

No. 655,175.

Patented July 31, 1900.

C. E. LINTON.
ROTARY ENGINE.

(Application filed Nov. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.

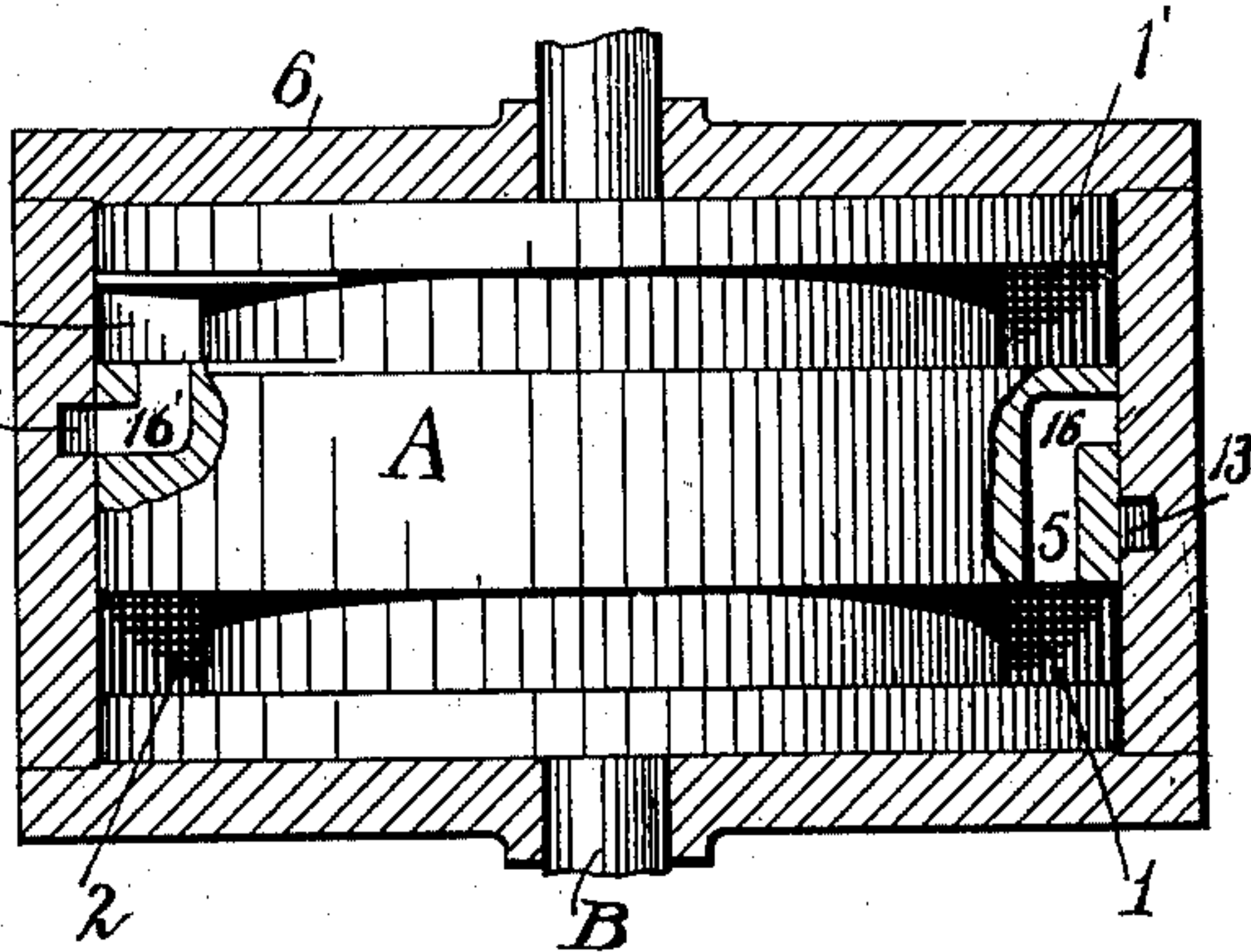
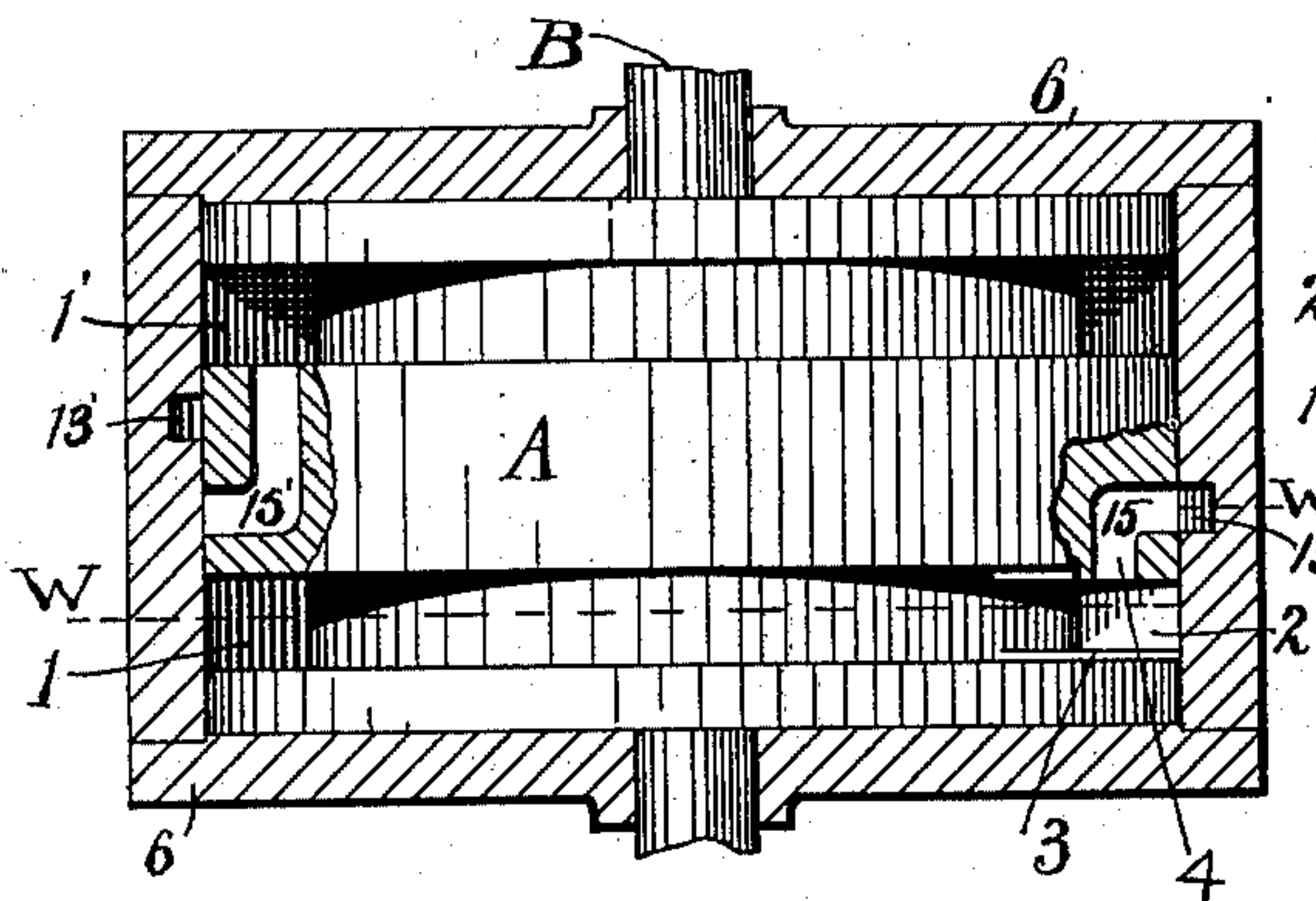
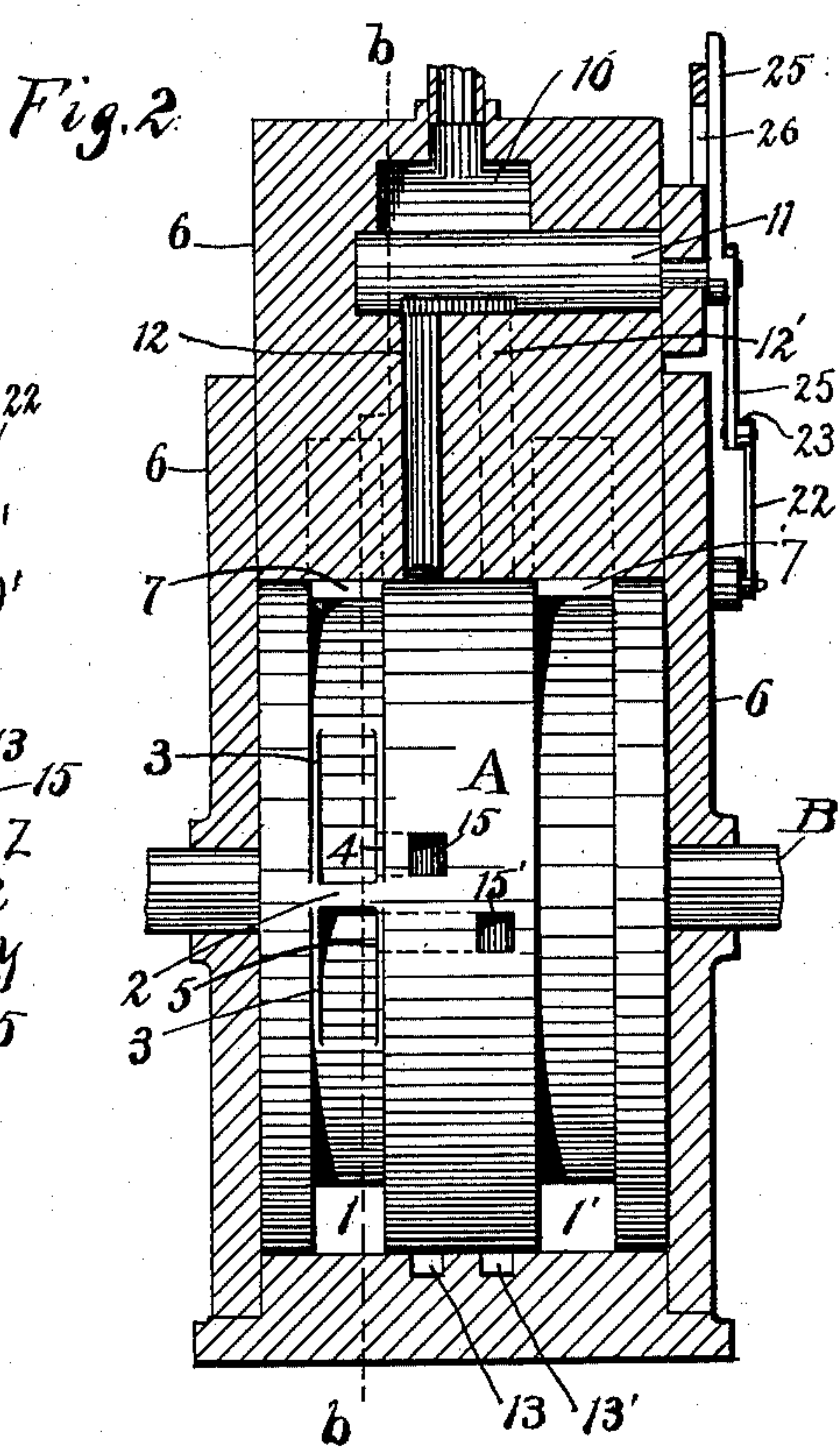
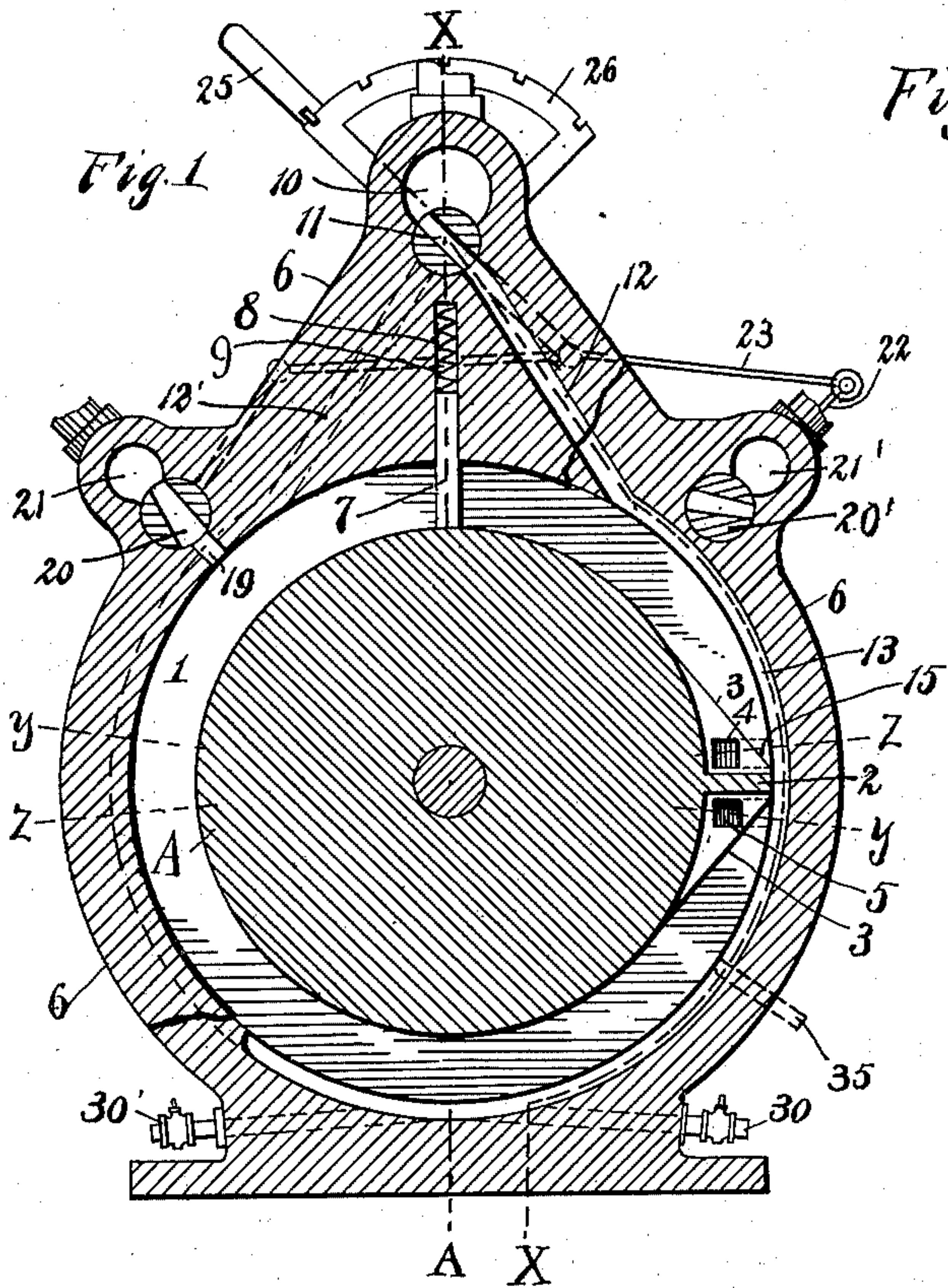


Fig. 3.

Fig. 4

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2 Sheets—Sheet 2.

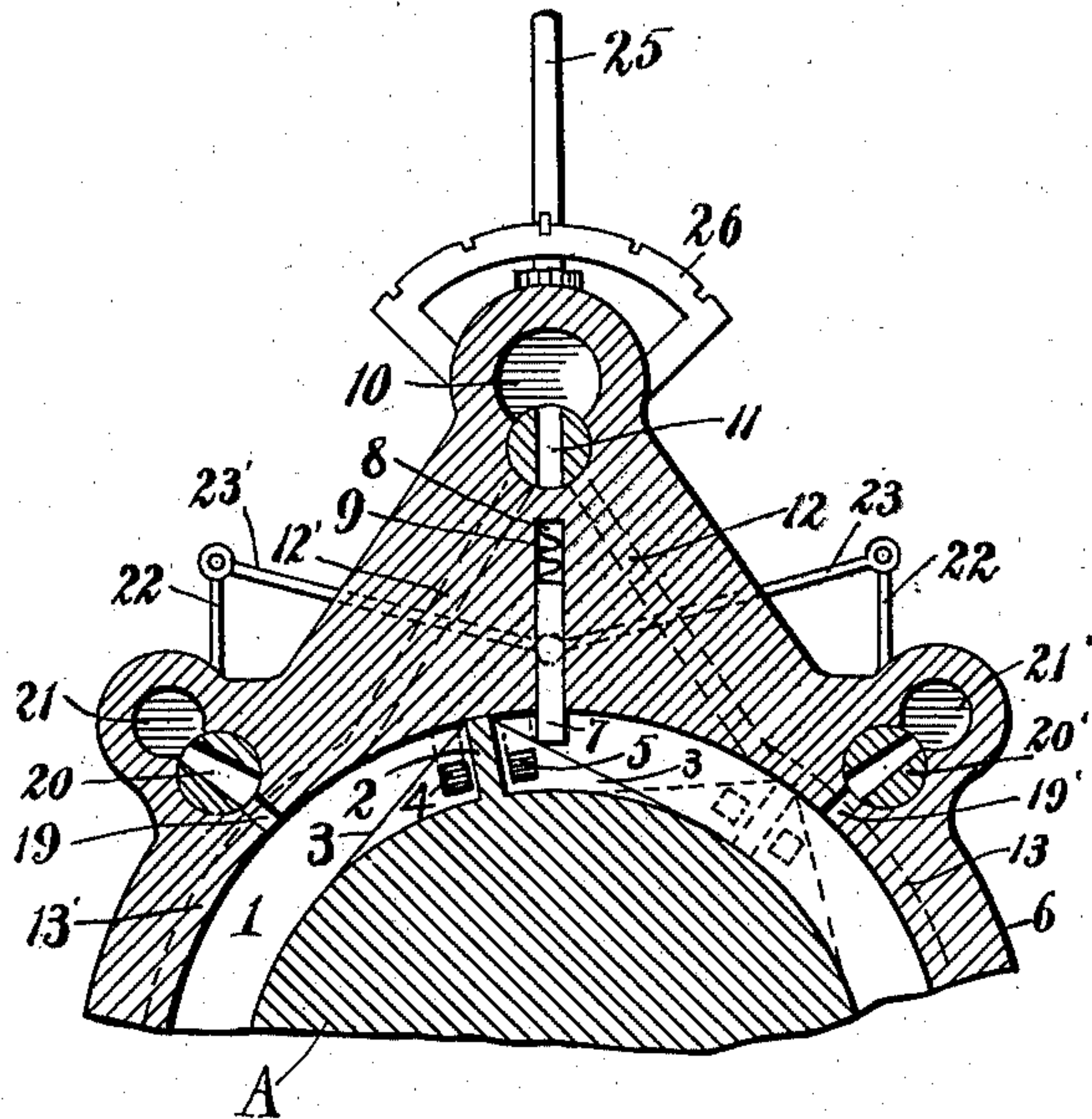


Fig. 5.

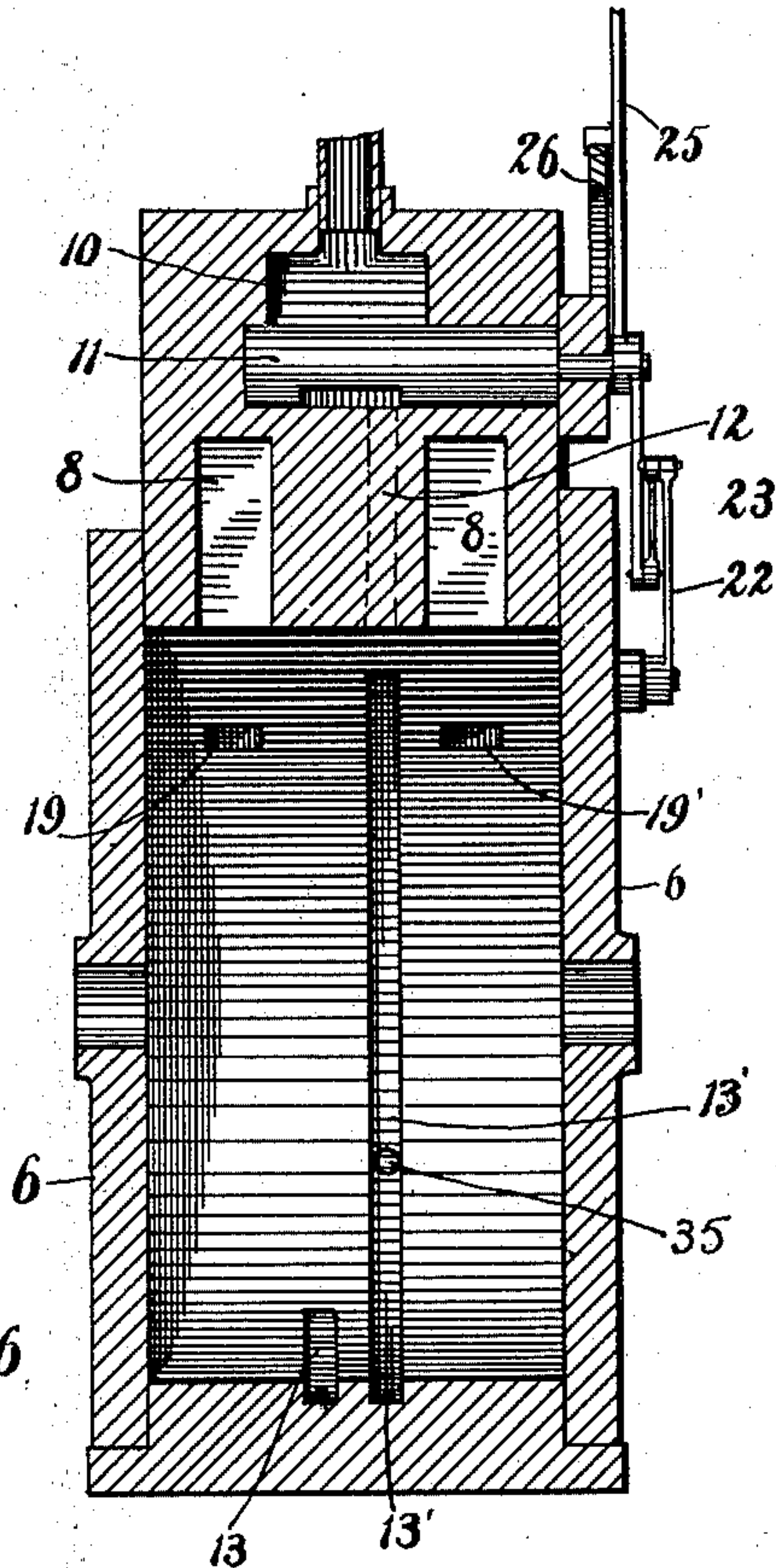


Fig. 6.

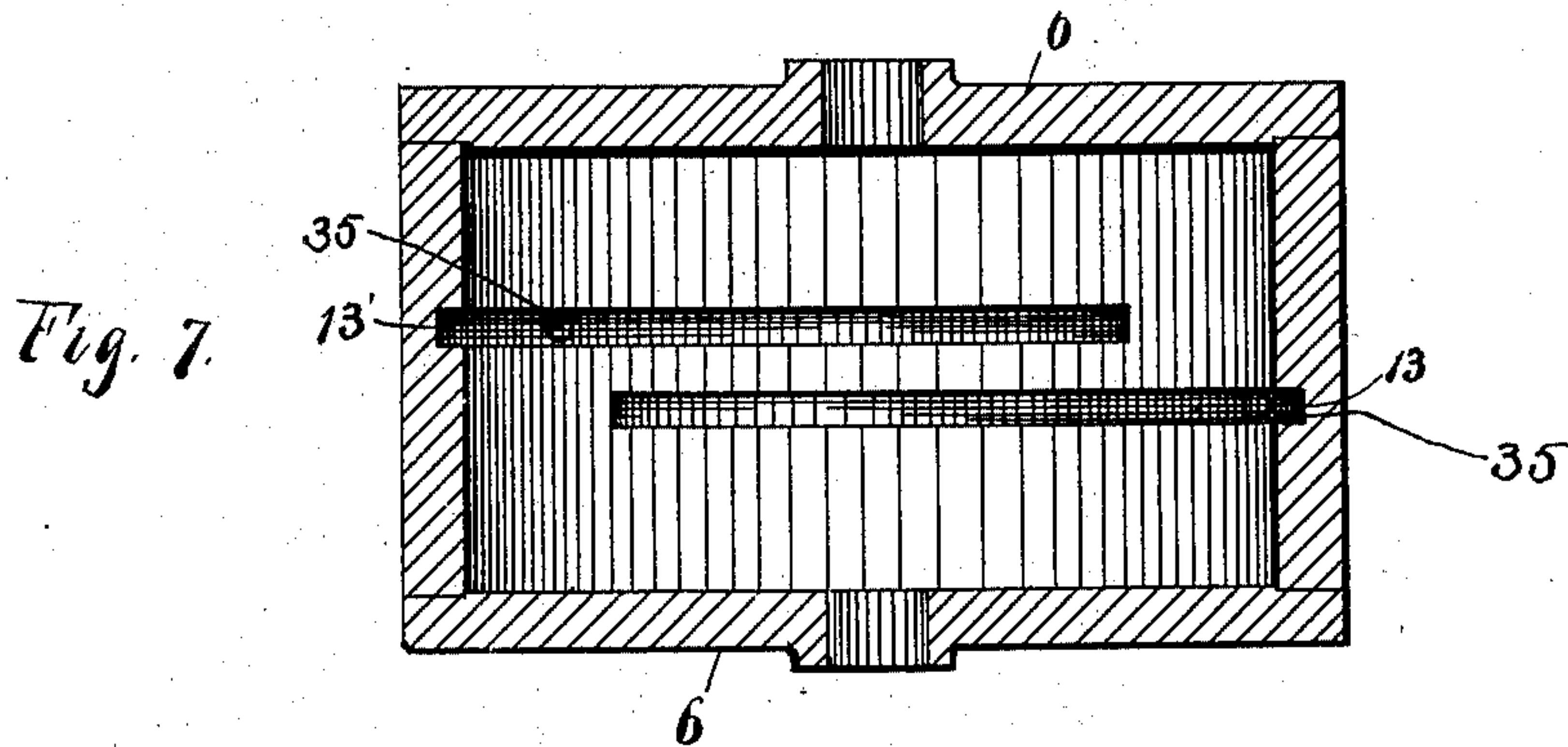


Fig. 7.

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CHARLES E. LINTON, OF SAGINAW, MICHIGAN.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 655,175, dated July 31, 1900.

Application filed November 18, 1899. Serial No. 737,185. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. LINTON, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention is a rotary engine; and it consists of the combination, arrangement, and construction of the several parts whereby certain important advantages are attained.

In the drawings I have illustrated what may be termed a "double piston"—i. e., a piston with two steam-chambers, whereby the engine has continuous pressure—viz., one half live steam and the other half expansion, as hereinafter appears. I have also illustrated a reversible engine. It will be obvious that the piston can be made single; but when so made it will run a portion of the time on expansion entirely. It will also be seen that the piston may also be provided with three or more steam-chambers. This I claim the right to do.

In the drawings, Figure 1 is a vertical section on line *ww* of Fig. 3, but showing the entire casing. Fig. 2 is a section on line *xx* of Fig. 1. Fig. 3 is a section on line *zz* of Fig. 1. Fig. 4 is a section on line *yy* of Fig. 1. Fig. 5 is a section on line *bb* of Fig. 2 with the piston in different position. Fig. 6 is a section of the casing on line *ax* of Fig. 1. Fig. 7 is a section of the casing on line *zz* of Fig. 1.

A is the piston, and consists of a metal wheel carried on the shaft B, journaled in the casing or may be suitably supported in any other manner and the sides of the casing removed, as will hereinafter appear. The piston A is provided with two peripheral grooves 1 and 1', extending nearly around the piston and the proper distances apart and from the edges of the wheel. These grooves are the steam-chambers of the piston and, as stated, are not quite angular, the parts 2 and 2' of the

piston lying between the ends of each groove respectively. These parts 2 and 2' are upon opposite sides of the circumference of the piston and are integral therewith and form, as will hereinafter appear, the piston-heads. These parts 2 and 2' extend at right angles to the bottom of the grooves, but are provided on each side with the sloping walls 3, extending from the top of the heads to the bottom of the grooves with the proper slope.

6 is the casing of the piston A. The outer surface thereof may be of any form, its inner surface fitting the piston-wheel, and may be provided with steam or other packing, none being shown in the drawings.

7 and 7' are gates of the width of the grooves 2 and 2', and when in the grooves completely block the same and may be so constructed as to be steam-tight.

As the piston A revolves the sloping walls 3 of the heads will engage a gate and crowd it backward into a pocket 8 in the casing and as soon as the head has passed the gate it will descend, its descent being retarded by the sloping walls 3, which, as previously stated, are on each side of the head. A spring 9 may be placed in the pocket 8 to make the downward movement of the gate more positive.

10 is the opening of the live-steam pipe, 11 a valve in the live-steam port, and 12 and 12' the live-steam ports and extend from the valve 11 through the casing on each side of the middle thereof, respectively, and connect with the small channels 13 and 13', respectively, on the inner surface of the casing, but at the side of the piston-grooves 1 and 1' and not in communication therewith, except at certain periods of the revolution of the piston, through the elbow-channels in the piston 15 and 16, which open into the grooves 1, and 15' and 16', which open into groove 1', through the openings 4 and 5 in the sloping walls 3 at the side of the piston-heads 2 and 2'. The channel 13 extends from its connection with port 12 one-half the circumference of the casing. It will be seen that as the piston revolves the channel 15 of the piston will be in continuous connection with the channel 13 during one-half of its revolution—i. e., during the time 15 ports with 13—and that steam will be cut off from the piston as soon as 15 has passed the end of the channel 13, and the piston will

run on expansion until the head 2 has passed the exhaust-port 19.

20 is the exhaust-valve, and 21 the discharge-pipe.

5 The groove 1' has exact duplicate connections to groove 1, and, its head 2' being on the opposite side of the piston from the head 2 when the groove 1 is cut off from taking steam, the groove 1' will commence to take
10 steam from the channel 13 through the elbow-channel 16, and the engine will then be run by live steam in groove 1' and expansion in groove 1.

In order that the engine may be reversed, I
15 construct the opposite side of the casing the same as the side just described—viz., with channel 13' connected with port 12', and provide the piston with elbow-channels 15' and 16', opening on opposite sides of the heads 2
20 and 2' from the opening of channels 15 and 16, which will connect the grooves 1 and 1' with the port 12' through channel 13'. 19' and 20' are the exhaust port and valve of this side of the engine.

25 22, 23, and 25 is an arrangement of levers connecting steam-valve 11 and exhaust-port 20 and 20', whereby they may be adjusted so as to reverse the engine. 26 is a rack, in which the lever 25 may be locked when adjusted.

30 Fig. 1 shows port 12 connected through valve 11 to live steam, and exhaust-port 20 open. Fig. 5 shows both exhaust-ports open and live port closed and engine at rest.

It is obvious that other motive power may
35 be used with but little, if any, modification, and therefore I do not desire to limit myself to steam-power.

30 and 30' are drip-pipes located in the lower part of the casing for the purpose of drawing
40 off the condensation.

It will be seen that the duplicate groove 1' and its connections may be omitted and the engine operated by the single groove, when, as previously stated, the piston will run on
45 expansion from the end of the channel 13 to the exhaust-port 19.

With the engine made double, as illustrated, it will be impossible to "center" the piston. As stated, the piston may be provided with
50 more than two grooves and their connections, and with the piston so constructed the channel 13 could be shortened, so as to allow the engine to run more on expansion. One of the grooves of the piston could, however, always
55 be in live steam.

In the engine, as illustrated, I have shown a means for shortening the grooves 13 and 13', so that less steam may be used—viz., the plug
35 extending from outside of the casing into the groove at any desired point and adapted to be inserted or withdrawn as desired. Any number of these plugs may be used as desired to shorten or lengthen these channels. It is obvious that these plugs are but one of
60 many ways that may be provided for accomplishing the same purpose. Of course the amount of steam given these channels may be

regulated from the outside of the engine, as is common.

As previously intimated, the side walls of
70 the casing 6 may be discarded, thus leaving the sides of the piston exposed, as with the proper packing of the peripheral casing the steam will be confined in the piston-chambers. I do not wish therefore to confine my-
75 self to the exact form or construction of the various parts illustrated and claim any change therein that may be suggested by mechanical skill.

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

1. In a rotary engine a casing for the same having on different parts of its inner surface two or more channels a semicircumference or
85 less in length, a metal wheel-piston having in its periphery one or more grooves extending nearly around the same, a head in each groove integral with the piston on the opposite sides thereof, sloping walls in each
90 groove on each side of the head extending from the bottom of the groove and a short distance from the base of the head to the surface of the head, a gate in a pocket in the casing adapted to be actuated into the groove
95 and block the same and be elevated out of the groove by contact with the sloping walls of the groove at the piston-head as the piston is revolved, channels in the piston adapted to connect with the channels in the casing as
100 the piston revolves, steam-ports connected to the channels in the casing, and exhaust-ports connecting with the groove in the piston, substantially as set forth.

2. In a rotary engine, a piston-wheel hav-
105 ing grooves forming the steam-chambers, each groove having a head, the heads in different planes of the piston, a casing for the piston, two or more channels in the surface of the casing between the grooves of the pis-
110 ton and in communication with steam-ports and in communication with channels in the piston connected with the piston-grooves and opening therein on each side of the piston-head, whereby each groove of the piston will,
115 during a portion of the revolution of the piston be in communication with the live-steam ports through the piston-channels and casing-channels with sliding gate to be actuated in and out substantially as set forth.

3. In a rotary engine having a piston-wheel
120 having two or more grooves in its periphery forming steam-chambers, a casing for the piston having two or more small channels on its inner circumference between the piston-
125 grooves but not in communication therewith, each channel in communication with live-steam ports and during a portion of the revolution of the piston, in communication with the grooves of the piston with sliding gates
130 in the casing to be actuated in and out substantially as set forth.

4. In a rotary engine, a piston having a steam-chamber extending nearly around the

same formed by a groove in the piston, a head
in the groove integral with the piston, a cas-
ing for the piston having two or more chan-
nels on its inner circumference not in direct
5 communication with the steam-chamber but
connected to live-steam ports, channels in the
piston on each side of the head adapted to
connect with the channels in the casing dur-
ing part of the revolution of the piston and
10 convey the steam to the steam-chamber just
behind the piston-head, and a gate in the cas-

ing adapted to be actuated into the steam-
chamber and form a back stop for the steam,
and means for throwing the gate in and out
of the chamber substantially as set forth. 15

Signed by me at Saginaw, Michigan, this
27th day of December, 1898.

CHARLES E. LINTON.

Witnesses:

A. H. SWARTHOUT,
BENJ. FOSTER.