No. 833,588. PATENTED OCT. 16, 1906.

H. J. DABONVILLE.

ROTATING MOTOR.

APPLICATION FILED NOV. 26, 1902.

4 SHEETS—SHEET 1.

Fig. 2.

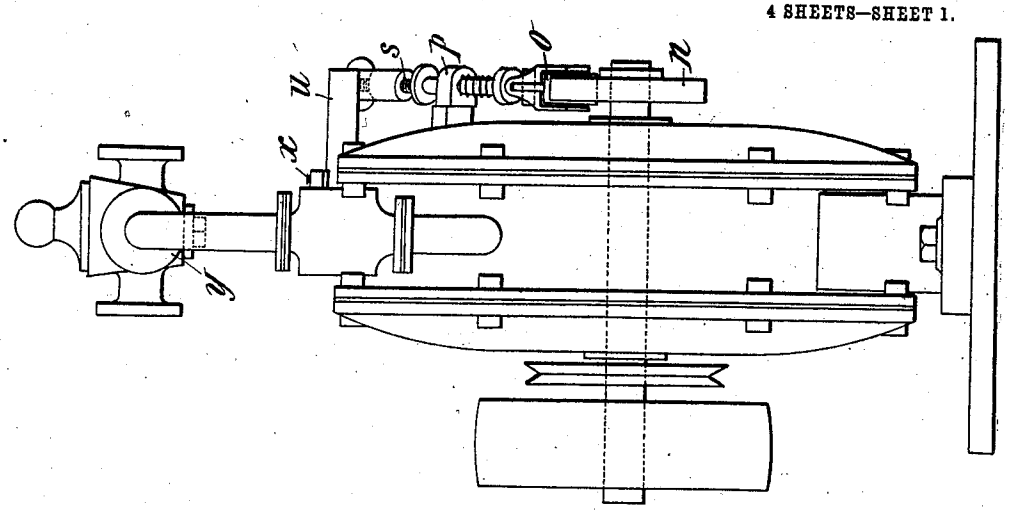
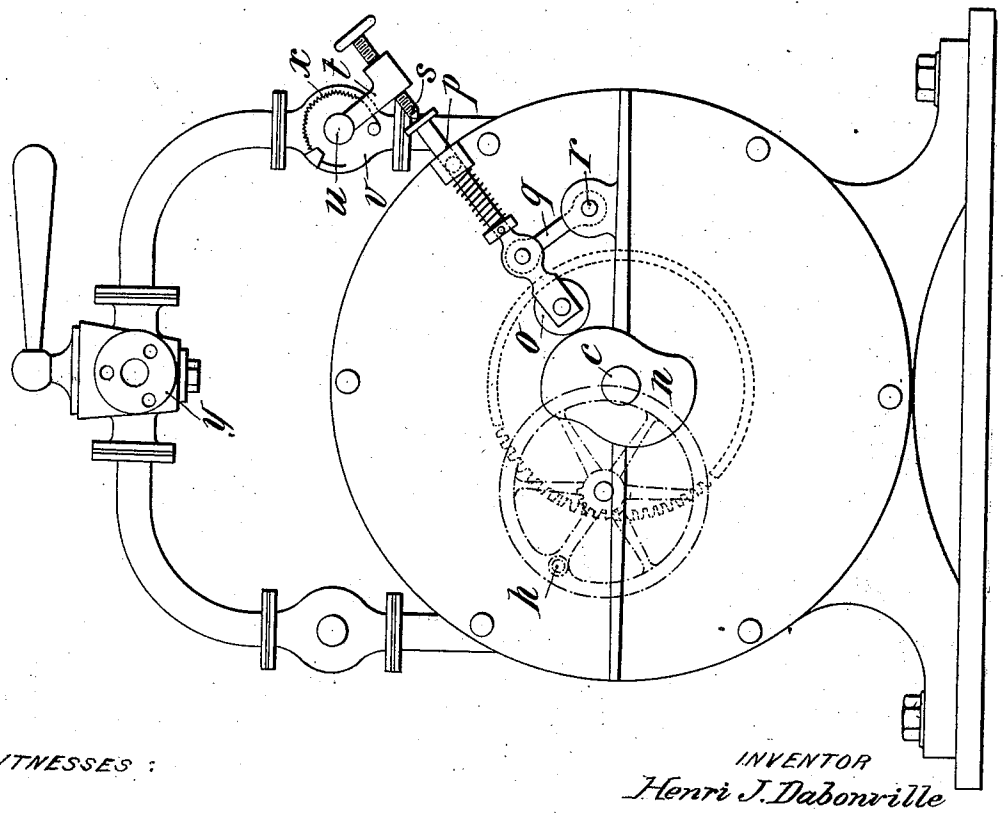


Fig. 1.



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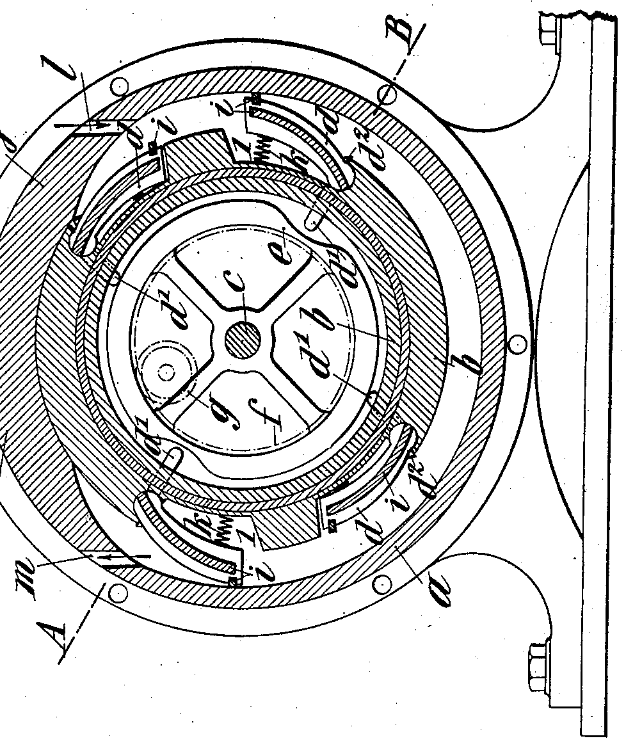


Fig. 4

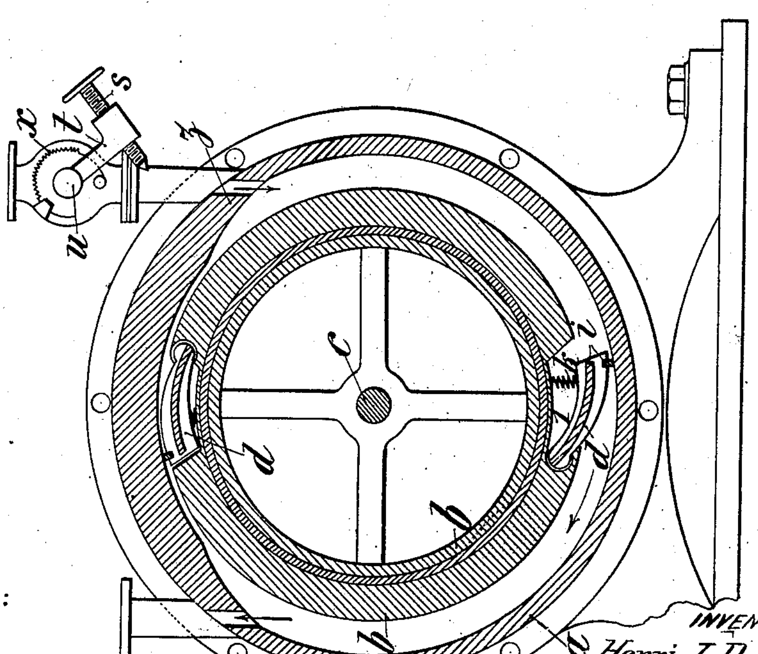


Fig. 3

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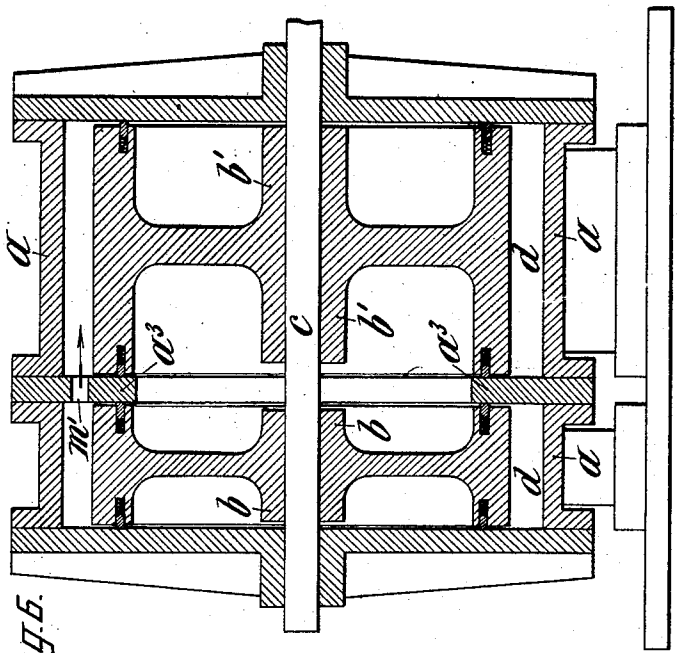


Fig. 6.

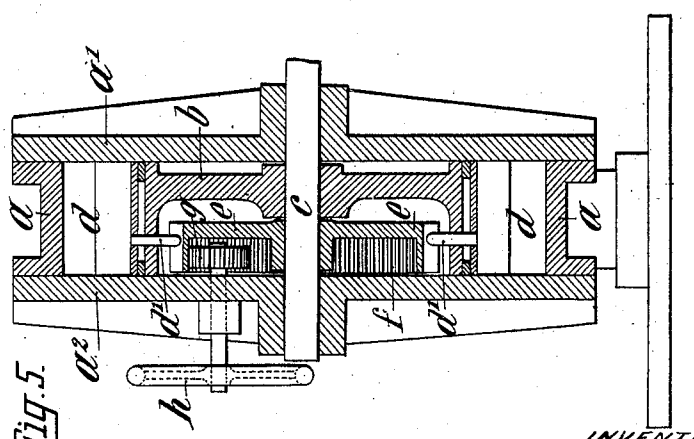


Fig. 5.

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4 SHEETS—SHEET 4.

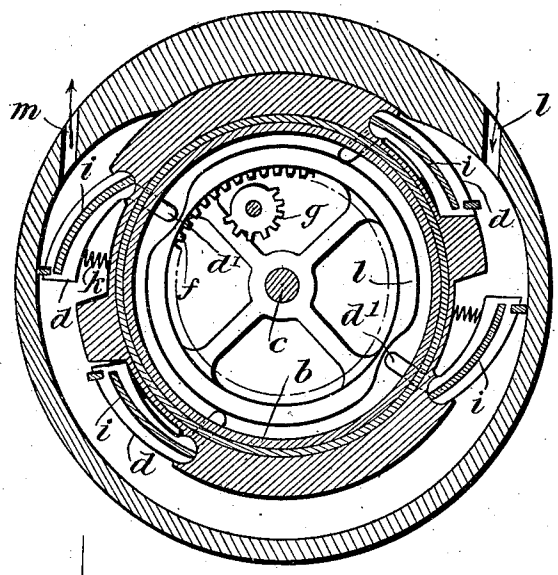


Fig. 7.

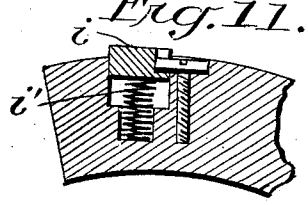


Fig. 11.

Fig. 8.

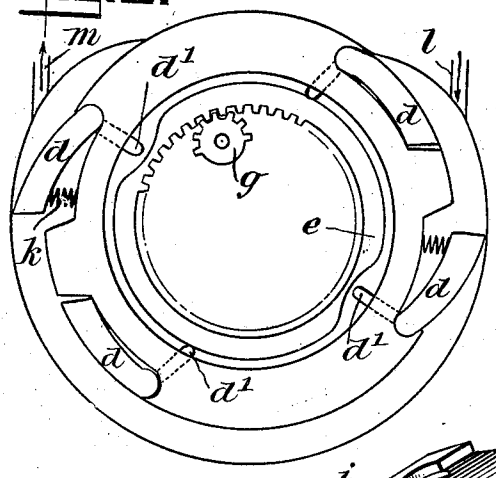


Fig. 9

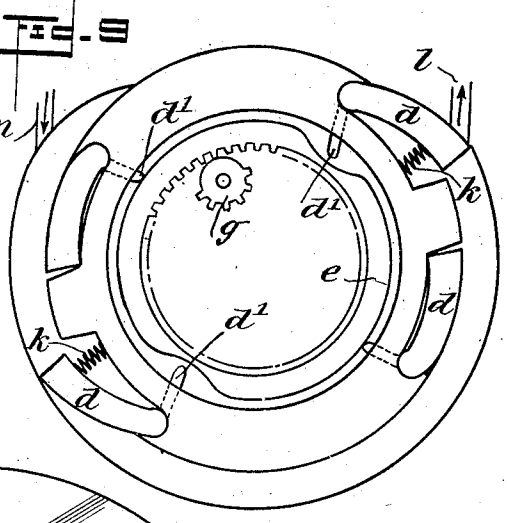
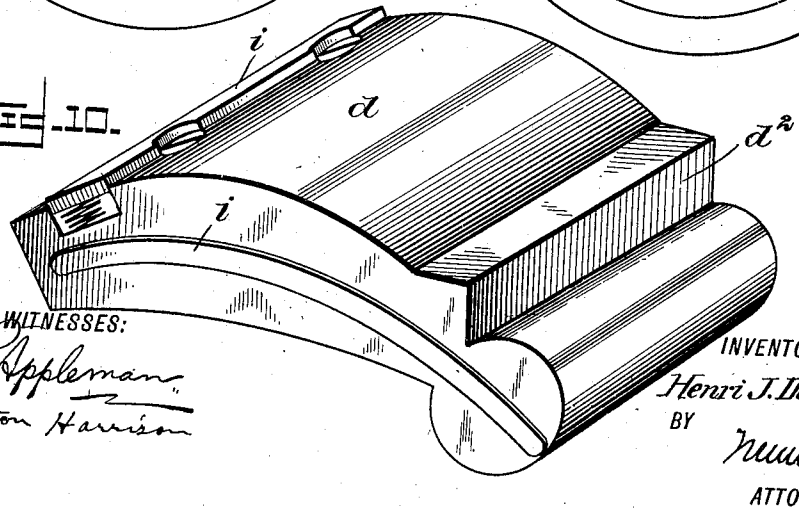


Fig. 10.



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HENRI JULES DABONVILLE, OF PARIS, FRANCE.

ROTATING MOTOR.

No. 833,588. Specification of Letters Patent. Patented Oct. 16, 1906.

Application filed November 26, 1902. Serial No. 132,881.

To all whom it may concern:

Be it known that I, HENRI JULES DABONVILLE, cashier, of 2 Rue Bellefond, in the city of Paris, Republic of France, have invented a Rotating Motor, of which the following is a full, clear, and exact description.

The subject of this invention is a system of rotating motors; and it consists of a rotating compression and expansion motor of progressive and variable speed, reversible or non-reversible, and capable of being driven by steam, compressed air, water, gas, or any other liquid or fluid.

The principal characteristic of the invention is the mounting on the motor-shaft of a loose crown moving in a cylinder under the impulse of the motive power acting on wings or pistons articulated on the said loose crown.

The nature of the invention is set forth in the accompanying drawings.

In the drawings, Figure 1 is a front view of my rotating motor. Fig. 2 is a side view of same. Fig. 3 is a vertical and longitudinal section of my system. Fig. 4 is a vertical and longitudinal section of a motor having reversing-gear. Fig. 5 is a cross-section of the same following the line A B, Fig. 4. Fig. 6 shows a cross-section of a motor provided with two loose crowns. Fig. 7 is a vertical section showing the mutilated spur-gear *g* in connection with the teeth *f*. Fig. 8 shows the relative positions of the pistons when the direction of rotation is clockwise. Fig. 9 indicates the action of the pistons when the rotation is contra-clockwise, and Fig. 10 is a perspective view of one of the pistons.

In all the figures the same letters of reference designate the same parts.

As may be seen in the drawings, the motor consists of a cylinder *a*, in which turns a crown *b*, fixed to the shaft *c*. This crown *b* bears on its circumference a variable number of articulated "wings" or pistons *d*. The cylinder *a* is located between the plates a' a^2, which support the motor-shaft.

In Fig. 3 the crown has two pistons, and in Fig. 4 it has four. Each of these pistons is provided with a rod d' in such a manner that they shall act conjointly with a crown *e*, placed inside the crown *b*, but acting independently of the latter. The crown *e* has teeth *f* on its inside circumference, and when it is caused to turn by the spur *g*, driven by the hand-wheel *h*, some of the pistons become immobilized, as will be seen farther on. The crown *e*, provided internally with teeth, as shown, occupies the position indicated in Fig. 7 when the direction of rotation is clockwise. By contrasting Figs. 7, 8, and 9 it will be seen that the gear-pinion *g* has teeth cut only upon one part of its circumference, the other part being smooth. The crown or ring *e*, which is actuated by the rotation of the motor-shaft, now comes into contact with the pinion. This crown *e* is mounted loosely upon the motor-shaft, and the arms b' of the pistons drag it along. In order to change the direction of rotation of the motor, all that is necessary is to turn the hand-wheel *h* so that the teeth of the pinion *g* engage the teeth of the crown *e*, as indicated in Fig. 8. If now the rotation of the hand-wheel be continued, the pinion *g* engages the crown *e* in such manner that the series of pistons which were previously drawn out, as indicated in Fig. 1, now become depressed, while the other series of pistons are thrown out in their turn, as indicated in Fig. 3. In this event the steam or other propulsive fluid is introduced into the cylinder by the pipe *m*, and the exhaust is effected through the pipe *l*, so that the motor-shaft turns in the opposite direction. The crown *e* follows the rotatory movement of the crown *b*, and the spur-gear *g*, which has teeth only on a part of its circumference, has no action on the crown *e* while the motor is at work. That action is only exercised on the crown in order to immobilize some of the pistons when it may be desired to reverse the action of the motor.

Each piston has segments properly arranged so as to assure a water-tight fit with the inside of the cylinder, against which they are pressed by a spring *k*.

The cylinder *a* is provided with an orifice *l* for the introduction of the motive power and another, *m*, for its escape.

On the shaft *c* is mounted a cam *n*, against which constantly presses a roller *o*, which roller is held on the end of a rod *p*, articulated to a connecting-rod *q*, free to move round its axis *r*. Each time that the rod *p* is pushed by the cam *n* it in its turn pushes the screw *s*, which screw is carried by a lever *t*, fixed to the key *u* of the distribution-cock *v*, and a spring *x* brings the screw *s* again into contact with the rod *p*, when the latter redescends to follow the sinuosities of the cam.

A double-holed cock *y*, mounted on the inlet and escape pipes, allows, according to

the position into which it is turned, of introducing the motive power by one or other of the orifices *l* or *m*, according to the direction in which it is desired to make the motor turn.

The working of the motor is as follows: In the case of an ordinary motor—that is to say, a non-reversible motor, as shown in Fig. 3—the steam, for instance, enters the cylinder by the orifice *l* and acts on one of the pistons *d*, which is ready to receive it, being pushed into the required position by its spring *k*. In order that the pistons under the pressure brought to bear on one of their sides may slide freely along the interior side of the cylinder, each piston is provided with an abutment d^2, which limits the length of the stroke. This regulation may, however, be effected in any other manner. The pressure causes the crown *b* and the shaft *c* to turn in the direction indicated by the arrow. When the piston has passed the orifice *m*, the escape takes place. During this time the second piston has received the pressure and the movement of rotation continues without any dead-point. As soon as the piston has passed the escape-hole *m* a protuberance on the inside of the cylinder, composed of a regular curve terminated by easy inclines and forming a kind of partition, forces the piston into its corresponding recess. It is only after passing the protuberance *z* that the piston regains its position under the action of its springs *k* and becomes ready to receive the pressure of the motive power.

In the modification shown in Fig. 4 the action of the motor is the same as that just described; but the crown *b* carries two sets of pistons arranged in inverse positions. While one set of pistons receives the pressure of the motive power the other set is immobilized by the displacement of the inner crown *e*, and consequently these pistons are pushed into their corresponding recesses. To reverse the motor, it suffices to act on the crown *e* so as to free the pistons from their recesses and to depress the pistons that have just been at work. If then the power be introduced through the orifice *m*, the motor will turn in the opposite direction, and the escape will take place through the orifice *l*.

In the modification represented in Fig. 6 it will be seen that on the motor-shaft *c*, which bears the crown *b*, is fixed a second crown *b'*, separated from the former by a partition a^3, joined to the cylinder *a*. This partition is provided with an orifice *m'*, which allows the steam after acting on the pistons *d* of the crown *b* to act on the pistons *d* of the crown *b'* and then to escape through a properly-placed opening.

It will be easily understood that steam introduced into the cylinder *a* and acting successively on the pistons of the crowns *b* and *b'* will increase the power of the motor.

Such is the principle of this system of motors. The form, dimensions, details, and material used in construction may vary without in any way changing the object of the invention.

I claim—

1. In a rotary engine or other motor, the combination of a casing provided with an inlet and an outlet, revoluble mechanism mounted therein and propelled by a fluid entering through said inlet, a cam connected with said revoluble mechanism, a thrust-rod disposed adjacent to said cam, a link connected with said thrust-rod for supporting the same, a valve connected with said inlet and adapted to cut off the flow of the fluid into said casing, a swinging arm connected with said valve mechanism, and a screw adjustably engaging said swinging arm and resting upon said thrust-rod.

2. In a rotary engine or other motor, the combination of a casing, an inlet for admitting an expansive fluid thereinto, a cut-off valve for said inlet, a rocking arm connected with said cut-off valve for actuating the same, means for normally retaining said arm in a predetermined position, a screw adjustably engaging said arm, a member engaging said screw for actuating said arm, and revoluble mechanism for engaging said last-mentioned member.

3. In a rotary motor, the combination of a piston acting as a shutter and provided with an abutment serving to limit the opening of the piston to a predetermined angle, said abutment being adapted to stop the outward swing of said shutter at a predetermined distance from the wall of the cylinder independently of the pressure upon said shutter, segments transversely located relatively to said shutter, and springs for pressing said segments against the walls of the cylinder so as to insure tightness therebetween.

The foregoing specification of my rotating motor signed by me this 12th day of November, 1902.

HENRI JULES DABONVILLE.

Witnesses:
EDWARD P. MACLEAN,
MAURICE W. PIGNET.