F. BECK.

ROTARY MOTOR.

APPLICATION FILED JUNE 30, 1910.

998,451.

Patented July 18, 1911.

2 SHEETS—SHEET 1.

FIG. 1.

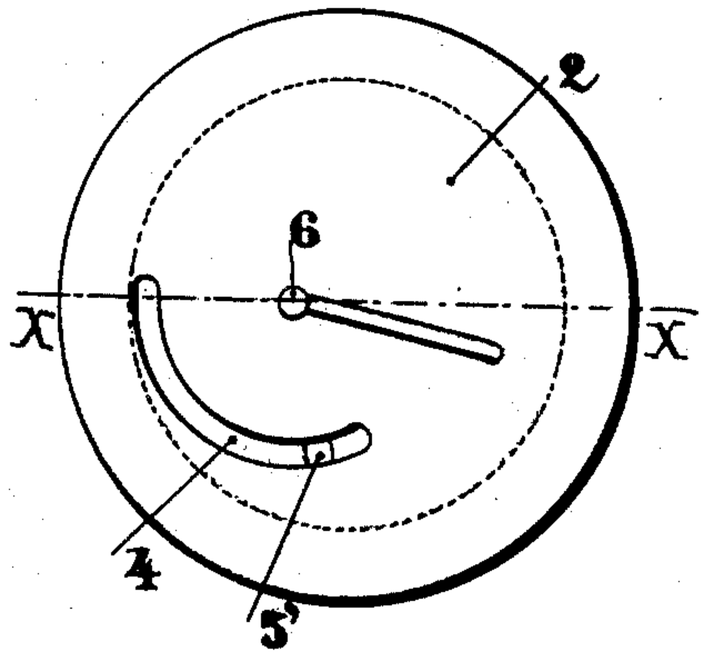


FIG. 2.

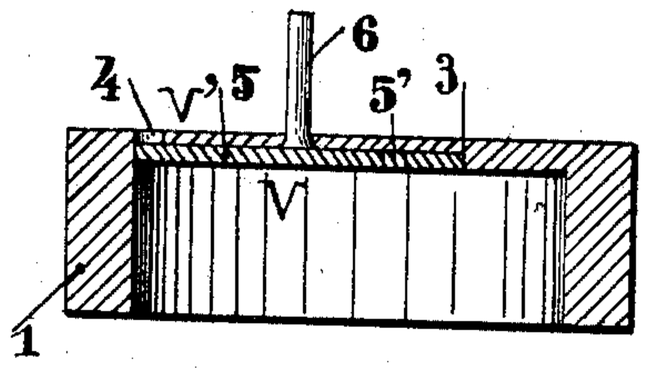


FIG. 3.

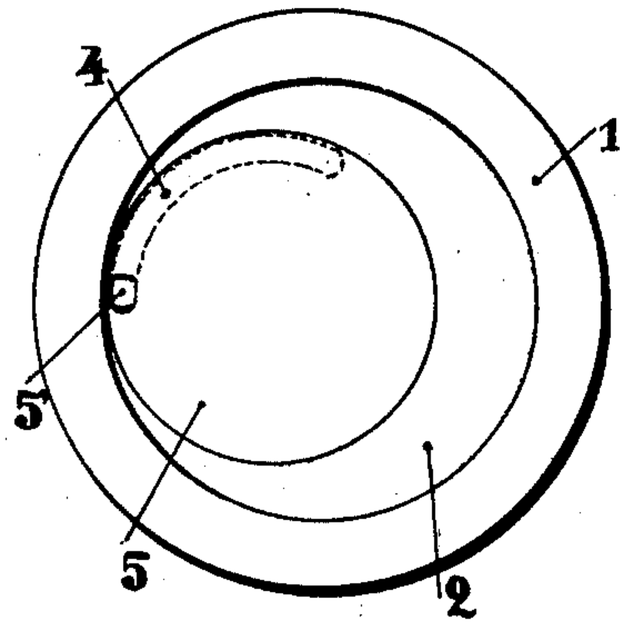


FIG. 4.

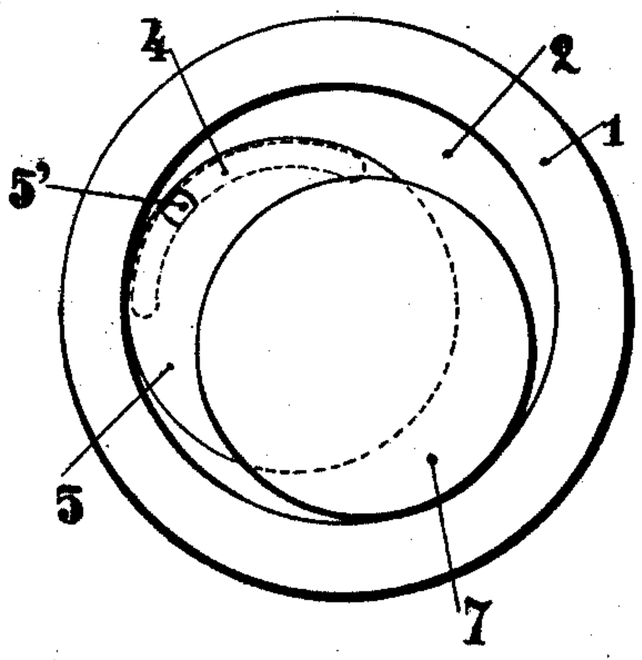


FIG. 5.

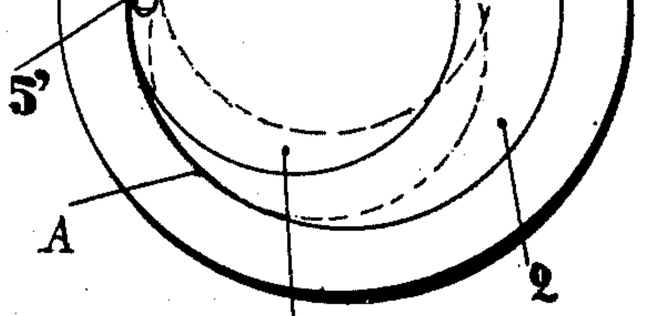
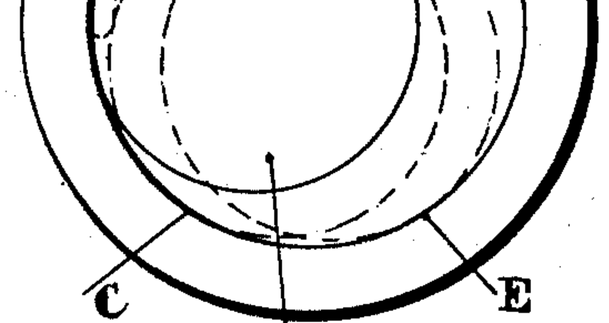


FIG. 6.



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2 SHEETS—SHEET 2.

FIG. 7.

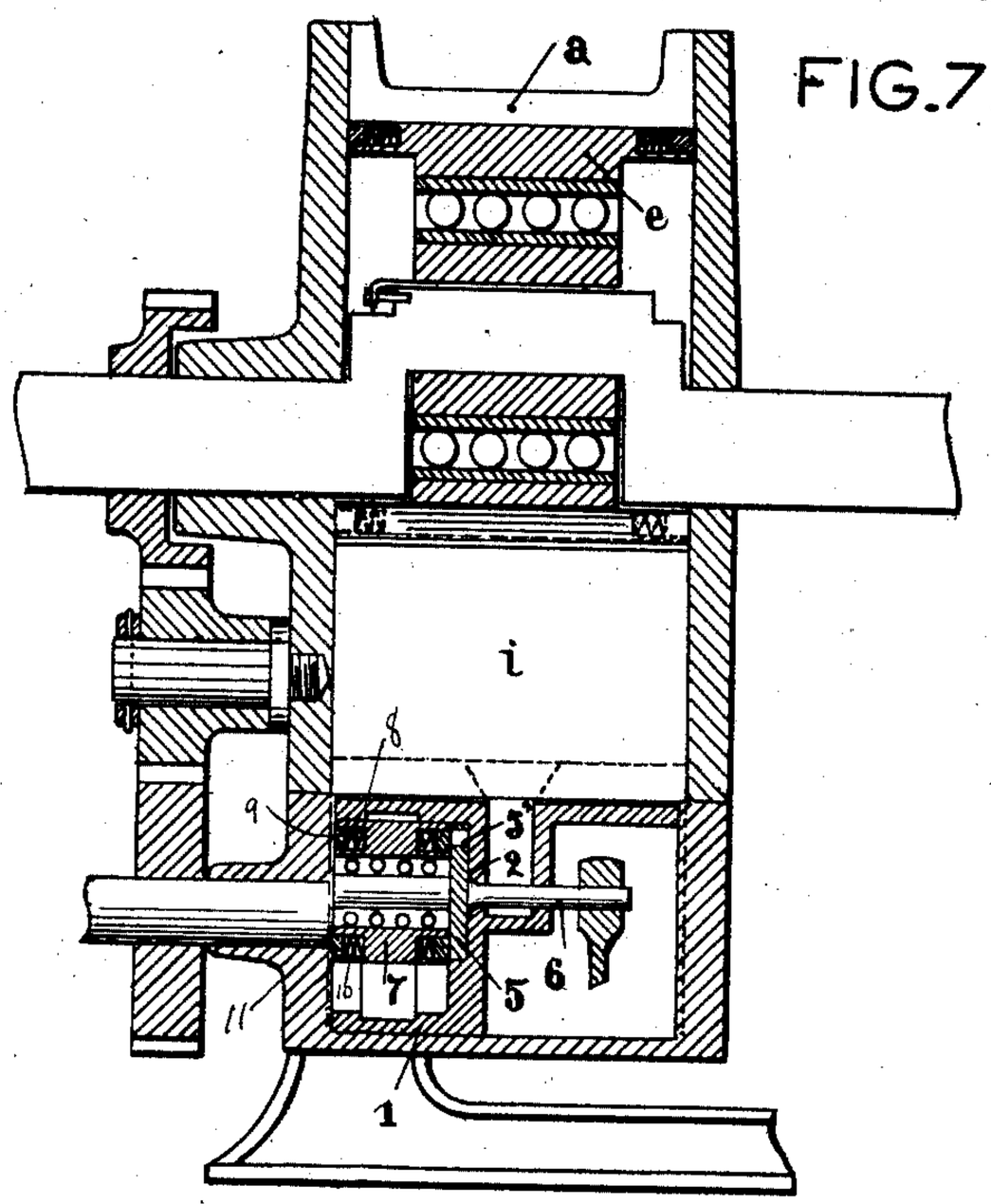
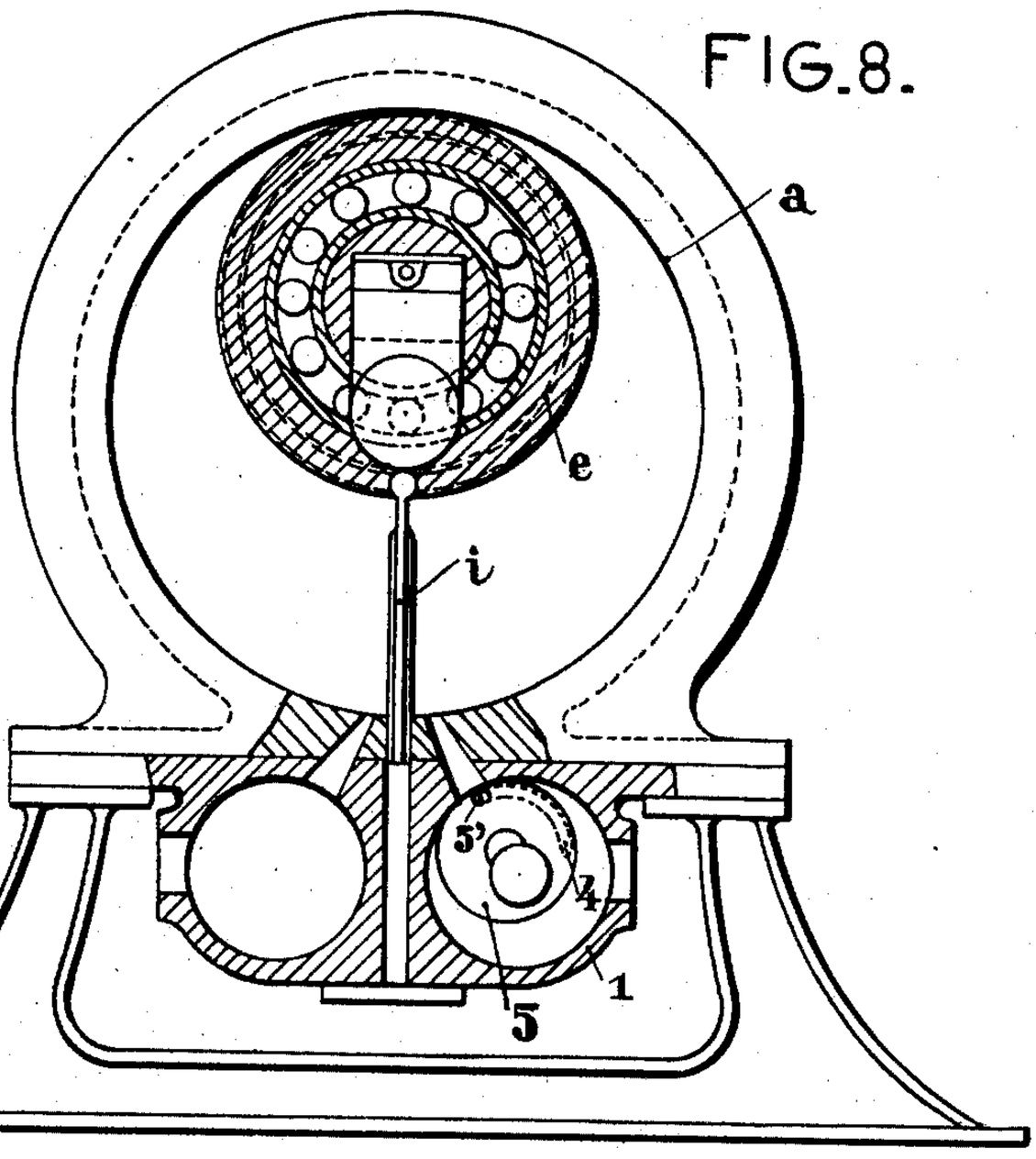


FIG. 8.



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FRÉDÉRIC BECK, OF NEUILLY-SUR-SEINE, FRANCE.

ROTARY MOTOR.

998,451. Specification of Letters Patent. **Patented July 18, 1911.**

Application filed June 30, 1910. Serial No. 569,776.

To all whom it may concern:

Be it known that I, FRÉDÉRIC BECK, citizen of the Republic of France, residing at 21 Rue Montrosier, Neuilly-sur-Seine, France, have invented new and useful Improvements in Rotary Motors, of which the following is a specification.

This invention consists in improvements in rotary motors of the type comprising a disk loose on a driving crank which it drives by its rotation around the internal circumference of a drum, the said disk carrying an abutment that reciprocates in the peripheral wall of the drum.

The present improvements consist substantially in an improved rotary slide valve and in an improved manner of mounting the motor disk.

One construction of the improved slide valve and motor is illustrated by way of example in the accompanying drawings in which:—

Figure 1 is an end view of the valve casing containing the slide valve proper; Fig. 2 is a section on the line X—X of Fig. 1; Fig. 3 is an underside view of the said casing, the rotary slide valve having been removed. Fig. 4 is an underside view of the said casing with the slide valve in place, in one of its positions. Figs. 5 and 6 are views similar to Fig. 3 showing the obturating disk in its two extreme positions; Fig. 7 is an axial section, and Fig. 8 is a section at right angles to the axis of a rotary motor of the aforesaid type showing the application of the rotary valve thereto.

As shown, the rotary slide valve comprises a cylindrical casing 1 having only one head 2, the other head being formed by the head of the motor drum as shown in Fig. 7. In the head 2 of this casing there is arranged eccentrically a recess 3 designed to receive the obturating disk hereinafter referred to. A slot 4 is pierced in the head 2 through the complete thickness thereof to the periphery of the recess 3 (Figs. 1 and 2).

An obturating disk 5 is arranged in the recess 3; its thickness is equal to the depth of the recess (Fig. 2). This disk is pierced by a hole 5′ arranged near the edge so as to be capable of coinciding with the slot 4. The obturating disk 5 carries at its center a rod 6 by means of which it is connected to a governor of any suitable type. By the operation of this governor the disk can be rotated in its recess, and be moved into any position between the two extreme positions shown in Figs. 5 and 6. The purpose of this movement is described hereinafter.

7 is a cylindrical slide valve having a diameter slightly greater than the obturating disk 5. The slide valve 7 is adapted to roll in the valve casing 1, and to be set in motion by a crank or any other analogous operating means. The slide valve 7 is preferably formed, as clearly shown in Fig. 7, with annular recesses 8 in which recesses annular members 9 are positioned which are constantly urged outwardly by springs 10 located within the recesses. Ball bearings 11 are preferably provided between the slide valve 7 and the crank or other operating means by which it is actuated.

The steam coming from the generator (or the motive fluid) enters the casing 1 at V; it leaves the casing on its way to the motor through the slot 4 and the orifice 5 when these two apertures are in coincidence with each other. The external face V′ of the casing communicates with the admission duct of the motor.

From the foregoing it will be readily understood (see Figs. 5 and 6) when the slide valve 7 rolls inside the casing 1, that it will uncover during a greater or shorter period of time the orifice 5′ by which the steam can enter the casing 1. Consequently the duration of the admission period is variable, and depends on the position of the obturating disk 5. When this disk is in the position shown in Fig. 5, the steam supply is shut off while the slide valve is traveling through the arc A B in the valve casing, and it will be opened during the remainder of the travel; this is the maximum duration of the steam admission. When however the obturating disk is in the position shown in Fig. 6, in which position the orifice 5′ is nearer the center of the box 1, the steam admission is shut off during the whole of the time while the slide valve is traveling through the arc C D E, and therefore it is open only during the travel through the arc E C. This is the minimum duration of the steam admission.

It is to be understood that the obturating disk can occupy all the possible intermediate positions between those two extreme ones. In this manner admissions varying between the maximum and minimum can be realized.

The movements of the obturating disk are

produced by the governor of the motor. If desired, operation by hand may be provided, so as to allow of varying the degree of the admission as desired at any moment.

The dotted lines in Figs. 5 and 6 indicate the positions of the rotary slide valve corresponding with the moments at which the opening or the closing of the admission orifice begins.

In existing motors of the type hereinbefore referred to, the disk *e* is mounted below the abutment *i*. It has been found that this method of mounting gives rise to considerable wear and produces an oval shape of the drum *a* owing to the circumstance that the action of gravity acts upon the whole of the lower part of the internal surface of the drum *a*. Now according to the present invention this drawback is obviated by arranging the disk *e* above the sliding abutment *i*, and so as to bear thereon. By this means the disk *e* no longer bears with all its weight against the internal surface of the drum and undue wear is prevented. A similar device is positioned within the corresponding left hand opening shown adjacent the bottom of Fig. 8.

What I claim is:—

1. In a rotary motor of the type specified, in combination a casing for receiving the motive fluid, formed with an eccentric circular recess in one end and also with a slot in said end, an obturating disk adapted to rotate in said eccentric circular recess, formed with an aperture, the coincidence of said aperture with said slot constituting an orifice for the admission of the motive fluid, a cylindrical slide valve located in said casing and means for causing said cylindrical slide valve to roll around against the internal periphery of said casing, whereby the movement of said cylindrical slide valve uncovers the aperture for the admission of the motive fluid, during a period of time varying according to the position of said obturating disk, as set forth.

2. In a rotary motor of the type specified, in combination a casing for receiving the motive fluid, formed with an eccentric circular recess in one end and also with a slot in said end, an obturating disk adapted to rotate in said eccentric circular recess, formed with an aperture the coincidence of said aperture, with said slot constituting an orifice for the admission of the motive fluid, means connecting said obturating disk to the governor of the motor, a cylindrical slide valve located in said casing, and means for causing said cylindrical slide valve to roll around against the internal periphery of said casing, whereby the movement of said cylindrical slide valve uncovers the aperture for the admission of the motive fluid during a period of time varying according to the position of said obturating disk, when displaced by the governor of the motor as set forth.

3. In a rotary motor of the type specified, comprising in combination a casing for receiving the motive fluid, formed with an eccentric circular recess in one end and also with the slot in said end, an obturating disk located above the sliding abutment of the motor and arranged to bear thereon, said obturating being adapted to rotate in said eccentric circular recess formed with an aperture, the coincidence of said aperture, with said slot constituting an orifice for the admission of the motive fluid, a circular slide valve located in said casing, and means for causing said circular slide valve to roll around against the internal periphery of said casing, whereby the wear and tear of the drum of the motor otherwise due to the action of gravity upon the disk, is obviated as set forth.

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

FRÉDÉRIC BECK.

Witnesses:
H. C. Coxe,
M. Ferolo.