

No. 688,665.

Patented Dec. 10, 1901.

J. MORRISSETT.
PISTON.

(Application filed Apr. 18, 1901.)

(No Model.)

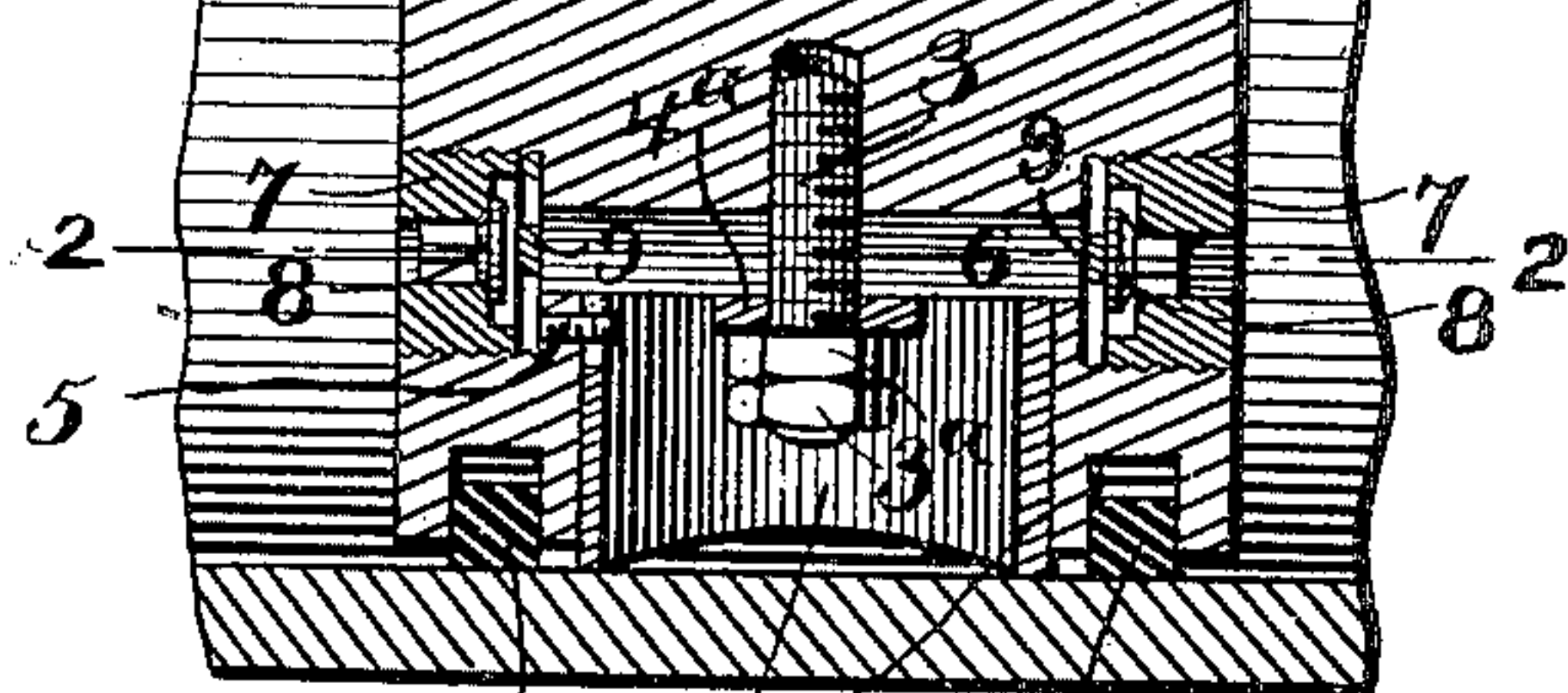
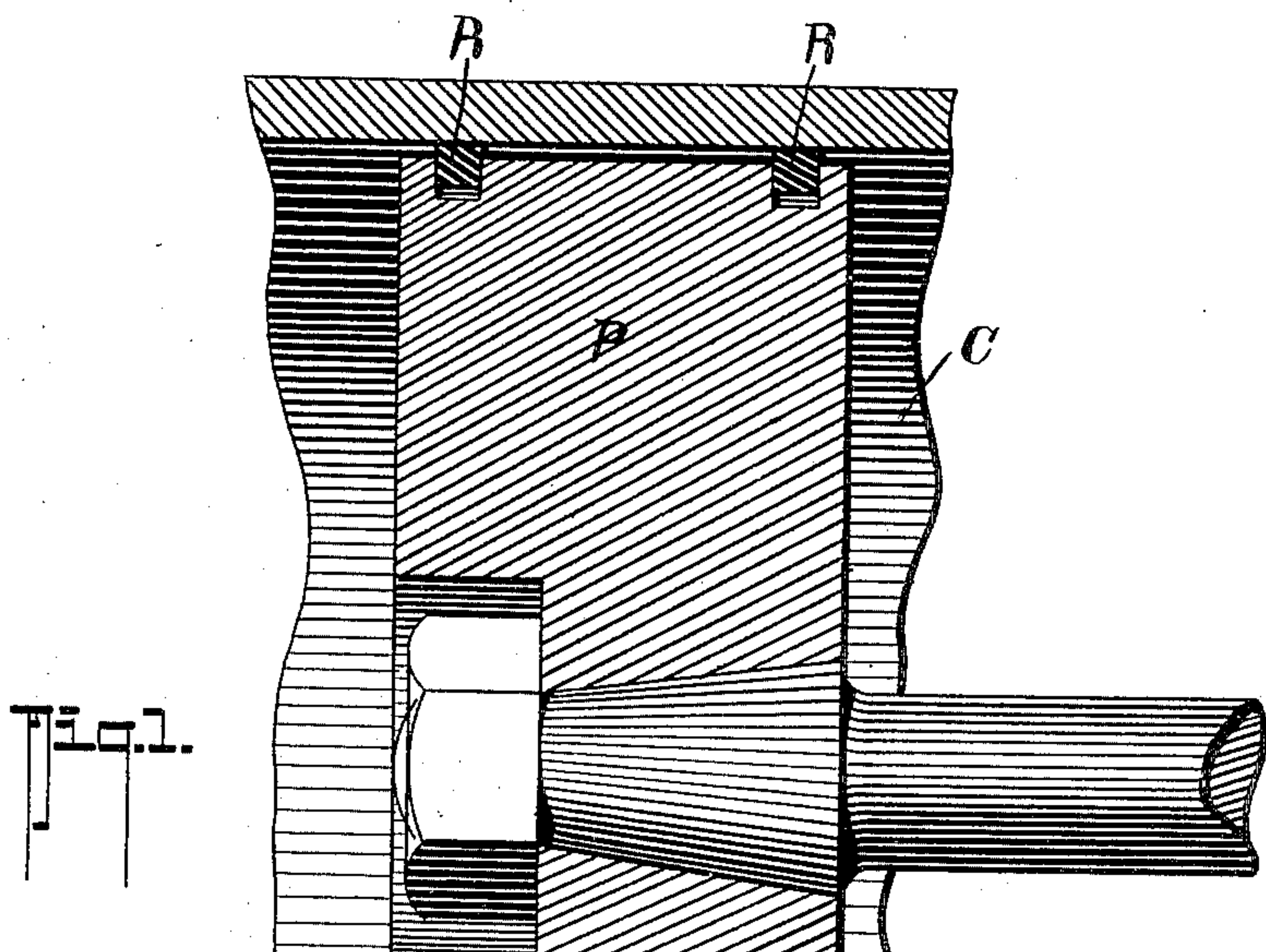
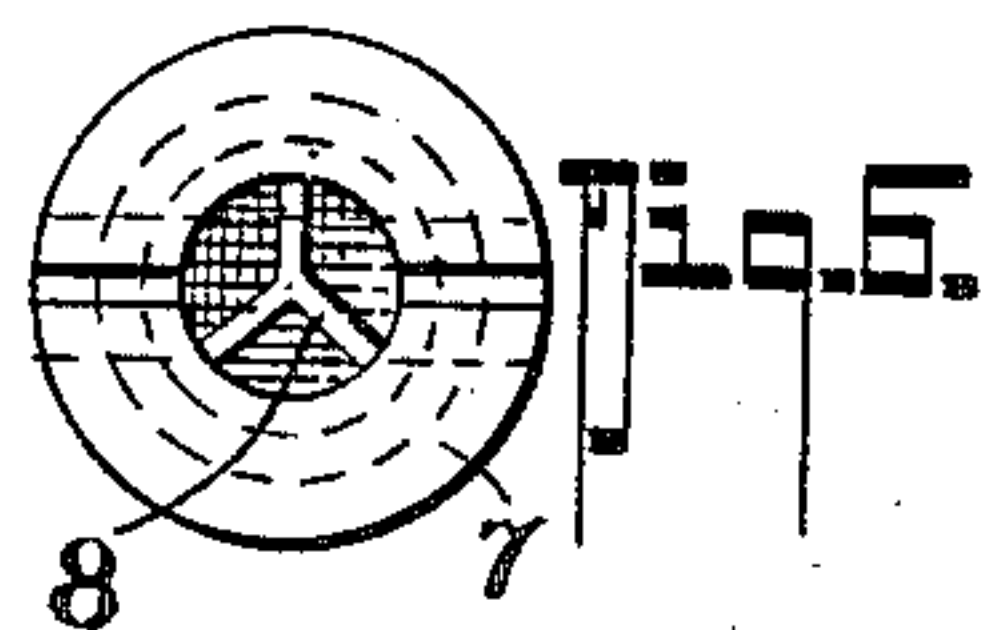
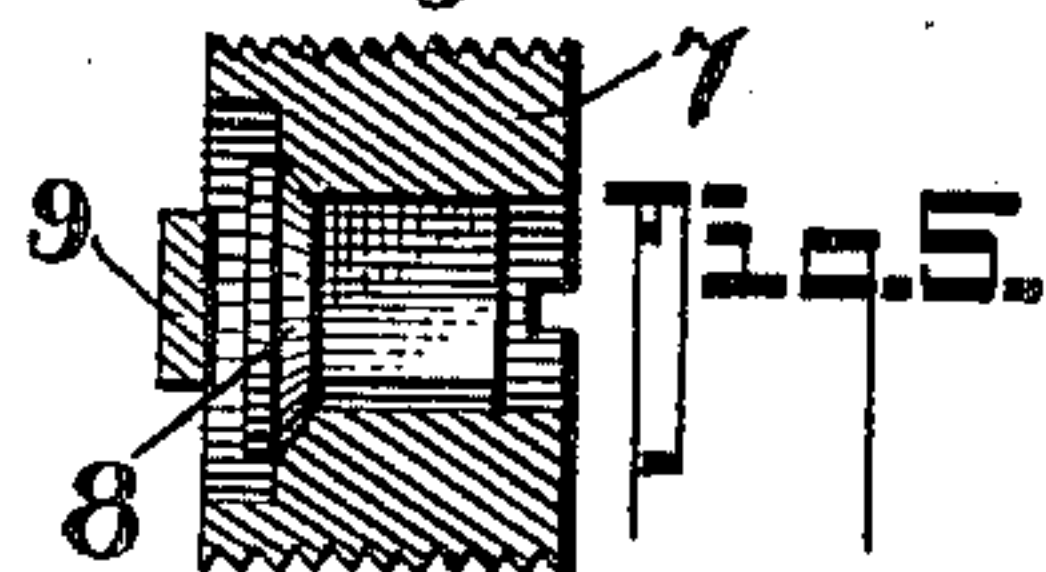
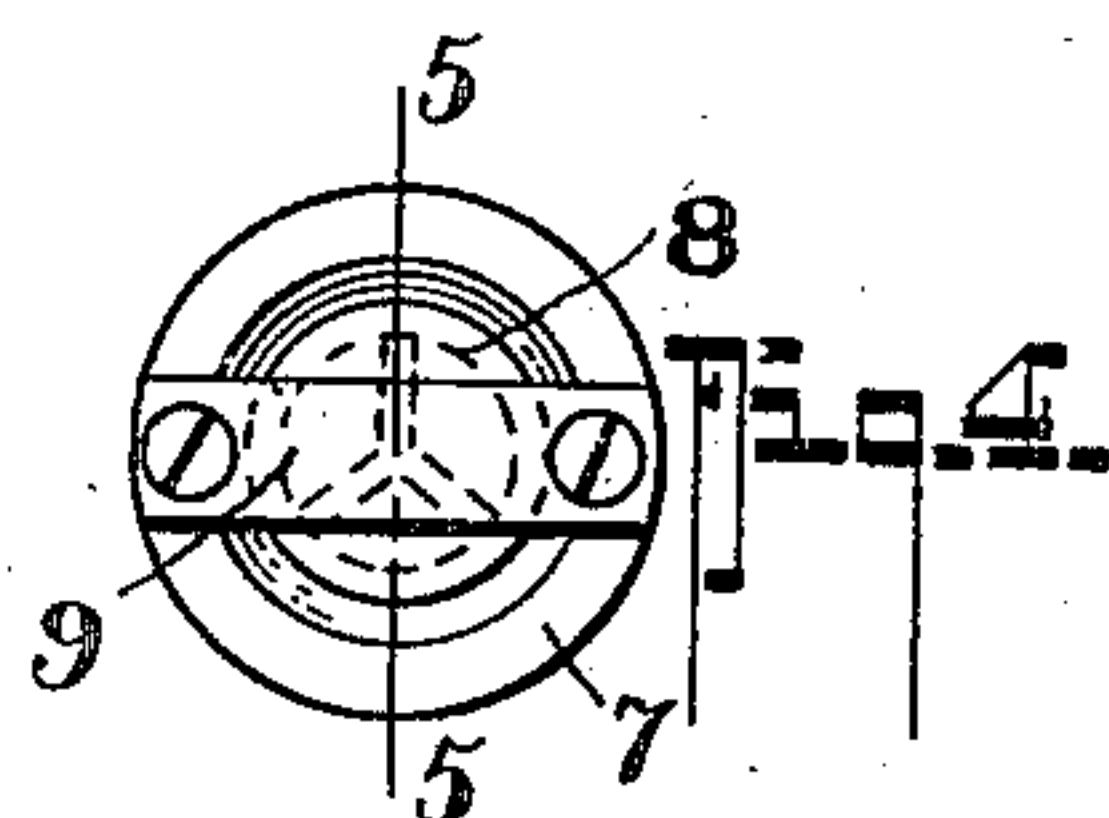
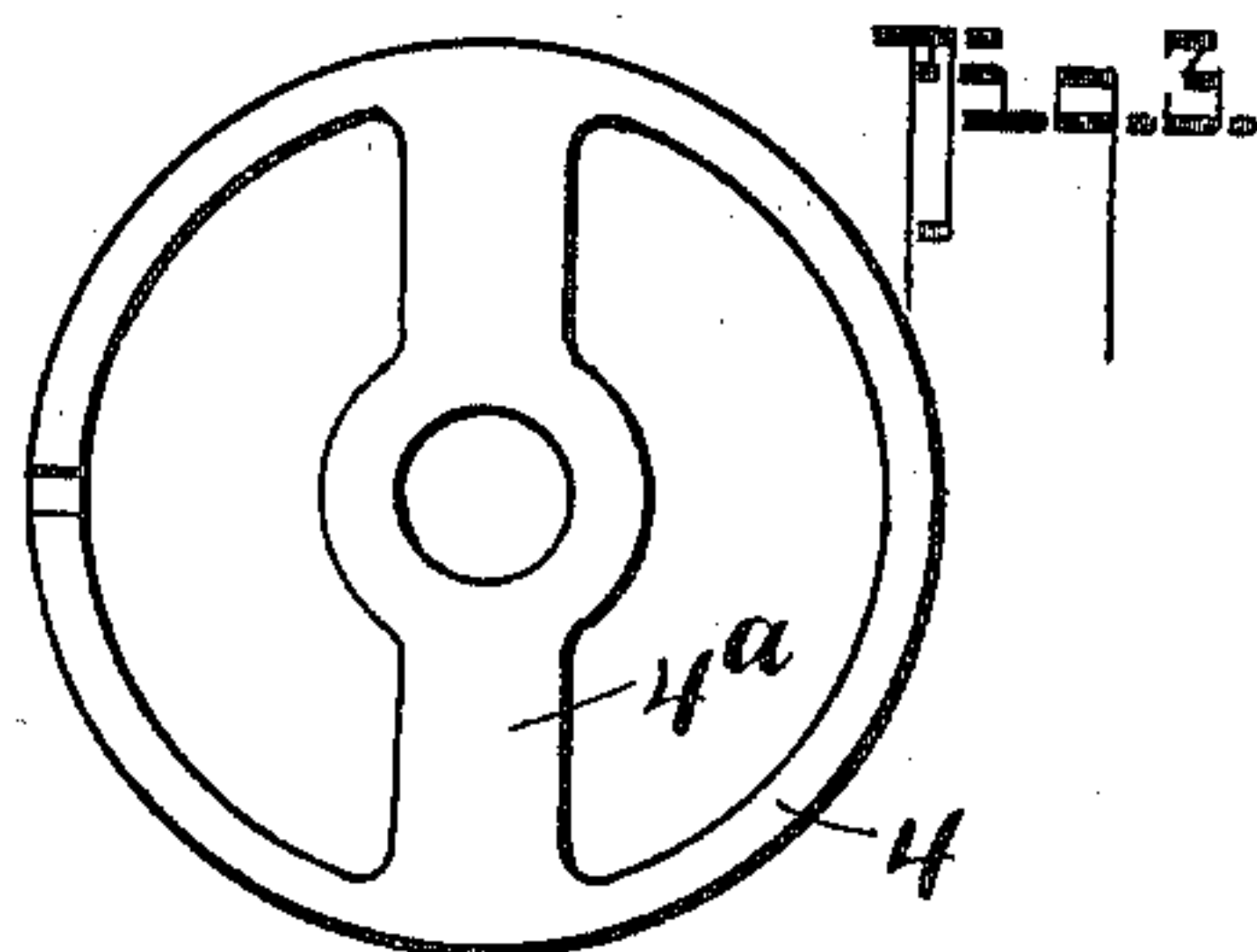
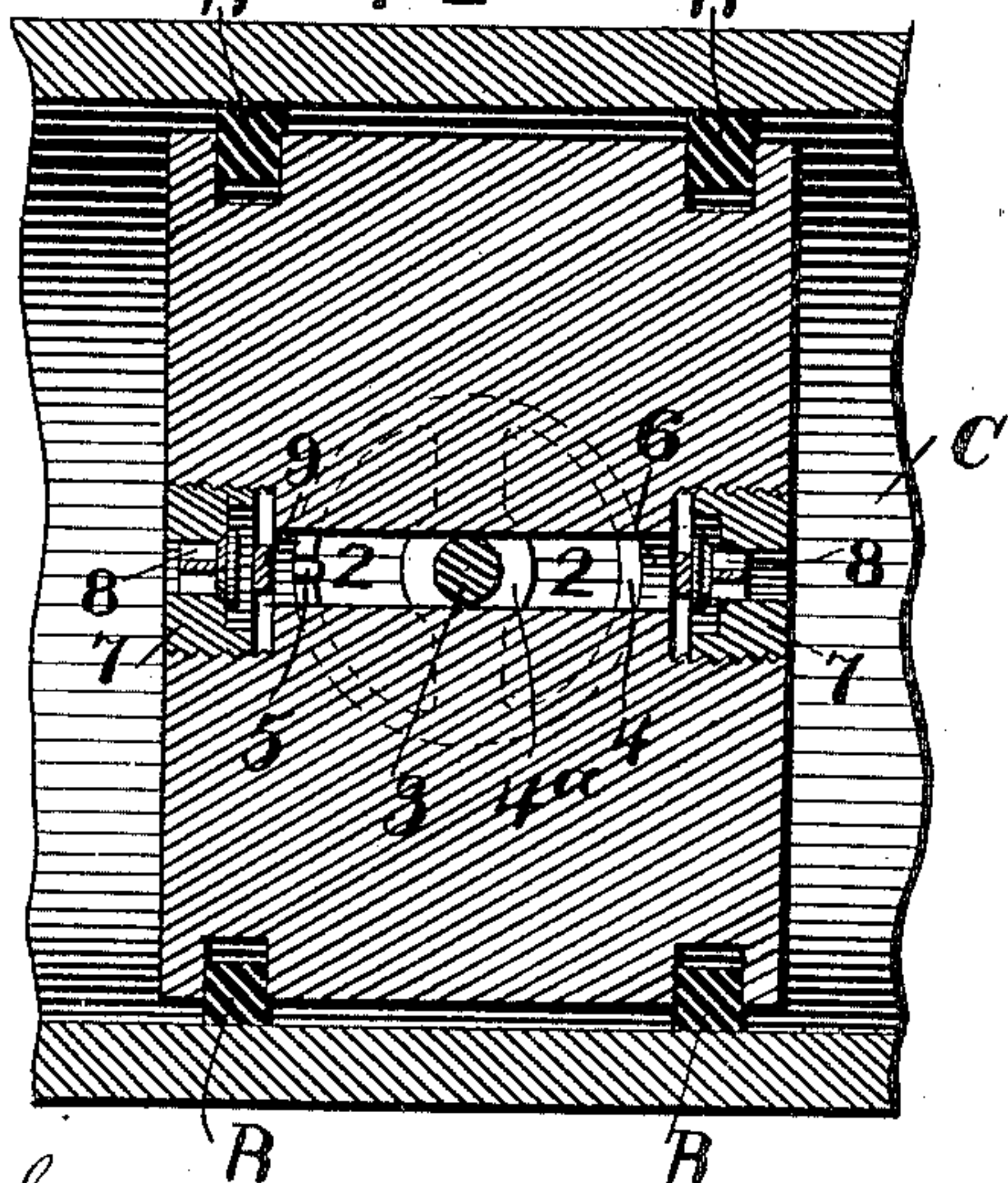


Fig. 2.



WITNESSES:

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PISTON.

SPECIFICATION forming part of Letters Patent No. 688,665, dated December 10, 1901.

Application filed April 18, 1901. Serial No. 56,420. (No model.)

To all whom it may concern:

Be it known that I, JOHN MORRISSETT, a citizen of the Dominion of Canada, residing at Vancouver, in the Province of British Columbia, Canada, have invented a new and useful Piston, of which the following is a specification.

My invention consists of an improvement in pistons for horizontal engines or pumps, and is designed to sustain the weight of such piston by the pressure of the steam or fluid within the cylinder, and thus prevent the cylinder wearing oval, as is invariably the case when the weight of the piston is allowed to rub back and forth on the lower side of the cylinder-bore. I attain this result by the means illustrated in the accompanying drawings, in which—

Figure 1 is a vertical cross-section of the piston of a horizontal engine with my device applied; Fig. 2, an enlarged longitudinal section of one of the check-valves and its seating-plug; Fig. 3, an end elevation of the same; and Fig. 4 an enlarged plan of the seating-cylinder in the balancing-chamber.

In the drawings, P represents the piston, and C the cylinder-walls, the difference being exaggerated.

In the under side of the body of the piston P between the packing-rings R, I bore a cylindrical chamber 2 of such diameter that its area multiplied by the steam-pressure will sustain or be slightly in excess of the weight of the piston and rod fastening and a proportion of the rod exterior to the piston, and within this chamber 2 I suspend by the stud 3 the light cylinder 4, which is turned to fit nicely the chamber 2, so as to be capable of easy axial movement therein. This cylinder 4 has a bar 4^a across its upper end, through the center of which the stud 3 passes, and this cylinder is supported on the stud by the lock-nuts 3^a, which regulate a limited axial movement of the light cylinder 4 and allow the lower edge of such to project beyond the periphery of the piston P an amount approximately equal to half the difference of the diameter of the cylinder C and the piston P. The lower edge of the cylinder 4 is turned to the diameter of the cylinder C, and 4 is prevented from rotating on its axis by the key-pin 5.

At the upper side of the chamber 2 and communicating therewith is the opening 6, drilled from side to side through the thickness of the piston P, and into an enlargement at each side I screw the plugs 7, which contain the check-valves 8, each of which opens inwardly with a movement limited by the bar 9.

In the operation of my device the steam enters through the check-valve 8 from the side of the piston which it is operating on and closing the other check-valve 8 fills the chamber 2, and being unable to escape from under the lower edge of the cylinder 4 acts on the upper side of the chamber 2 and sustains the weight of the piston, &c., to the extent it has been calculated to do. If the lifting pressure within the chamber 2 is in excess of what is required to sustain the weight and the piston is inclined to be forced to the upper side of the cylinder C as the downward movement of the cylinder 4 is limited by the lock-nuts, the cylinder 4 will lift with the piston and the steam escape from the lower edge of the cylinder 4 and the equilibrium be restored. The piston is thus sustained in the desired position in the cylinder and in a manner floats lightly therein.

Having now particularly described my invention, what I claim as new, and desire to be protected in by Letters Patent of the United States, is—

1. In a piston designed for a horizontal cylinder, a cylindrical chamber 2 on the under side thereof; a light hollow open-ended cylinder, slidable axially within such chamber, the lower edge of which fits closely the curvature of the cylinder C; means for limiting and regulating the axial movement of the cylinder 4; and means whereby the fluid-pressure from either side of the piston is admitted to the chamber 2 while it is prevented from passing from side to side through the piston, substantially as and for the purposes described.

2. In a piston for a horizontal cylinder, a cylindrical chamber 2 on the under side thereof; an open-ended hollow cylinder 4 within such, the lower edge of which conforms to the curvature of the bore of the cylinder of the engine or pump; means whereby the cylinder 4 may be moved axially to project be-

yond the periphery of the piston P; means whereby the cylinder 4 is prevented from rotating on its axis; passages from each side of the piston P communicating with the chamber 2; check-valves in such passages one on each side of the piston seating outward, substantially as described.

3. In a piston of the class described, a cylindrical chamber on the under side thereof; a hollow cylinder slidably fitting such, the lower edge of which coincides with the curvature of the engine-cylinder bore; a bar across the upper end of the hollow cylinder 4; a stud fixed to the upper end of the chamber 2 and passing through a hole in the bar; lock-nuts whereby the axial movement of the

cylinder 4 is regulated and limited; a key-pin to prevent rotation of the cylinder 4 on its axis; an opening from side to side of the piston P and communicating with the chamber 2; valve-seat plugs screwed in this opening from each side of the piston; valves seating outwardly in each plug and means whereby the movement of these valves is limited, substantially as described.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

JOHN MORRISSETT.

In presence of—

W. G. TRETHEWEY,
ROWLAND BRITAIN.