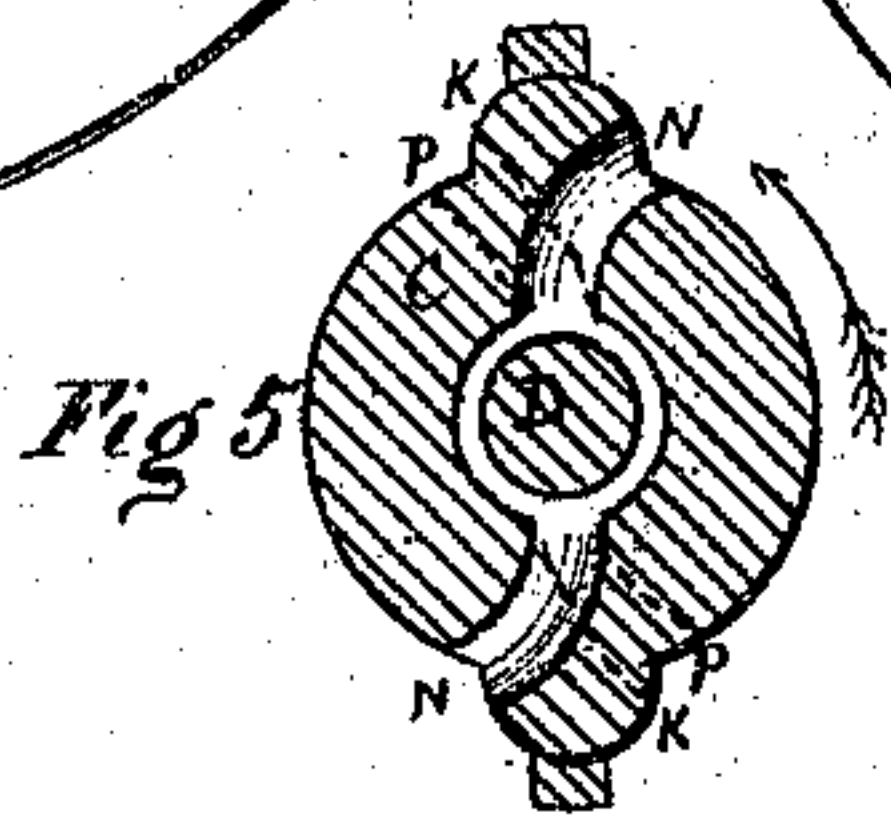
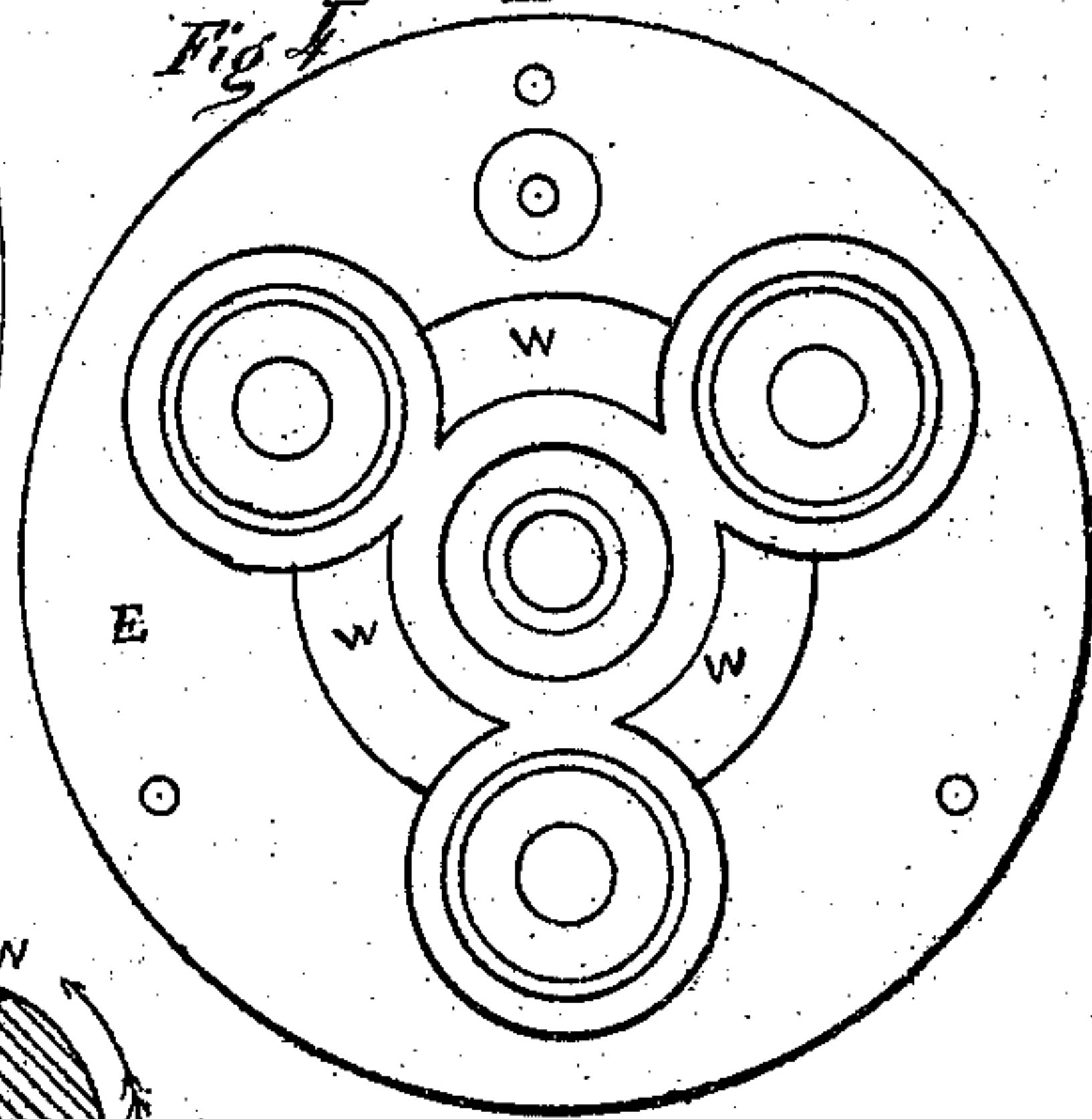
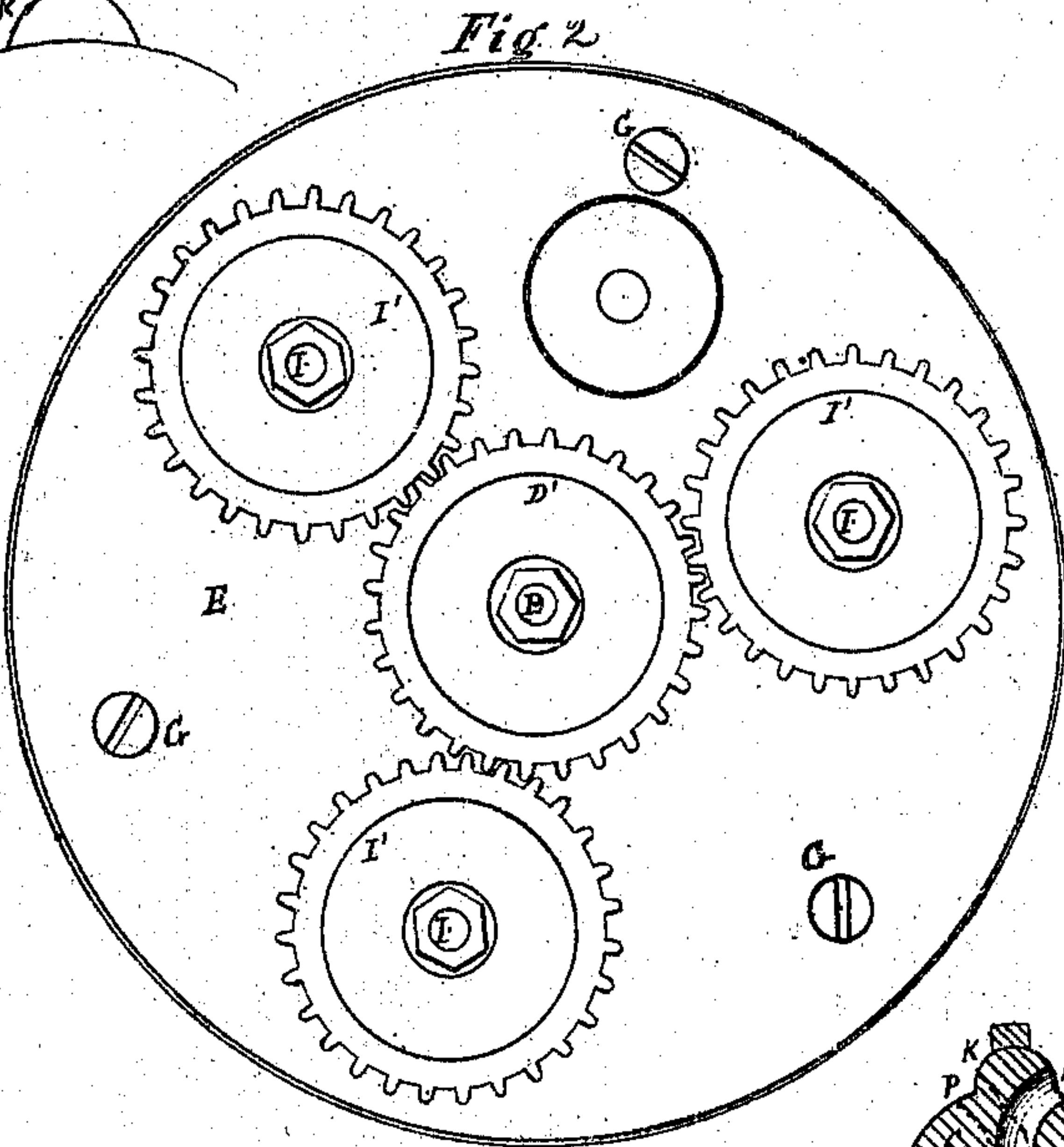
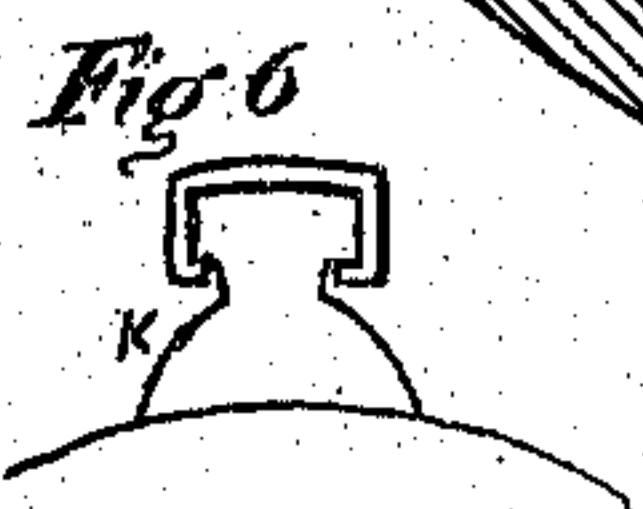
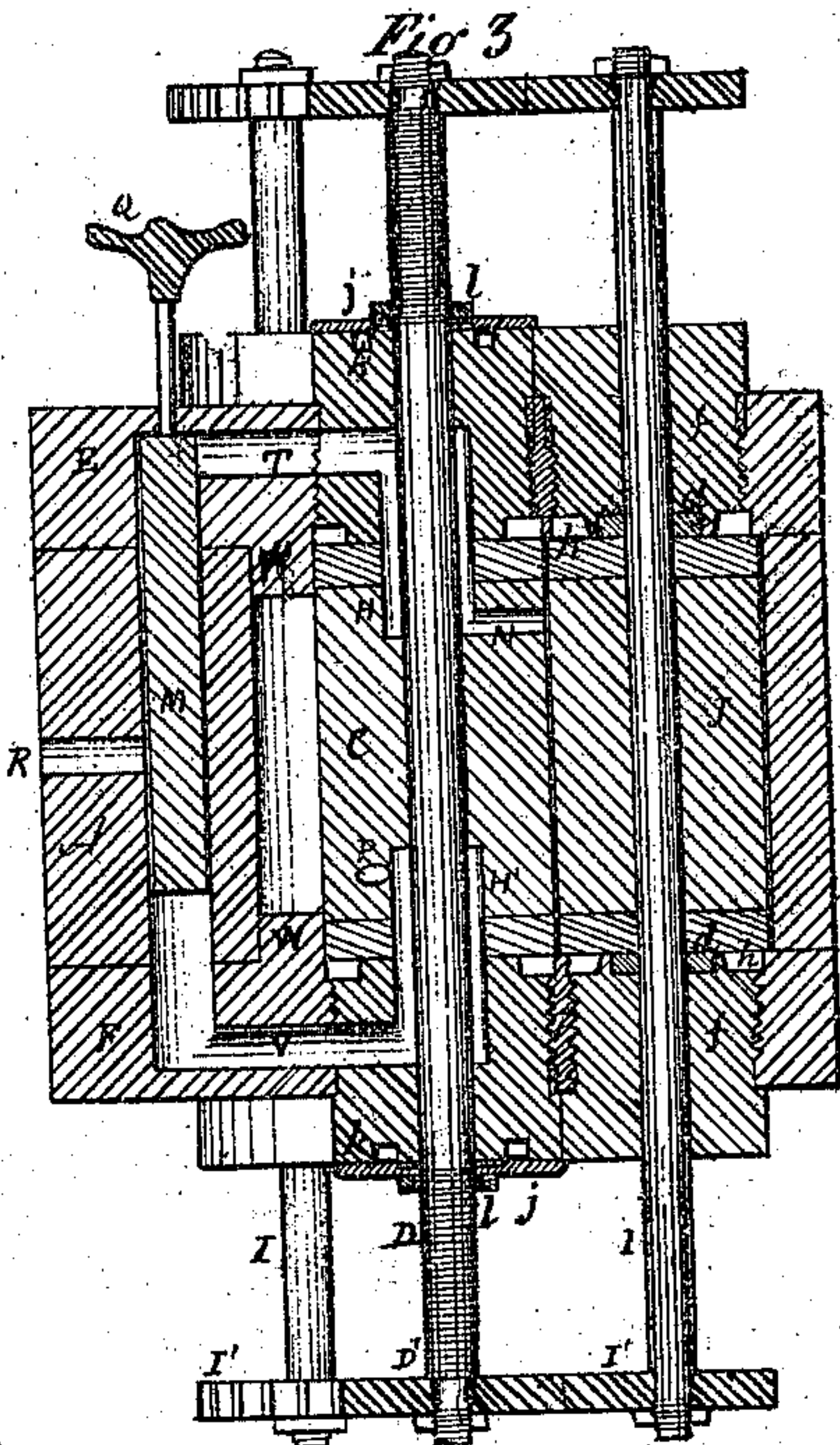
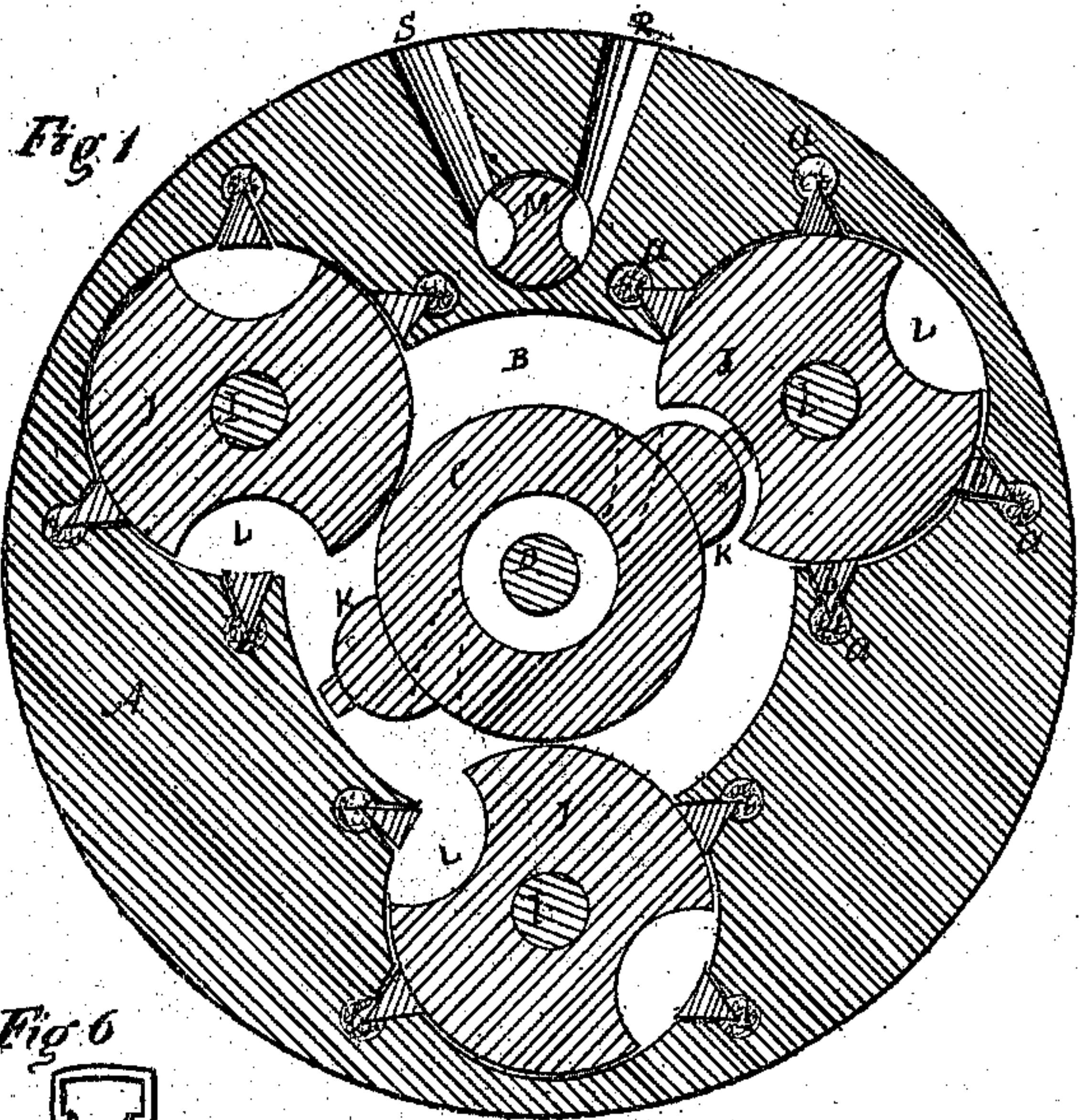


E. D. Mead,
Rotary Engine,
No 105,708. Patented July 26, 1870



Witnesses
Wm. H. Laman
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Inventor
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United States Patent Office.

EDWIN D. MEAD, OF SHORTSVILLE, NEW YORK.

Letters Patent No. 105,708, dated July 26, 1870.

IMPROVEMENT IN ROTARY ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, EDWIN D. MEAD, of Shortsville, Ontario county, in the State of New York, have invented certain new and useful Improvements in Rotary Steam-Engines; and I hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

The nature or essence of my invention consists in the peculiar construction and arrangement of devices described in the following specification and shown in the accompanying drawing.

Figure 1 is a cross-section of the cylinder through the supply and exhaust-ports.

Figure 2 shows the end of the cylinder and the arrangement of the gearing.

Figure 3 is a central section of the cylinder, cut lengthwise.

Figure 4 is the inside of one of the heads E or F.

In the drawing—

A is a cylinder, bored through the center, as shown at B, fig. 1, for the rotating winged piston C to turn in, which is fastened to the shaft D, to turn it, and communicate the power of the engine to the machinery to be driven by it.

The cylinder A has two heads, E and F, which are fastened to the cylinder with screws G G, and perforated for the shaft D of the piston and the shafts I I of the cut-off cylinders, of which there may be three or more, as preferred.

The cylinder A is also bored parallel to B, for the cut-off cylinders J J, which are fastened to the shafts I I, which are provided with gears I', turned by the gear D', on the piston-shaft D, so that the piston C and cut-off cylinders J J all have the same number of revolutions per minute.

The piston C and cut-off cylinders J J are all of the same size, and their ends beyond the wings K of the piston, and the grooves L of the cylinder cut-offs, may roll in contact or very near together.

The wings K of the piston may be made in the form shown in the drawing, and provided with a clasped-shaped packing, as shown in Figure 6, to work against the sides of B and into the grooves L L in the cut-off cylinders, as shown in fig. 1.

The ends of the piston C are bored larger than the shaft, to form the chambers H at each end of the cylinder. From one of these chambers there are supply-ports or openings N, for the steam to enter the cylinder B, and turn the piston in the direction of the arrow, fig. 5, and as the wing K passes by the cut-off cylinder, the steam enters the opening P, and exhausts through it into the chamber H', at the opposite end of the cylinder. The grooves L in the cut-off cylinders are segments of circles.

There is a hole bored in the cylinder A and into the heads E and F, as shown in fig. 3, for the faucet-plug M, which is provided with a stem through the head E, and a hand-wheel, Q, to turn it, and let the steam on and shut it off.

The plug M serves the supply-port R, through which the steam enters, (see fig. 1,) and the exhaust-port S, through which the steam escapes, being grooved on one side, toward the head E, to supply the steam to the passage T in the head E, which opens into the chamber H of the piston, as shown in fig. 3. And the plug M is grooved on the opposite side, opening into the exhaust or escape-port S, so that the steam, which passes through P into the chamber H', passes from the chamber into the passage V, and from thence by the side of the plug M to the exhaust-port S, through which it passes out of the engine.

To pack the cut-off cylinders, I drill four small holes, *a a*, near each cylinder, through the cylinder A, and cut a slot or opening from the holes *a a* to the cylinders J, as shown in fig. 1, and make some triangular bars *b b* to fit the slots, and put some fibrous or other elastic packing in the holes *a a*, behind the bars, to press them out against the cylinders and stop the steam, and as the bars *b b* are longer than the grooves L in the cylinders, so as to rest on the circular ends of the cylinders, while the grooves L are passing under or by the bars, or, in other words, the circular heads of the cylinders J prevent the packing-bars *b b* from entering the grooves L in the cylinders.

As the wings K do not extend the whole length of the cylinder, I make some segments, W W, fig. 4, on the inside of the heads, to project into the opening B, and prevent the steam from passing the ends of the wings K.

In fig. 3, *d* is a ring on the shaft I, which fits the end of the bushing *f*, which is screwed through the head F, and some fibrous or other packing may be put in the space *h*, to pack the ends of the cylinders.

If the hole in the cylinder and the plug M are both made tapering, they can be easily fitted tight. By turning the plug M half-way round the motion of the engine will be reversed.

I make some packing-rings, *j j*, to fit the piston-shaft D, with circular flanges *k*, to fit grooves in the journal-boxes, so that some fibrous or other packing may be put under cap *j*, around the shaft, and the nut *l*, on the shaft, screwed up to make it tight.

Instead of the plug M and the ways to and from the piston for the steam, I contemplate that the piston-shaft may be made hollow, and the steam supplied at one end and escape or exhaust at the other end of the hollow shaft. Also, that the gearing at one end may be dispensed with.

I further contemplate that my engine may be run

by the pressure of water, instead of steam, and that it may be used as a pump if turned by some power.

By using three cut-off cylinders the steam acts on one or more of the piston wings constantly, and will keep the engine in motion without the use of a balance or fly-wheel; and, besides, the steam cannot blow through the engine without turning the piston, as it might do if only two cut-off cylinders were used.

I claim—

1. The combination and arrangement of the central feed and central discharge, around the shaft and into

the end of the cylinder, with the two-winged piston C K, and three or more rotating cut-off cylinders, J J J, and two-way supplying plug, M, the whole being constructed to operate as described.

2. In combination with the grooved cut-off rotary cylinders J J, the circular head and packing-bars *b b*, substantially as described.

EDWIN D. MEAD.

Witnesses:

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H. E. WOODRUFF.