

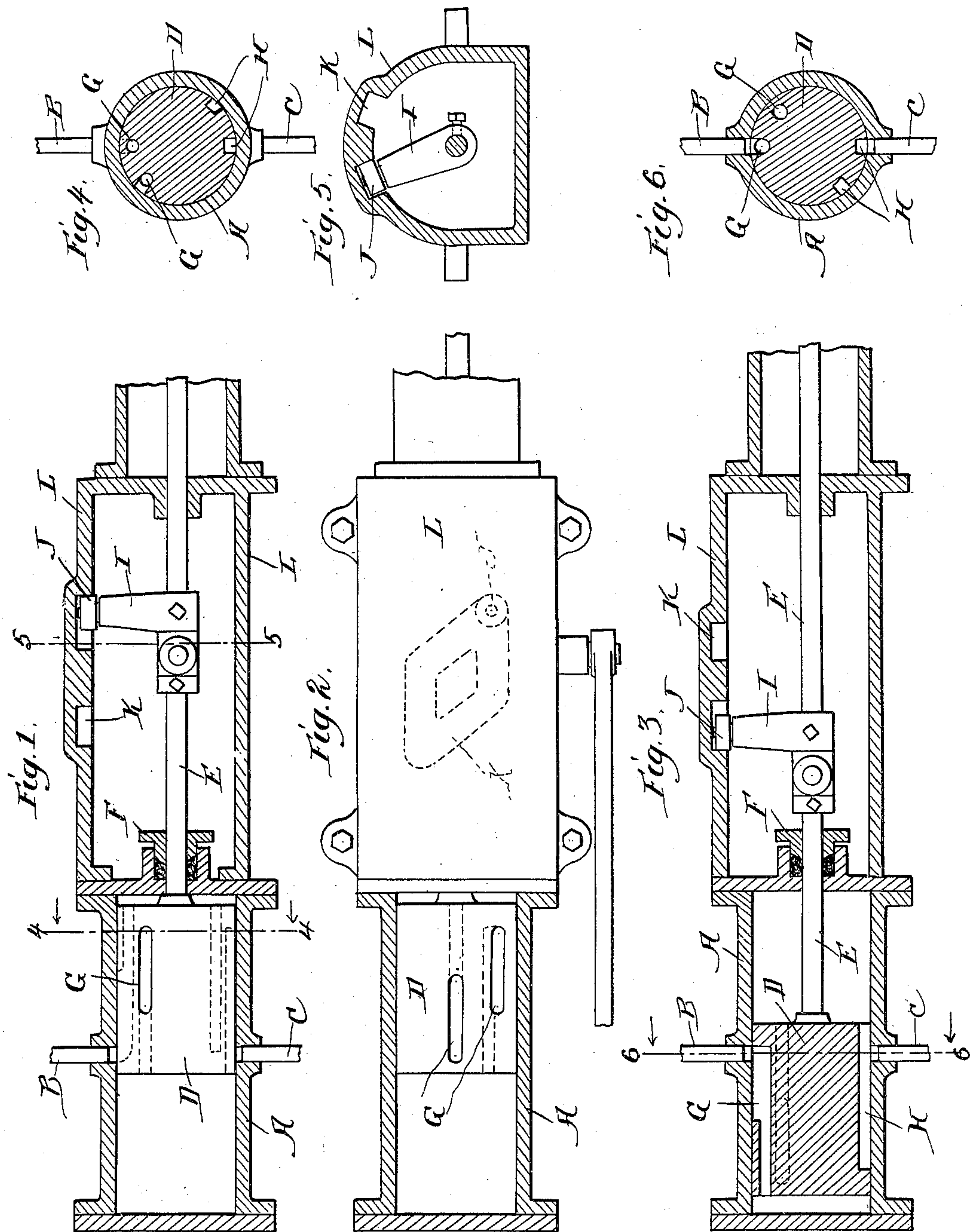
No. 770,566.

PATENTED SEPT. 20, 1904.

J. DODD.
ENGINE.

APPLICATION FILED JULY 8, 1903.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN DODD, OF VANCOUVER, CANADA.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 770,566, dated September 20, 1904.

Application filed July 8, 1903. Serial No. 164,676. (No model.)

To all whom it may concern:

Be it known that I, JOHN DODD, a subject of the King of England, residing at Vancouver, Province of British Columbia, Canada, have invented a certain new and useful Improvement in Engines, of which the following is a specification.

My invention relates to a new and useful improvement in engines, and has for its object to provide an engine in which the slide-valves or other valves are done away with entirely and in which the steam or compressed air is allowed to enter and exhaust from the cylinder upon each side of the piston alternately and this entrance and exhaust is controlled directly by a slight rotary movement of the piston, the inlet and outlet ports being arranged in the piston instead of the independent valves.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth, and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a longitudinal section through a cylinder of my improved construction; Fig. 2, a horizontal section through a cylinder, showing the piston in elevation; Fig. 3, a similar view to Fig. 1, showing the piston at the other end of its stroke; Fig. 4, a section on the line 4 4 of Fig. 1; Fig. 5, a section on the line 5 5 of Fig. 1; Fig. 6, a section on the line 6 6 of Fig. 3.

A represents the cylinder, of ordinary construction. B is the inlet-pipe extending into the cylinder, and C is the exhaust-pipe extending outward therefrom.

D is the piston, and E the piston-rod connected thereto, which extends out from the cylinder through the usual stuffing-box F. Near the upper side of the piston are two steam-inlet ports G, one extending from one end of the piston to a point near the other end, then turning at right angles and opening upward through the periphery of the piston,

and the other port G extending from the opposite end of the piston to a point near the other end and then turning at right angles and opening up through the periphery of the piston. These two ports G lie close together, but do not communicate with one another. Near the lower side of the piston are the exhaust-ports H, which are in the form of longitudinal grooves cut into the periphery of the piston, and one extends from one end of the piston to a point near the opposite end, and the other extends from the opposite end of the piston to a point near the other end. These exhaust-ports H are the same distance apart as the inlet-ports G, and these inlet-ports G and exhaust-ports H are so arranged that when one of the inlet-ports is in alinement with the inlet-pipe B the exhaust-port H, which connects with the opposite end of the piston will be in alinement with the exhaust-pipe C, so that the steam may enter upon one side of the piston and be exhausted from the other side upon each stroke. Thus it is only necessary to turn the piston upon its axis a slight distance at each stroke to bring first one set of inlet and exhaust ports in alinement with the inlet and exhaust pipes and then upon the next stroke bring the other set in alinement, and so on, and in this way the cut-off mechanism is contained entirely in the cylinder and is controlled by the rocking of the piston upon its axis.

Of course I am aware that different mechanisms could be utilized for accomplishing the rocking of the piston. Therefore I do not wish to be limited to any special mechanism. The mechanism which I have shown in the drawings for accomplishing this movement consists of an arm I, secured rigidly to the piston-rod, and this arm I has pivoted upon its upper end an antifriction-roller J, which is adapted to travel in a cam-slot K, formed upon the under side of a housing L, attached to the rear of the cylinder, and this cam-slot K is so formed that the piston will be turned upon its axis as required upon each backward and forward stroke of the piston.

The great advantage of this form of cut-off mechanism is that no extra parts are required which are liable to get out of order, and there-

fore reduces the cost of utilization and operation of the engine and also guards against any waste steam or compressed air, as the cut-off mechanism is contained entirely in the
5 cylinder.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of my invention.

10 Having thus fully described my invention, what I claim as new and useful is--

In an engine, a cylinder having supply and exhaust pipes, a piston therein having longitudinally-disposed inlet-ports separated and
15 leading to the front and rear of the piston, suitable exhaust-ports extending longitudinally of the piston and communicating with the front and rear thereof, a piston-rod, a

casing through which the piston-rod moves, a cover for the casing having a reinforced portion provided with a cam-slot in its under surface; the said slot being approximately diamond shape and extending diagonally across the cover, the center bounded by the slot being rigid and the ends of the slot being rounded, an arm bolted to the piston-rod and extending into the slot, the extremity of the arm being reduced to form a spindle, and an anti-friction-roller mounted therein. 20 25

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses. 30

JOHN DODD.

Witnesses:

PERCY W. CHARLESON,
THOMAS MATHEWS.