

No. 652,729.

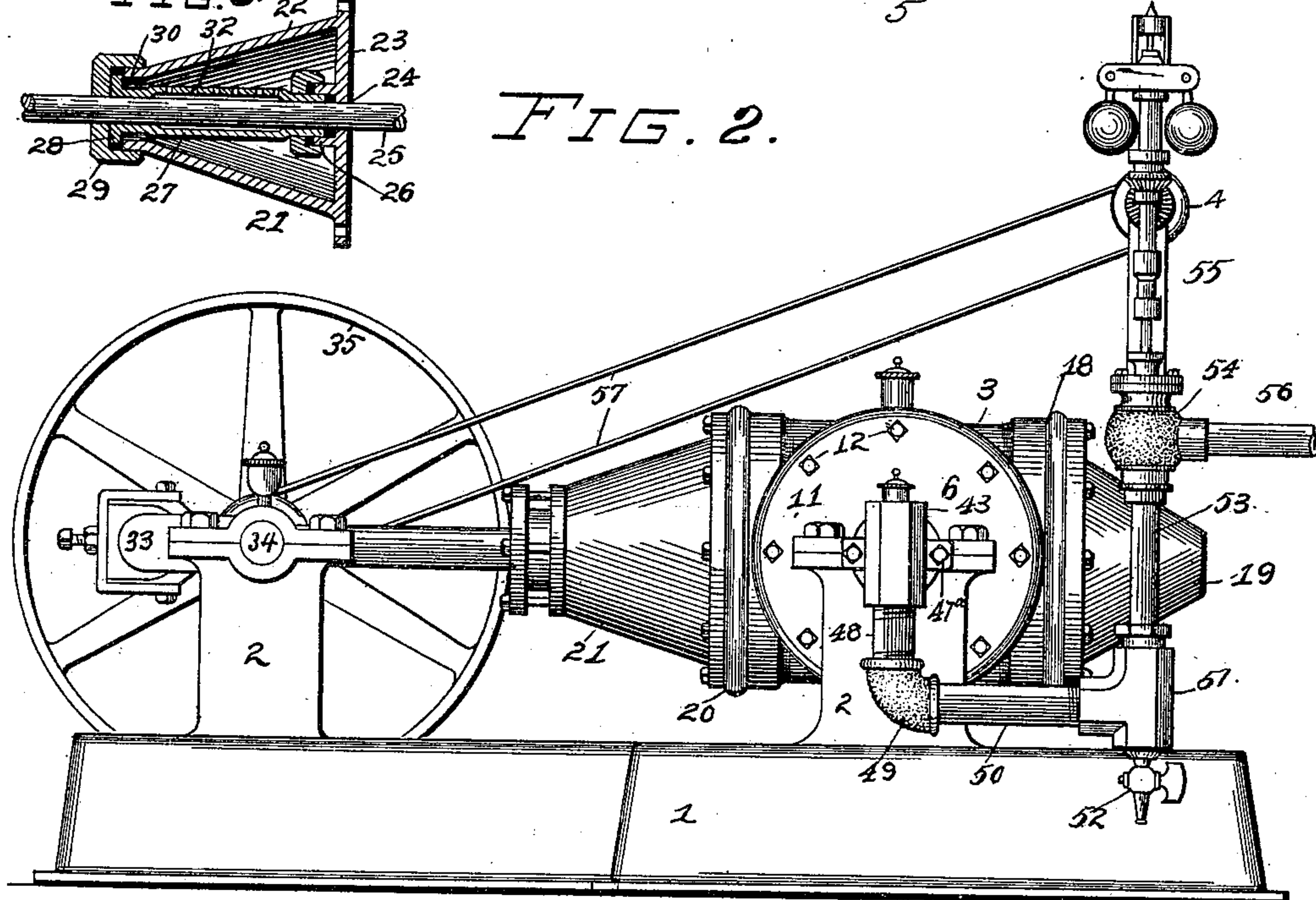
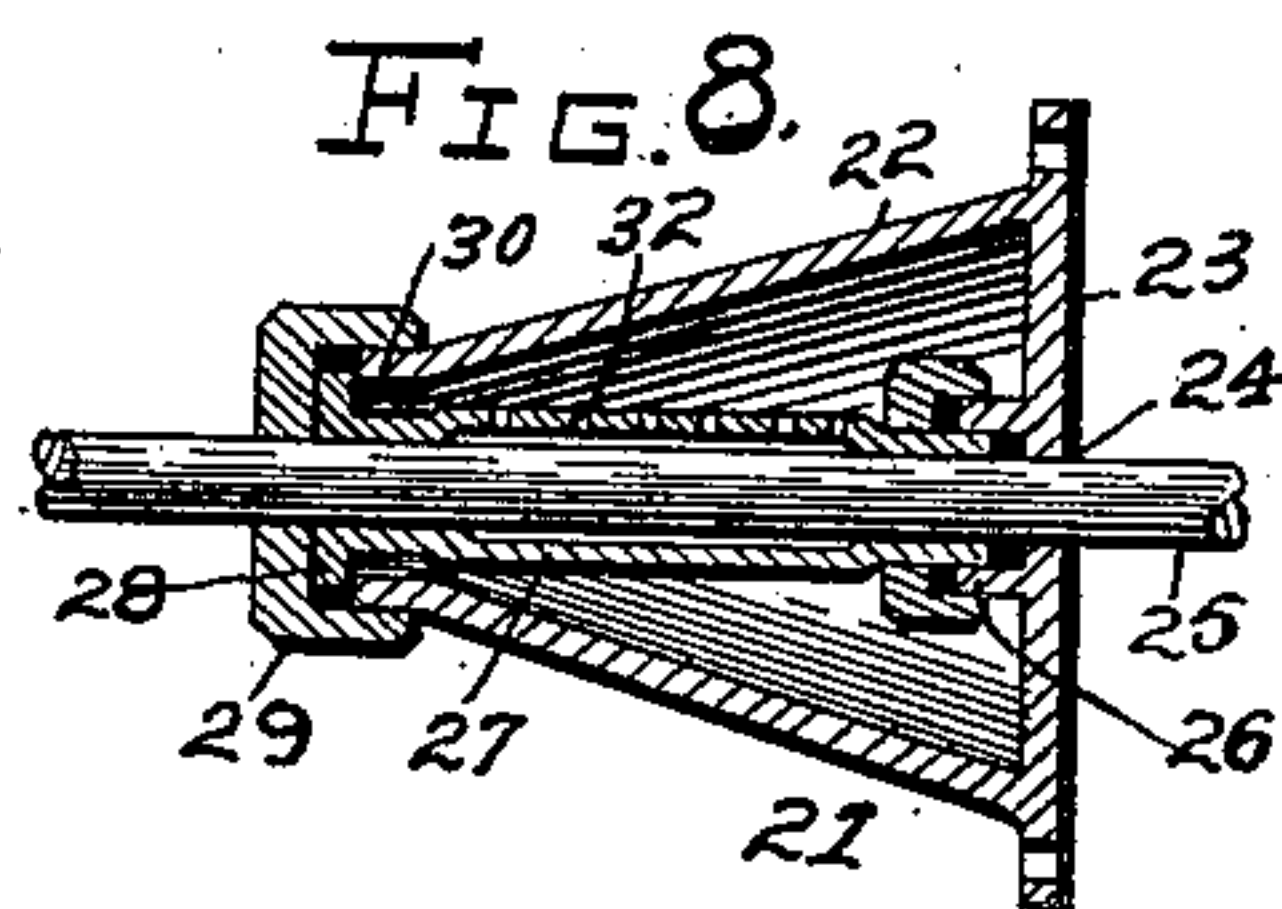
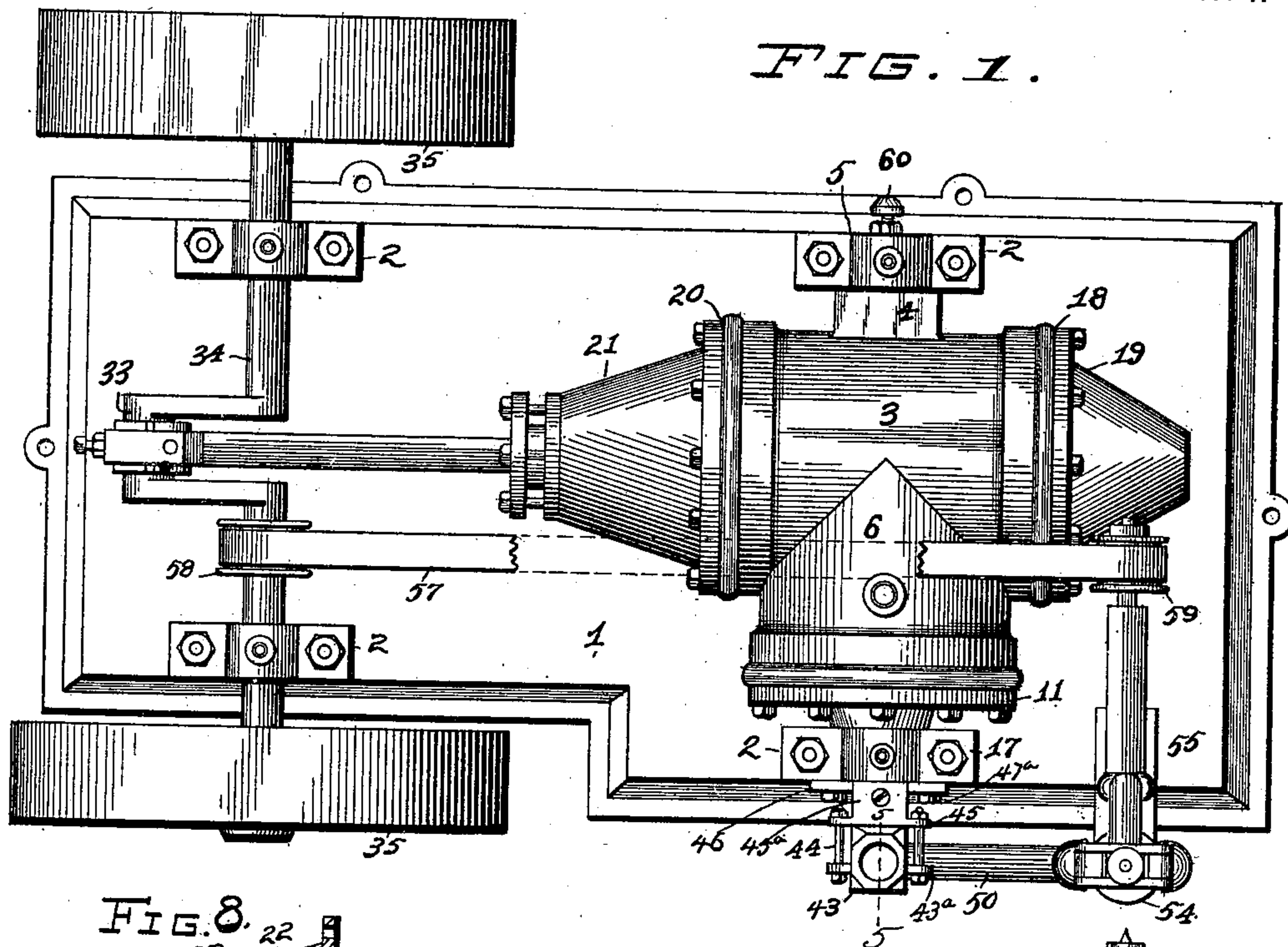
D. J. FILKINS.
ENGINE.

Patented June 26, 1900.

(Application filed Aug. 21, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Attest
M. Smith
Alfred A. Eicher

Inventor:—
Daniel J. Filkins.
By Nigam Longan Atty's.

No. 652,729.

Patented June 26, 1900.

D. J. FILKINS.
ENGINE.

(Application filed Aug. 21, 1899.)

(No Model.)

2 Sheets—Sheet 2.

FIG. 3.

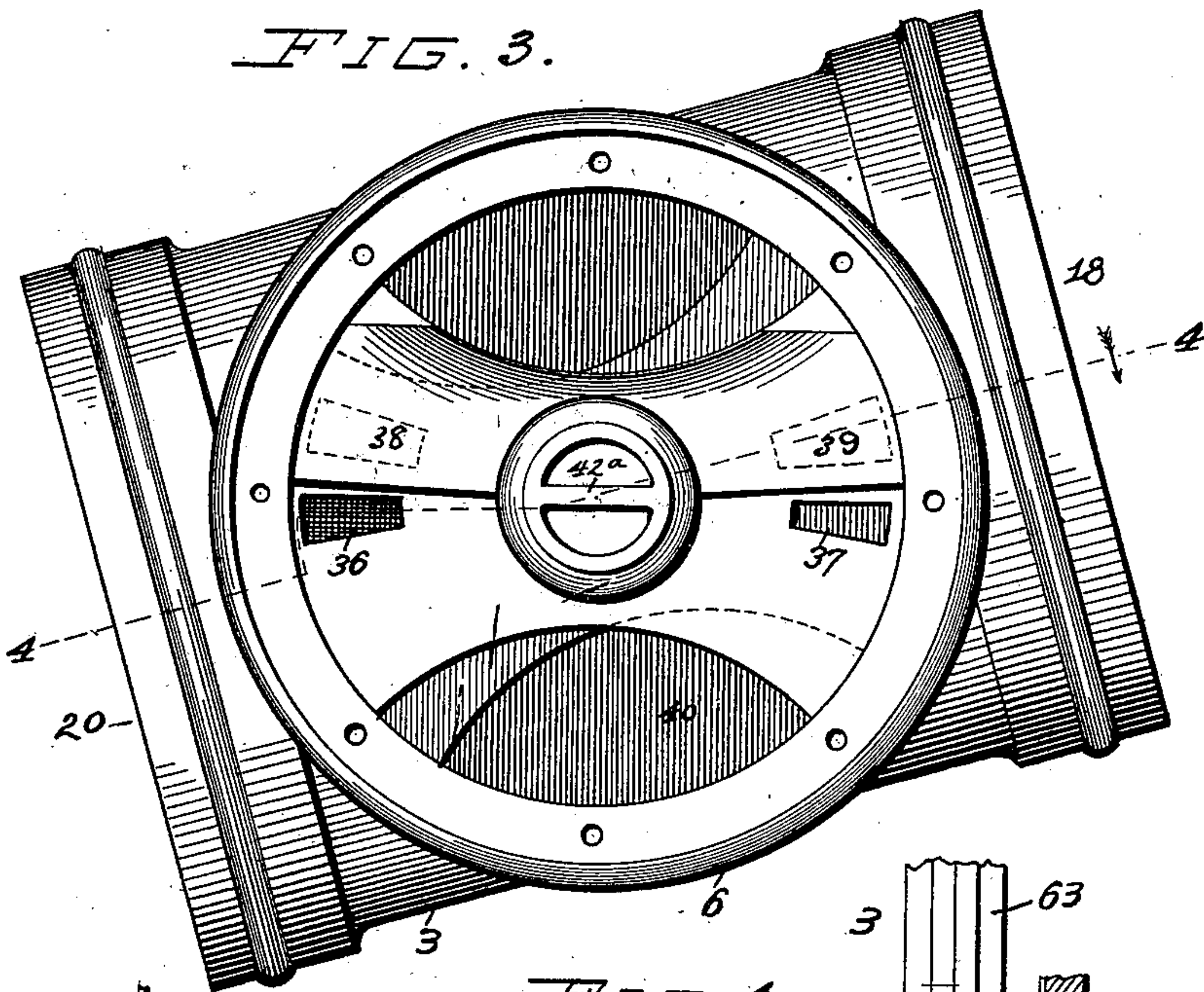


FIG. 4.

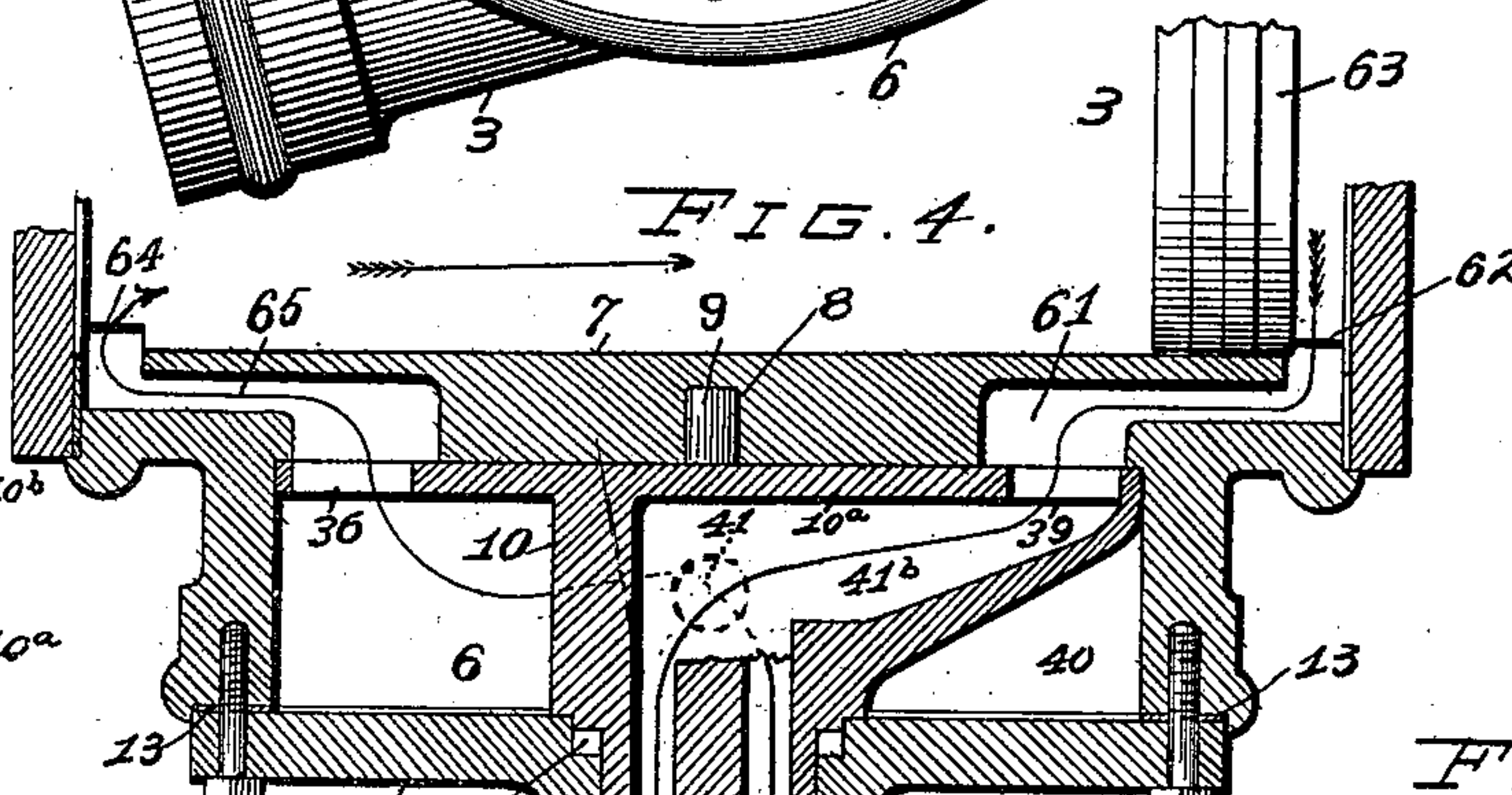


FIG. 9.

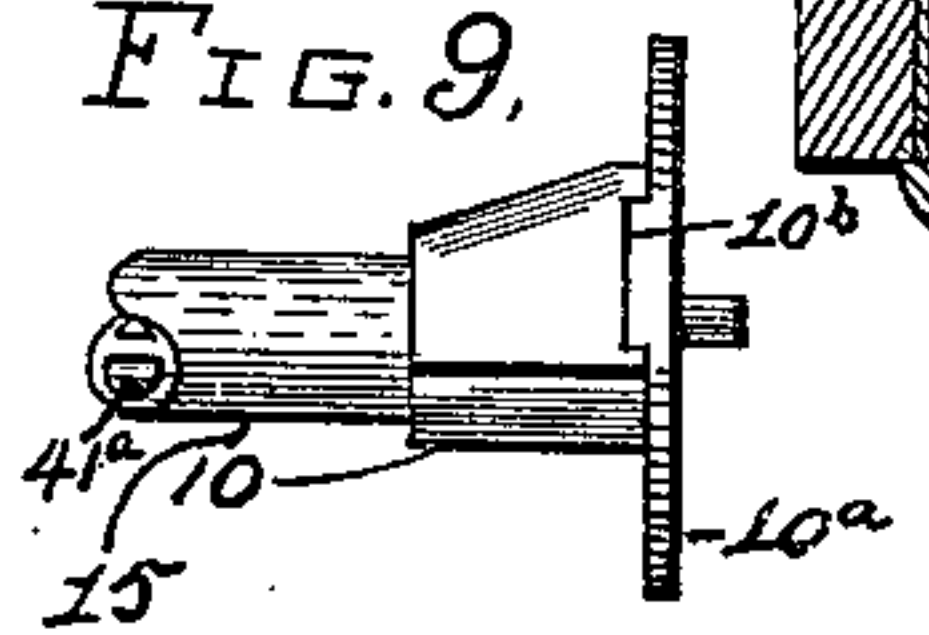


FIG. 5.

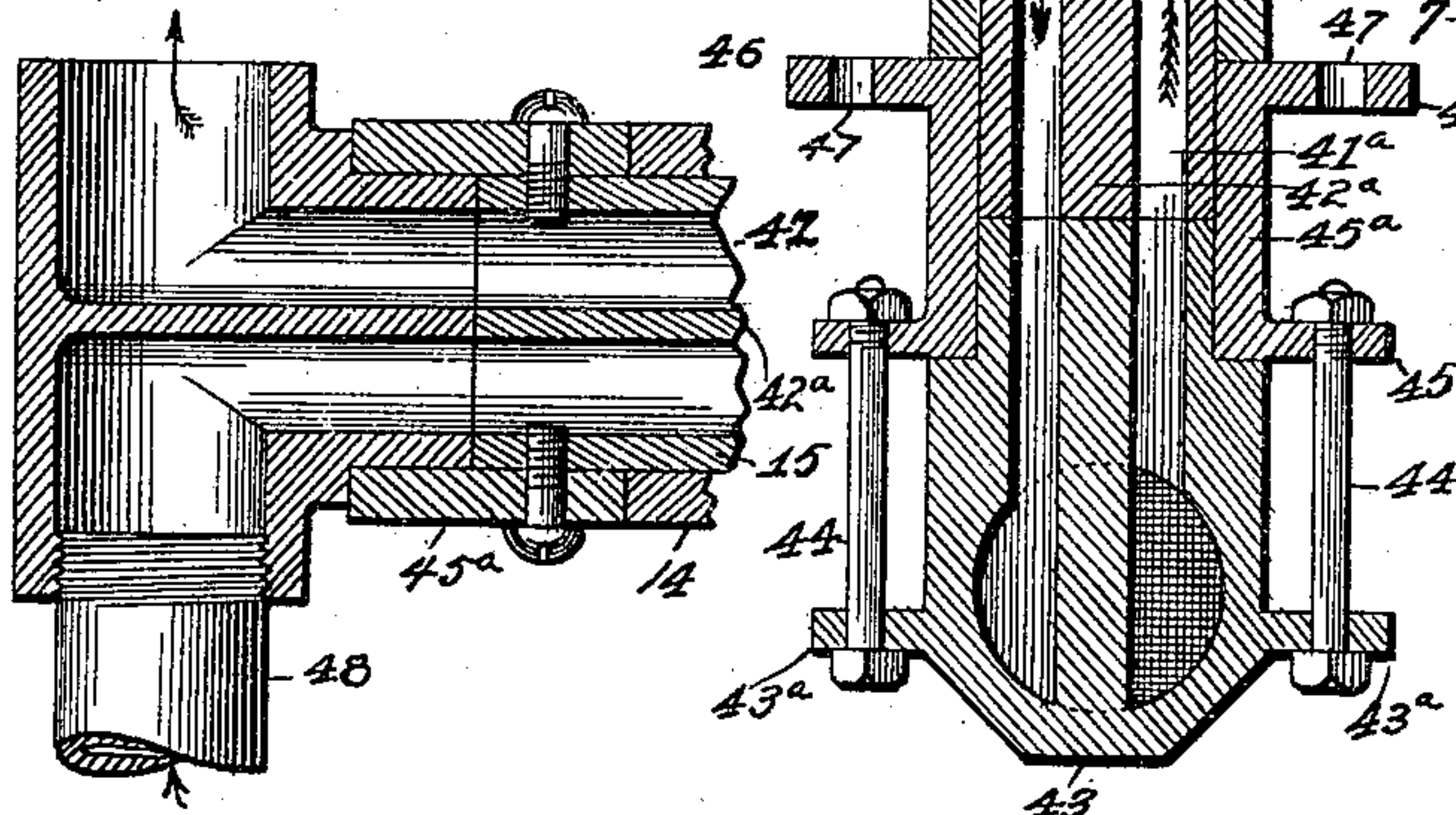


FIG. 6.

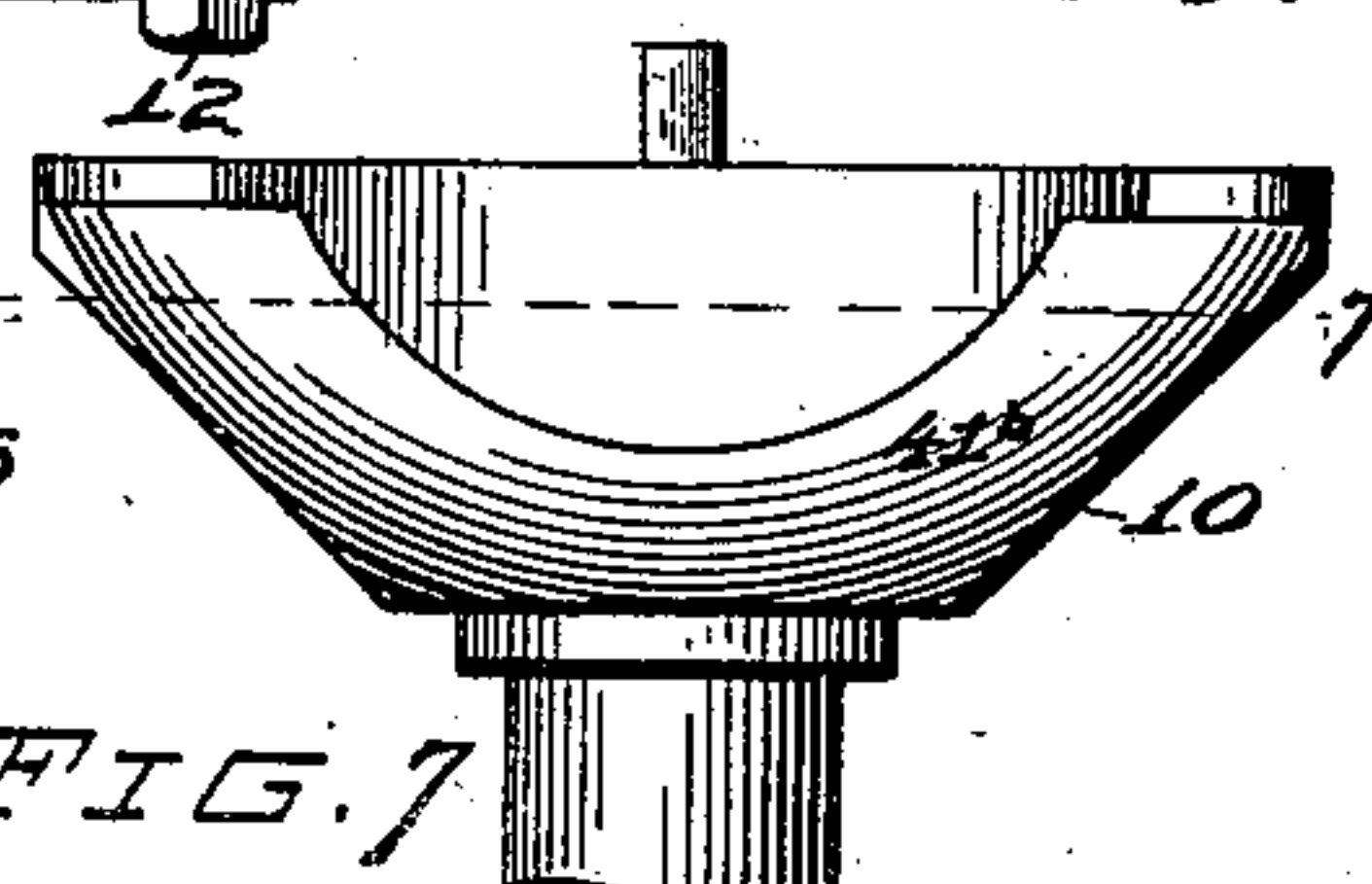
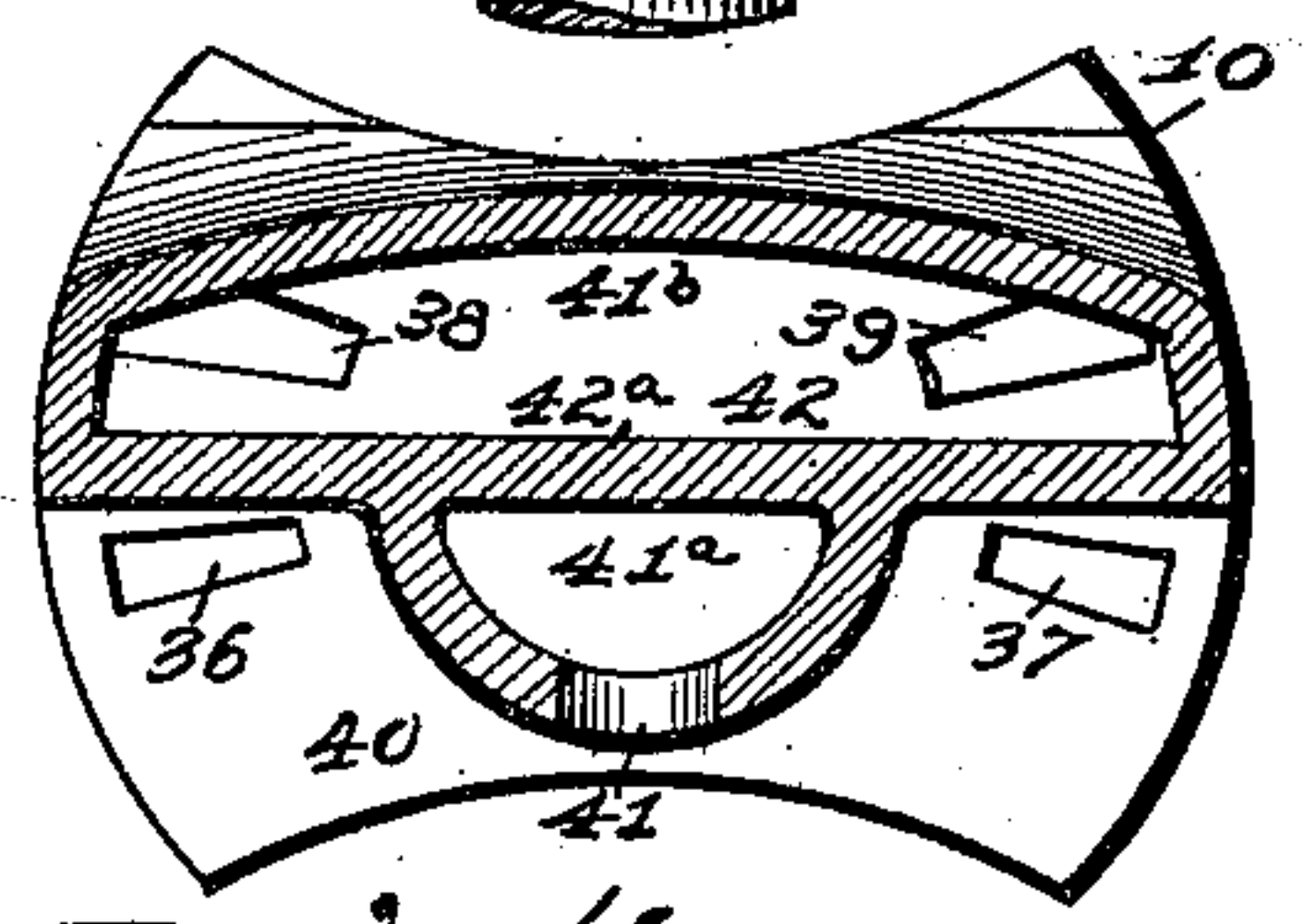


FIG. 7.



Attest
M. Smith
Alfred A. Eicks

Inventor
Daniel J. Filkins
By Higdon & Logan Attys.

UNITED STATES PATENT OFFICE.

DANIEL J. FILKINS, OF ST. LOUIS, MISSOURI.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 652,729, dated June 26, 1900.

Application filed August 21, 1899. Serial No. 727,913. (No model.)

To all whom it may concern:

Be it known that I, DANIEL J. FILKINS, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to engines; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

The principal feature of this engine is the valve of peculiar construction, as shown, said valve being held in a rigid position within the steam-chest and is provided with a horizontal partition, and the upper half of the main plate of the valve is housed in, and the ports in the upper half of this housed-in portion are exhaust-ports, the ports in the lower half being the steam-inlet ports. The right-hand end of the cylinder is weighted in order to equalize the weight of the piston-rod. Consequently the entire cylinder oscillates in its bearings very easily and with practically no vibration and is always balanced on the first and last quarter of each stroke of the engine and at the same time furnishing extra weight at point of wrist-pin on crank-shaft while the piston is passing each center.

Figure 1 is a plan view. Fig. 2 is a side elevation with the balance-wheel removed. Fig. 3 is a side elevation of the cylinder of my improved engine looking directly into the steam-chest thereof, the head of said steam-chest being removed. Fig. 4 is a horizontal sectional view taken approximately on the line 4 4 of Fig. 3. Fig. 5 is an enlarged detail sectional view taken approximately on the line 5 5 of Fig. 1. Fig. 6 is a plan view of the form of valve of which I make use in carrying out my invention. Fig. 7 is a vertical sectional view taken approximately on the line 7 7 of Fig. 6. Fig. 8 is a vertical sectional view of the front head of the cylinder, showing the bearing and oil-receptacle for the piston-stem. Fig. 9 is a side view of the valve, drawn to a small scale, showing the manner in which the valve face-plate is applied thereto. 1 is a base having formed integral therewith bearing-uprights 2, each supporting a journal-bearing, an oscillating cylinder 3,

having at its one side an integral projecting bearing 4, which is supported in a journal-box 5, formed on the top of one of said up-rights 2. Opposite to said bearing 4 on said cylinder 3 is formed integral a steam-chest 6, divided from the cylinder by a partition 7, forming a part of the cylinder and having in its center a bore 8, in which is to engage a pin 9, formed on the stationary valve 10. The steam-chest is provided with a head 11, secured thereto by bolts or studs 12 and held steam-tight by means of packing material 13, placed between the head and contact edge of said chest. The head is provided with a right-angular circular projection 14 of sufficient size to fit snugly over a combined valve supply and exhaust pipe 15 and held air and steam tight by packing material 16, (see Fig. 4,) placed between said projection and shoulder of said valve. This projection 14 is mounted and adapted to oscillate in a journal-bearing 17, mounted upon one of said up-rights 2.

To the end 18 of the cylinder I provide a cone-shaped head 19, constructed of solid material, and it is held thereto by bolts in the usual manner and designed to provide extra weight at said end when the piston-head is past the center in said end of the cylinder to aid in oscillating the same at an upward angle, assisting the piston to pass its center on the crank-shaft. To the end 20 of said cylinder I provide a head 21, which is also cone-shaped in form, but constructed as shown in the sectional view, Fig. 8, consisting of a hollow shell 22, separated from the cylinder-space by a wall 23, in which is formed an opening 24 for the admission of the piston-stem 25. Within the shell and secured to the partition 23 is a stuffing-box 26 for carrying packing material, and communicating therewith is a gland 27, extending horizontally from said stuffing-box to the end of said shell and having a projecting flange 28, in which is to come in contact a screw-cap 29, also forming a stuffing-box, and is applied to the end 30 of said shell. The gland 27 has a portion of itself hollowed to a larger diameter than the piston-stem 25 and is provided with a plurality of apertures 32, through which oil is adapted to pass from the shell 22, acting as an oil-receptacle, down into communication with the piston-stem 25 for

lubricating the same. The object of this gland is for the purpose of making a steam and oil tight bearing upon said piston-stem, and it is tightened by means of the cap 29, coming in
 5 contact with the flange 28, pressing it inwardly against the packing material placed in the stuffing-box 26, and also acts as a guide and support for the piston-stem. The piston-stem 25 serves as a connecting-rod and is con-
 10 nected direct to the crank-shaft 33, forming part of the driving-shaft 34, held in journal-bearings formed on the uprights and operating drive and balance wheels 35.

Referring to Figs. 4 and 5, the stationary
 15 valve 10 has a face-plate 10^a, provided with a tenon 10^b, extending across its entire width, and is for the purpose of allowing the steam in the steam-chest to press against said plate, making a tight joint between said plate and
 20 partition 7. The tenon 10^b will allow said plate to act, yet prevent same from turning. The plate 10^a has provided in its face two steam-ports 36 and 37 and two exhaust-ports 38 and 39, the exhaust-ports being formed
 25 through the tenon 10^b. In this manner the steam cannot gain access into the exhaust-ports between the plate 10^a and valve 10. The steam-ports communicate with the space 40 of the steam-chest, which is supplied with
 30 steam through an opening 41, formed in the bottom of the pipe 15, communicating with the steam-supply passage 41^a, located at the bottom, and the exhaust-ports open into a Y-shaped duct 41^b, formed in said valve and ter-
 35 minates in the pipe 15, having its exhaust-passage 42 at the top. Said passages of the pipe 15 are separated from each other by a horizontal division-wall 42^a.

The end of the pipe 15 communicates with
 40 a T-coupling 43, having ears 43^a, (see Figs. 4 and 5,) which is held by means of bolts 44, passing through said ears and through a flange 45, formed on a collar 45^a, passing around the pipe 15 and a portion of the T-
 45 coupling 43, and is provided with a flange 46, having apertures 47, by which said flange is secured to the standard 2 by means of bolts 47^a. (See Fig. 2.) The T 43 has passages
 50 arranged to communicate and be in alinement with the passages 41^a and 42, and to the bottom of said T is connected the steam-supply pipe 48, passing downwardly and con-
 55 nected to an elbow 49, connecting said pipe with the pipe 50, having at its end a T 51, carrying a blow-off or air cock 52. To the top of the T 51, by means of a stuffing-box, is held a pipe 53, carrying a governor-valve 54, which supports the governor and its mech-
 60 anism 55. To this valve 54 is connected a pipe 56, which leads to the boiler. The governor mechanism is operated by means of a belt 57, passing over a pulley 58, located upon the driving-shaft 34, and over a pulley 59, mounted upon the shaft of the governor
 65 mechanism.

The journal-bearing 5 is provided with an adjusting mechanism 60, which comes in com-

munication with the integral projection 4 and is for the purpose of adjusting the cylinder and steam-chest in close communication with
 70 the stationary valve 10, bringing their contact-faces in a steam-tight connection.

The operation of my improved engine is as follows: When it is desired to start the en-
 75 gine, the steam-valve is operated, which will allow the steam to pass through the pipe 56, through the governor-valve, downwardly through the pipe 53, T 51, and thence through the pipe 50, and upwardly through the pipe 48 into the T-coupling 43, through its bottom
 80 port, which is in alinement and communicates with the passage 41^a of the pipe 15, passing, as indicated by the arrow in Fig. 4, down through the opening 41 into the space 40 of the steam-chest, through the port 36 into the port
 85 65, formed in the partition 7 of the cylinder, and through the port-opening 64 into the cylinder against the piston-head 63, driving the same to the opposite end of said cylinder. The steam which is in the cylinder in said
 90 opposite end is then forced by the piston-head through the port-opening 62 in the opposite end of the cylinder, through the port 61 in the partition 7, and will pass through the port 39 into the Y-shaped duct 41^b, as indi-
 95 cated by the arrow, through the passage 42 into the exhaust-pipe, which is to be located on the top of the T-coupling 43. After the piston-head has reached the opposite side the steam passes from the space 40, supplied by
 100 the passage 41^a, by means of the opening 41, through the port 37 into the port 61, and through the port-opening 62, pressing against said piston-head, bringing it into the position opposite that shown in Fig. 4, and the ex-
 105 haust is then driven through the port-opening 64, through the port 65, through the opening 38 into the Y-shaped duct 41^b, into the exhaust-passage 42, and out. The ports of the partition 7 of the cylinder alternately
 110 come in communication with the valve-ports 36 and 37 and exhaust-ports 38 and 39 by means of its oscillating action, which can be seen in Fig. 3.

The engine may be reversed by reversing
 115 the valve mechanism, which will place the supply-pipe on the top and the exhaust at the bottom. This can readily be accomplished by loosening the bolts 47, which will then allow the operator to reverse the entire valve
 120 and T-coupling 43 and entire cylinder by reversing the heads, and when the opposite openings of the flange 47 come in communication with the opposite openings in the journal-box the bolts are then secured therein,
 125 and in this manner the engine is reversed.

I claim—

1. An engine of the class described having a cylinder provided at its one end with a solid cylinder-head and its other end with a hood
 130 composed of a hollow shell for carrying oil and for acting as a guide for the piston-rod, substantially as specified.

2. An engine of the class described having

a cylinder provided at one end with a hood composed of a hollow shell for carrying oil and for acting as a guide for the piston-rod, and a gland formed in said shell around the piston-rod for regulating the flow of oil thereon and for supporting the packing material to prevent leakage, substantially as specified.

3. An engine of the class described having a cylinder, a steam-chest formed integral with said cylinder, a stationary valve mounted in said steam-chest and held therein by a cap, said cap secured to the steam-chest and acting as a bearing for said cylinder, a like bearing formed on said cylinder opposite said cap and supported in a bearing, said cylinder and steam-chest connected direct to the drive-shaft of the engine, and said valve provided with steam and exhaust ports which communicate with like ports in said steam-chest, substantially as specified.

4. An engine of the class described having a cylinder, a steam-chest formed integral with said cylinder, a stationary valve mounted in said steam-chest, said valve provided with steam and exhaust ports which communicate with like ports in said cylinder, and provided with a divided hollow stem acting as the steam and exhaust passages of said valve, substantially as specified.

5. An engine of the class described, having a cylinder provided at its one end with a solid cylinder-head and its other with a head composed of a hollow shell for carrying oil and

for acting as a guide for the piston, a gland formed in said shell around the piston for regulating the flow of oil thereon and for supporting the packing material to prevent leakage, a steam-chest formed integral with said cylinder, a stationary valve mounted in said cylinder and held therein by a cap, said cap secured to the steam-chest and acting as a bearing for said cylinder, a like bearing formed on said cylinder opposite said cap and supported in a bearing, said cylinder and steam-chest oscillating upon said bearings and carrying a piston connected direct to the drive-shaft of the engine, said valve provided with steam and exhaust ports which communicate with like ports in said steam-chest, said valve provided with a divided hollow stem acting as the steam and exhaust passages of said valve, said valve held stationary by a pin formed in its face and by a casting secured to the hollow stem, said casting provided with like ports, and a means for supplying steam to said valve, said steam operating the piston in said cylinder by the alternate communication of the ports of said valve and steam-chest with the oscillatory action of said cylinder, substantially as specified.

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

DANIEL J. FILKINS.

Witnesses:

ALFRED A. EICKS,
M. GRIFFIN.