

No. 706,481.

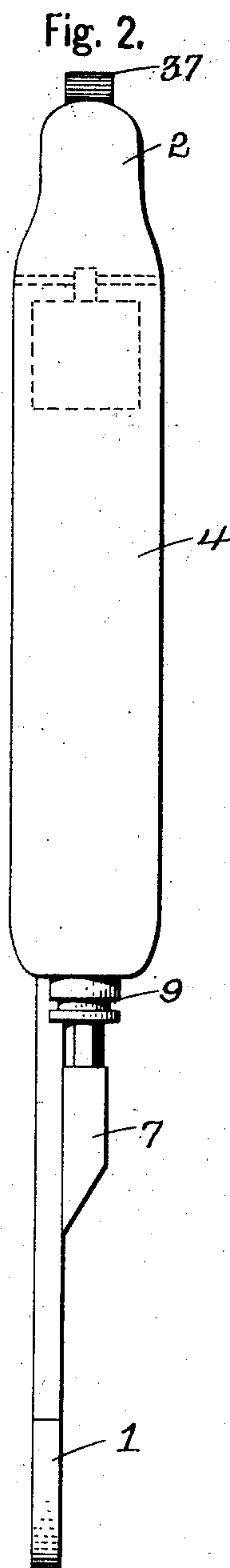
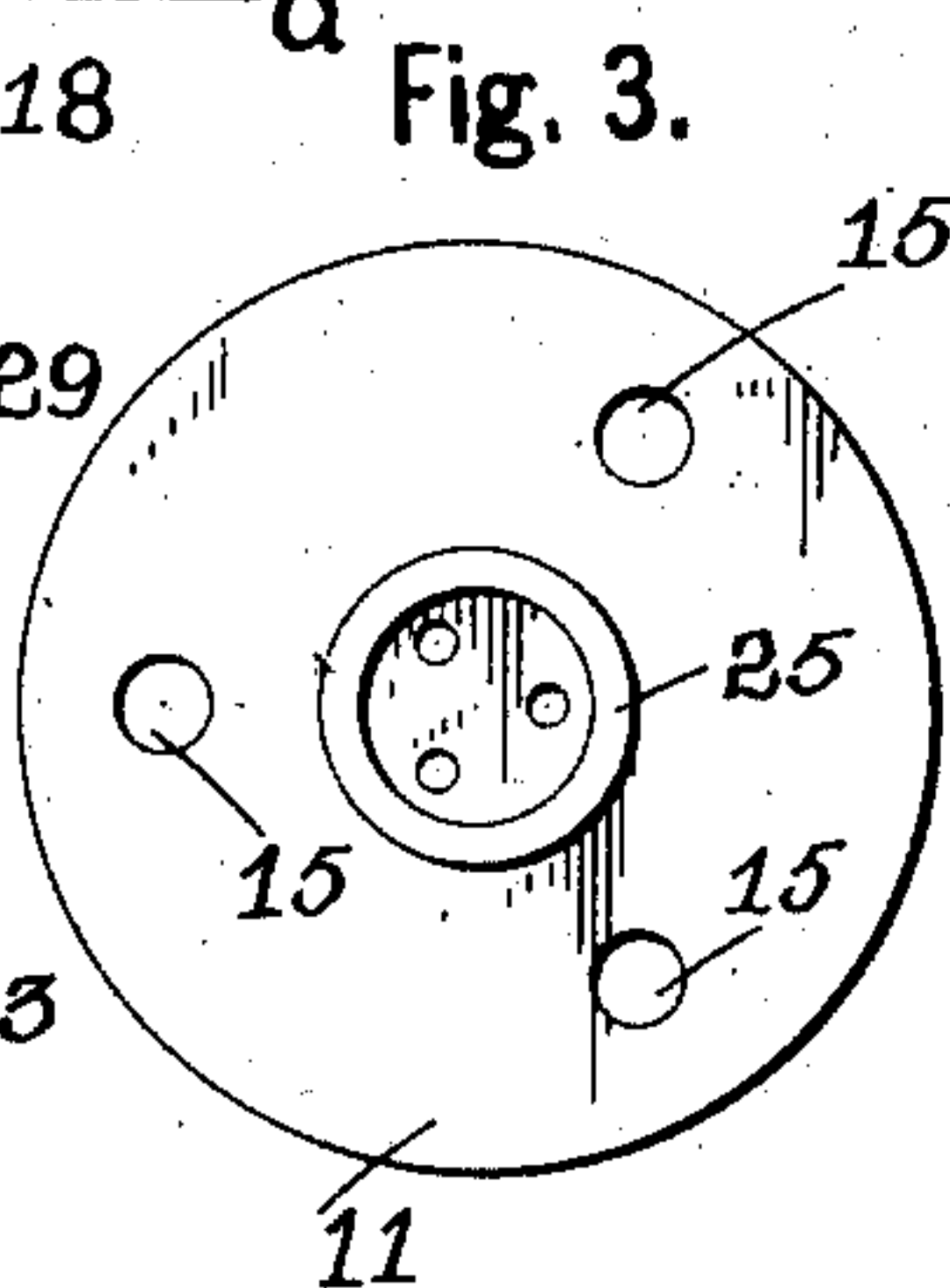
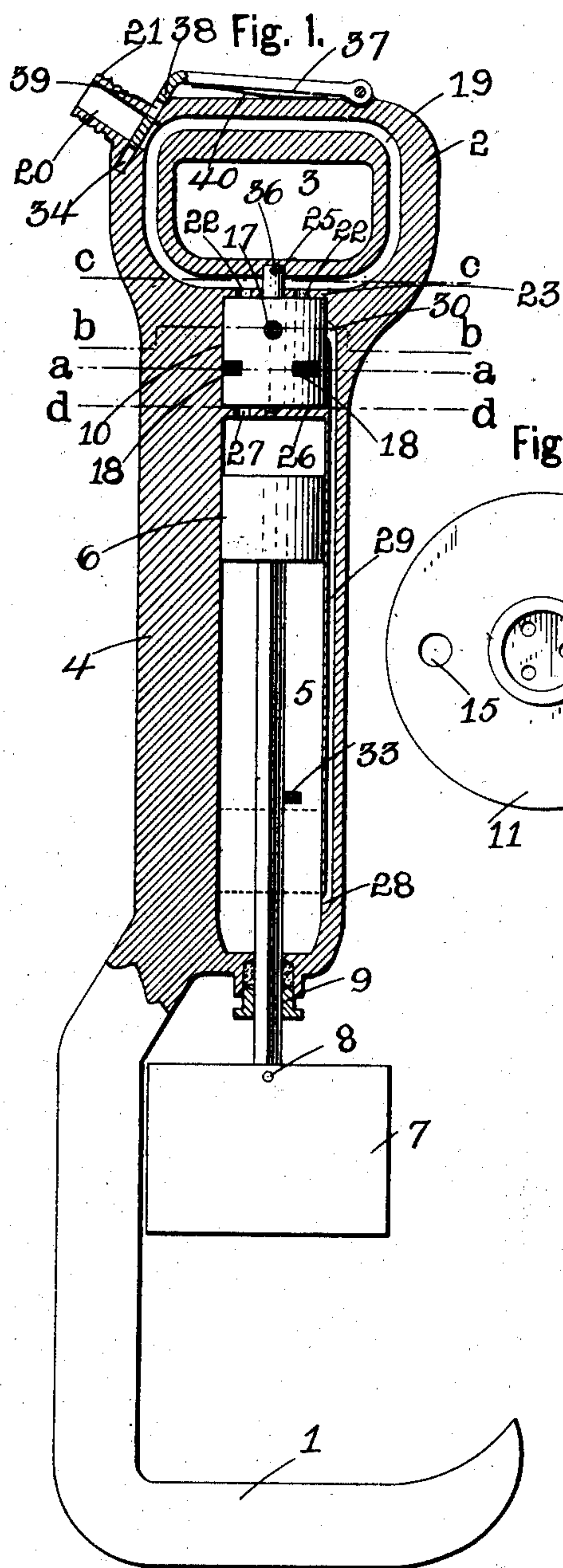
Patented Aug. 5, 1902.

J. H. N. WILSON.
DEVICE FOR CUTTING SUGAR CANE, &c.

(Application filed Oct. 17, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

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Fig. 4.

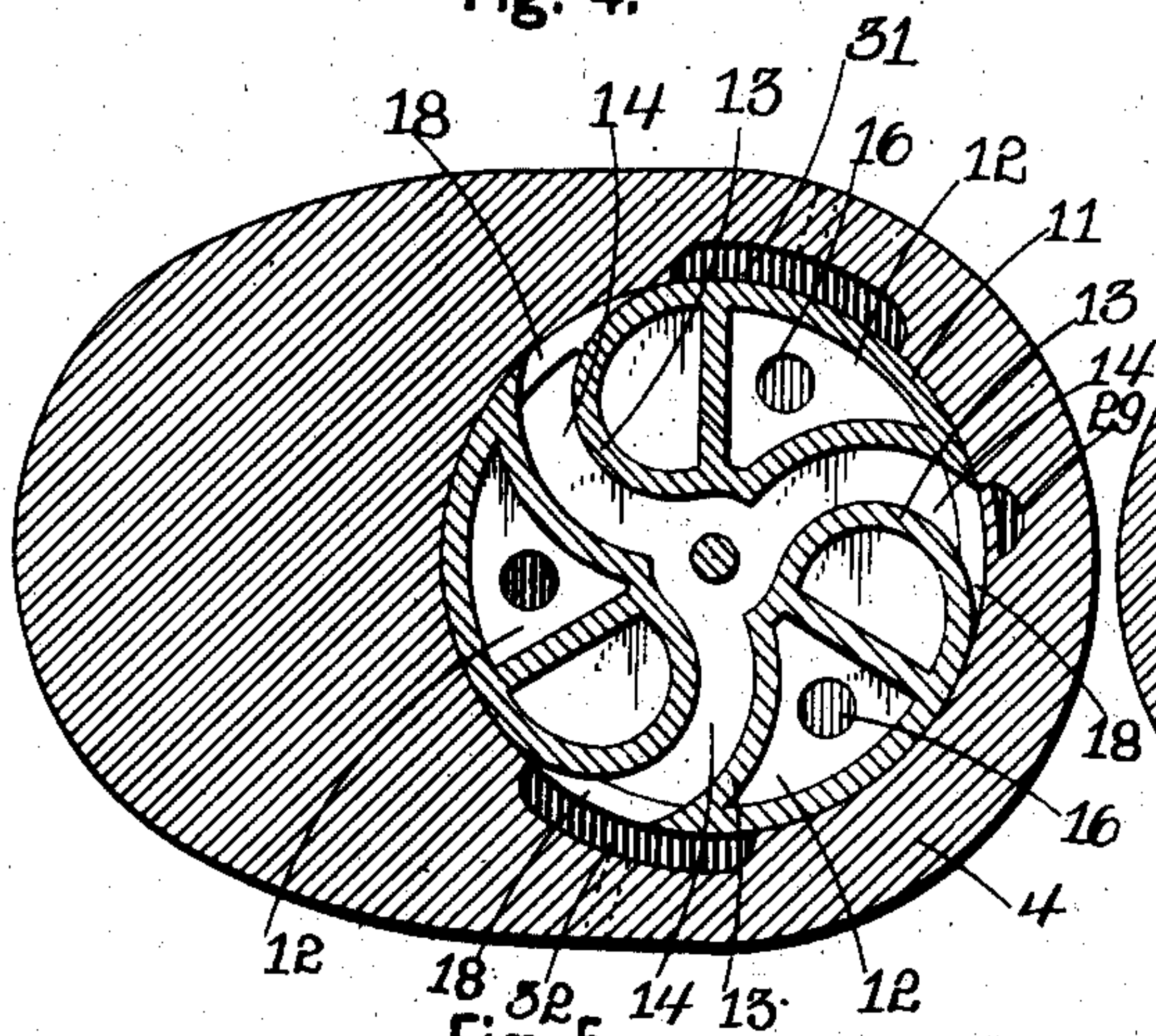


Fig. 7.

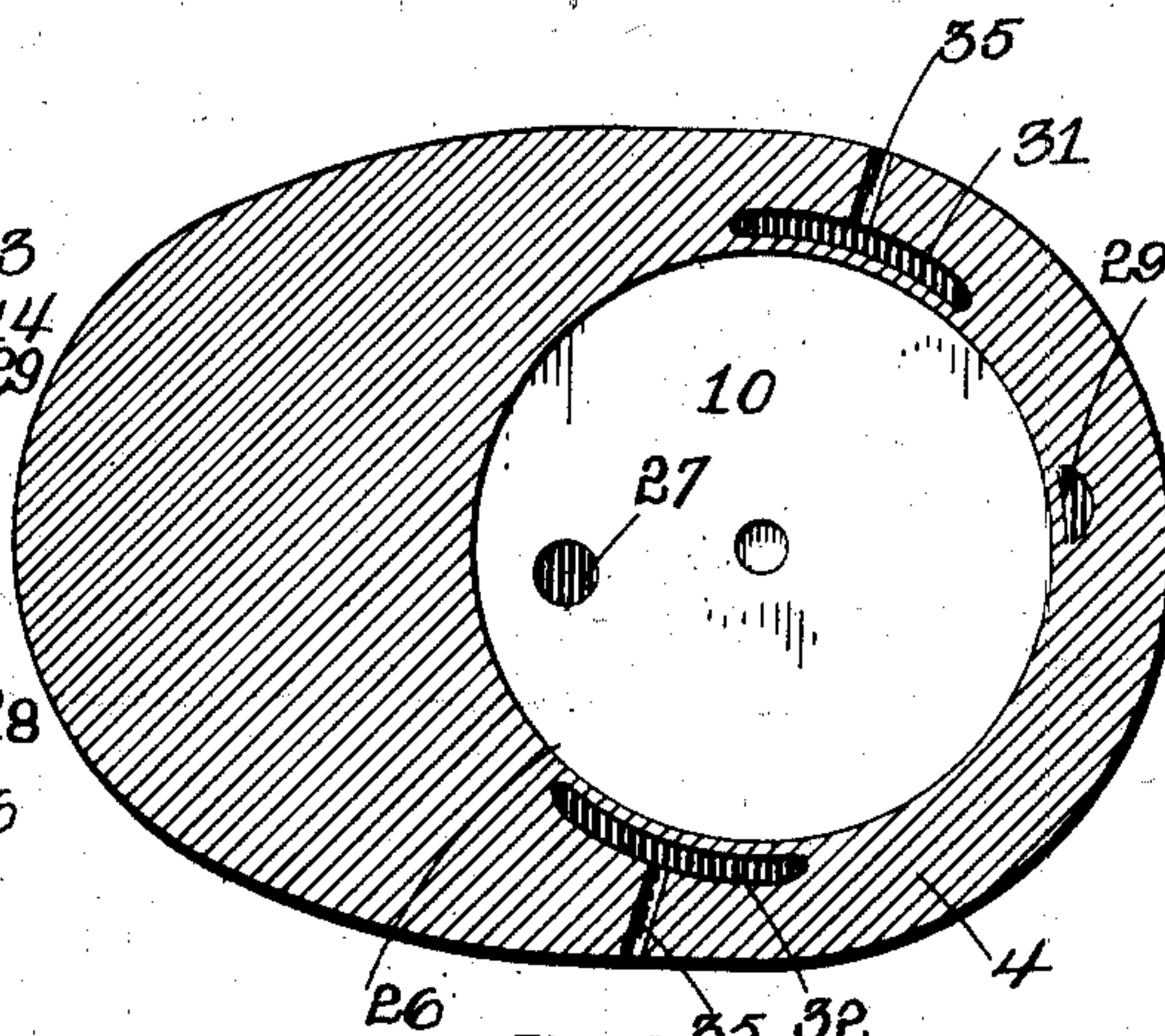


Fig. 5.

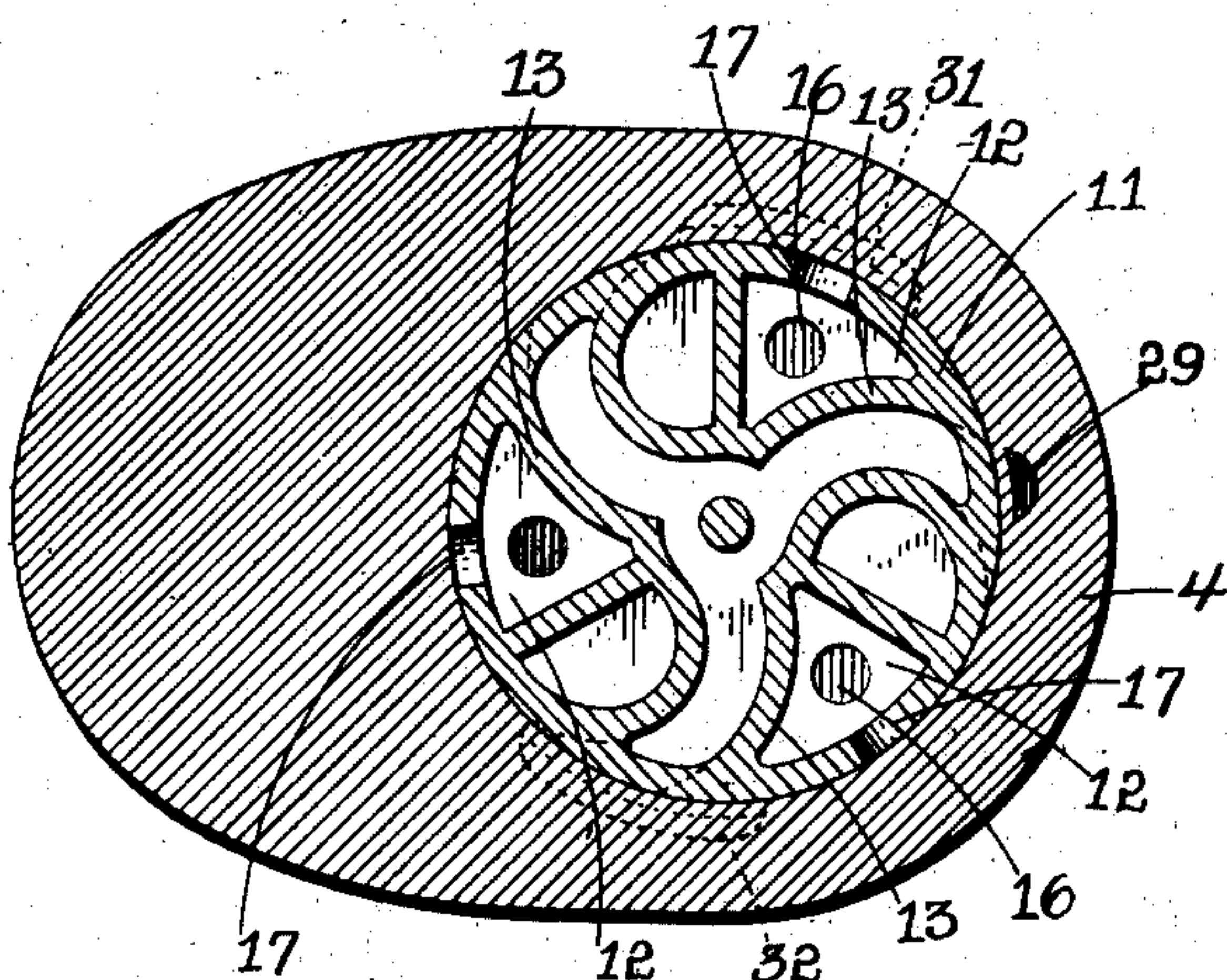


Fig. 8.

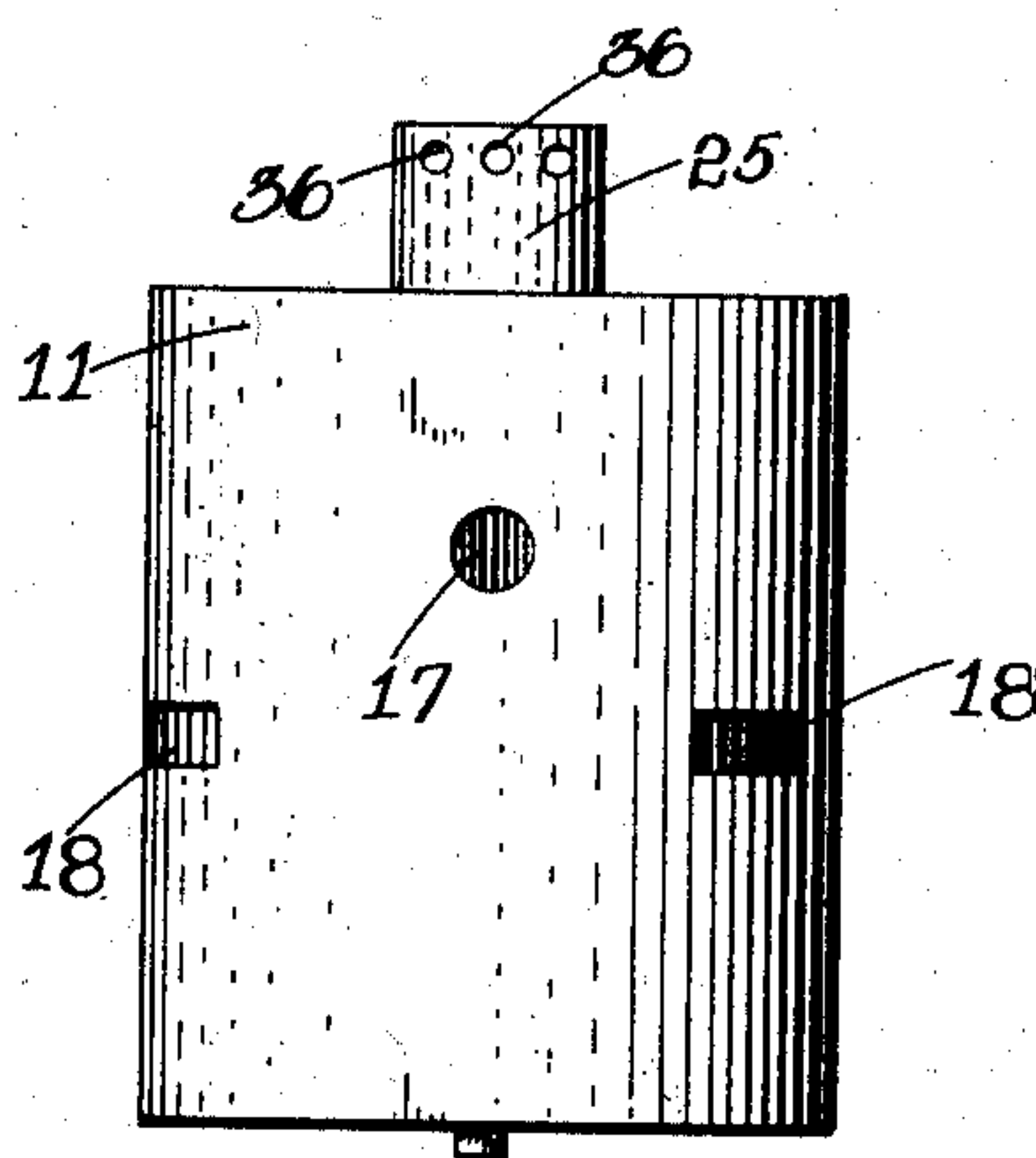
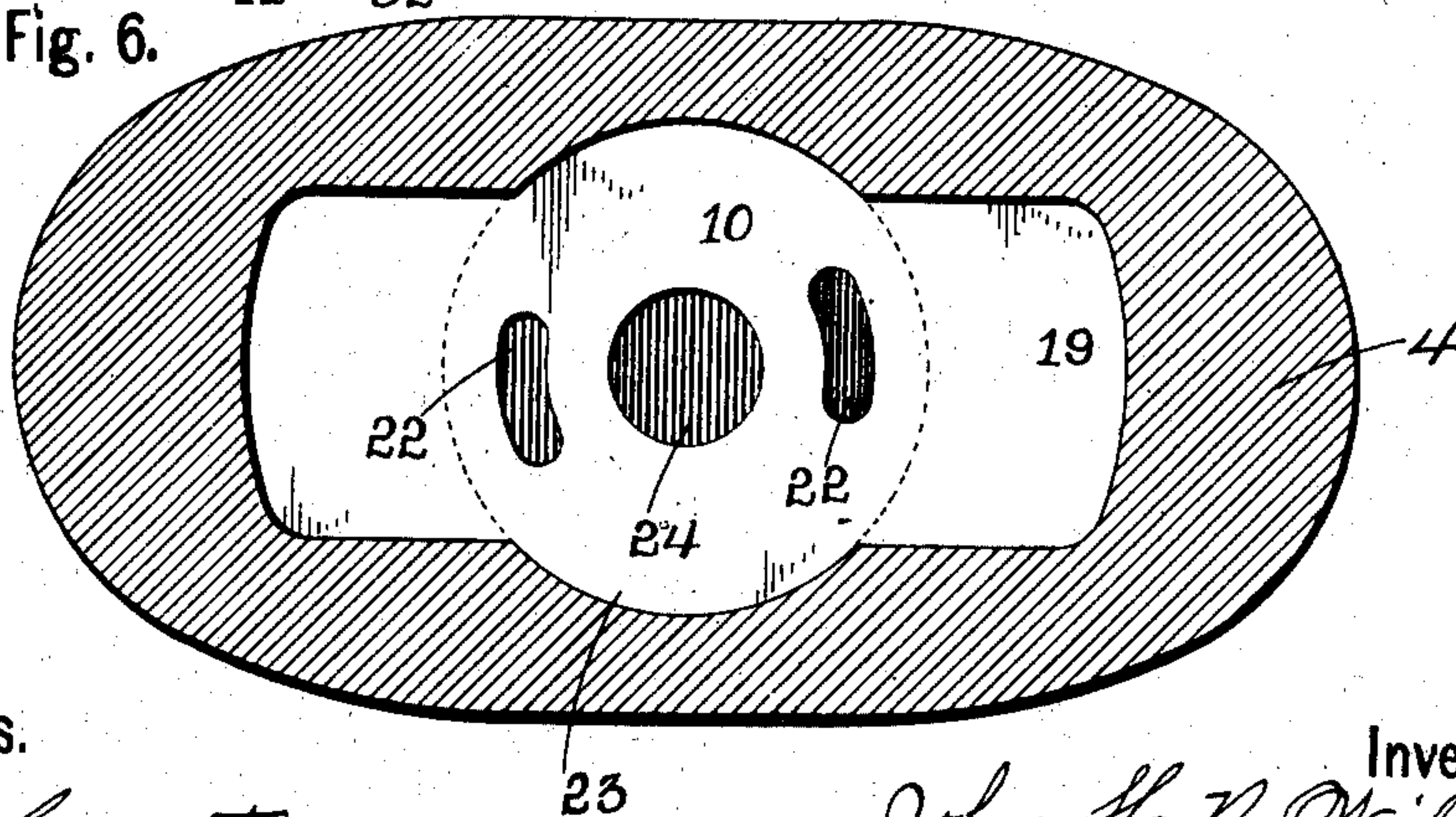


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN H. N. WILSON, OF HONOLULU, TERRITORY OF HAWAII.

DEVICE FOR CUTTING SUGAR-CANE, &c.

SPECIFICATION forming part of Letters Patent No. 706,481, dated August 5, 1902.

Application filed October 17, 1901. Serial No. 78,981. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. N. WILSON, a citizen of the United States, residing at Honolulu, in the Territory of Hawaii, have invented certain new and useful Improvements in Devices for Cutting Sugar-Cane or the Like, of which the following is a specification.

This invention relates to a light portable device for cutting sugar-cane and the like which is operated by power controlled by the operator; and the object of the invention is to provide a comparatively light and easily-carried device for this purpose which can be quickly placed in cutting position and which is operated to sever the cane or the like by power, such as compressed air, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which a preferred embodiment of the invention is shown.

Figure 1 is a side elevation of the device partially in section. Fig. 2 is an end or edge view of the same. Fig. 3 is a detached top view of the tubular rotary device. Fig. 4 is a section on line *a a*, Fig. 1. Fig. 5 is a section on line *b b*, Fig. 1. Fig. 6 is a section on line *c c*, Fig. 1. Fig. 7 is a section on line *d d*, Fig. 1. Fig. 8 is a detached side elevation of the tubular rotary valve device.

In referring to the drawings in detail like numerals designate like parts.

The body of the device is in an elongated form and has a hook 1 at one extreme, which is adapted to be placed behind a stalk of the sugar-cane or other material cut by the same, and an enlargement 2, provided with an opening 3, to afford a hand-grasp at the opposite extreme.

The intermediate portion 4 of the body between the hook and hand-grasp is provided with an air chamber or cylinder 5, in which a piston 6, attached to the cutting-knife 7, is adapted to reciprocate. The piston shaft or rod is of a square, hexagonal, or other equivalent form to prevent rotation, and the knife-blade 7 is provided with a socket in which the lower extreme of the piston-rods fits and is fastened by a pin 8. The opening through which the piston-rod passes is packed by a packing-box 9. Above the air chamber or

cylinder 5 is located a valve-chamber 10, in which a tubular rotary valve device is placed. This valve device is constructed substantially as shown in the drawings (see particularly Figs. 3, 4, 5, 6, 7, and 8) and has a hollow cylindrical body 11, closed at both ends with the exception of certain valve-openings herein-after described.

The interior of the body is divided into three equal-sized compartments 12 by curved walls 13, and these walls are separated from each other to leave passage-ways or exhaust-openings 14, which curve outward from the center of the body.

The top of the valve device is provided with three openings 15, arranged at equal distances, each of which serves as an air-inlet into one of the compartments 12.

The bottom of the valve device is provided with three openings 16, which form air-outlets, and the side of the valve device has three air-outlets 17 and three elongated exhaust openings or ports 18.

The hand-grasp or enlargement 2 is provided with an annular opening 19, which extends longitudinally through the metal surrounding the hand-opening 3, and an opening 20 extends from the opening 19 through a tubular screw-threaded portion 21, to which a tube or pipe extending from a source of compressed air is adapted to be attached. Openings 22 extend downward from the opening 20 through the top wall 23 of the valve-chamber 10. The top wall 23 of the valve-chamber is also provided with a central opening 24, (see Fig. 6,) in which a tubular top extension 25 of the valve device is journaled. The horizontal wall 26, separating the valve-chamber from the air chamber or cylinder, has a single outlet-opening 27, which forms an upper inlet into the air-chamber. The lower air-inlet 28 is near the bottom of the chamber or cylinder, and an opening 29 extends vertically upward from said inlet and bends at 30 to extend through the side wall of the valve-chamber on the same horizontal plane as the openings 17.

Two exhaust passage-ways 31 and 32 extend longitudinally in the intermediate portion of the body, one on each side of the air-

cylinder, and one serves to exhaust the air in the cylinder at the completion of the upstroke and the other to exhaust the air in the cylinder at the completion of the downstroke.

5 The exhaust passage-way or port 31 extends into communication with the air-chamber at or about the point 33, so that the air employed in the downstroke of the piston will have an opportunity to exhaust itself before
10 the piston reaches the lower air-inlet 28.

The air in the lower portion of the air-cylinder below the lower air-inlet forms an air-cushion to relieve the jar on the knife and piston at the termination of the downstroke,
15 being compressed by the downward movement of the piston after it passes the exhaust-opening 33.

The upper exhaust opening or passage 32 extends into communication with the air-chamber at a point about the same distance
20 beneath the upper end of the air chamber or cylinder as the entrance 33 of the lower exhaust-opening is above the lower end of the air chamber or cylinder and serves to exhaust
25 the air in the chamber or cylinder in precisely the same manner at or near the termination of the upstroke of the piston as the lower exhaust-opening does with reference to the downstroke of the piston. The exhaust-air
30 after passing through the valve device finally escapes into the surrounding atmosphere through the tubular top extension 25 and the horizontal opening 36 in the valve device (see Fig. 1) and the opening in the hand-grasp 2.
35 (Shown in dotted lines in Fig. 2.)

An opening or depression 34 is formed transversely to the air-inlet 20, and an angular metal strip 37 is pivoted at one end to the body of the device and has a leaf or gate 38, adapted
40 to slide in the depression 34. This strip is normally maintained in a raised position by a spring 40.

The leaf or gate 38 has a valve-opening 39, which registers with the inlet 20 when the strip
45 37 is depressed by the operator.

The operation of the device is as follows: The strip 37 being depressed, air is admitted through the air-inlet 20 and passes through the angular opening 19, through one of the
50 openings 22, and through one of the openings 15 into one of the compartments 12 in the interior of the valve device. The compressed air then passes through one of the openings 16 in the valve device and the upper air-inlet
55 27 into the air-chamber and forces the piston down. When the piston moves past the lower exhaust-opening 31, the air passes out of the air-chamber through the exhaust-opening into one of the curved passage-ways
60 or exhaust-openings 14 in the valve device and presses against the curved walls of the valve device, thereby partially rotating the valve device and turning it so that the opening 16 in the valve device is moved from its registering position with respect to the upper air-

inlet 27 and shutting off the passage of air into the air-chamber through the upper air-inlet. The same movement of the valve device brings one of the side openings or air-outlets 17 in registering position with the upper extreme 30 of the lower air-inlet and permits the air to pass into the lower portion of the air-chamber and force the piston upward. When the piston is at or near the termination of its upstroke, the air exhausts itself
75 through the upper passage-way or opening 32 in exactly the same manner as described for the downstroke, and the exhaust-air in passing through the valve device turns it a partial revolution, thereby opening the upper
80 air-inlet and permitting the compressed air to again force the piston down. If the force of the exhaust proves too powerful and turns the valve device too rapidly, openings 35 can be made near the upper termination
85 of the exhaust-openings, through which a portion of the exhaust may pass. The size and area of these openings 35 can be regulated so that just the right force will be obtained to operate the valve device at the proper speed.
90 Of course each device will have to be regulated in this respect by itself, as the parts may vary slightly.

The different parts of the device, with the exception of the knife, are preferably made
95 of cast or malleable iron, the knife being constructed of steel.

The operator in cutting sugar-cane or other stalks with this device places the hook portion behind the stalk, and the knife moving
100 outward presses the stalk against the hook and severs it. The device is connected to a compressed-air tank by a rubber tube of some length, so that it can be easily moved about
105 by the operator, and as the knife is reciprocated extremely fast the cutting capacity is large, the hook being moved from one stalk to another as fast as they are severed.

I claim as my invention—

1. In a device for cutting sugar-cane or the like, the combination with an operating-engine having a piston, of a body provided with a hook and a hand-grasp, and a knife attached to the piston of the engine and adapted to operate in connection with the hook to sever
115 the sugar-cane or the like.

2. In a device for cutting sugar-cane or the like, the combination with an engine having a piston, of a body provided with a hook and a hand-grasp at its extremes, and a knife connected to the piston and adapted to operate in connection with the hook, substantially as set forth.

3. A light portable device for cutting sugar-cane or the like having a body provided with
125 a hook at its lower end, a hand-grasp at its upper end and an engine-cylinder, a cutting-knife, a piston having connection with the cutting-knife and operating in the engine-cylinder, and a rotary valve device between
130

the hand-grasp and engine-cylinder, substantially as set forth.

4. A device for cutting sugar-cane or the like comprising a body having a hook adapted to be placed against a stalk to be severed, and a pneumatic engine having a piston carrying a knife adapted to operate in connection with the hook to cut the stalk, substantially as set forth.

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Witnesses:

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