

No. 764,756.

PATENTED JULY 12, 1904.

W. G. NICOLA.
ROTARY ENGINE.

APPLICATION FILED APR. 19, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

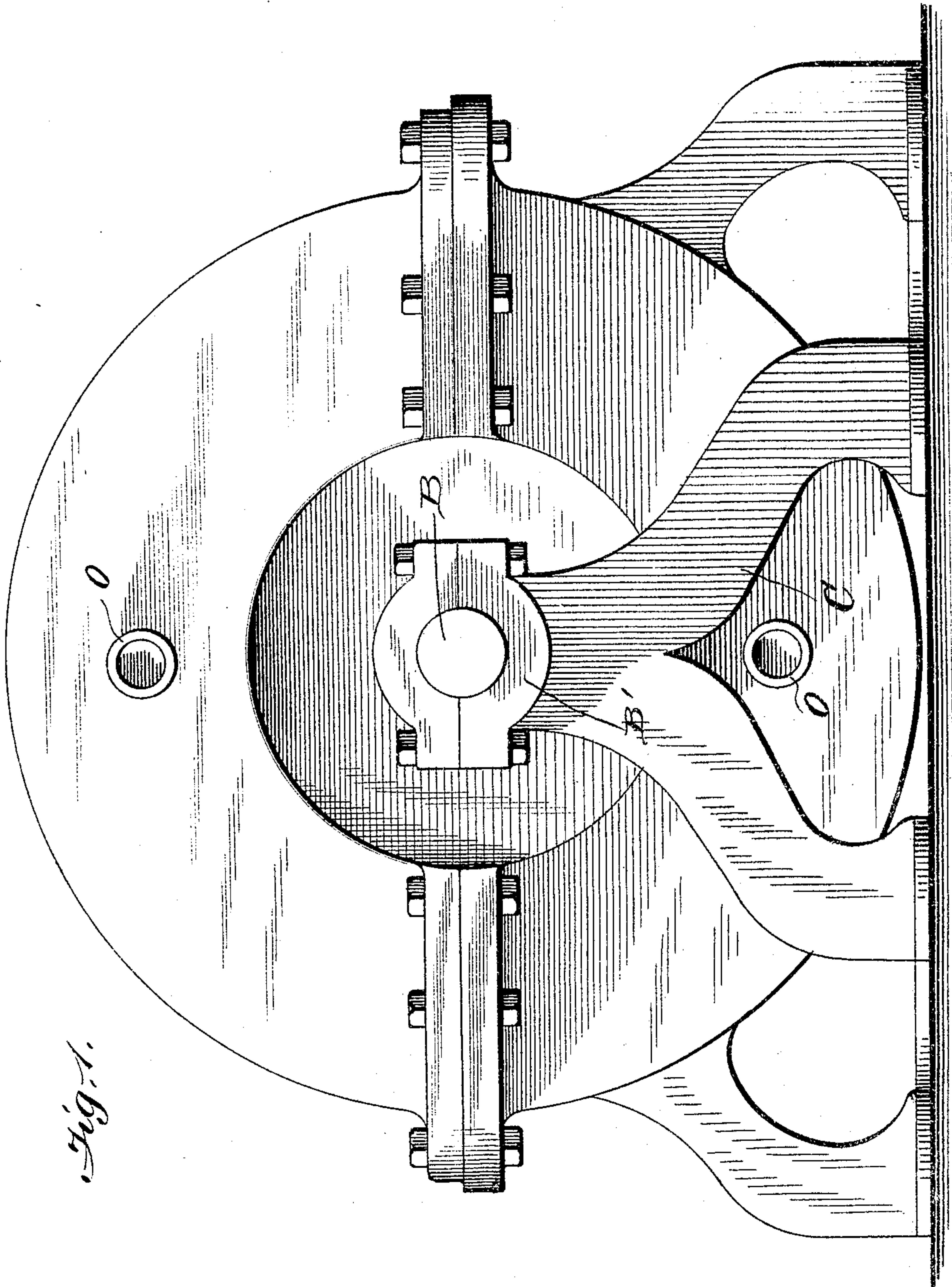


Fig. 1.

Witnesses

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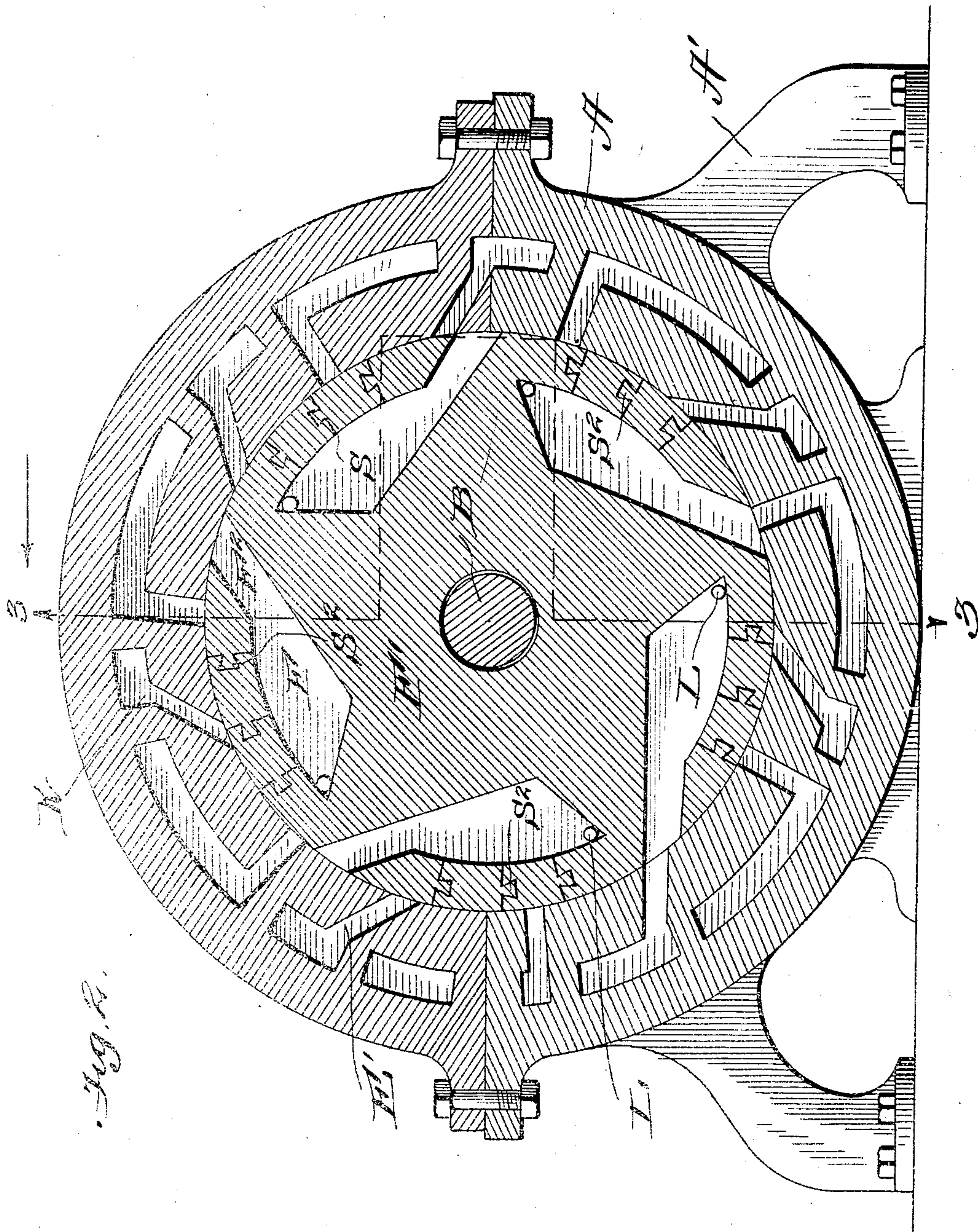
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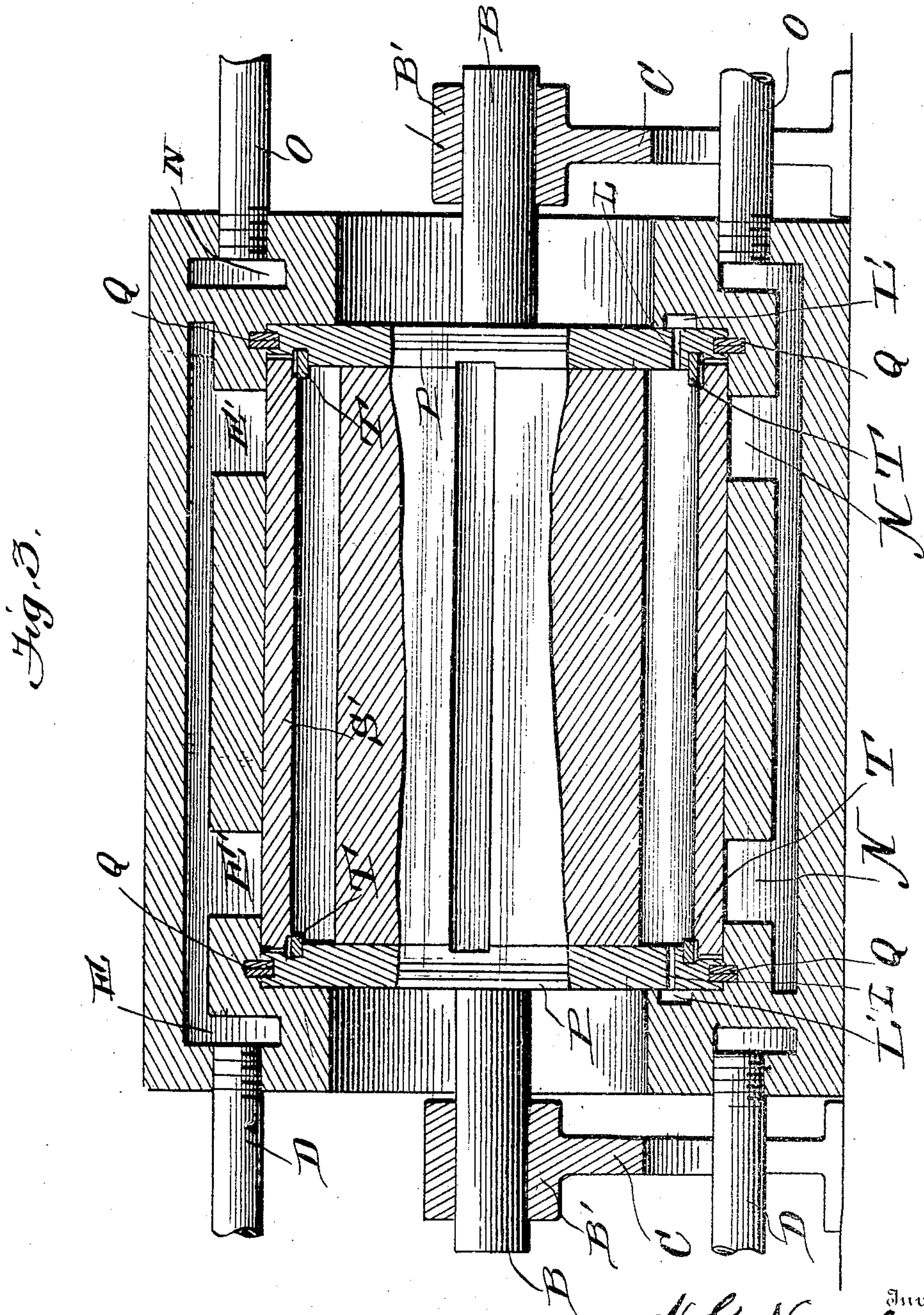
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3 SHEETS—SHEET 3.



Witnesses

R. A. Bowell
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UNITED STATES PATENT OFFICE.

WILLIAM G. NICOLA, OF WASHINGTON, IOWA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 764,756, dated July 12, 1904.

Application filed April 19, 1904. Serial No. 203,899. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. NICOLA, a citizen of the United States, residing at Washington, in the county of Washington and State of Iowa, have invented certain new and useful Improvements in Rotary Engines; and I do 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 ap-
 10 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful im-
 15 provements in rotary steam-engines; and the object of the invention is to produce an apparatus of this character in which a pressure of live steam is constantly exerting its force upon one section or another of a rotary cyl-
 20 inder while exhaust is taking place at one part of the cylinder or the other.

The invention consists, further, in various details of construction and combinations and arrangements of parts, which will be herein-
 25 after fully described and then specifically defined in the appended claims.

My invention is illustrated in the accompa-
 nying drawings, which, with the letters of reference marked thereon, form a part of this
 30 application, and in which—

Figure 1 is an end elevation of my improved rotary engine. Fig. 2 is a sectional view through the cylinder and casing, and Fig. 3 is a sectional view on line 3 3 of Fig. 2.

35 Reference now being had to the details of the drawings by letter, A designates the casing of the engine, which is made up, preferably, of two sections securely bolted together and supported upon legs A'. A shaft B is
 40 journaled in bearings B', mounted upon the legs C. Said casing is provided with two steam-inlet ports D at one end thereof, which open into a chamber E, which chamber has a series of ports E', which pass through the
 45 inner face of the cylinder at angles, as shown. Having reference to Fig. 3 of the drawings, it will be seen that the steam-chamber E passes substantially the length of the casing and has the ports E' leading therefrom,
 50 which are adapted to communicate succes-

sively with the steam-pockets F in the cylinder F', which is keyed to rotate with said shaft B. Each of said pockets F has a contracted neck portion F² opening through the circumference of said cylinder and is adapted 55 to come alternately into registration with a steam-port and an exhaust-port K. The exhaust-ports, which are positioned intermediate the steam-ports, open into the exhaust-chamber, (illustrated by letter N, Fig. 3,) and 60 exhaust-pipes O lead from said chamber, as clearly shown in the drawings. In order to make the steam-tight joint between the rotary casing and the cylinder, packing-rings Q are provided, which are seated in an annular 65 groove in the circumference of the ends P of the cylinder, and the curved segments of the cylinder (designated in the drawings by letter S) are made up of separate sections S², dovetailed together, so that steam-pressure 70 on the interior of the cylinder may press these parts of the cylinder against the inside of the casing, thereby making a steam-tight surface between the cylinder-drum and the cylinder. In order to make a more effectual steam-tight 75 connection, steel rings T are provided, which are seated in the ends of the cylinder and bear against the sections S of the rotary cylinder. Leading from each of the steam-pock-
 80 ets is a drain-port L, whereby any condensed steam may make exit into a port L' in the casing about the cylinder when not in use.

By the provision of a rotary engine made in accordance with my invention it will be ob-
 85 served that live steam is being constantly fed into the pockets of the rotary cylinder through one or another of the steam-ports, while exhaust is permitted through one or another of the exhaust-ports, and by the arrangement of the ducts the pressure of the live steam is 90 exerted upon the rotary cylinder during the interval that the opening in the steam-pocket passes from one steam-inlet port to an exhaust-port, thus utilizing the full force of the steam.

While I have shown a particular detailed 95 construction of apparatus illustrating my rotary engine, it will be understood that I may vary the detailed construction of the engine, if desired, without departing from the spirit of the invention.

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

1. A rotary engine comprising a cylinder
5 having a live-steam chamber therein with inclined ports leading therefrom through into the interior of the casing, a shaft, a cylinder keyed to said shaft and rotating in contact with the inner surface of said casing, said cylinder having a series of steam-pockets having
10 ports opening through the circumference of the cylinder, the outer wall of each of said pockets made up of sections, an exhaust-chamber with exhaust-ports disposed intermediate
15 the steam-inlet ports, and so arranged that steam may be continuously admitted to the steam-pockets simultaneously with the exhaust of the steam-pockets, as set forth.
2. A rotary steam-engine comprising a casing
20 having a live-steam and an exhaust chamber therein, a shaft passing through said casing and mounted in suitable bearings, a cylinder rotating with said shaft and in contact with the inner surface of said casing, and provided
25 with a series of sections forming the outer walls of steam-pockets, with ports opening through the circumference of the cylinder, exhaust-ports leading radially into the exhaust-chamber and live-steam ports leading
30 through the casing tangent to said cylinder, with the live-steam feeding and exhaust ports alternately arranged, as set forth.
3. A rotary steam-engine comprising a cylindrical casing with a hollow center and provided
35 with a live-steam and an exhaust chamber, exhaust-ports leading from the exhaust-

chamber radially and opening through the inner wall of said casing, a shaft passing through said casing, a cylinder rotating with said shaft in contact with the inner surface of said casing and provided with a series of steam-pockets having ports opening through the circumference of said cylinder, the outer walls of said pockets made up of sections having dovetailed connections, said live-steam chamber having
45 series of tangential ports leading through the inner wall of the casing and alternately arranged with said exhaust-ports, cylinder ends, suitable packings between the same and said casing, and packing-rings intermediate the
50 sections of said cylinder, as set forth.

4. A rotary steam-engine comprising a casing having a live-steam and an exhaust chamber therein, a shaft passing through said casing and mounted in suitable bearings, a cylinder rotating with said shaft and provided
55 with a series of sections forming steam-pockets, the outer wall of said pockets being made up of sections which are dovetailed together, steam-ports opening through the circumference
60 of the cylinder, exhaust-ports leading radially into the exhaust-chamber and live-steam ports leading into the casing tangent to said cylinder, said live-steam and exhaust
65 ports alternately arranged, as set forth.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WILLIAM G. NICOLA.

Witnesses:

A. E. RITCHEY,
CHAS. MEANS.