

No. 677,032.

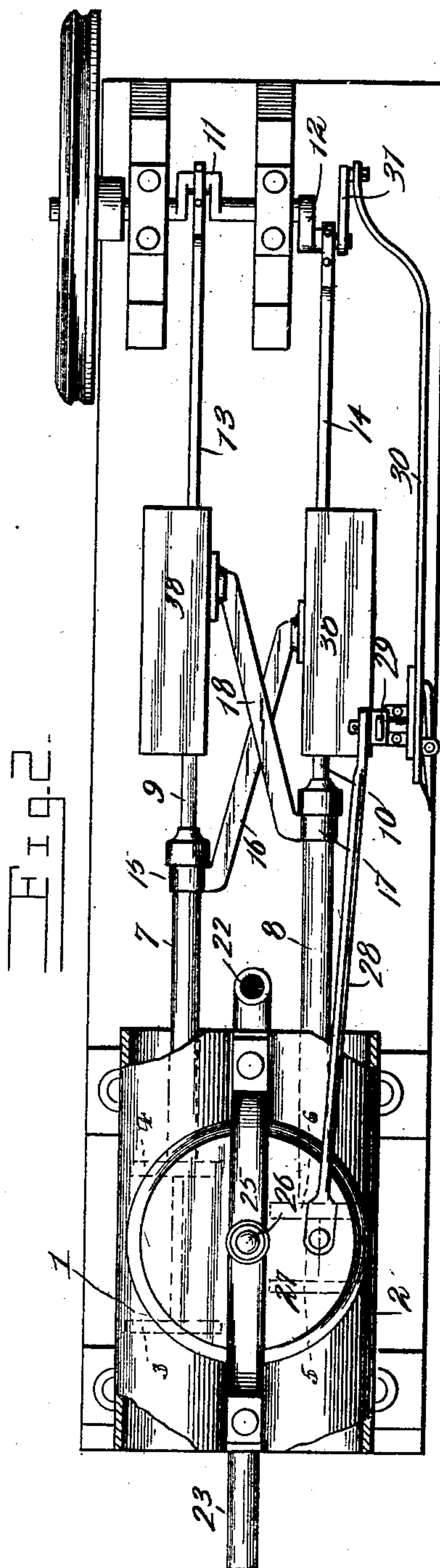
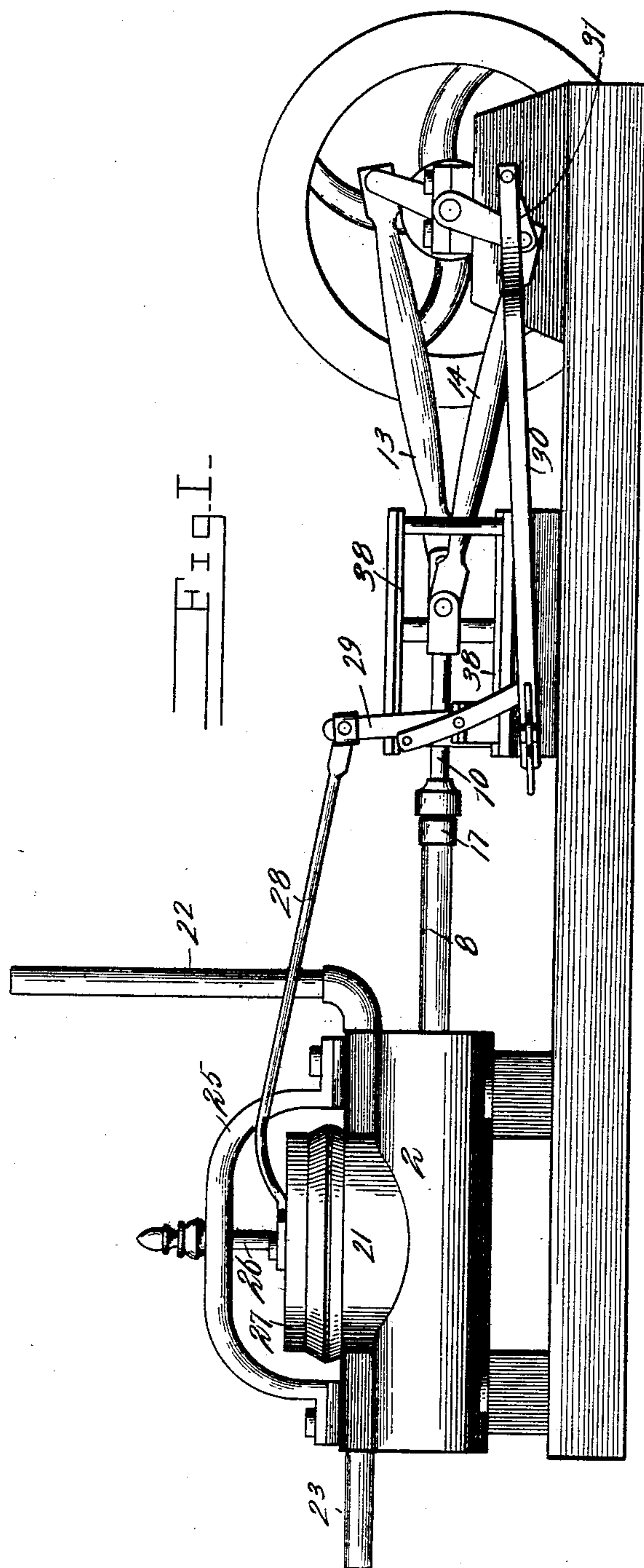
Patented June 25, 1901.

D. H. ISEMINGER.
ENGINE.

(Application filed Sept. 11, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

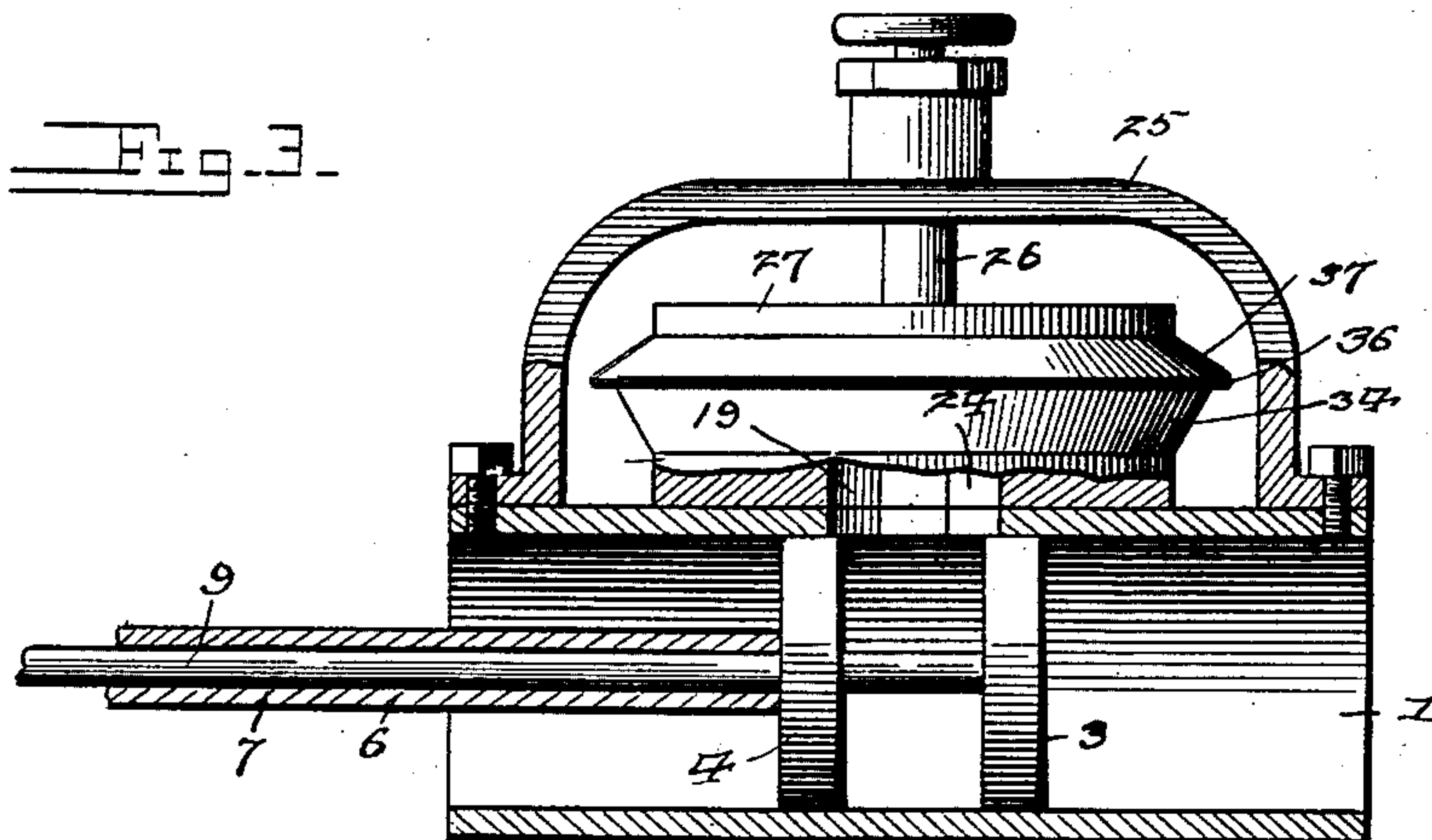


Fig. 5.

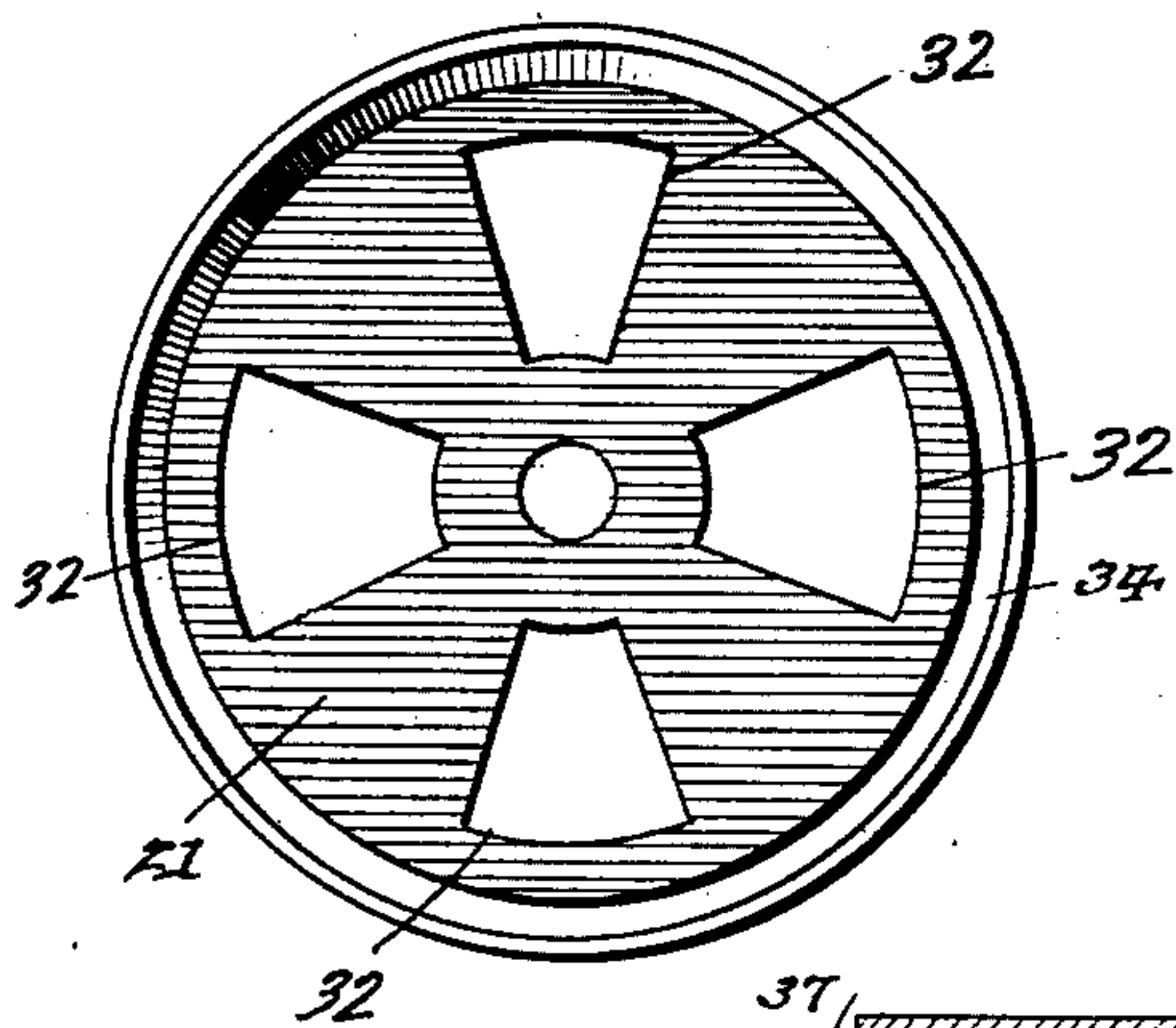


Fig. 6.

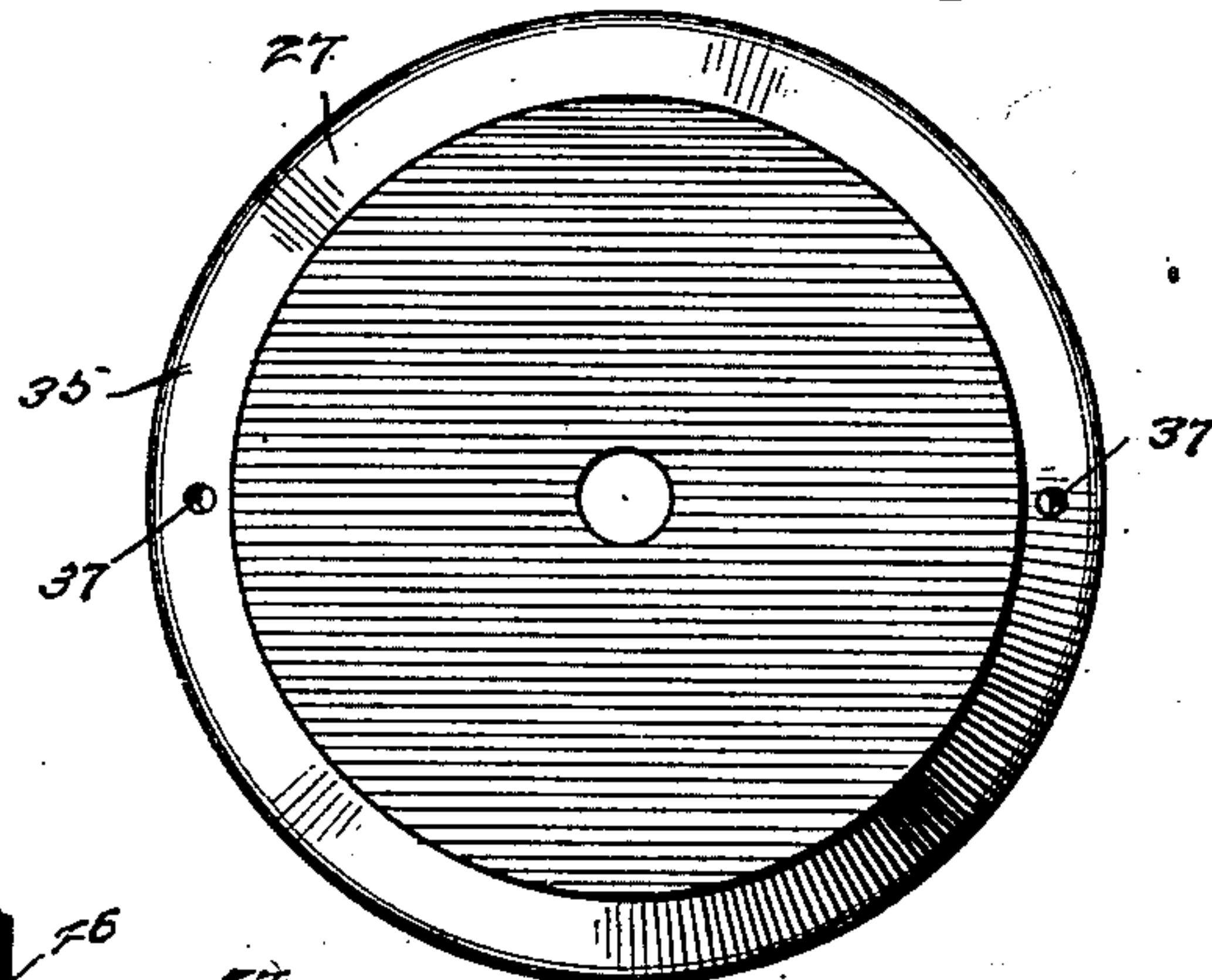
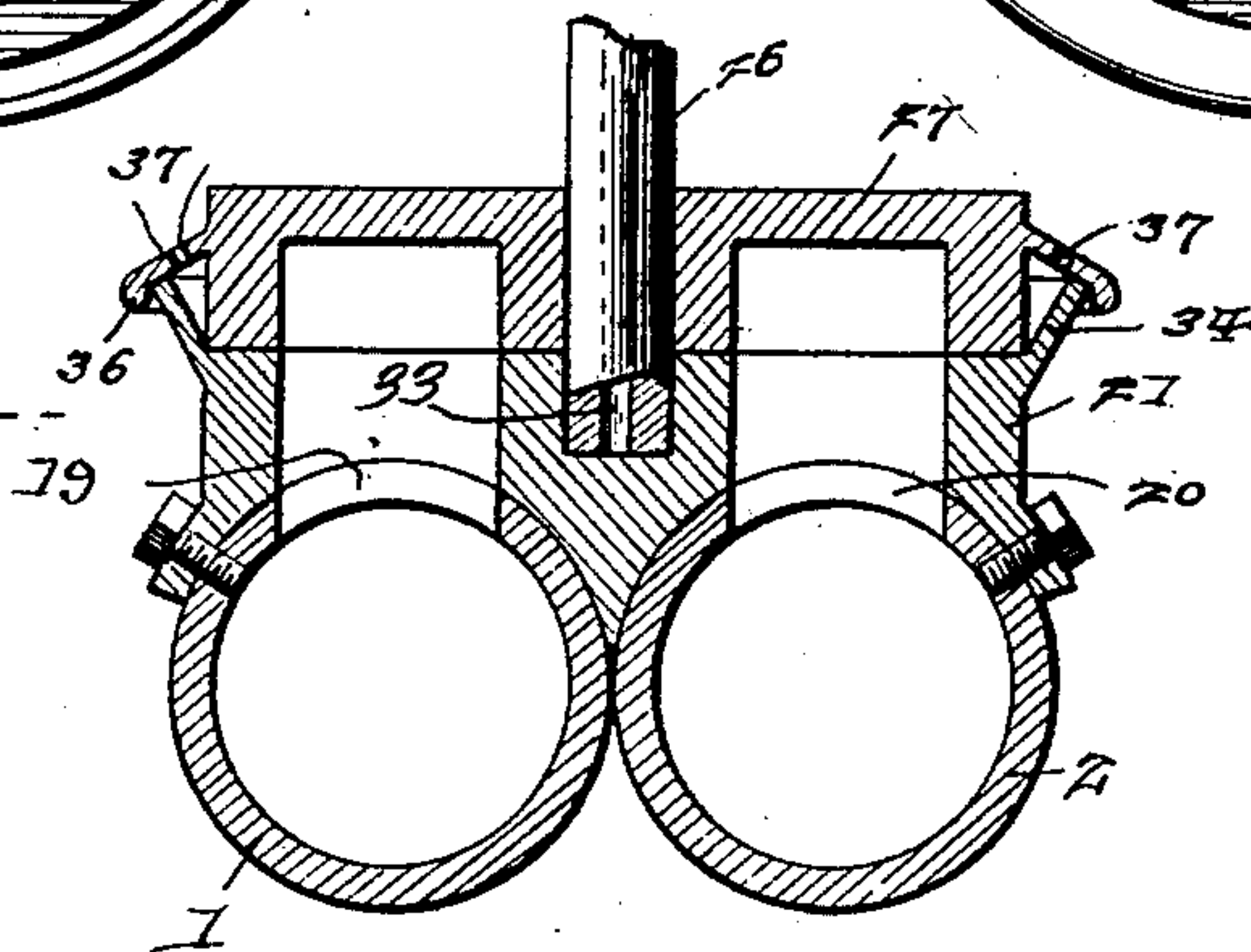


Fig. 4.



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UNITED STATES PATENT OFFICE.

DANIEL H. ISEMINER, OF BLOOMINGTON, ILLINOIS.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 677,032, dated June 25, 1901.

Application filed September 11, 1900. Serial No. 29,704. (No model.)

To all whom it may concern:

Be it known that I, DANIEL H. ISEMINER, a citizen of the United States, residing at Bloomington, in the county of McLean and State of Illinois, have invented a new and useful Reciprocating Engine, of which the following is a specification.

This invention relates to that class of steam-engines in which steam is introduced between the pistons, whereby the full expansive force of the steam is exerted on the main shaft; and the invention particularly contemplates, in combination with the remaining engine mechanism, means for effectively oiling the cut-off valve and rendering the same dust-proof to thereby produce an easy operation of the same and reduce wear on the valve and its seat to a minimum, and a further object is to dispense with the use of cylinder-heads.

The invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed and which constitute features of improvement of the invention disclosed in my Patent No. 195,013, granted to me September 11, 1877.

In the drawings, Figure 1 is a side elevation of an engine embodying the features of improvement. Fig. 2 is a top plan view of the same, showing the cylinder ends broken away to illustrate the disuse of heads. Fig. 3 is a section through the length of one cylinder and a portion of the valve structure above. Fig. 4 is a transverse section through the valve mechanism and the cylinders. Fig. 5 is a top plan view of the valve-seat which is disposed over the cylinders at an intermediate point. Fig. 6 is a top plan view of the valve.

The numerals 1 and 2 designate the two cylinders, 3 and 4 the two pistons in the cylinder 1, and 5 and 6 the two pistons in the cylinder 2, the said cylinders having completely open ends. The pistons 4 and 6 are connected to tubular piston-rods 7 and 8, through which pass solid piston-rods 9 and 10, to which the pistons 3 and 5 are connected. The piston-rods 9 and 10 are attached to crank-arms 11 and 12 on the ends of the main shaft by connecting-rods or pitmen 13 and 14.

The tubular piston-rod 7 is adjustably connected by a sleeve 15 and cross-arm 16 to the

end of the piston-rod 10, and the other tubular piston-rod 8 is likewise adjustably connected by a sleeve 17 and cross-arm 18 to the end of the piston-rod 9, whereby the pistons 3 and 4 are made to move in an opposite direction from the pistons 5 and 6.

The arrangement of the pistons and piston-rods for the two cylinders is such that as the main shaft revolves the pistons 3 and 4 and 5 and 6 are moved in opposite directions and approach each other when opposite the steam-ports 19 and 20, and when thus positioned at the center of the cylinders the cylinder 1 is taking steam or air between the pistons 3 and 4 and the cylinder 2 exhausting steam or air between the pistons 5 and 6. The said steam-ports open out into the cylindrical steam-chest 21, which is horizontally disposed and provided with a steam-induction pipe 22 and exhaust-pipe 23, each communicating with the chest, and the cylinders are also provided with exhaust-ports 24, leading through the chest. The said chest is arranged centrally between the cylinders at a point intermediate of the length of the latter, and thereover a head-yoke 25 is mounted to give bearing to a vertical stem 26, to which is secured a horizontally-disposed disk valve 27. The valve is actuated by a connecting-rod 28, eccentrically attached thereto and to an intermediate link-motion 29, operated by a link-rod 30, running to a crank-arm 31 on one end of the main shaft. The valve-stem and valve have imparted thereto an oscillating or partially-revolving movement of about ninety degrees, and the said valve has four radially-arranged communicating ports 32 therein, arranged at equal distances apart, so that communication is established between the steam-induction port to one cylinder and one of said ports 32, and also between the eduction-port of the other cylinder and another of said ports, and thus continue in alternation. The stem 26 extends downwardly into the center of the middle partition of the chest, as shown by Fig. 4, and has a lubricating-bore 33 extending therethrough full length to feed oil to the lower end of the same. The chest has an upwardly-projecting outwardly-inclined flange 34 surrounding the upper edge portion thereof, and the valve 27 has a downwardly and outwardly projecting cover-flange 35

surrounding the same at an intermediate elevation on the periphery of the same; the said latter flange having a downwardly-projecting guard 36 to provide a close joint with the upper edge of the flange 34, on which it is normally rested. These two flanges form an oil or lubricant trough into which oil is delivered through openings 37 in the flange 35, and the latter flange prevents the entrance of dust and grit into the said trough, and thereby overcomes wear on the valve and chest. The oil is free to feed to the engaging portions of the chest and valve with evident advantages in the operation of the valve and obviating the disagreeable and disadvantageous exterior splashing or outthrow of oil, and also causing an economical use of the latter.

It will be observed that the crank-arms or cranks of the main shaft are reversely arranged for obvious reasons, and the piston-rods and connecting-rods are supported by and slide upon guides 38.

The preferred form of the improved arrangement has been shown and described; but it is obviously apparent that changes in the form, size, proportions, and minor details may be resorted to without departing from the principle of the invention.

Having thus described the invention, what is claimed as new is—

1. In an engine, the combination of a pair of headless cylinders, each provided with two pistons movable outwardly from and inwardly toward each other, a chest centrally located between and communicating with the cylinders and having an outwardly-flaring flange

and a seat, a horizontally-disposed oscillatable valve on the chest having a surrounding downwardly-extending flange to engage the flange of the chest and form an oil-trough, a vertical stem to which the valve is attached having its lower portion rotatably bearing in the seat of the chest and provided with a vertical oil-feeding bore entirely therethrough to lubricate the lower end thereof, and connecting devices between the stem and the main shaft of the device for operating the valve.

2. The combination of two cylinders with their ends completely open, two pistons in each cylinder which move inwardly toward and outwardly from each other and having solid and tubular piston-rods, the tubular piston-rods being connected to the solid ones and the latter to the main shaft, a chest between and communicating with the cylinders, an oscillatable horizontally-disposed valve on the chest having a surrounding downwardly-extending flange, the said chest having an upwardly and outwardly flaring flange to engage the flange on said valve, to thereby form an oil-trough, and connecting devices between the said valve and the main shaft of the device for operating the same.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

DANIEL H. ISEMINGER.

Witnesses:

L. D. WELCH,
C. C. WAGNER.