

(No Model.)

2 Sheets—Sheet 1.

J. TREGONING.
VALVE OPERATING MECHANISM.

No. 462,805.

Patented Nov. 10, 1891.

Fig. 1

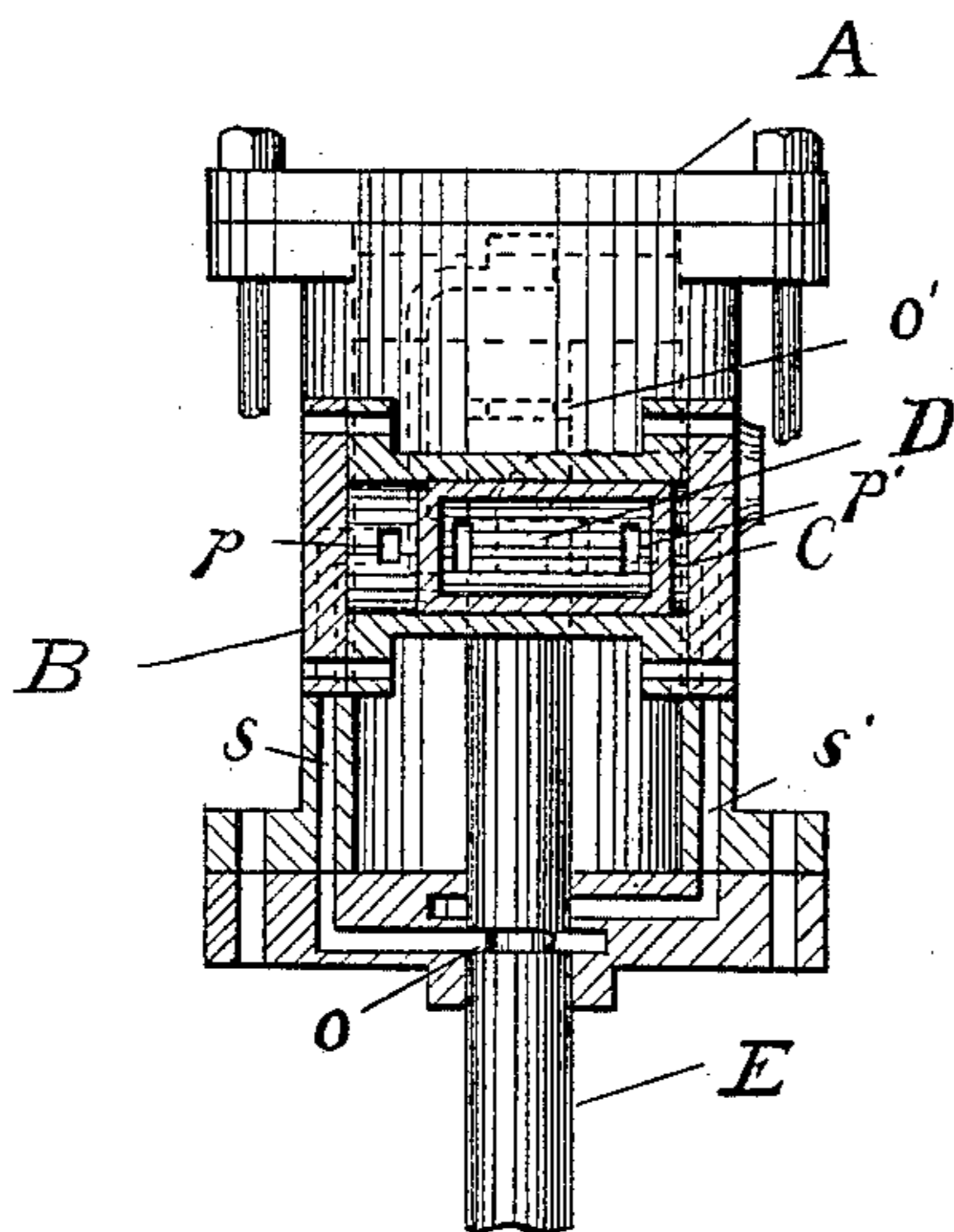
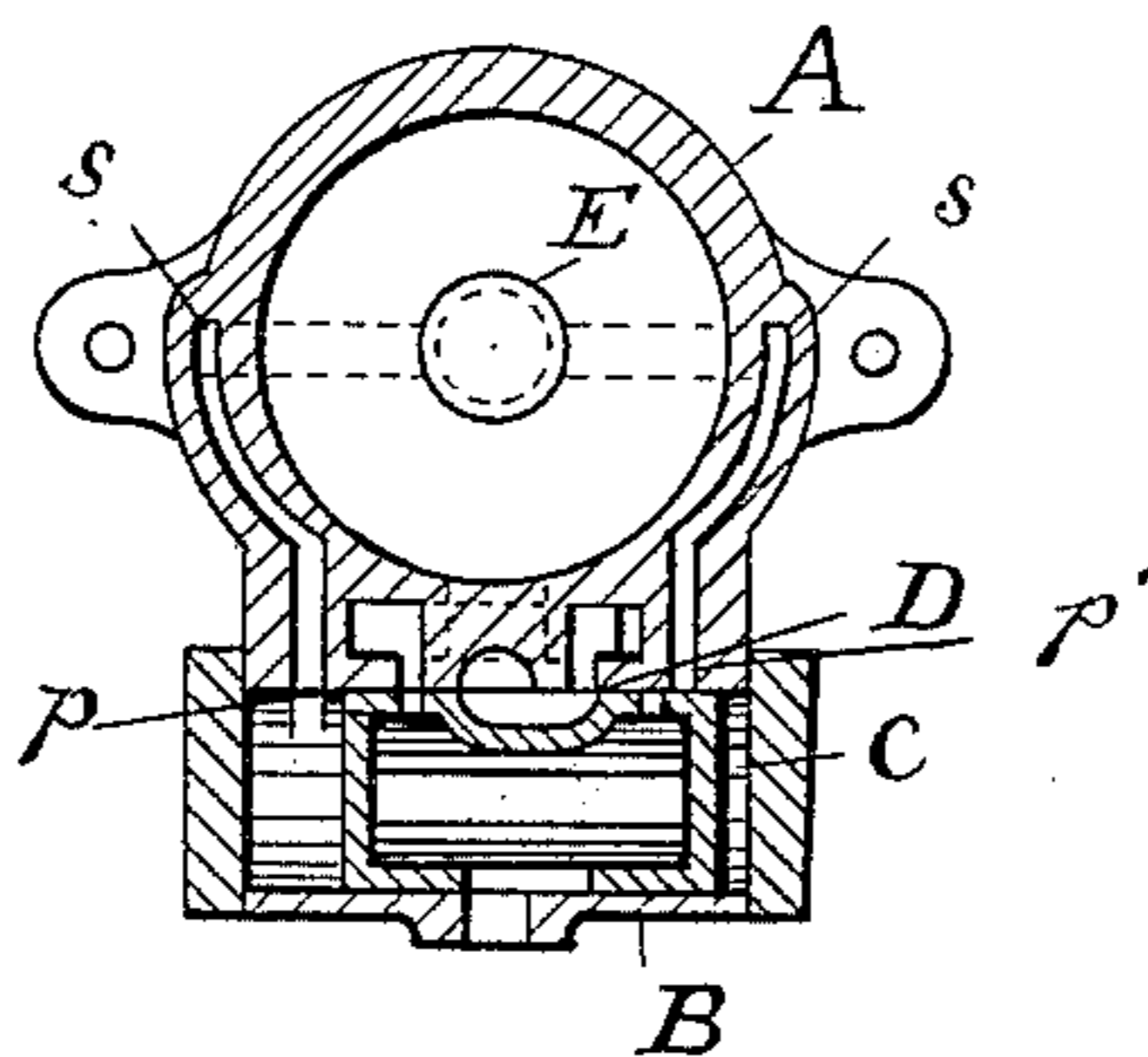


Fig. 2.



WITNESSES.

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(No Model.)

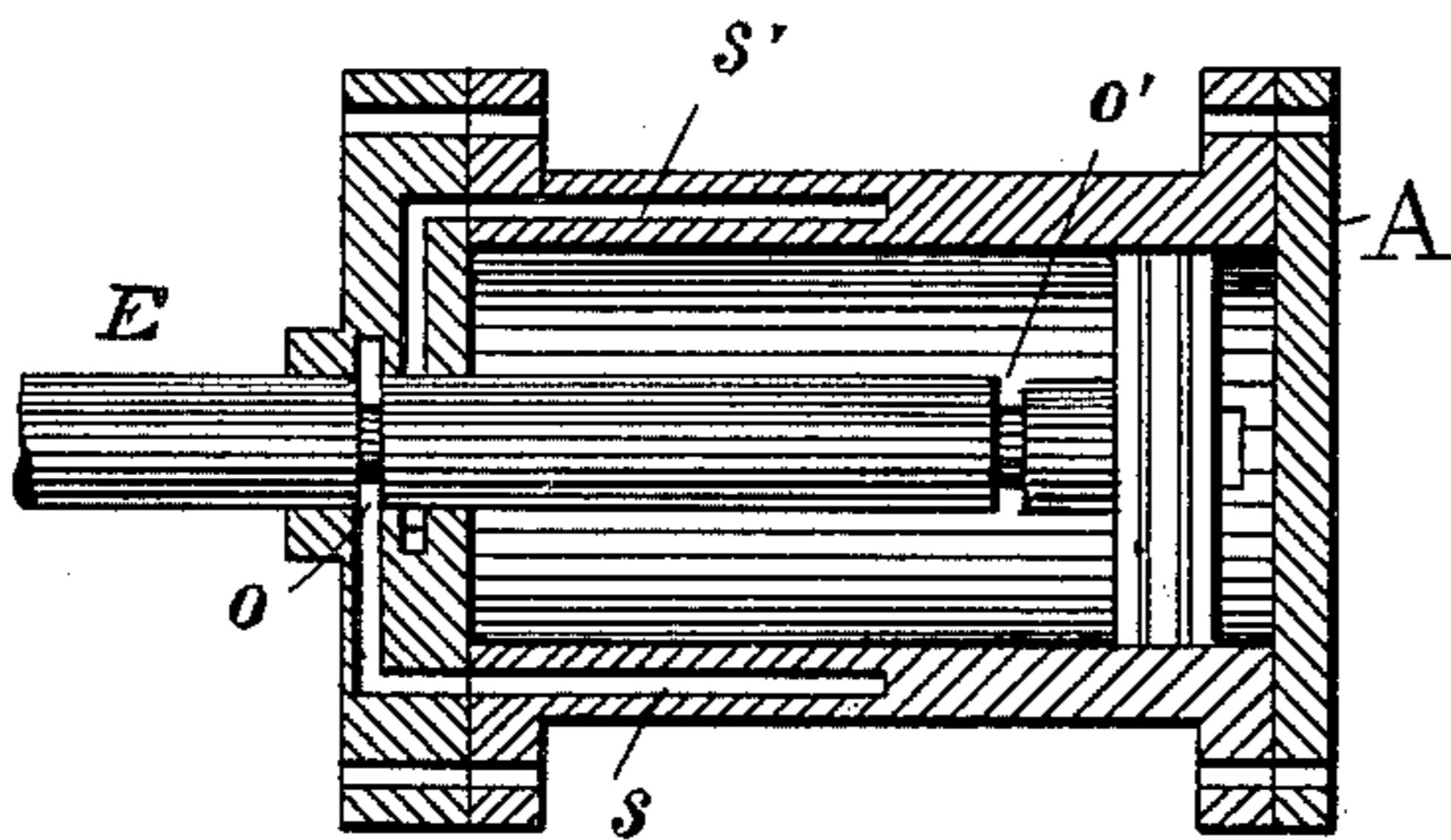
2 Sheets—Sheet 2.

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FIG. 3



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN TREGONING, OF LYNN, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO
JAMES T. LENNOX, OF SAME PLACE.

VALVE-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 462,805, dated November 10, 1891.

Application filed April 29, 1891. Serial No. 390,936. (No model.)

To all whom it may concern:

Be it known that I, JOHN TREGONING, a citizen of the United States, a resident of Lynn, in the Commonwealth of Massachusetts, have
5 invented a new and useful Improvement in Valve-Operating Devices, of which the following is a specification.

My invention relates to improvements in devices of the above class, in which a piston-
10 rod having annular grooves on one side of the piston extending through the head of the cylinder acts as a valve, opening and closing passages communicating with exhaust-ports in the steam-chest, and leading across
15 the cylinder-head through the opening in which the piston-rod slides to the exhaust-receiver or atmosphere.

In the accompanying drawings, which illustrate my invention, Figure 1 is a view thereof,
20 taken partially in section through center of main cylinder and partially in section through center of the steam-chest and partially in elevation. Fig. 2 is a section through the center of the steam-chest, showing also a right
25 section of the main cylinder. Fig. 3 is a section of the main cylinder.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, A is the main
30 cylinder, and B is a cylindrical steam-chest mounted thereon, and preferably placed at right angles, or nearly so, thereto.

In the steam-chest B is the piston C, inside of which and operated thereby is the valve
35 D, which is similar to the ordinary D-valve, and by means of which the steam is admitted into and exhausted from the cylinder in the usual way. Near the heads of the steam-chest B are the exhaust-ports *p* and *p'* communicating with the passages *s* and *s'*, respectively, which lead along the cylinder A
40 and across the head thereof, and through the opening in which the piston-rod slides, and are continued beyond the same and until they
45 communicate with the exhaust-receiver or directly with the atmosphere. Except in positions hereinafter set forth, the passages *s* and *s'* are closed by the piston-rod.

In the main cylinder A is a piston of the usual form, to which is secured the piston-
50 rod E, which passes through the head of the cylinder A, in which are the passages *s* and *s'*, and which is provided with spring-packing which surrounds the rod E and prevents leakage of steam into passages *s* and *s'*. In the
55 rod E is an annular groove *o'*, placed at such distance from the piston that at the limit of the stroke it will coincide with the passage *s'*. The rod E is further provided with another annular groove *o*, which, at the extrem-
60 ity of the reverse stroke, coincides with the passage *s*. The passages *s* and *s'* pass through the opening in the cylinder-head, through which the piston-rod E slides at different distances from the plane of the inner face
65 thereof, and can only coincide with the annular grooves *o* and *o'*, as hereinbefore set forth.

The operation of my invention is as follows: When steam is admitted into the steam-chest B it passes over the valve D into cylinder A. When the piston reaches the limit of
70 its stroke, the groove *o'*, coinciding with the passage *s'*, connects the exhaust-port *p'* with the exhaust-receiver or directly with the atmosphere, and the steam which has leaked
75 by the piston C will drive it over and operate the valve D, opening the exhaust and admitting steam to the other end of the cylinder. At the extremity of the reverse stroke
80 the groove *o* coincides with the passage *s*, and the operation of the piston C and the valve D is reversed.

My present invention I consider limited to forms of valve-operating devices in which the annular grooves are both on the same side of
85 the piston, and in which it is not necessary to extend the piston-rod through the back head of the cylinder, and in which both passages from the exhaust-ports in the steam-chest lead to the same head of the cylinder. 90

I make this limitation in view of Letters Patent of the United States No. 193,736, dated July 31, 1877, and granted to me for improvements in steam-valves in pumping-engines.

I claim as my invention and desire to secure by Letters Patent— 95

In a valve-operating device, the combination of the piston-rod E, having the annular grooves *o'* and *o* on the same side of the piston, the passages *s'* and *s*, crossing the same
5 head of the cylinder, the steam-chest B, having exhaust-ports communicating with the passages *s'* and *s*, respectively, the piston C,

and the valve D, all substantially as set forth, and for the purposes specified.

Dated at Lynn, this 18th day of April, 1891. 10
JOHN TREGONING.

Witnesses:

WINFIELD S. PARTRIDGE,
ALFRED SMITH.