

R. W. RIORDAN.
 ROTARY ENGINE.
 APPLICATION FILED MAR. 16, 1908.

924,832.

Patented June 15, 1909.
 2 SHEETS—SHEET 1.

Fig. 2

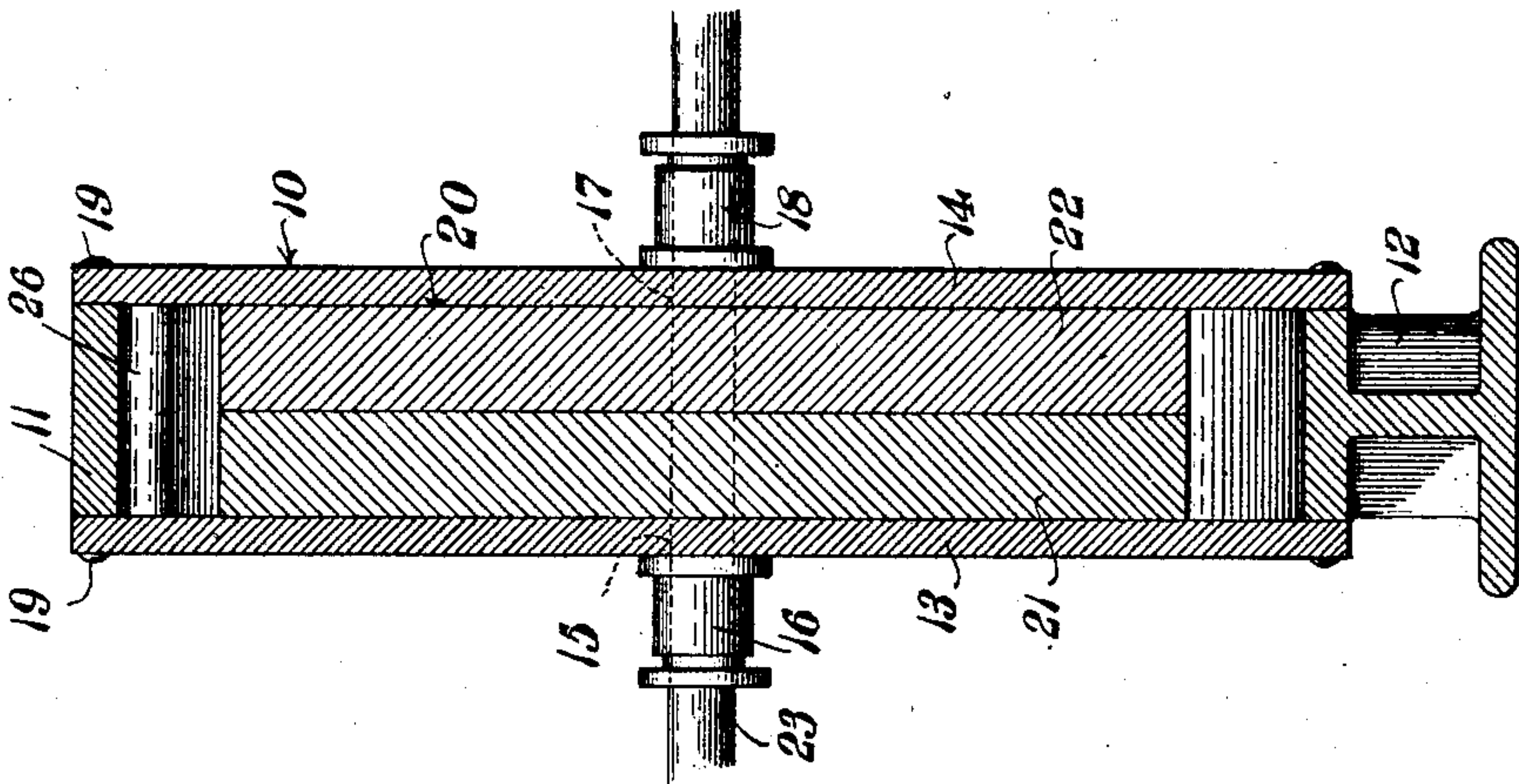
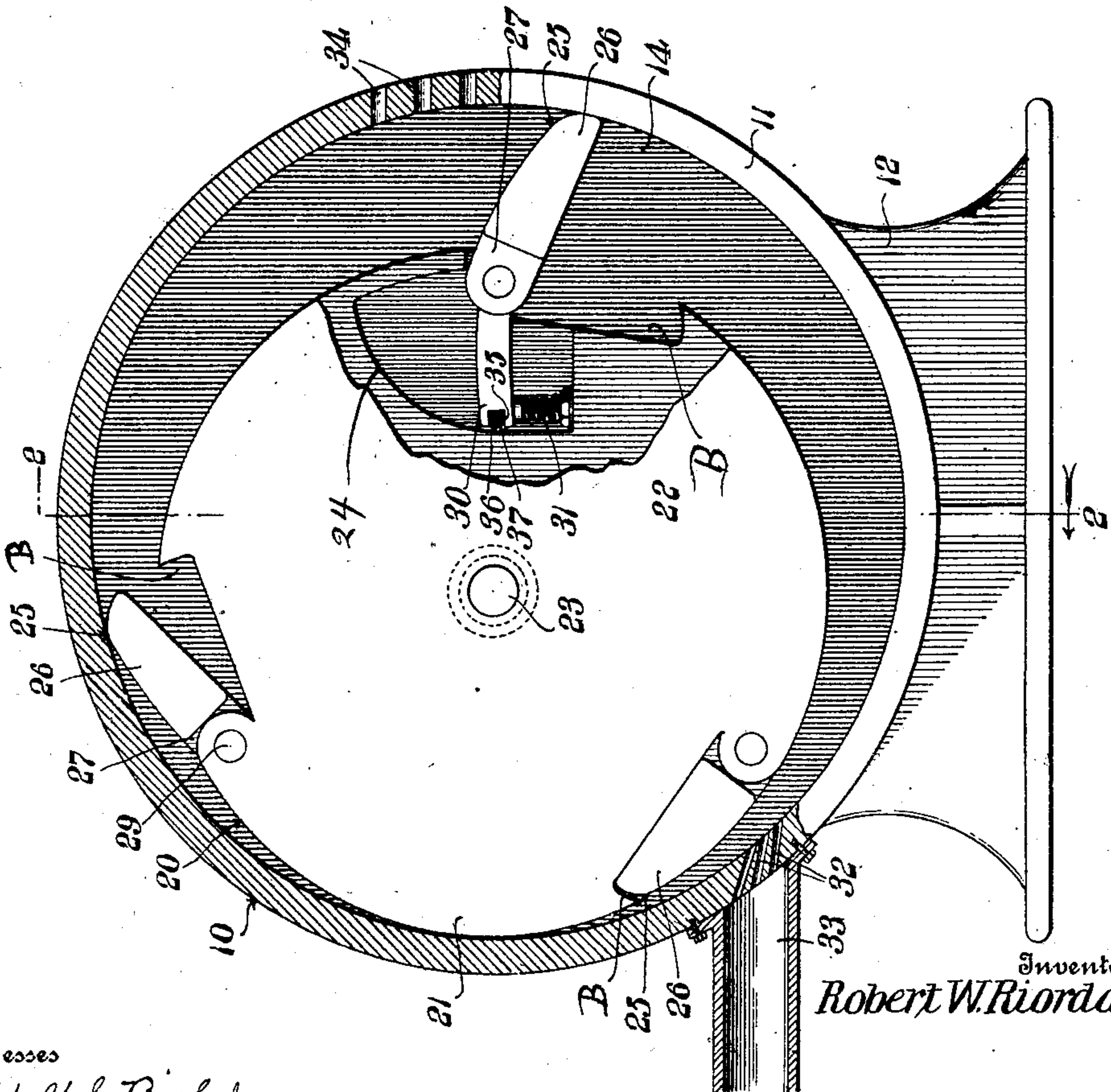


Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

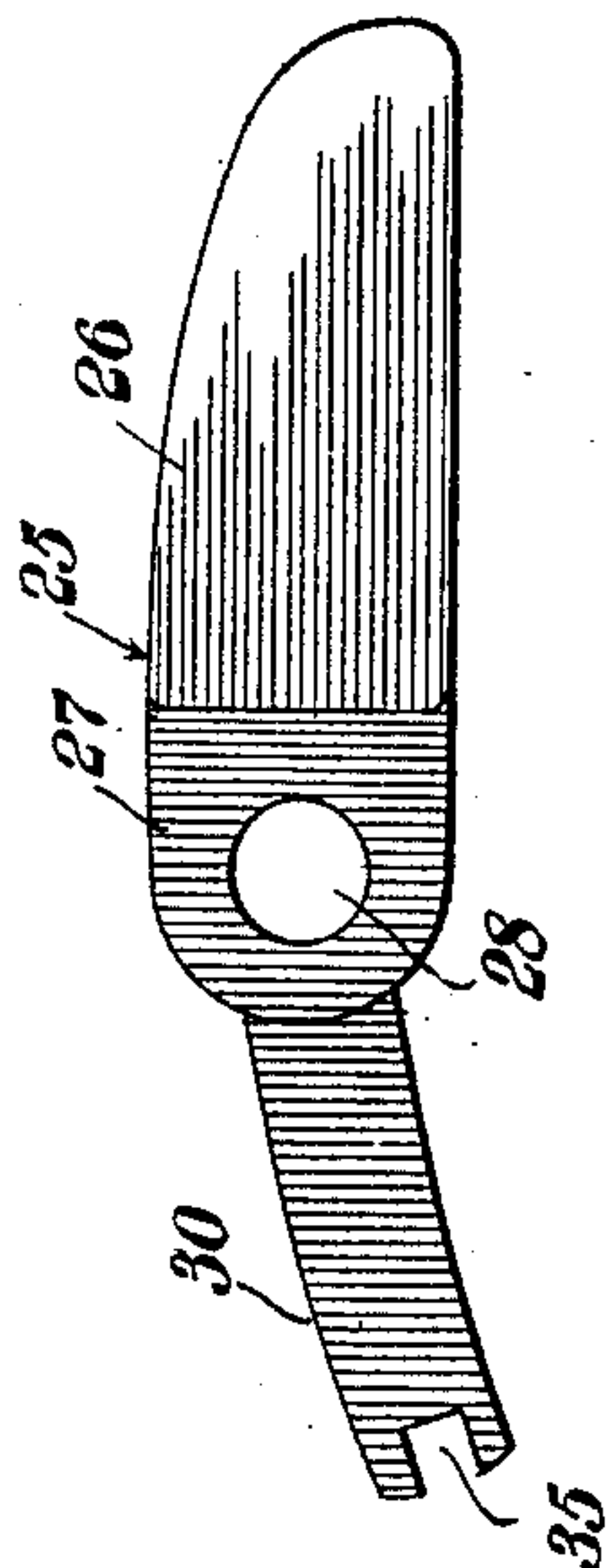


Fig. 5.

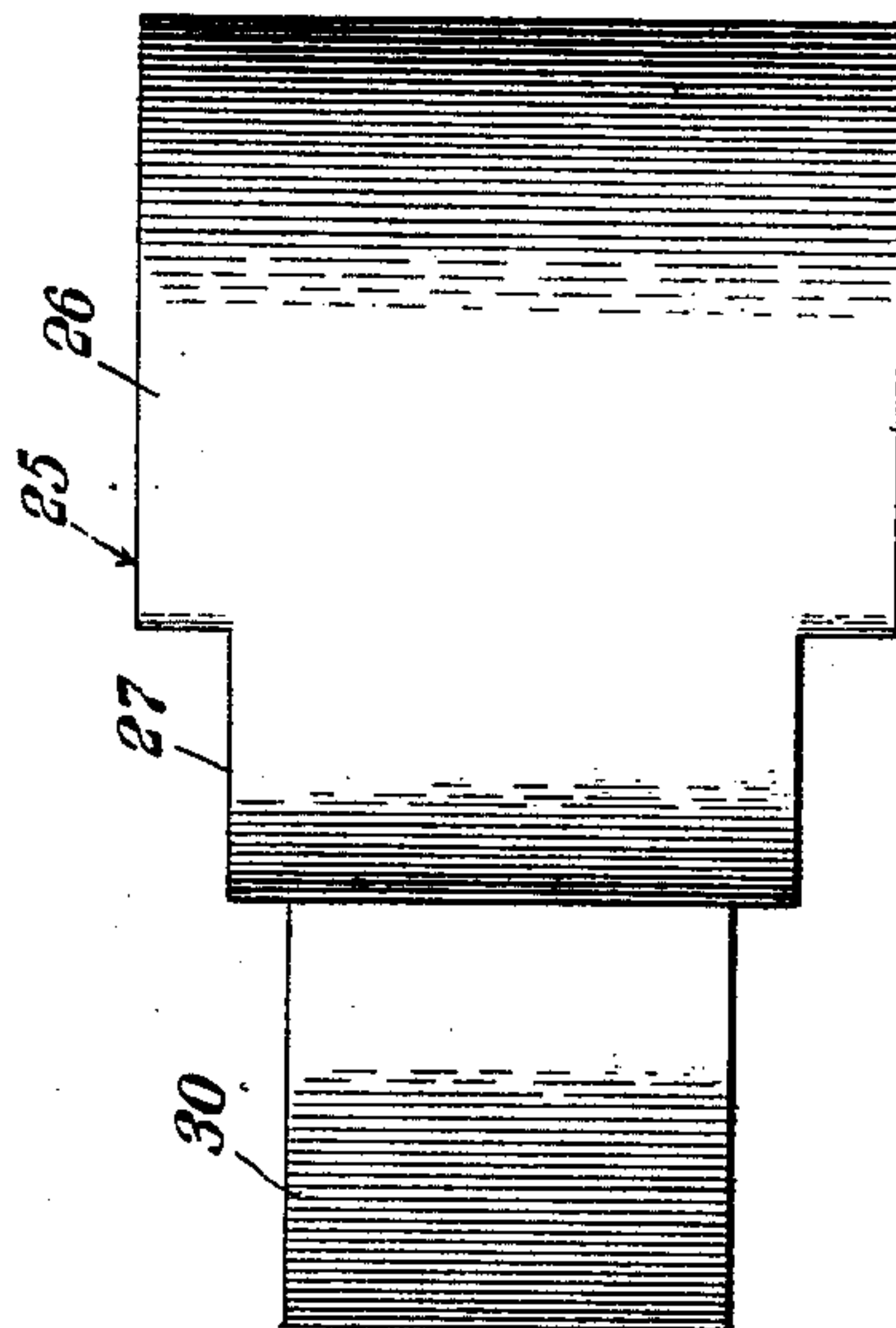


Fig. 6.

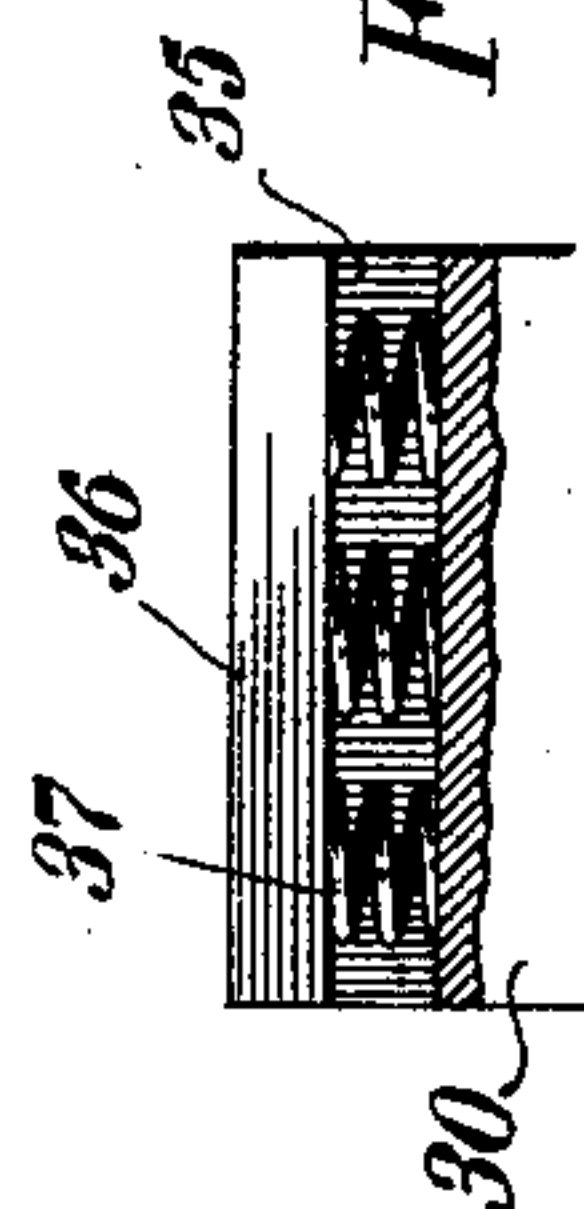
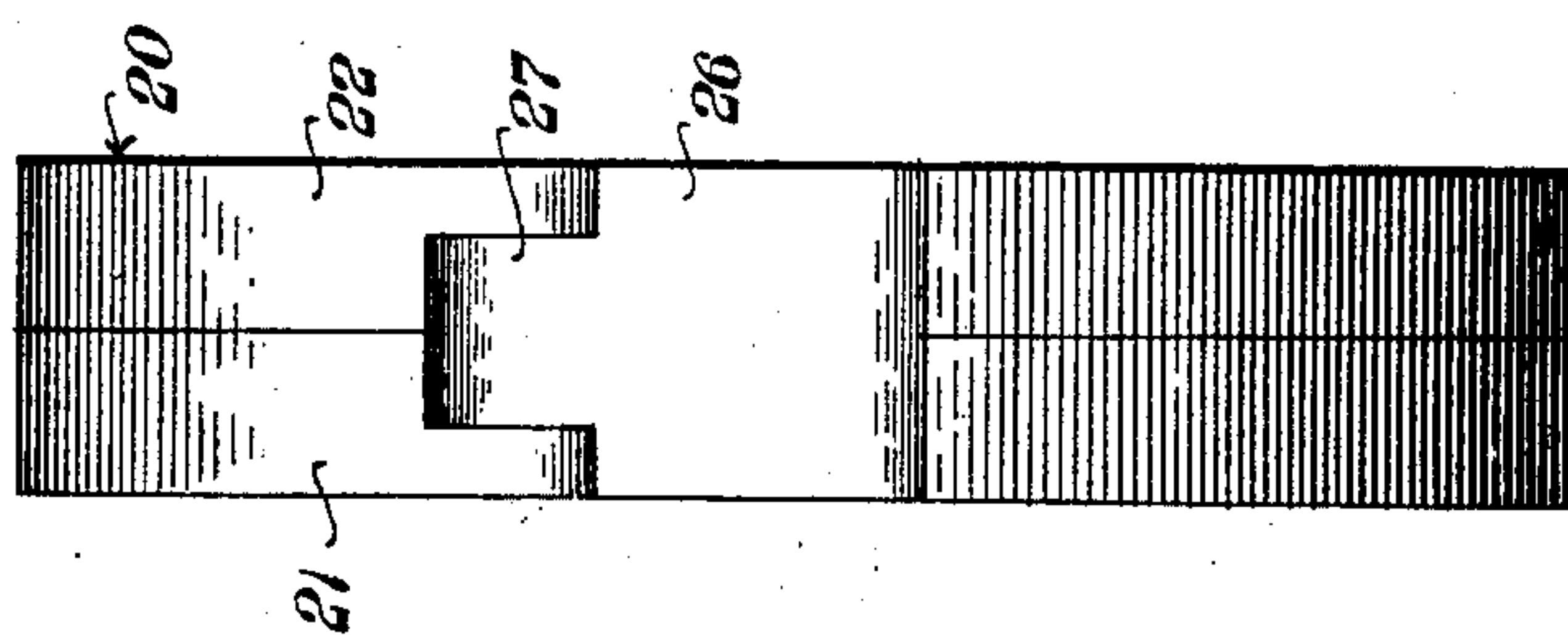


Fig. 3.



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ROTARY ENGINE.

No. 924,832.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed March 16, 1908. Serial No. 421,417.

To all whom it may concern:

Be it known that I, ROBERT W. RIORDAN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to steam engines and more particularly to rotary engines and has for an object to provide an engine of this character having a rotor journaled eccentrically in a cylindrical casing.

A further object of this invention is to provide an engine of the above character comprising but few parts; also to simplify the same, and thus reduce the cost of its manufacture to a relatively low figure.

Other objects and advantages will be apparent from the following description and it will be understood that changes in the specific structure shown and described may be made within the scope of the claim without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like characters of reference indicate similar parts in the several views, Figure 1 is a side elevational view of the present engine, a portion of the piston being removed to disclose interior parts, Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is an end view of the piston, Fig. 4 is a side view of one of the vanes, Fig. 5 is a top plan view of the same, Fig. 6 is a detail section of the vane packing.

Referring to the drawings, there is shown a rotary steam engine 10 including a casing or cylinder 11 having a supporting base 12, as shown. The cylinder 11 is preferably in the form of a circular ring closed at both sides by heads 13 and 14 respectively. The head 13 is provided with an opening 15 spaced from its center and a journal 16 for a purpose to be hereinafter described. The head 14 is provided with a similar registering opening 17 and journal 18. The heads 13 and 14 are secured to the ring by means of fastening bolts or the like 19.

Located within the cylinder 11, there is shown a piston or rotor 20 formed of two circular disks 21 and 22 respectively, carried upon a shaft 23 disposed in the journals 16 and 18. The piston 20 is thus eccentrically mounted within the cylinder 11.

The piston 20 is provided with a plurality of peripheral recesses B, communicating respectively with which there are inwardly

disposed approximately sector-shaped cavities 24 each having one of its radial walls disposed concentrically adjacent the periphery of the piston, their centers being disposed in a common direction. Pivoted in the opening of each of the cavities 24 there is shown a vane 25 comprising a head 26 having an inwardly directed reduced portion 27 provided with a passage 28 arranged to receive a pivot pin 29 secured in the members 21 and 22 respectively of the piston. An integral extension 30 is carried by the reduced portion 27 of the vane and is arranged for radial movement within the cavity 24. The heads 26 are thus arranged to lie at times with their outer ends in contact with the inner wall of the ring 11. Their outer end edges are rounded, which, with their outer side faces form approximately parabolic curves in cross section, as shown so that a rounded surface is presented against the face of the ring 11 at all stages of the action of the vanes, and wear of the cylinder reduced to a minimum. A recess B is formed in the periphery of the piston adjacent each cavity and communicating therewith to receive the adjacent vane therein when at the closed limit of its movement, to lie flush with the adjacent peripheral face of the piston.

Each cavity 24 is provided with a relatively small spring 31 arranged to cushion the extension 30 of the vane 25 during an outward movement of its head 26.

The ring 11 at one side and adjacent its lower end is provided with a plurality of steam inlet passages 32 arranged to receive steam from a suitable nozzle 33 which is also carried by the ring 11. The ring 11 is also provided with a plurality of exhaust passages 34 located at a point above the center of the piston 20 and located at the opposite side of the ring from the passages 32.

It will thus be seen that each vane as it reaches a point below the passages 32 formed in the ring 11 will fall by gravity, centrifugal force, and the ingress of steam to the cavity 24 around the base of the vane, until the outer edge of the head 26 is in contact with the inner wall of the ring 11, thus closing the space between the piston and the ring beyond the steam inlet, the steam then engaging the vane to revolve the piston. After the vane has reached a point above the exhaust passages 34 the vane will fall into the recess B and lie flush with the pe-

ripheral edge of the piston. The vane will continue to lie in this position until it falls as previously described to a position to receive a new charge of steam.

5 The extension carried by each of the vanes has its inner end recessed as shown at 35, and receives a suitable packing strip 36 yieldably held in contact with the arcuate wall of the cavity by means of helical springs or
10 similar resilient means.

What is claimed is:—

A rotary steam engine comprising a cylinder and a base therefor, a rotor carried within the cylinder, said rotor comprising
15 coengaged disks having opposed recesses therein to form sector-shaped chambers having extensions opening on the periphery of the rotor, one radial wall of each chamber being disposed concentrically of the rotor, said rotor being journaled eccentrically of
20 the cylinder, pivoted vanes mounted transversely within the chambers, said vanes having extensions movable within the chambers,

the ends of the extensions being recessed on their outer edges, and disposed in spaced relation with the curved walls of the chambers, spring pressed packing strips disposed in the recesses in the vanes and against hard curved walls to prevent leakage of a power medium through the chambers, said extensions of the chambers being adapted to receive the vanes therein flush with the periphery of the rotor, said vanes having outer faces constructed and adapted to present a rounded surface against the outer wall of
25 the cylinder at all points in the movement of the vanes, said cylinder having a plurality of tangential inlet passages at one side and a plurality of steam exhaust openings at the other.
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35
40

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

ROBT. WHITING RIORDAN.

Witnesses:

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RUDOLPH TEXTOR.