No. 677,370. Patented July 2. 1901.

C. PIGUET.

ROTARY CUT-OFF VALVE.

(Application filed Nov. 12, 1900.)

(No Model.)

FIG. 1

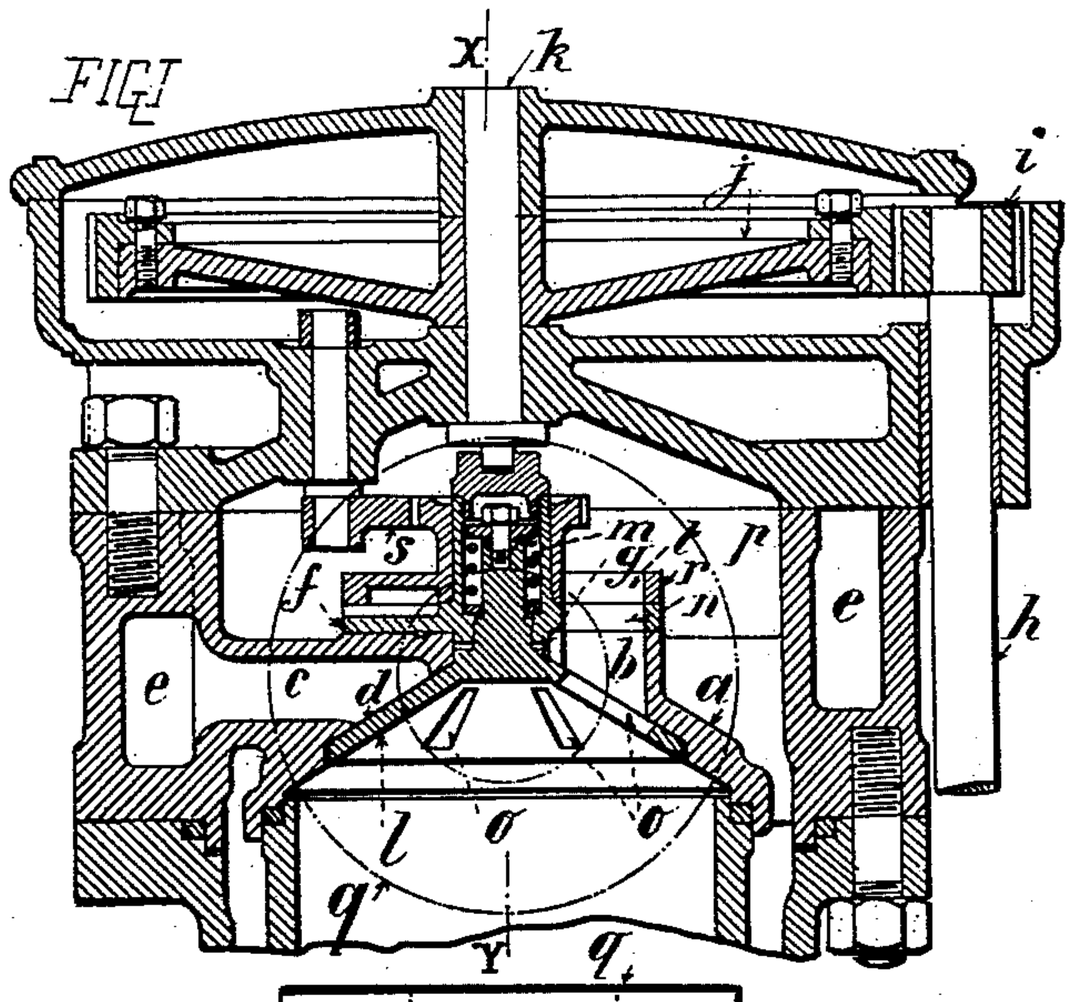


FIG. 2

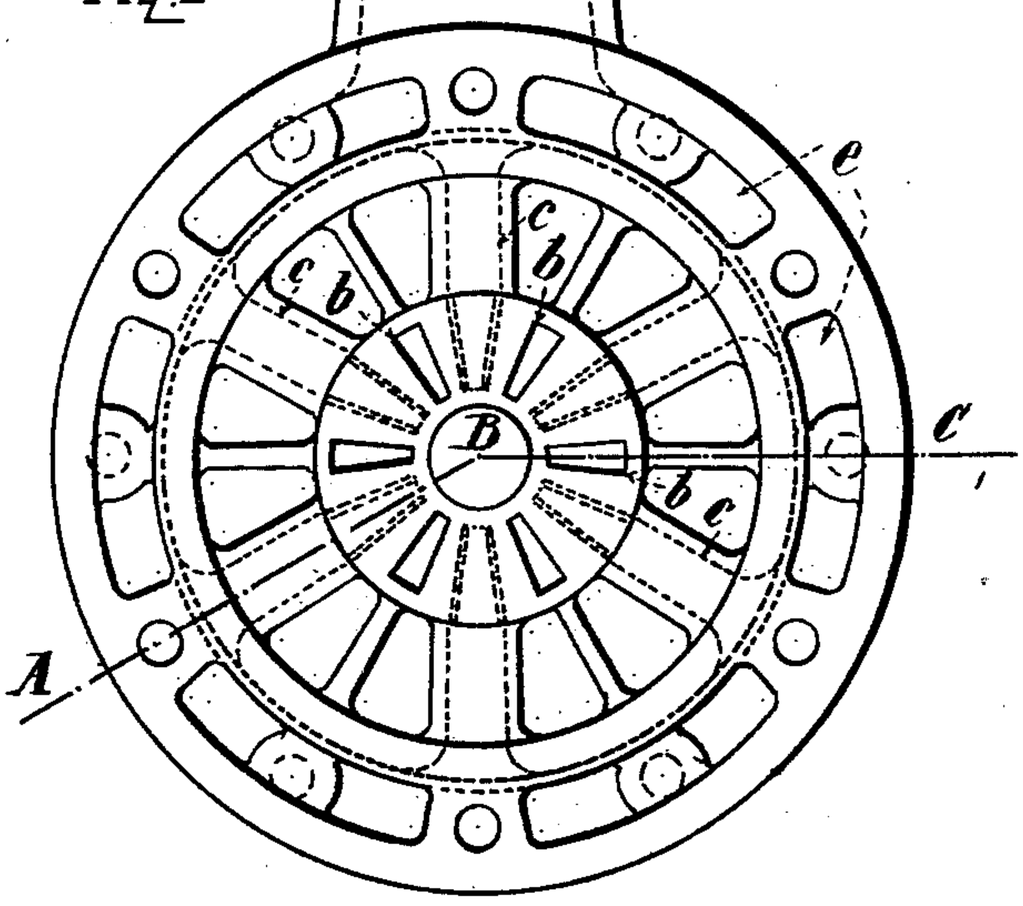


FIG. 3

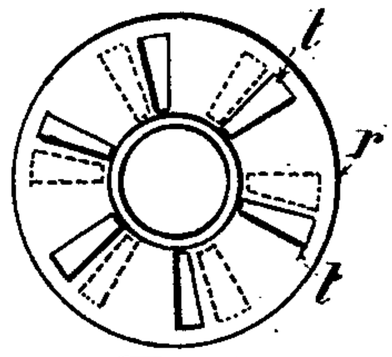


FIG. 4

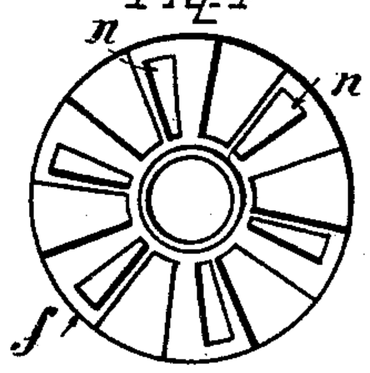
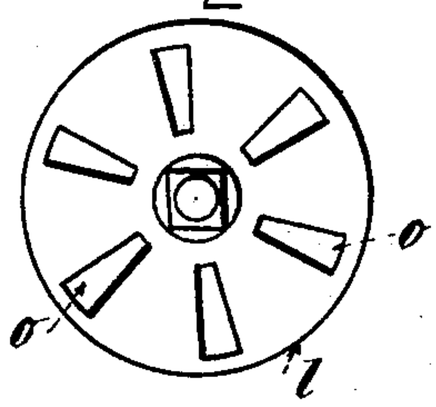


FIG. 5



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES PIGUET, OF LYON-VAISE, FRANCE, ASSIGNOR TO LA SOCIÉTÉ PIGUET & CIE., OF SAME PLACE.

ROTARY CUT-OFF VALVE.

SPECIFICATION forming part of Letters Patent No. 677,370, dated July 2, 1901.

Application filed November 12, 1900. Serial No. 36,295. (No model.)

To all whom it may concern:

Be it known that I, CHARLES PIGUET, a citizen of the Republic of France, residing at 2 Rue de Paris, Lyon-Vaise, in the Republic of France, have invented a new and useful Improvement in Rotary Cut-Off Valves for Elastic Fluid Under Pressure, of which the following is a specification.

This invention relates to a supply system by means of independent disks possessing continuous rotation. It is applicable to all motors aerostatically operated by an elastic fluid under pressure acting on a piston or diaphragm.

Referring to the accompanying drawings, Figure 1 illustrates a vertical section on the lines A B C of Fig. 2 of a motor-base provided with this supply system. Fig. 2 shows a plan view of the motor-base with the supply organs removed. Fig. 3 shows a plan of the disk regulating the admission of the motive power. Fig. 4 shows a plan of the admission-disk. Fig. 5 shows a plan of the emission-disk.

Referring to Figs. 1 and 2, *a* represents (by way of example) the base of a cylinder of a piston-motor. This base is pierced at intervals by the ports or inlets *b*. The outlet-passages *c* discharge through ports *d* on the interior surface of the base and conduct the motive fluid into an annular receptacle *e*. A flat disk *f*, Figs. 1 and 4, pivoted at *g*, slides on the external surface of the base and receives continuous rotary motion from the motor-shaft of the machine—for instance, by aid of an intermediate shaft *h* with cone-gearing and the gear-wheels *i j*. The wheel *j* is keyed on the axle *k*, which shaft carries with it in its rotation the disk *f*. The disk *l*, Figs. 1 and 5, which is shown convex, but which may also be flat, spherical, or cylindrical, as may also the disk *f*, can revolve upon the internal surface of the base. The said disk, like the disk *f*, is pivoted at *g* and revolved by it continuously when the same rotates. The two disks are therefore independent, but revolve on the same axis X Y. A spring *m* tends to press the disks together. The disk *f* is pierced at intervals by the ports *n* and the disks *l* in like manner by the ports *o*. The number of ports *l* is equal to that of the ports *o*. It is likewise equal to the proportion existing between the number of revolutions of the motor-shaft and that of the disks. Thus in the drawings are shown six ports to each disk. In this case the disks revolve six times slower than the shaft. This very considerable reduction in the number of revolutions of the distributing-disks has the advantage of reducing their speed, and consequently the friction. Combined with the independence of the two disks it constitutes the fundamental characteristic of the invention.

The number of ports in the base *a* is equal to or less than that of the disks. The motor fluid which is contained in the chamber *p* keeps the disk pressed upon the base *a* and reaches the cylinder as soon as the ports *n* of the disk *f* uncover in their rotation the ports *b* of the base. It is obvious that this period must coincide with that of the admission to the motor—that is, that it must begin when the motor-piston is near its dead-point with respect to the base *a* and that it must end when the piston has almost reached the other end of its course. At this moment the ports *b* are completely closed and the ports *d* about to be uncovered by the disk *l*. The motor fluid, regularly admitted after having operated in the cylinder, can escape by the channels *c* and pass into the receptacle *e* and then into the tube *q* to reach the receiver of the escape—for instance, the condenser, if it be a steam-engine.

The distributer *f* of the admission being independent of the distributer *l* of the escape, the small quantity of motor fluid which may have been able to pass between the disk *f* and the base will nevertheless operate usefully on the piston instead of escaping directly or causing an injurious counter-pressure upon the piston. Moreover, the independence of the two disks has the further advantage that it protects the escape-disk from the high pressure on the admission-disk, and thus permits of the reduction of the dimensions of the latter disk, and consequently of its friction.

It is easy to correctly proportion the periods of admission and emission by proportioning the size of the ports and by suitably fixing the position of the disks on their motor-shaft. For the realization of a complete control it

is, however, necessary to be able to vary the admission. For this purpose the shutter-disk *r*, Figs. 1 and 3, which does not revolve with the disks *f* and *l*, is mounted with slight friction on the axle of the disk controlling the admission and can be adjusted angularly by aid of the rack *s*, either by hand or otherwise. This shutter is pierced by ports *t*, which are formed with double entrance to increase the size of the passages and avoid the cutting of the motor fluid. According to their positions these ports will limit the admission period of the motor fluid.

It is obvious that this system of supply can be applied to all aerostatic motors, simple or compound, operating by means of an elastic fluid of any kind—steam, compressed air, gas, or the like. It can also be placed axially in the base of the cylinder, as shown in the drawings, or obliquely, or even at right angles at the side. Further, groups of distribution may be mounted on the base of a single cylinder axially or laterally.

What I claim is—

1. In a rotary slide-valve mechanism for motors operated by an elastic fluid, a circular casing attached to the motor an annular discharge-chamber within said casing, a circular central inlet-chmber within said casing and communicating with the source of fluid-pressure, a central shaft supported vertically in the casing, gearing adapted to rotate said shaft, an upper perforated disk loosely mounted on said shaft, mechanism adapted to control the position of said disk, a slotted inlet-disk beneath the upper disk keyed on the central shaft and adapted to communicate periodically with the inlet-chamber and a slotted discharge-disk beneath the inlet-disk also keyed on the central shaft and adapted to open communication periodically with the annular discharge-channel.

2. In a circular inclosed distributer for elastic fluid under pressure, the central shaft *k* the gear-wheel *j* keyed on said shaft, the pinion *i* keyed on the shaft *h* passing through the casing and adapted to be rotated by an outside force, inlet and outlet chambers for the pressure fluid, and a plurality of perforated disks on said central shaft adapted to control the passage of the motor fluid.

3. In a circular inclosed distributer for elastic fluid under pressure, the circular outlet-channel *e* the concentric superposed supply-chamber *p*, the perforated admission-disk *r* having an upward toothed prolongation, the adjustable rack *s* engaging with said toothing, the revolving slotted admission-disk *f* in contact with the disk *r* and the slotted escape-disk *l* maintained by spring-pressure in contact at its center with the concentric disk *f*.

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

CHARLES PIGUET.

Witnesses:
L. HEYNAT,
M. VACHON.