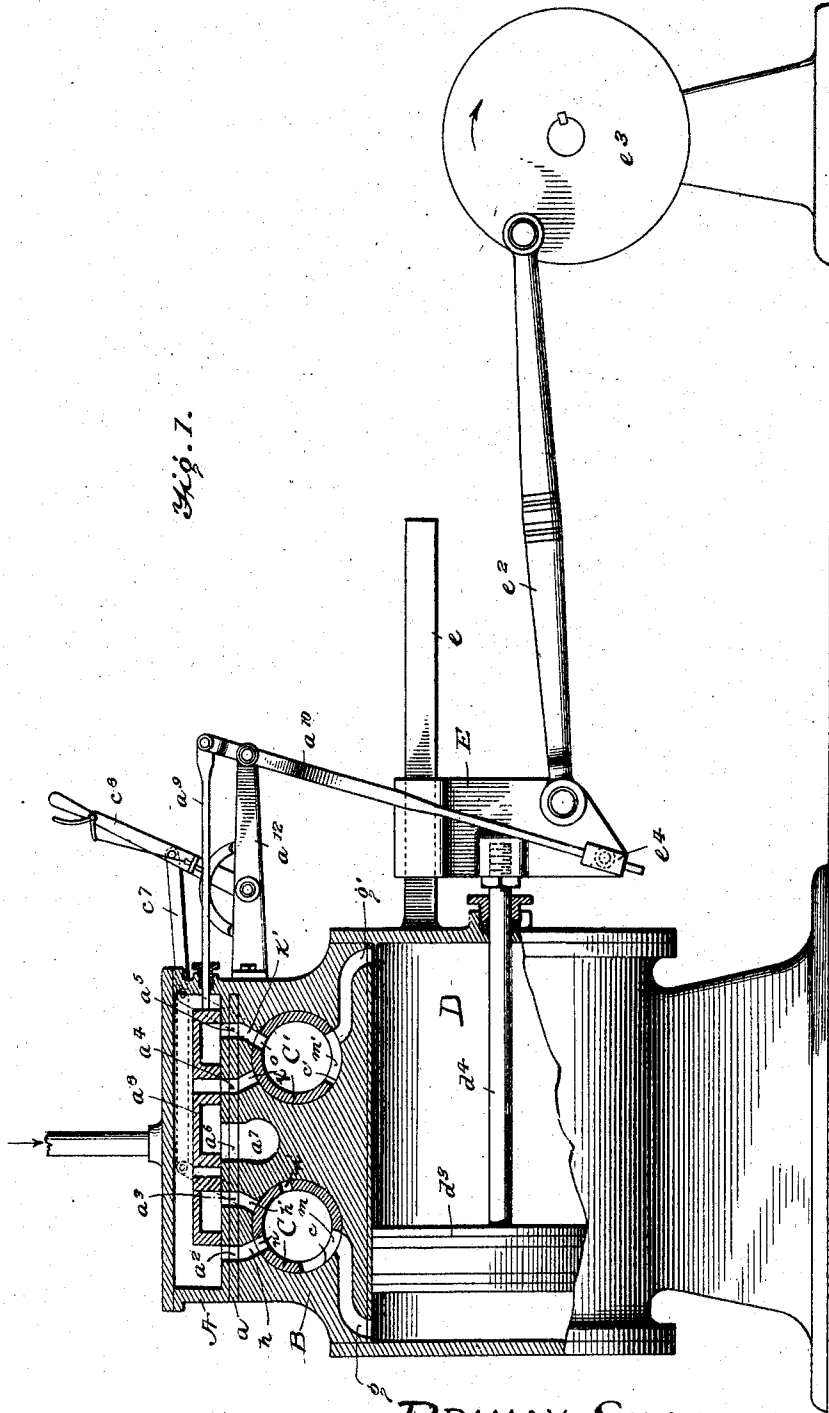


981,019.

B. SMARTT.
 ROTARY VALVE.
 APPLICATION FILED FEB. 6, 1908.

Patented Jan. 10, 1911.

2 SHEETS-SHEET 1.



Witnesses
 L. H. Schmidt.
 Harold E. Stonebraker.

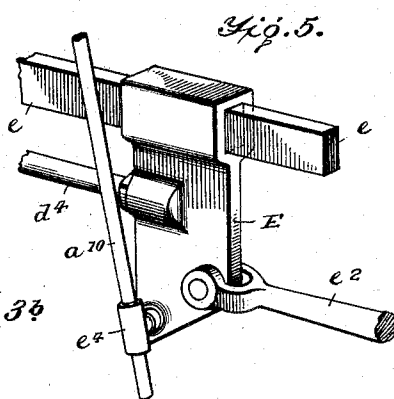
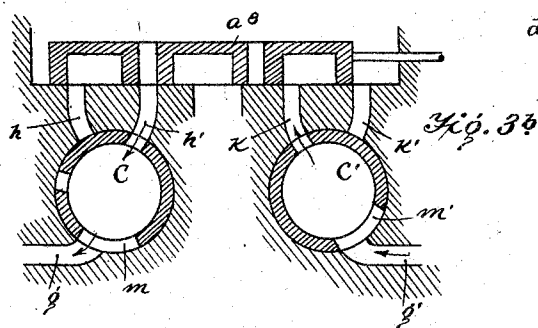
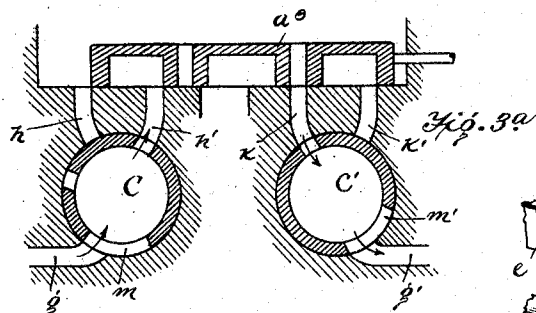
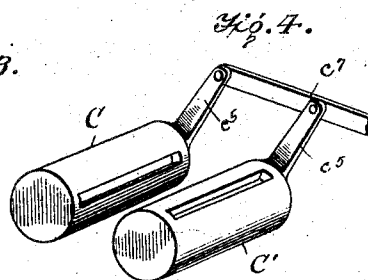
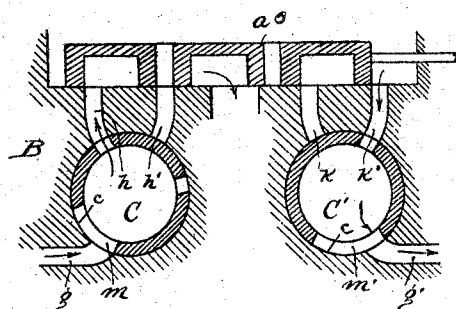
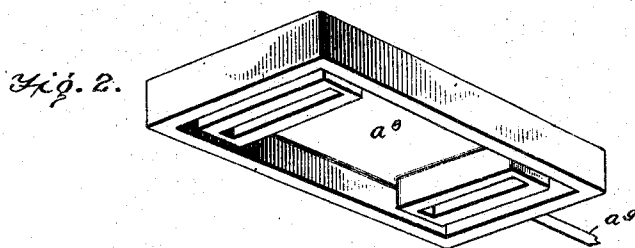
BRINAY SMARTT, Inventor

By his Attorney *R. L. Dyerforth.*

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 L. H. Schmidt
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UNITED STATES PATENT OFFICE.

BRINAY SMARTT, OF NASHVILLE, TENNESSEE, ASSIGNOR TO THOMAS MADDIN STEGER,
OF NASHVILLE, TENNESSEE.

ROTARY VALVE.

981,019.

Specification of Letters Patent.

Patented Jan. 10, 1911.

Application filed February 6, 1908. Serial No. 414,633.

To all whom it may concern:

Be it known that I, BRINAY SMARTT, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Rotary Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in reversing valves, adapted for use in any of the various types of reciprocating fluid pressure engines.

The object of my invention is to provide an improved form of rotary, reversing valve, possessing simplicity of construction, and, at once, durability and efficiency of operation.

With these objects in view, my invention comprises the arrangement and combination of parts hereinafter fully described, and pointed out in the claim hereto appended.

In the drawings, which form a part of this specification, and which are to be read in conjunction therewith, Figure 1 is a longitudinal section, partly in elevation, of my rotary reversing valve applied to a reciprocating single piston steam engine, and with the slide-valve, and reversing valve, both in first position. Fig. 2 is a view, in perspective, of the slide-valve. Fig. 3 is a sectional diagrammatic view, showing the reversing valve in first position, and the slide-valve in second position. Fig. 3^a is a sectional diagrammatic view, showing the reversing valve in second position, and the slide-valve in first position. Fig. 3^b is a sectional diagrammatic view, showing the reversing valve and slide-valve both in second position. Fig. 4 is a detail view, in perspective, of the reversing valve, and Fig. 5 is a detail view, in perspective, of a portion of the valve gear.

Referring more particularly to the drawings, in which like reference characters refer to corresponding parts in the several views, A is the steam chest, containing the slide-valve a^8 , and B is the reversing-valve chamber. The slide-valve a^8 is provided with vertical ports and has passages formed on its under side, surrounding the ports, so as to permit passage of steam from either end

of the cylinder to the exhaust port, as will appear more fully hereinafter.

Between the steam chest A and the reversing-valve chamber B is a plate a , provided with ports a^2 , a^3 , a^4 , a^5 , and a^6 , for a purpose to be explained hereinafter, the latter port a^6 , serving to communicate with an exhaust chamber a^7 .

D is the engine cylinder, containing the piston d^3 , and piston-rod d^4 , which is suitably connected to a cross-head E. The cross-head E is slidably supported on a post e , and has pivotal connection with a connecting-rod e^2 , which, in turn, is pivoted to a driving-wheel e^3 .

The steam valve a^8 is secured to valve-stem a^9 , connected at its outer end with a depending rod a^{10} which is pivotally supported on the bracket a^{12} . Carried by the cross-head E is a guiding-sleeve e^4 , through which the rod a^{10} passes.

C, C¹ are the reversing valves, in the form of hollow cylinders, working in the cylindrical casings c and c^1 respectively. The casings c and c^1 have ports g , and g^1 , at the bottom, and h , h^1 , and k , k^1 , at the top. The valves C, C¹ are provided with enlarged ports m , m^1 at the bottom, adapted to register with the ports g , g^1 . The valve C is further provided with ports n , n^1 at its top, to register with ports h , h^1 , while valve C¹ has a single port o at its top, for registry with either of ports k , k^1 . The valves C, C¹ carry, each, an arm c^5 , pivoted to a link c^7 , which extends through the wall of the chamber B, and is pivoted to a suitably fulcrumed lever c^8 , under control of the operator.

The operation of my invention is as follows: Supposing the parts to be in the position indicated in Fig. 1, steam enters through ports a^2 , h , n , m , and g , moving the piston forward, and causing steam to exhaust through ports g^1 , m^1 , o , k^1 , a^5 , a^6 , into steam outlet a^7 . As the piston moves forward, the slide-valve a^8 is moved in the opposite direction, so as to uncover port a^5 and cover port a^2 , thereby reversing the movement of the live and exhaust steam just described. To reverse movement of the engine, lever c^8 is shifted to rock the valves C, C¹, so as to open ports h^1 and k , and close ports h and k^1 , as shown in Figs. 3^a and 3^b. Thereupon,

for the first position of the slide-valve, steam enters through h and exhausts through h^1 , and for the second position of the slide-valve, steam enters through h^1 , and exhausts through h .

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

In a reversing-valve mechanism, the combination with a steam-chest, of a reciprocating valve therein, pairs of ports leading from the steam-chest, and controlled by said valve, a reversing-valve-box arranged below the steam-chest, a pair of hollow rotary valves arranged in said valve-box, a port in the bottom of each of said valves, single ports in the valve-box communicating with

the last-mentioned ports, pairs of ports in the top of the valve box and leading from the ports in the steam-chest to said rotary valves, a single port in the top of one of said rotary valves for registering with either port of the respective pair, a pair of ports in the top of the other rotary valve for registering respectively with the ports in the other pair, and instrumentalities for operating said rotary valves in unison.

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

BRINAY SMARTT.

Witnesses:

WM. E. STEGER,
LITTON HICKMAN.