No. 713,649. Patented Nov. 18, 1902.

T. M. KENNEY.

ROTARY ENGINE.

(Application filed Oct. 31, 1901.)

(No Model.) 2 Sheets—Sheet 1.

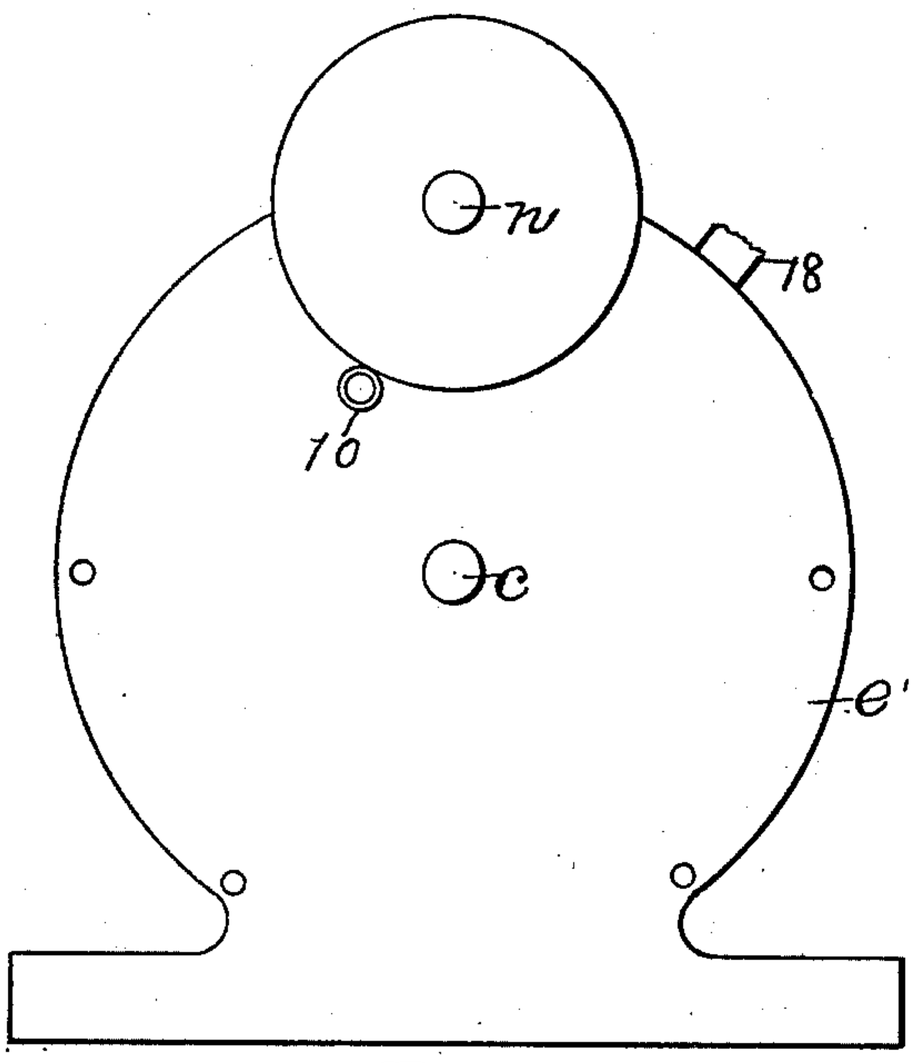

Fig. 1.

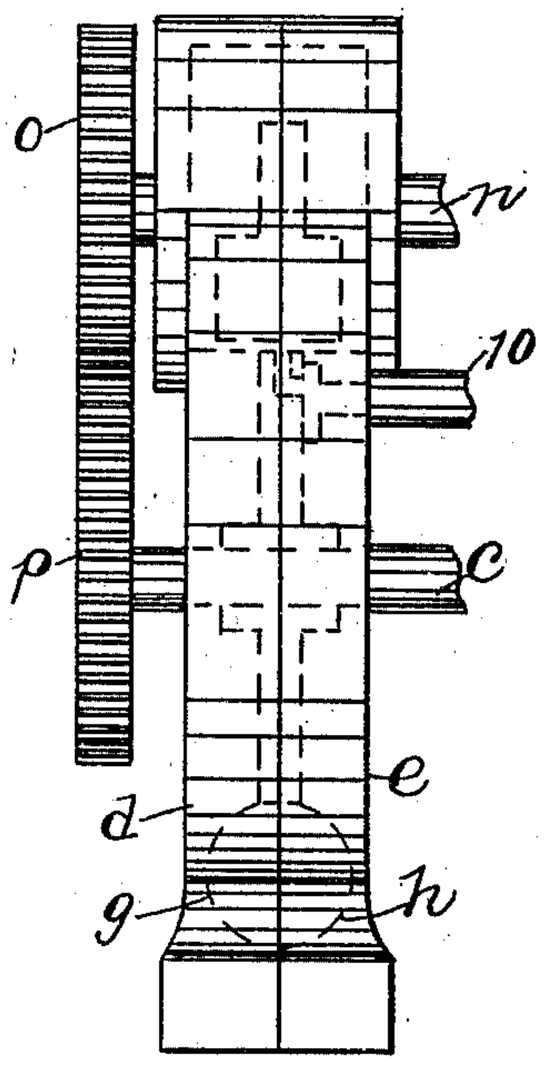

Fig. 2.

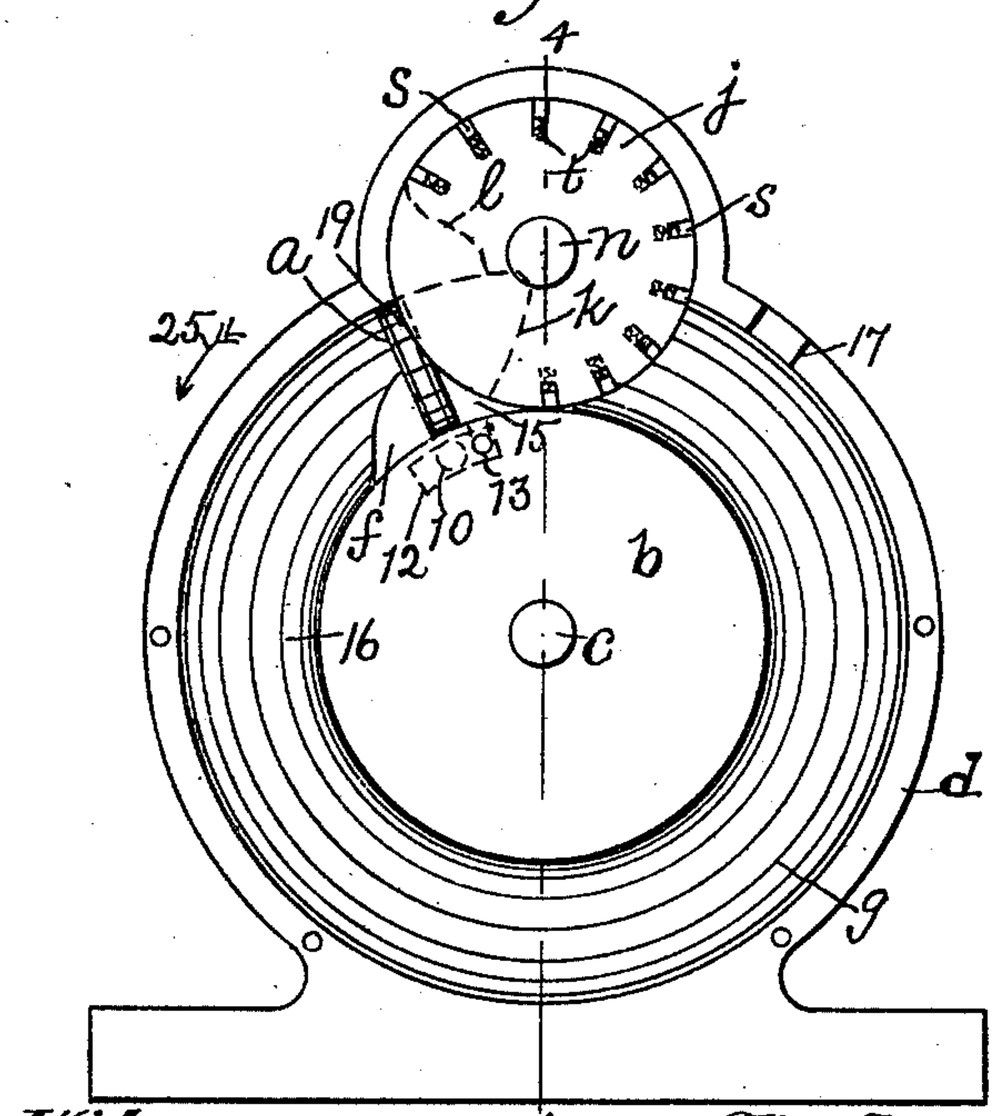

Fig. 3.

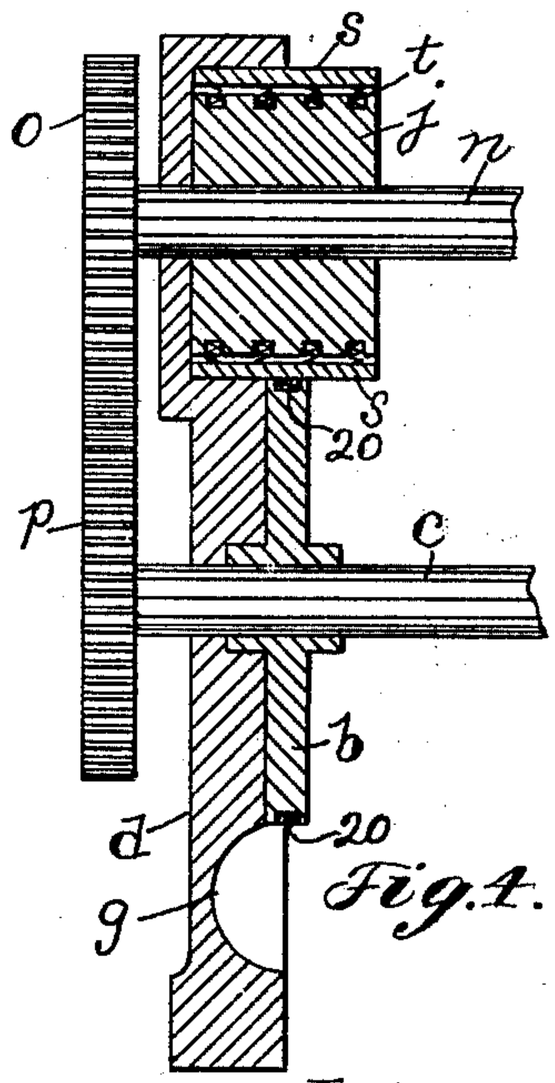

Fig. 4.

Witnesses.
C. D. Emmett.
J. Murphy.

Inventor.
Thomas M. Kenney
by Jas. H. Churchill
Atty.

No. 713,649. Patented Nov. 18, 1902.

T. M. KENNEY.

ROTARY ENGINE.

(Application filed Oct. 31, 1901.)

(No Model.) 2 Sheets—Sheet 2.

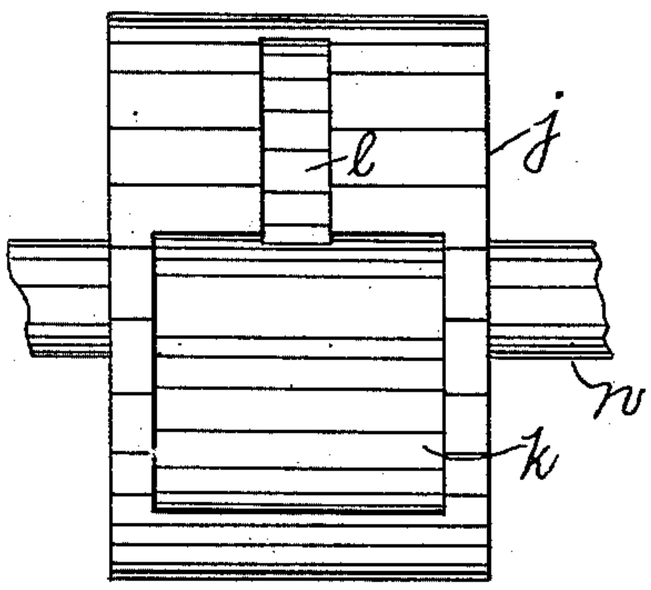

Fig. 5.

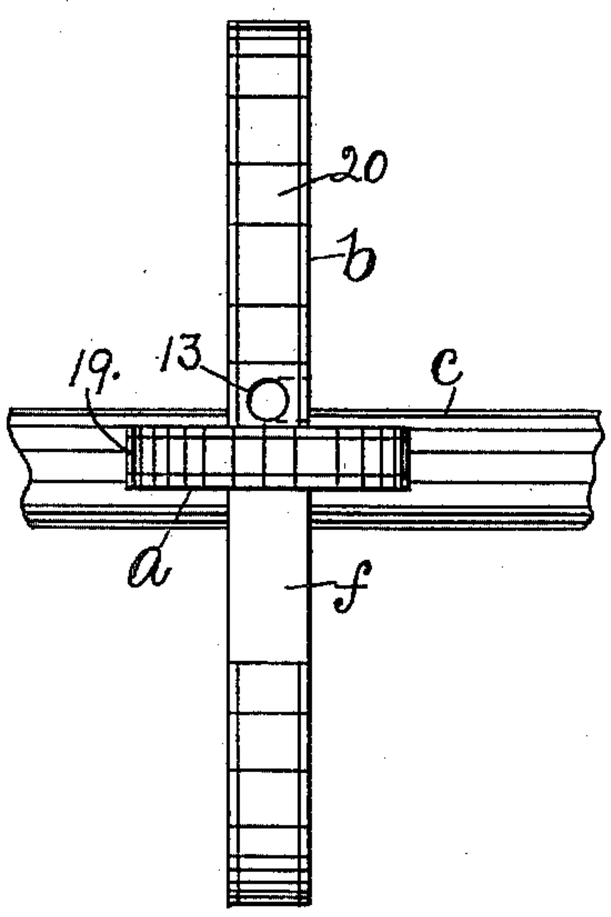

Fig. 6.

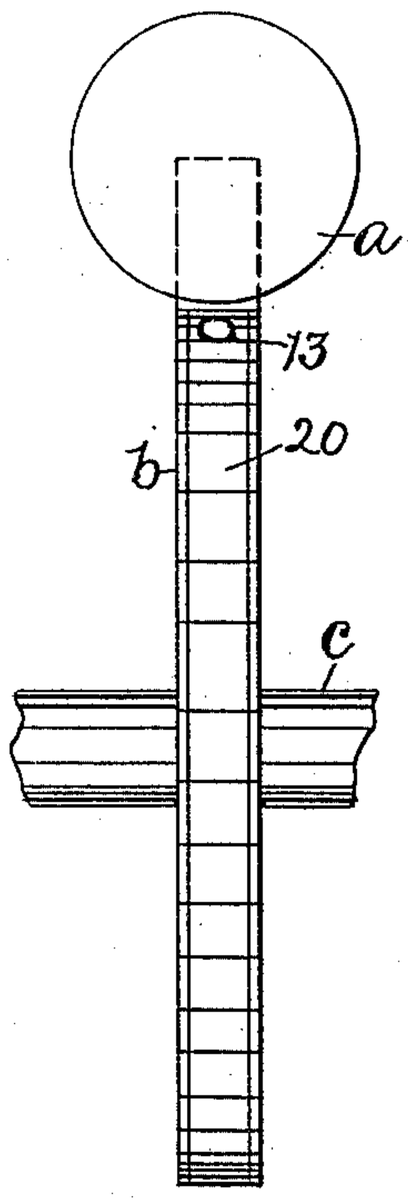

Fig. 7.

Witnesses.
E. H. Zamett
J. Murphy

Inventor
Thomas M. Kenney
by Jas. H. Churchill
atty.

UNITED STATES PATENT OFFICE.

THOMAS M. KENNEY, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO DAVID FARQUHAR, OF CAMBRIDGE, MASSACHUSETTS.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 713,649, dated November 18, 1902.

Application filed October 31, 1901. Serial No. 80,634. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. KENNEY, a citizen of the United States, residing in Cambridge, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Rotary Engines or Motors, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a rotary engine or motor which may be actuated by steam, hot air, gas, water, or other suitable medium or agent and which to facilitate description will be hereinafter referred to as a "steam-engine." The engine or motor may be single or compound, and in the present instance it is illustrated as a single engine or motor.

The invention has for its object to provide a simple, efficient, noiseless, and economical engine, and for this purpose I employ a piston mounted on an axis to move in a path concentric with the said axis within an inclosing casing, and the said piston is arranged to fill said path, so that it can be provided with steel or other packing which will make a steam-tight fit with the walls of the said path and separate the latter into steam-tight compartments. The engine or motor is provided with an abutment which rotates in unison with the piston and is recessed to receive the same, as will be described. These and other features of this invention will be pointed out in the claim at the end of the specification.

Figure 1 is a side elevation of a rotary engine or motor embodying this invention; Fig. 2, an end elevation of the engine shown in Fig. 1 looking toward the right; Fig. 3, an elevation with one-half of the casing removed; Fig. 4, a section on the line 4 4, Fig. 3; Fig. 5, a detail of the abutment on an enlarged scale; Figs. 6 and 7, details of the piston and its carrier shown in Fig. 3.

Referring to the drawings, *a* represents a cylindrical disk constituting the piston of my improved engine, which is attached to a second disk *b*, mounted on a shaft *c*, supported in bearings in the two parts or halves *d e* of an inclosing casing.

The disk *b* constitutes a carrier for the piston *a*, and the latter is affixed to the periphery of the former, as by a bracket or arm *f*. The piston *a* is disposed substantially at right angles to the disk or carrier *b* and is adapted to be moved in a circular path formed by semicircularly annular grooves *g h* on the interior walls of the parts of the casing. The disk or carrier *b* is fast on the shaft *c*, and the said disk and its piston *a* coöperate with a revoluble cylinder *j*, forming an abutment for the steam to act against, said cylinder being supported in cylindrical sockets in the two halves of the casing and being made of sufficient diameter to extend across the circular path traveled by the piston *a* and engaging the periphery of the circular carrier or disk *b*. The cylindrical abutment is provided with a recess or opening *k* for the entrance of the piston *a* in its travel and with a further opening *l*, communicating with the opening *k*, for the reception of the bracket or arm *f*. The abutment *j* is mounted on a shaft *n*, provided with a gear *o*, which meshes with a gear *p* on the shaft *c*, and by means of said gears the abutment and the piston are revolved in unison.

The abutment *j* may be provided, as shown, with packing strips or bars *s*, located in axially-extended slots in the periphery of said abutment and forced outward into close contact with the walls of the sockets containing the cylinder by springs *t* or in any other suitable manner.

The engine is provided with a steam-inlet pipe 10, which in the revolution of the piston is adapted to communicate with a pocket, channel, or groove 12 in one face of the carrier or disk *b*, (see dotted lines, Fig. 3,) and the said pocket communicates with a port or passage 13, extended from the periphery of the disk or carrier *b* to said pocket. The port or passage 13 is located in close proximity to the piston *a* and admits steam into the live-steam chamber 15, formed on one side of the piston *a* by the latter and the abutment *j*, the exhaust-steam chamber 16 being formed on the opposite side of said piston and communicating with the exhaust port or passage 17 in the casing and with the exhaust-pipe 18.

The cylindrical piston *a* may and preferably will be provided with a steel or other

packing-ring 19, and, if desired, the circular carrier or disk *b* may also be provided with a similar packing-ring 20.

The operation of the engine may be briefly described as follows: Assuming the parts in the position shown in Fig. 3, steam passes through the inlet-pipe 10 into the pocket 12, thence through the port or passage 13 into the chamber 15, wherein it acts against the piston and the abutment *j* and moves the piston in its annular path in the direction indicated by the arrow 25. Steam at boiler-pressure thus acts on the piston until in the revolution of the piston and its carrier the latter is moved a sufficient distance to remove the pocket 12 from in line with the steam-inlet 10 and to close the latter, whereupon the steam in the chamber 15 acts expansively and continues to move the piston until the latter passes by or uncovers the exhaust-port 17, at which time the piston will have acquired sufficient momentum to complete its movement and again uncover the steam-inlet port or passage 10.

I have herein shown and described my invention as embodied in a single-acting engine; but I do not desire to limit myself in this respect, as it is evident the invention may be embodied in a compound engine, and, further, by duplication of the piston and steam-ports in a manner well understood the engine may be made reversible.

By means of the steel packing-rings on the piston steam-tight chambers or compartments on opposite sides of the said piston are insured, consequently enabling the engine to work without leakage of steam and with a minimum consumption of the same. Furthermore, the recessed cylindrical abutment revolving in unison with the piston permits the engine to be operated at a substantially high speed with a minimum noise, thus removing this objection to engines of this class. Furthermore, a small compact engine of substantially great capacity can be made at a minimum cost, owing to the simplicity of its parts.

I claim—

In an engine of the class described, the combination with a casing having an annular path and a cylinder extended transversely of said annular path, a shaft *c* extended through said casing concentric with said annular path, a disk fast on said shaft, a piston attached to the periphery of said disk substantially at right angles thereto and movable in said annular path, a second shaft *n* extended through said casing concentric with the cylinder in said casing, a cylindrical abutment fast on the shaft *n* and provided with a recess for the reception of the said piston, packing strips or bars located in axially-extended slots in said cylindrical abutment, means to force said strips or bars into contact with the inner wall of said cylinder, a steam-inlet port in the side of said casing adapted to communicate with the annular path between the said piston and cylindrical abutment, an exhaust-port in said casing communicating with said annular path, and gears on said shafts to effect continuous rotation of the said disk and cylindrical abutment in unison with each other, substantially as described.

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

THOMAS M. KENNEY.

Witnesses:

JAS. H. CHURCHILL,

J. MURPHY.