C. BARRANCE.

STEAM PUMP.

APPLICATION FILED FEB. 28, 1921.

1,437,704. Patented Dec. 5, 1922.

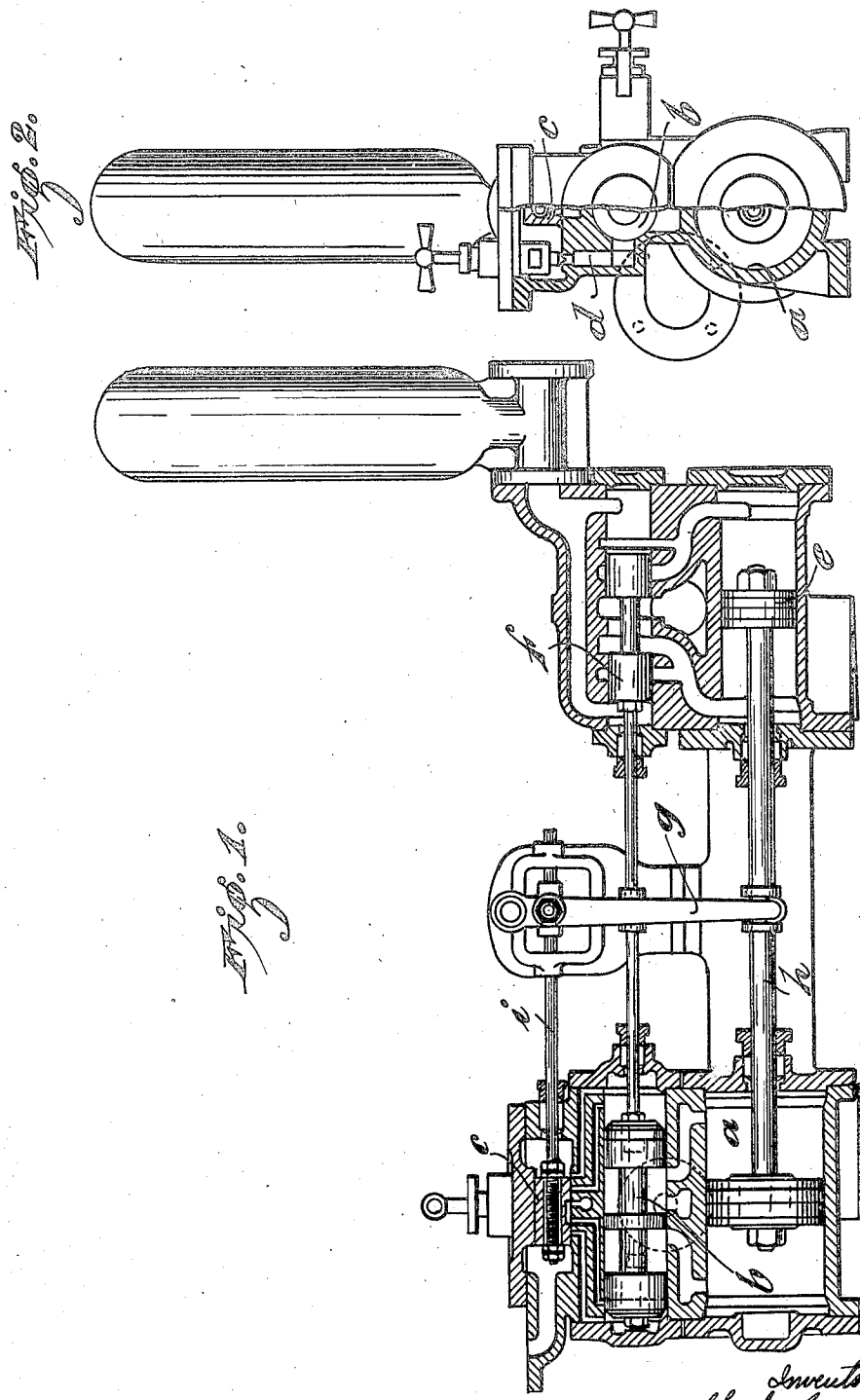


Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

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STEAM PUMP.

Application filed February 28, 1921. Serial No. 448,537.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, CHARLES BARRANCE, a subject of the Kingdom of Great Britain, residing at 9 Oak Terrace, Newcastle Road, Leek, in the county of Stafford, England, engineer, have invented certain new and useful Improvements in and Relating to Steam Pumps (for which I have filed application for patent in Great Britain, June 3, 1918, #127,413), of which the following is a specification.

This invention comprises certain improvements in or relating to steam pumps, particularly those employed for dealing with oil and heavy liquids. The type of steam pump to which this invention relates is that in which the slide valve for controlling the inlet and exhaust ports of the steam cylinder is connected to and operates a valve controlling the inlet and discharge of the pump, the pump piston being connected by a rod to the steam piston so as to operate in unison therewith, and a second or additional slide valve being incorporated for controlling the steam adapted to operate the steam cylinder slide valve, said additional valve being itself controlled by the movement of the steam cylinder piston.

In this invention improved means are provided in a pump of the above character for effecting in a more simple and effective manner the movement and operation of the second or additional valve, this operation according to the present invention being effected from the rod which connects the steam, and pump pistons.

In connection with steam pumping engines having the steam pistons connected with the pump piston, it has previously been proposed to actuate supplementary slide valves for governing the steam operating the main slide valves by a system of links, rollers and levers from the main piston-rod, a lever moved from the main piston rod being connected by a roller to a hanging lever which is in turn connected to pivoted link members jointed to the connecting rod of the supplementary valve. Also in steam pumps it has been proposed to connect a lever to the main piston rod which lever works freely through the boss of a fixed rotatable disc, one end of a connecting rod engaging with the disc and the other end of said rod being jointed to the rod of an expansion or cut-off valve which governs the steam operating the main slide valve.

In order that this invention may be clearly understood and readily carried into practice, reference may be had to the appended explanatory sheet of drawings, upon which:—

Figure 1 illustrates in sectional side elevation, and Figure 2 in sectional end elevation, an embodiment of the present invention.

In a convenient embodiment of the present invention, we provide a double-acting steam cylinder *a* and a piston slide valve *b* for controlling the inlet and exhaust thereof. This piston slide valve is operated by steam, the inlet and exhaust ports appertaining to the slide valve being controlled by a D-slide valve *c*. A part of the steam is thus utilized to actuate the piston valve *b*, and the main part of the steam passes directly to the piston slide valve at *d*. The piston *a* working in the steam cylinder is connected to a piston rod which is directly connected to a piston *e* working in the pump cylinder, which latter is co-axially aligned with the steam cylinder. The pump cylinder is double-acting and the inlet and exhaust thereof is controlled by a piston slide valve *f* which is connected by a rod to the piston slide valve *b* appertaining to the steam cylinder, these two piston slide valves being axially aligned.

To actuate the D-slide valve *c* a pivoted arm or lever *g* is at its free extremity actuated by the rod *h* connecting the pistons in the steam and pump cylinders. At a position near to its axis this arm or lever is adapted to actuate the rod *i* of the D-slide valve. The connection is such that a certain amount of lost motion occurs so that the D-slide valve is not continually moving but is appropriately actuated.

What I claim as my invention and desire to secure by Letters Patent is:—

A steam pump comprising a double acting

steam cylinder, a piston therein, a piston slide valve to control the inlet and exhaust of said cylinder, a second slide valve to control the operation of the piston slide valve; a pump cylinder, a piston therein, a rod connecting said pistons, a piston slide valve to control the inlet and discharge of the pump cylinder, a rod connecting said piston slide valves, a pivotally mounted lever to which said rods are connected, and a rod connecting said second slide valve to said lever.

In witness whereof I have hereunto set my hand.

CHARLES BARRANCE.