(No Model.) 2 Sheets—Sheet 1.

C. V. DIVAN, FILS.

ROTARY STEAM ENGINE.

No. 521,950. Patented June 26, 1894.

Fig. 1

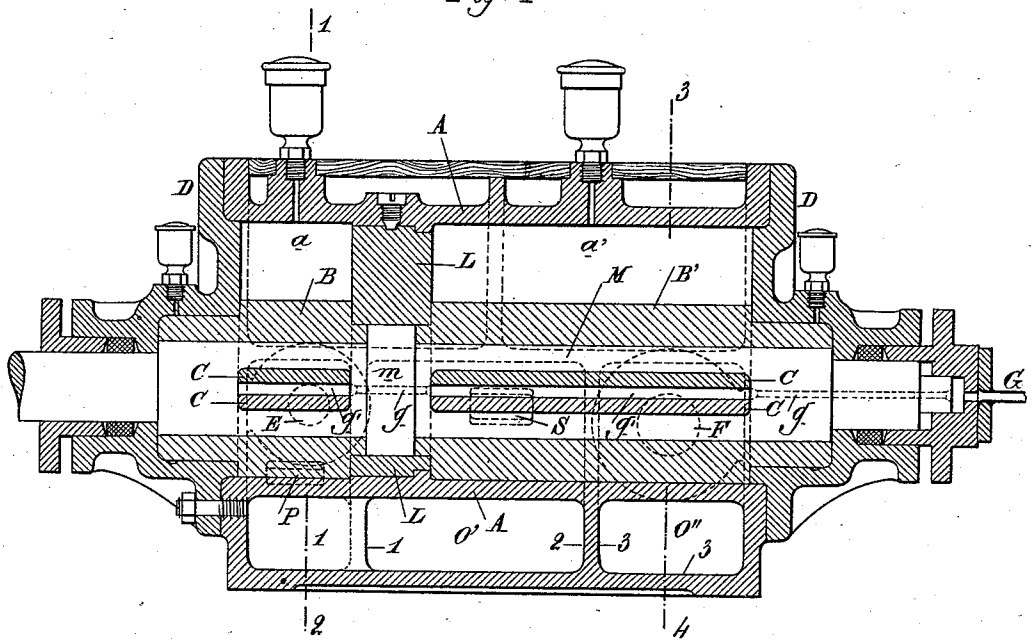
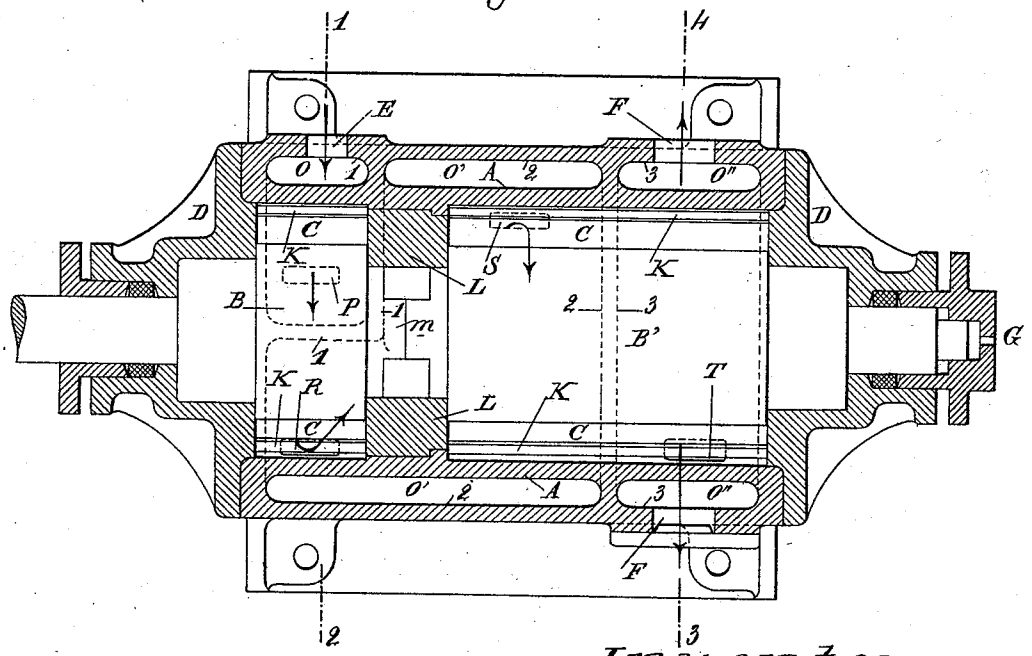


Fig. 2



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THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

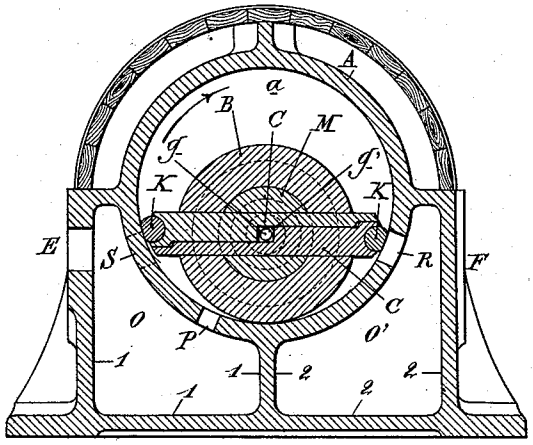


Fig. 5

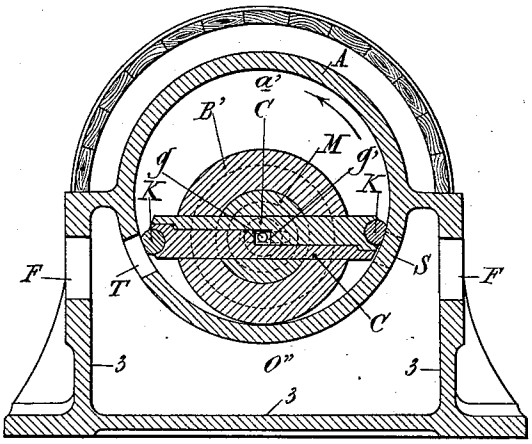
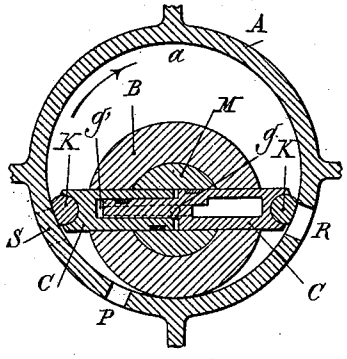


Fig. 4



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UNITED STATES PATENT OFFICE.

CHARLES VICTOR DIVAN, FILS, OF ST. NAZAIRE, FRANCE.

ROTARY STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 521,950, dated June 26, 1894.

Application filed January 12, 1894. Serial No. 496,658. (No model.) Patented in France June 3, 1893, No. 230,561.

To all whom it may concern:

Be it known that I, CHARLES VICTOR DIVAN, Fils, a citizen of the French Republic, residing at St. Nazaire, in the Department of the Loire-Inférieure, France, have invented certain new and useful Improvements in Rotary Steam-Engines, (for which Letters Patent were granted in France on the 3d of June, 1893, No. 230,561,) of which the following is a specification.

My invention includes a cylinder, a disk or disks arranged eccentrically therein, sliding partitions in the disk arranged to bear on the interior of the cylinder and packings carried in the ends of said sliding partitions adapted to have movement to maintain a firm bearing on the cylinder. The packings are disposed in such a manner that the steam presses the same directly without any intermediate device, to the interior wall of the cylinder. The position of the motive disk, as far as the cylinder is concerned is regulated by stuffing boxes or packings consisting of two parts which can be pressed more or less into the bearings of the shaft of the disk in order to take up wear. The motor can be disposed so as to work in both directions and can consist either of one cylinder or of two cylinders of unequal size and having coupled shafts. In that case, the steam that escapes from the first cylinder will act in the same manner in the second or expansion cylinder before escaping to the condenser or to the free air.

In the drawings:—Figure 1, is a longitudinal section of the rotary motor; Fig. 2, a sectional plan view of the same along the shaft of the cylinder; Fig. 3, a transverse sectional view of the same, on the line 1—2 of Figs. 1 and 2; Fig. 4, a modification of the same view; Fig. 5, a transverse sectional view of the same motor, following the line 3—4 of Figs. 1 and 2.

The same reference letters and numerals indicate the same parts in the different figures.

My motor consists of an ordinary cylinder A divided in two unequal parts (a, a') by means of a partition L fixed therein. The two extremities of the cylinder are provided with covers D through which the motive shaft M passes eccentrically and through stuffing boxes or other convenient packing. Upon this shaft are fixed two disks B B′ eccentrically as far as the cylinder is concerned and the lower parts of which are tangent to the same. The motive shaft M passes also through the partition L being held in position and guided therein by a boss (m). The two disks B B′ are of cast iron and are each respectively as long as the distance between the opposite covers D and the dividing partition L; they each carry two movable partitions C C which are independent and made of cast iron or cast steel and upon which the pressure of the steam works; these partitions can slide the one over the other in the direction of their width in a groove made in the disk. The relative motion of those two partitions, in regard the one to the other is caused by the action of the steam arriving through the introduction pipe G and penetrating through the pipe (g) up to a space (g') that exists between the same, the result of which is a sliding effect, of the partitions outwardly, which makes the free extremities of the partitions rest against the interior wall of the cylinder at all times. The partitions can be of similar forms as in Fig. 3, or they can engage by means of a groove and a tongue as represented in the modification shown by Fig. 4. The diameter of the disks B B′ is slightly superior to the radius of the motive cylinder, its proportion to the diameter of the latter being on an average from 0.60 to 0.70. The partitions C are arranged to slide easily in the two notches of the disks and at their free extremities they carry metallic packings K having the shape of spatulas made of anti-friction metal or of cast iron and intended to insure a tight joint between the cylinder and partition and between the partitions and the parts L. One of the surfaces of these spatulas K which rests against the interior wall of the motive cylinder has exactly the curvature of the wall of the latter, so that, notwithstanding the obliquity of the motive partitions in the cylinder, the surface will always remain normal in regard to the radius of the latter and will constantly always fit perfectly the curved surface of the cylinder in all its positions and therefore assure the tightness of the joint.

The motive cylinder or cylinders are thus divided into two separated compartments one of which is in constant communication with the orifice through which the steam comes in and the other with the exhaust.

The circulation of the steam is effected in the following manner in the case of the compound motor shown in the drawings; it would be analogous for a simple or a multiple expansion motor. The inlet of the steam is through the orifice E which communicates with the double envelope O formed by the walls 1; from there it passes through the admission orifice P into the cylinder (*a*) where it produces its effect by carrying along the partitions C C, and consequently the disk B and the motive shaft M. After having thus effected its operation it escapes through the orifice R, from where it passes through the double envelope O′ formed by the walls 2, and the admission orifice S into the large expansion cylinder *a′* in which it acts in the same manner, and escapes through the orifice T and from there passing through the double envelope O″ formed by the walls 3 it reaches the exhaust orifice F which can be placed at the same side of the inlet E or in any other suitable place.

The other accessory organs of the machine are the same as those generally used; therefore I will not describe them here.

I claim—

In a rotary engine the combination of the cylinder the rotary piston, the sliding partitions in the piston sliding in contact with each other and having opposing faces or shoulders forming a space *g′*, and the steam pipe leading to the shouldered part of the partitions, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CHARLES VICTOR DIVAN, FILS.

Witnesses:
M. SUPPLE,
H. VAN OLDENNEEL.