(No Model.) 3 Sheets—Sheet 1.

J. C. TELFER.

ROTARY ENGINE.

No. 316,309. Patented Apr. 21, 1885.

Fig. 1.

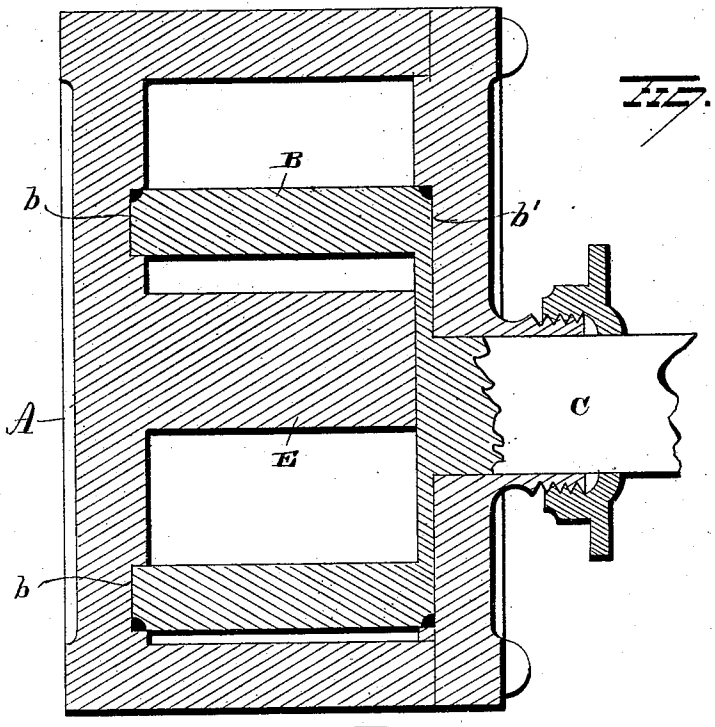
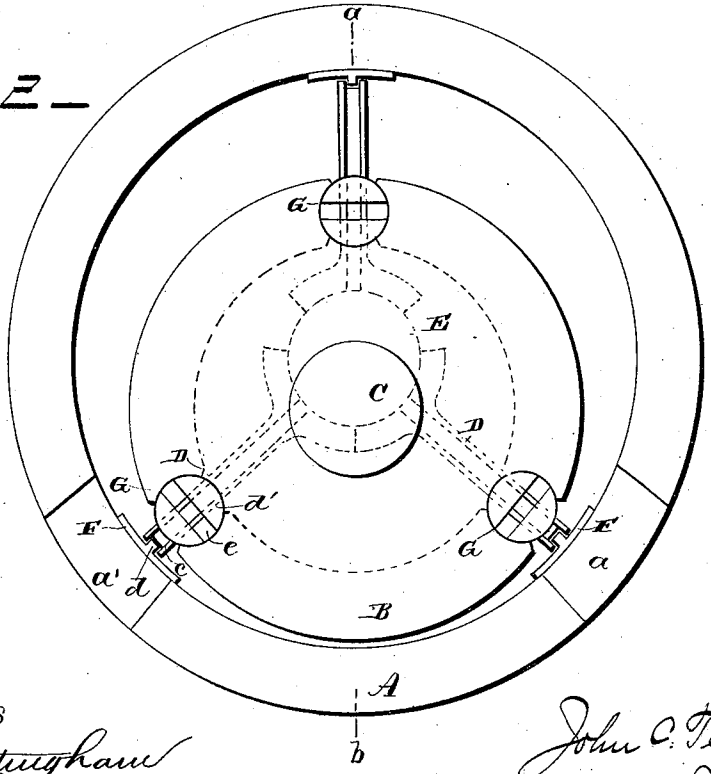


Fig. 2.



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Fig. 3.

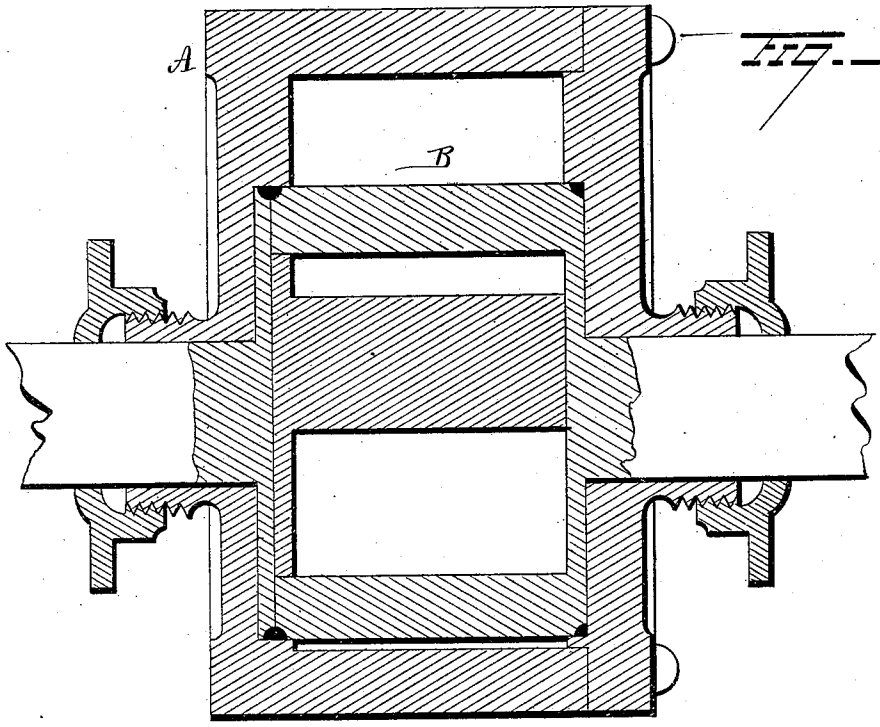
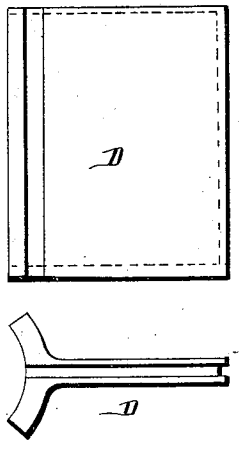


Fig. 4.



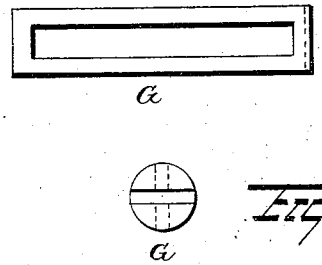


Fig. 5.

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Fig. 6.

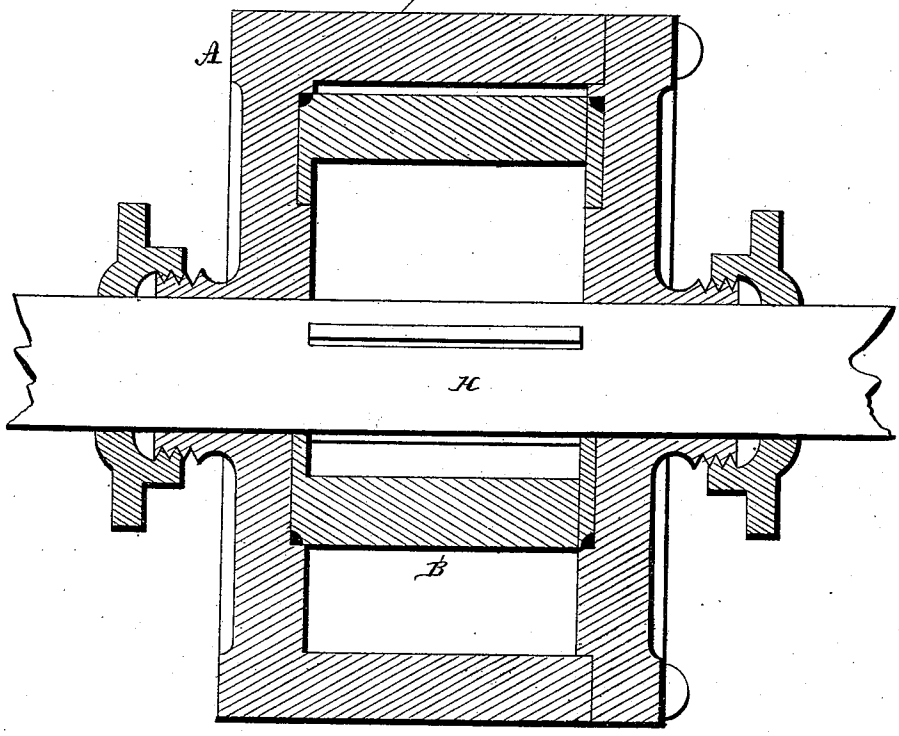
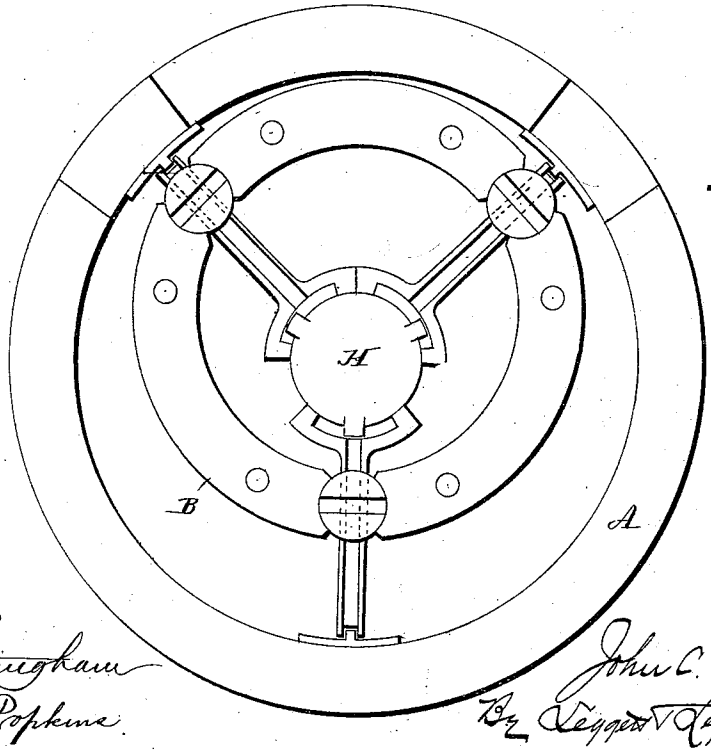


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN COPPELL TELFER, OF PALATKA, FLORIDA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 316,309, dated April 21, 1885.

Application filed July 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. TELFER, of Palatka, in the county of Putnam and State of Florida, have invented certain new and useful Improvements in Rotary Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same

My invention relates to an improvement in rotary engines and pumps, the object being to so construct the engine or pump that one or more of the pistons, in the absence of an abutment, by contact of the inner drum or cylinder with the outer cylinder will at all times perform the function of an abutment, regardless of the direction in which the engine is working.

A further object is to provide an engine of this character which shall be simple and economical in construction, and durable and efficient in use; and with these ends in view my invention consists in certain novel features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of my improvement on the line *a b* of Fig. 2. Fig. 2 is a sectional view showing the inner and outer cylinders. Fig. 3 is a modification of the device shown in Fig. 2. Fig. 4 is a side and edge view of one of the pistons. Fig. 5 is a view of the piston-guides, and Figs. 6 and 7 are views of a modification.

A represents an outer cylinder provided with a port, *a*, for the ingress of live steam, and with an exhaust-port, *a'*, the cylinder being constructed of any suitable size and material. Within this cylinder is essentially located a drum or cylinder, B, the rear head of the cylinder A being provided with a circular groove, *b*, in which fits the rear end of the drum, the latter being open in the back, the forward head of the cylinder A being provided with a circular recess, *b'*, adapted to receive the forward end of the drum. The said drum at its forward end is secured to or formed integral with a shaft, C, or, if desired, the shaft may extend from both ends of the drum, as shown in Fig. 3, in which case both ends of the drum are closed. At suitable intervals apart the drum is provided with slots through which pass pistons D, the inner ends of which are formed in the arcs of a circle and fit around a post or axle, E, either secured to the center of one of the heads of the cylinder A or loosely placed therein, being supported by and forming a bearing for the inner ends of the pistons, which pistons extend the length of the cylinder and fit against the heads thereof, the edges being formed with a groove, *c*, for the reception of a suitable packing to form a steam-tight joint.

The outer ends of the pistons are provided with caps F, convex on their outer surfaces in conformity with the curve of the inner side of the cylinder A, against which the caps bear, said caps being provided with a rib, *d*, on their inner side adapted to fit in the groove in the outer edge of the pistons.

In the slots formed in the drum B are loosely inserted cylindrical guides G, provided with slots *d'*, through which pass the pistons, and also with slots *e*, formed at right angles with the slots *d'*, for the reception of a suitable packing, forming a tight joint between the guides and the pistons.

Having described the construction of my improved engine, I will set forth its operation. Steam or gas being admitted at *a*, flows in between the cylinder A and the drum, and coming in contact with the pistons drives the one which projects farthest from the drum before it, and thereby turns the drum, which is so located in the cylinder that it will at no time in its revolution touch the inner side of the cylinder, and thus presents an abutment. The revolution of the drum is imparted to the shaft C, secured thereto, and thence to the outside of the engine.

In Figs. 6 and 7 I have shown a modification in which a shaft, H, performs the function of the shaft C and E in the construction shown in Figs. 1 and 2. The inner drum is mounted on the shaft H eccentric to the cylinder, to which shaft H is keyed the inner ends of the pistons. By means of this construction, the pistons, when turned by means of the live steam, impart their motion directly to the shaft and not through the drum, as in the former construction.

When used as a pump, the power is applied to the shaft on the outside of the cylinder and the power transmitted therefrom to the pistons.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a rotary engine, the combination, with an outer cylinder, of an inner cylinder located within the outer cylinder and eccentric thereto, and pistons passing through the inner cylinder and bearing against the outer cylinder and working concentric with the latter, the inner ends of the pistons bearing against a shaft permanently located in the center of the outer cylinder, substantially as set forth.

2. In a rotary engine, the combination, with an outer cylinder, of a cylinder located eccentrically within the outer chamber and so placed as to prevent contact with the latter, as described, and pistons bearing against a shaft fixed in a position in the center of the outer cylinder and passing through the inner cylinder bearing against the outer cylinder, substantially as set forth.

3. In a rotary engine, the combination, with an outer cylinder, of a cylinder located eccentrically therein and provided with slots, pistons provided on their outer ends with caps bearing against the outer cylinder, the pistons passing through said slots and having their inner ends bearing against a shaft rigidly secured to the center of said outer cylinder, substantially as set forth.

4. In a rotary engine, the combination, with an outer cylinder provided with steam entrance and exhaust ports, of a cylinder located eccentrically within the outer cylinder and provided with slots, grooved guides loosely placed in the slots, and pistons passing the guides and bearing against a shaft rigidly secured to the center of the outer cylinder and passing through said slotted guides, substantially as set forth.

5. The combination, with an outer cylinder provided with steam entrance and exhaust ports, of a cylinder located eccentrically within the outer cylinder and provided with slots, cylindrical slotted guides loosely placed within the slots, and pistons passing through the guides and having their inner curved ends bearing against a shaft fixed to the center of the outer cylinder and their outer ends provided with caps bearing against the outer cylinder, substantially as set forth.

6. The combination, with the cylinders A B, of pistons D, provided with caps F, guides G, axle E, and fixed shaft C, all of the above parts combined and adapted to operate substantially as set forth.

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

JOHN COPPELL TELFER.

Witnesses:
E. F. DUNNING,
W. E. RANSOM.