

APPLICATION FILED JUNE 29, 1907.

Patented Apr. 13, 1909.

4 SHEETS—SHEET 1.



Witnesses

L. H. Schmidt.

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Inventor

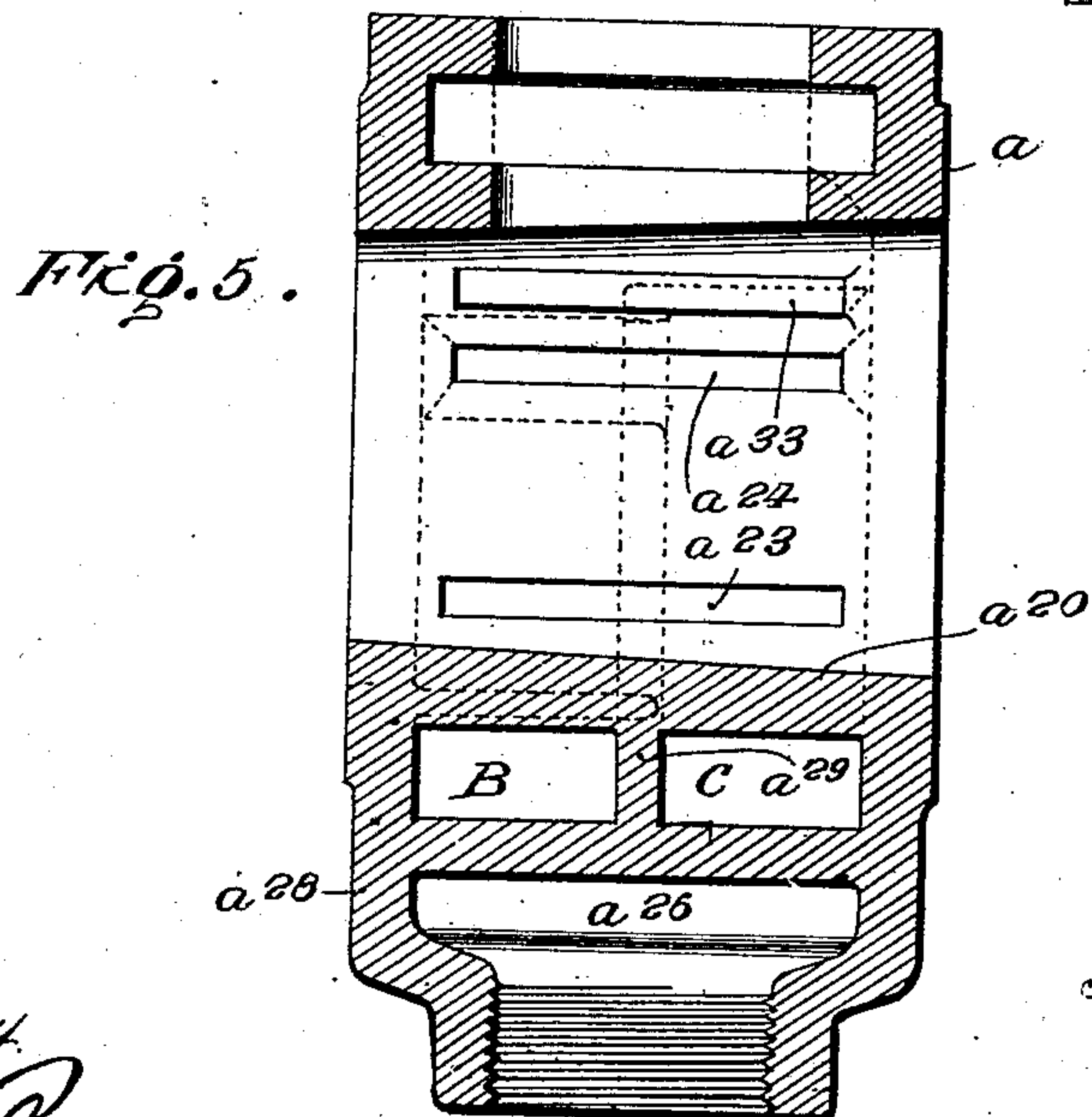
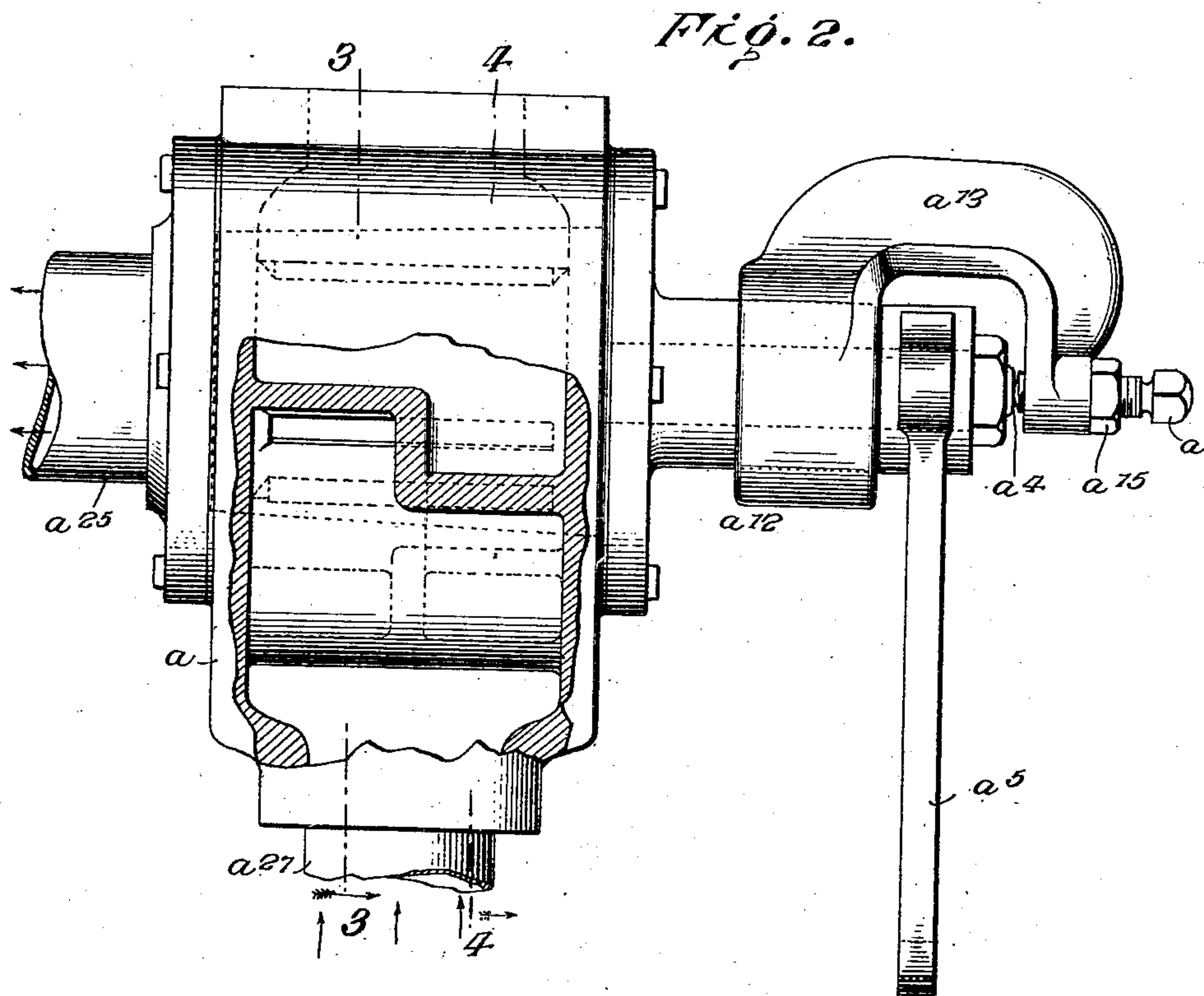
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918,004.

A. D. CATLIN.
 ROTARY VALVE.
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E. J. Paulsenburg

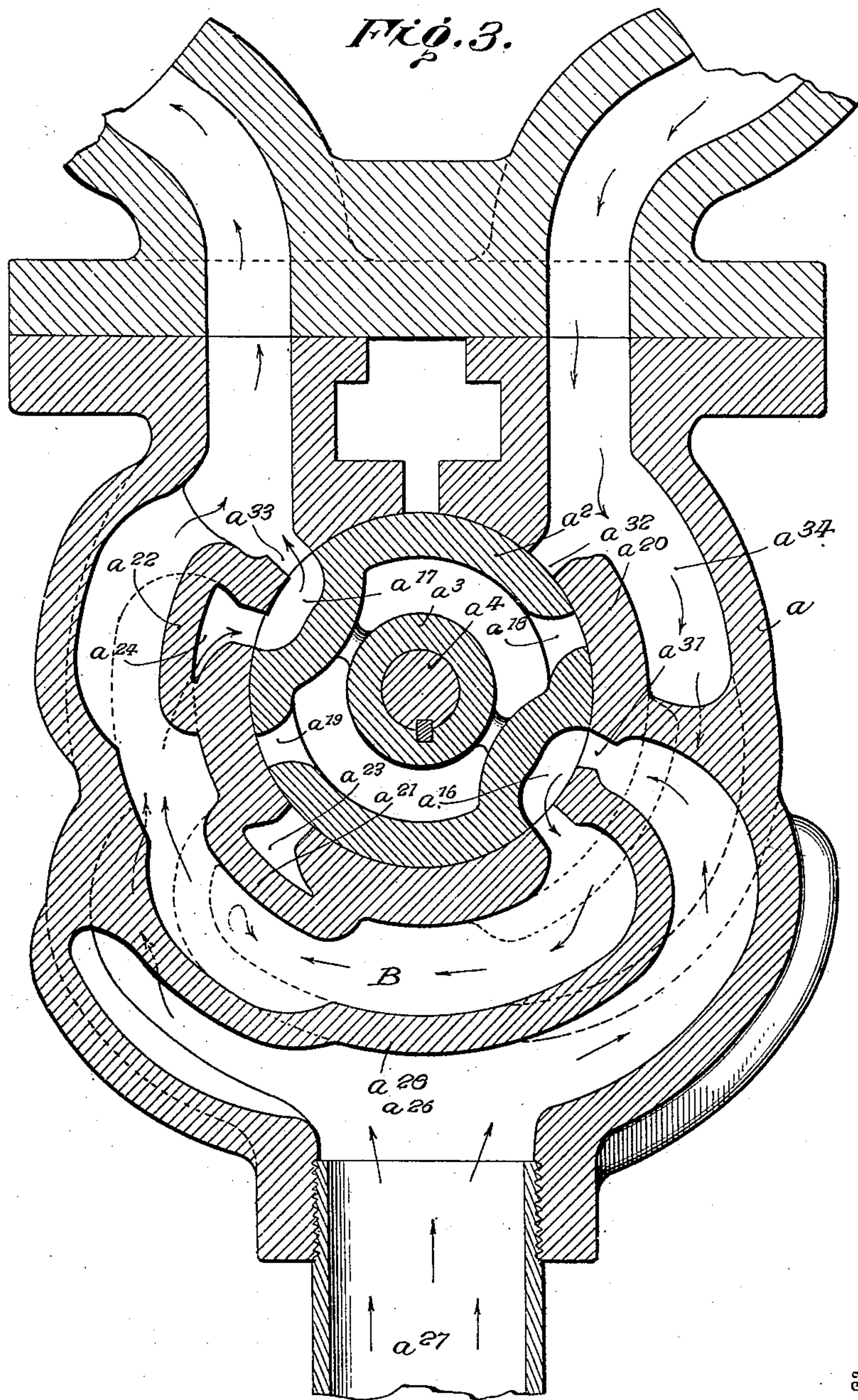
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E. J. Fraumberg

By

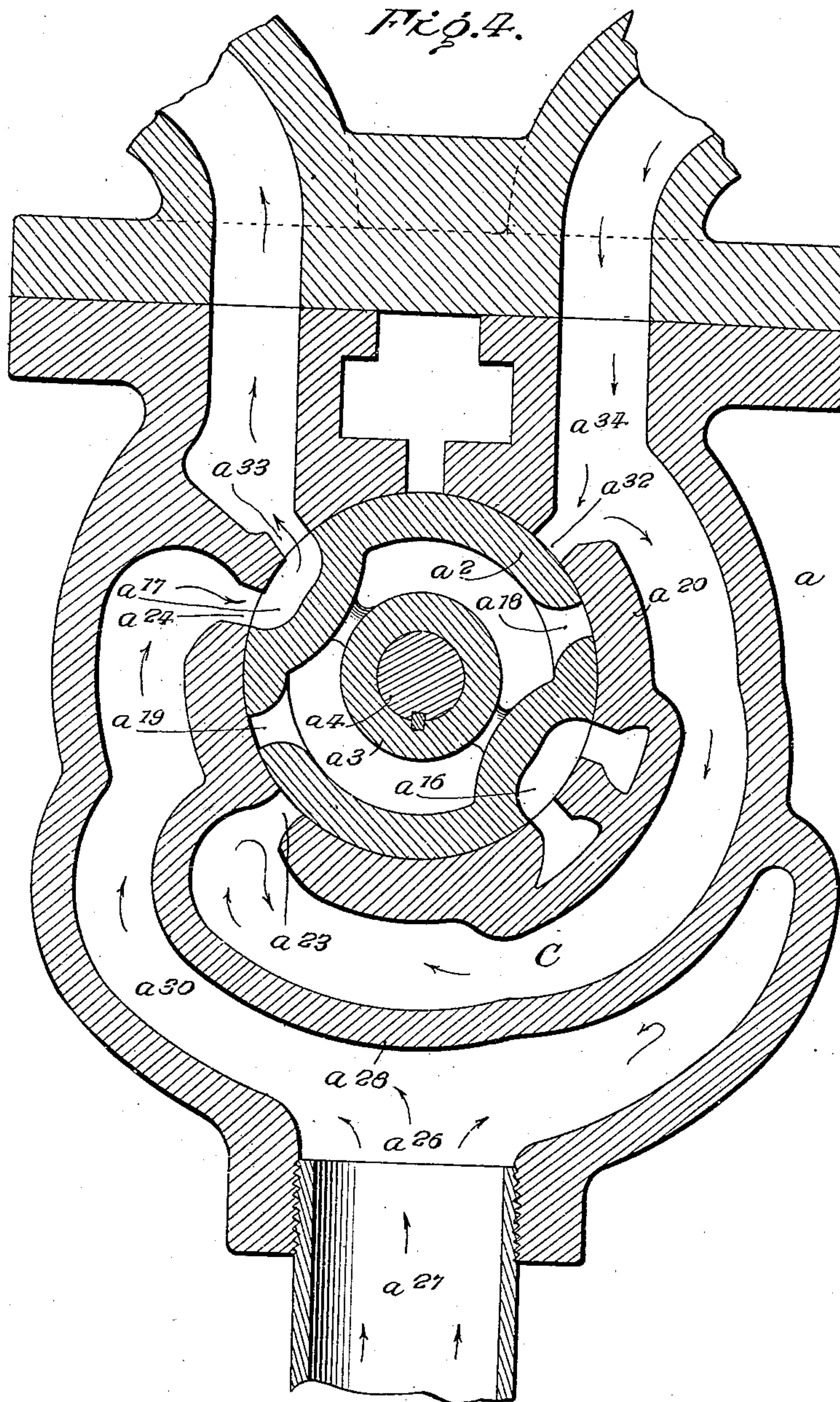
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Witnesses
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UNITED STATES PATENT OFFICE.

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ROTARY VALVE.

No. 918,004.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed June 29, 1907. Serial No. 331,486.

To all whom it may concern:

Be it known that I, ABEL D. CATLIN, a citizen of the United States, residing at Chattanooga, in the county of Hamilton 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.

The object of my invention is to provide a simple and efficient form of balanced rotary valve adapted for use in pairs especially on a "shot-gun feed" of a saw-mill; but which may be used with advantage in connection with any cylinder or plurality of cylinders requiring a cushion of steam at either end of the stroke of the piston.

With this object in view, the invention comprehends the novel construction, combination, and arrangement of parts of a device characterized by my invention, as will be fully hereinafter described in the specification, pointed out in the claims, and illustrated in the drawings, in which latter:

Figure 1 is a side elevation of a cylinder of a saw-mill carriage feed, with my improved valves operatively connected up therewith; Fig. 2 is a side elevation of my valve, the valve-casing being partly broken away; Fig. 3 is a vertical section on line 3—3, Fig. 2, looking in the direction of the arrow which points to the right; Fig. 4 is a vertical section on line 4—4, Fig. 2, looking in the direction of the arrow; Fig. 5 is a central, vertical section through the valve-casing shown in Fig. 2, the valve being removed.

Referring in detail to the drawings, A designates a cylinder, in this instance the cylinder of a saw-mill carriage feed; in which works the usual piston (not shown).

a designates the exterior shell of the valve-casing. Centrally of the interior of the shell is a rotary, cylindrical valve or plug a^2 , which is hollow and has a central hub portion a^3 , to which is keyed a shaft a^4 . To the end of shaft a^4 is secured a crank a^5 , pivotally connected to the end of which is a rocker-shaft a^6 . Pivotally secured to the rocker-shaft a^6 is a link a^7 , pivotally secured itself, as at a^8 , and pivotally secured, at its other end, to another link a^9 , pivotally secured to an operating-rod a^{10} pivotally secured, as at a^{11} . The shaft a^4 projects through a housing a^{12} , having an arch por-

tion a^{13} . Projecting through the end of the arch portion is a set-screw a^{14} , bearing against the end of the shaft a^4 , and carrying a nut a^{15} , whereby lost motion may be taken up, as the valve wears.

The valve a^2 is formed as a cylindrical, hollow plug. Cut transversely through the valve are two ports a^{18} , a^{19} , arranged on diametrically opposite sides of the valve; and extending longitudinally of the outer periphery of the valve are two grooves, dished-out portions, or ports a^{16} , a^{17} , arranged on diametrically opposite surfaces of the valve. Interiorly of the shell a and surrounding the plug or valve a^2 is a substantially cylindrical wall a^{20} , having bulged portions a^{21} , a^{22} ; in, and extending longitudinally through, which are pockets or ports a^{23} , a^{24} , adapted, upon rotation of the valve, alternately to register with ports a^{19} , a^{17} . Also cut through said wall a^{20} are longitudinally-extending ports a^{31} , a^{32} , a^{33} .

The hollow interior of the valve a^2 communicates, at one end, with an exhaust-pipe a^{25} ; the live-steam inlet to the valve-casing being, in this instance, located at the bottom, as shown at a^{26} , and connecting with which is a steam-supply pipe a^{27} , in communication with any suitable source of steam-supply (not shown).

Extending from the interior periphery of two opposite side walls of shell a , and out of contact with, but substantially following the contour of, wall a^{20} , is a wing a^{28} , terminating at one end in the region of port a^{16} of the valve a^2 . Rising centrally from and extending longitudinally of said wing a^{28} and extending to the wall a^{20} is a division wall a^{29} , thus forming two ports B, C, the port B constituting the raceway for part of the live steam to the cylinder A, as shown clearly by the arrows in Fig. 3. Port C runs to the port a^{23} . Communicating with port a^{24} is a port a^{30} extending down underneath the wing a^{28} and in communication with the inlet a^{26} . It will thus be observed (see Figs. 3 and 4) that the steam, upon entering the inlet a^{26} , separates, as shown by the arrows, one half going to the right, under the wing a^{28} , into the port B, and thence therethrough, out into the cylinder A; all as clearly shown by the arrows in Fig. 3; and the other half going to the left, under the wing a^{28} , through port a^{30} , into the communicating port a^{24} , thence through the registering port a^{17} to the valve a^2 , and out therethrough, where it mingles

with the steam coming through port B; the united steam thence passing into the cylinder A. During this movement, the steam in the cylinder is passing (see Fig. 4) down through the port a^{34} , to the right of the valve-casing, and this port communicating with port C, the steam passes through said latter port. Since port C terminates in communication with port a^{23} , the steam passes into this latter port. But, in the position of the valve as shown in Fig. 3, passage of exhausting steam to the valve a^2 through the ports a^{32} , a^{23} , is cut off,—as shown in Fig. 3, where it will be seen that these ports are blanked,—and the steam is, consequently, exhausting through the other valve of the pair, which valve is located at the opposite end of the cylinder. As the area of ports a^{16} , a^{17} disposed on diametrically opposite surfaces of the valve, are equal, and as the amount of supply of steam to each is the same, it follows that the pressure of steam on opposite sides of the valve are equal and balance. At each end of the stroke of the piston, the valve is revolved, until the ports a^{18} , a^{19} of the valve register with ports a^{32} , a^{23} , and simultaneously ports a^{31} , a^{24} are blanked; whereupon steam goes through the valve a^2 into the exhaust-pipe a^{25} .

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

1. In a balanced-valve, a casing having a live steam inlet, a partition above said inlet and separating it from a passage thereabove, a hollow, rotary plug or valve disposed in the casing and provided with longitudinally extending ports formed on the exterior thereof, one of said ports being adapted to place the live steam inlet in communication with the passage above the partition in one position of the plug or valve.

2. In a balanced-valve, a casing having a live steam inlet and an exhaust steam outlet, a hollow rotary plug or valve disposed in the casing and communicating with the exhaust steam outlet at one end, a pair of diametrically opposite longitudinally extending ports formed on the exterior of said plug or valve, a pair of diametrically opposite longitudinally extending ports in said plug or valve and opening communication between the interior and exterior thereof, a partition in the casing separating the live steam inlet from a passage thereabove, one of said ports in the

plug serving to permit passage of exhaust steam to the interior thereof.

3. In a balanced-valve, a casing having a live steam inlet and an exhaust steam outlet, a valve or plug within the casing, ports running longitudinally of the exterior surface of said valve or plug, a partition in said casing above the live steam inlet and terminating at a point adjacent the exterior surface of the beforementioned valve or plug, a passage above the partition, and means for turning the valve or plug to a position where communication is established between the live steam inlet and the passage above the partition.

4. In a balanced-valve, an outer casing having a live steam inlet, an exhaust steam outlet, an inner casing centrally of said outer casing and communicating with said exhaust steam outlet, ports in the outer casing for permitting entrance and exhaust of steam to a cylinder, ports in the inner casing for allowing passage of steam thereto, a valve or plug rotatable within said inner casing having a pair of ports extending through the same and a further pair of ports formed in the exterior surface thereof whereby communication may be established between the live steam inlet and the space within the interior casing, and closed between the exhaust steam outlet from the cylinder and the space within the interior casing or vice versa as described.

5. In a balanced-valve, an outer casing having a live steam inlet, an inner casing with an exhaust steam outlet, a partition above the live steam inlet and separating it from the inner casing, a passage between the partition and inner casing, a rotary valve or plug within the inner casing, ports arranged in the exterior surface of said valve, one of said ports serving to place in communication the passages on the two sides of the aforementioned partition, ports extending through the valve and arranged intermediate of the exterior surface ports, and ports in the interior casing, the aforementioned partition above the live steam inlet terminating at a point adjacent the rotary valve or plug.

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

ABEL D. CATLIN.

Witnesses:

E. T. BRANDENBURG,
EDMUND H. PARRY.