinder and reciprocating piston, a main piston controlled exhaust port, a valve casing, a hollow fluid actuated inlet valve in said casing, having a body portion and end heads over which heads the pressure fluid passes to the ends of the cyl-

inder, a hollow center pin for the valve, auxiliary compression relief ports for the cylinder, and means controlled by the valve for passing the auxiliary exhaust through the said hollow center pin, restricted passages being formed between said end heads and the valve casing. 15

In testimony whereof I have signed this specification.

WILLIAM A. SMITH.