975,156.

H. M. PIEPLU.

CARBURETER.

APPLICATION FILED MAR. 29, 1909.

Patented Nov. 8, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

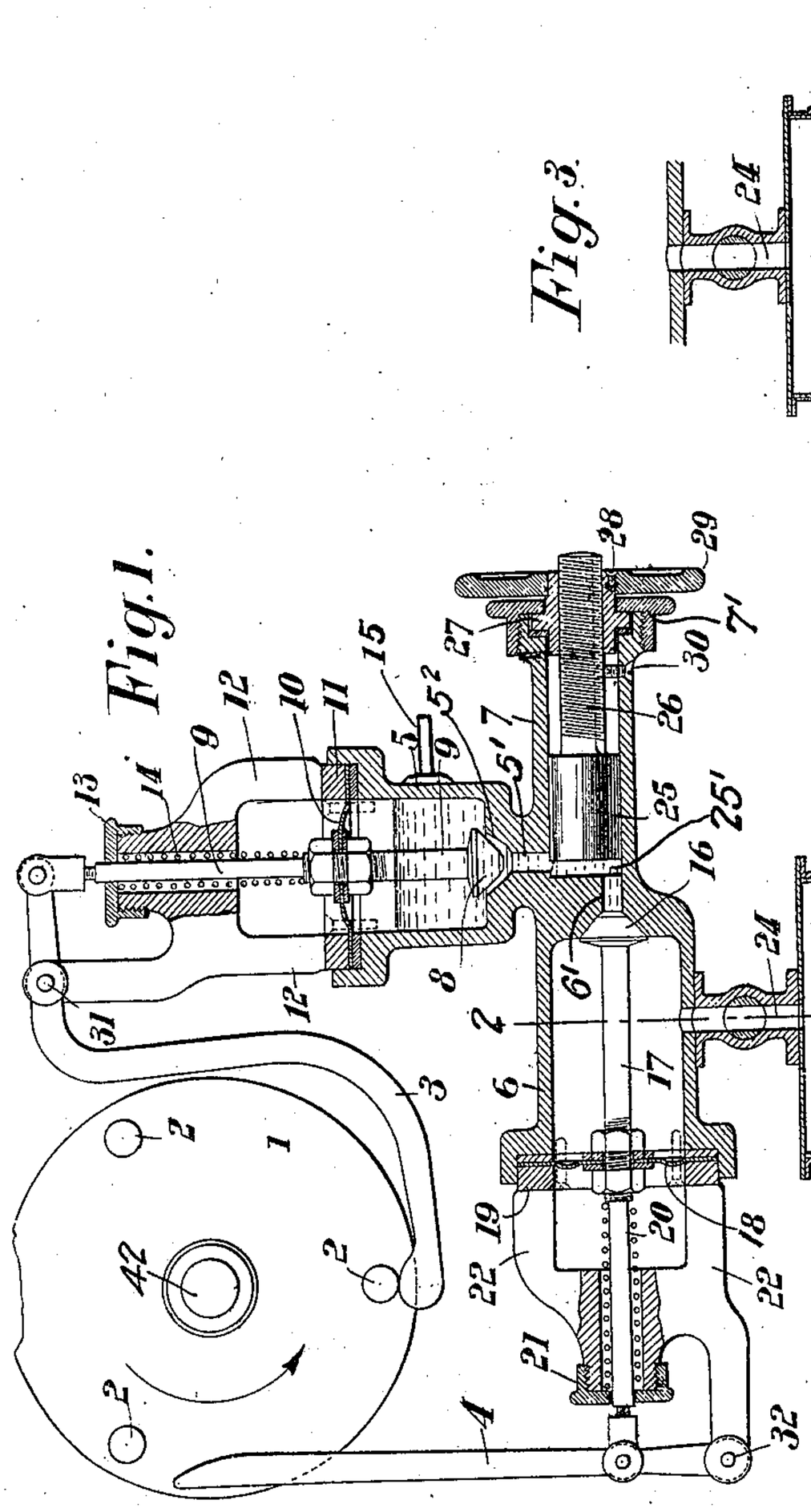



Fig. 3.

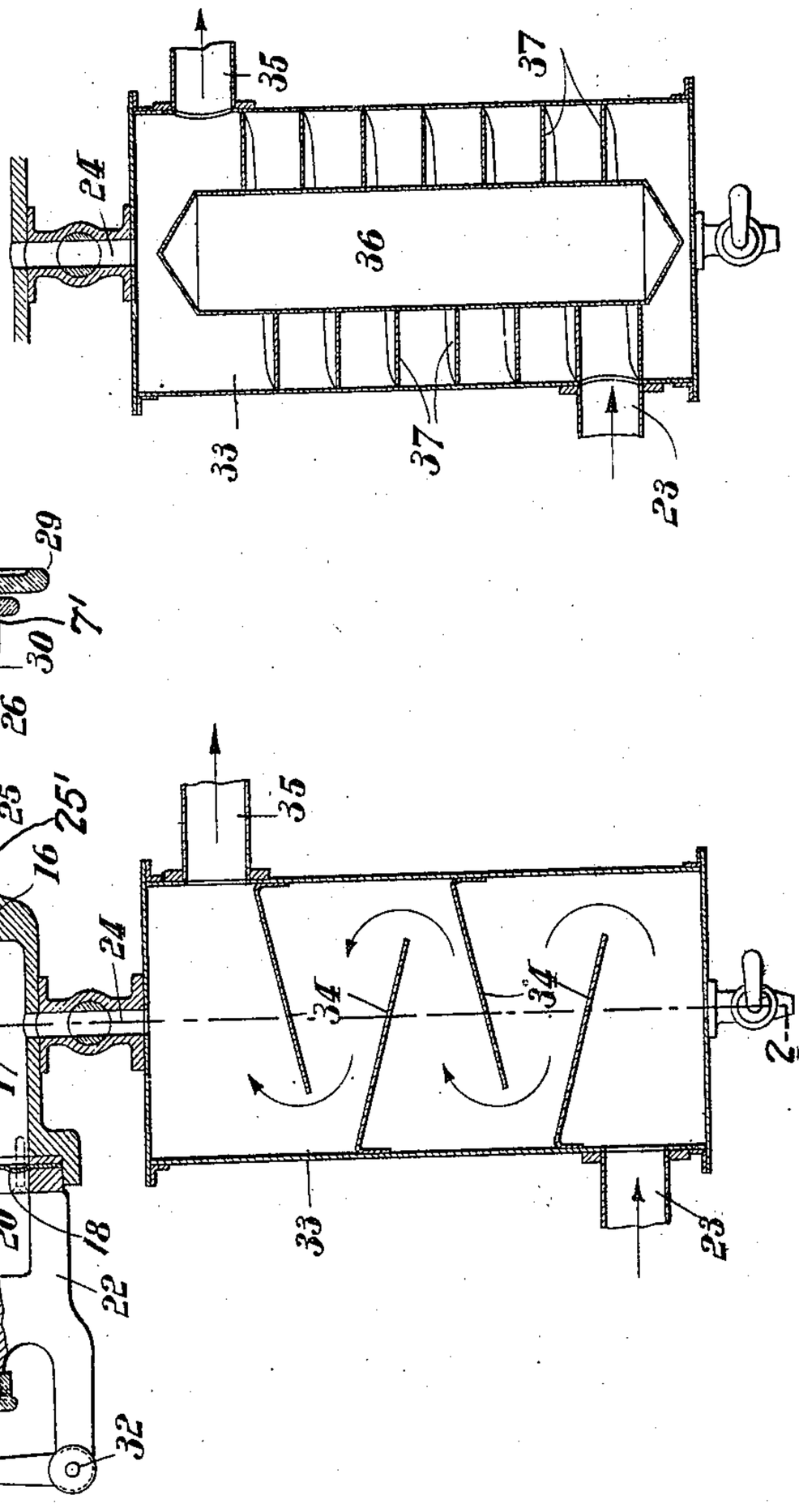
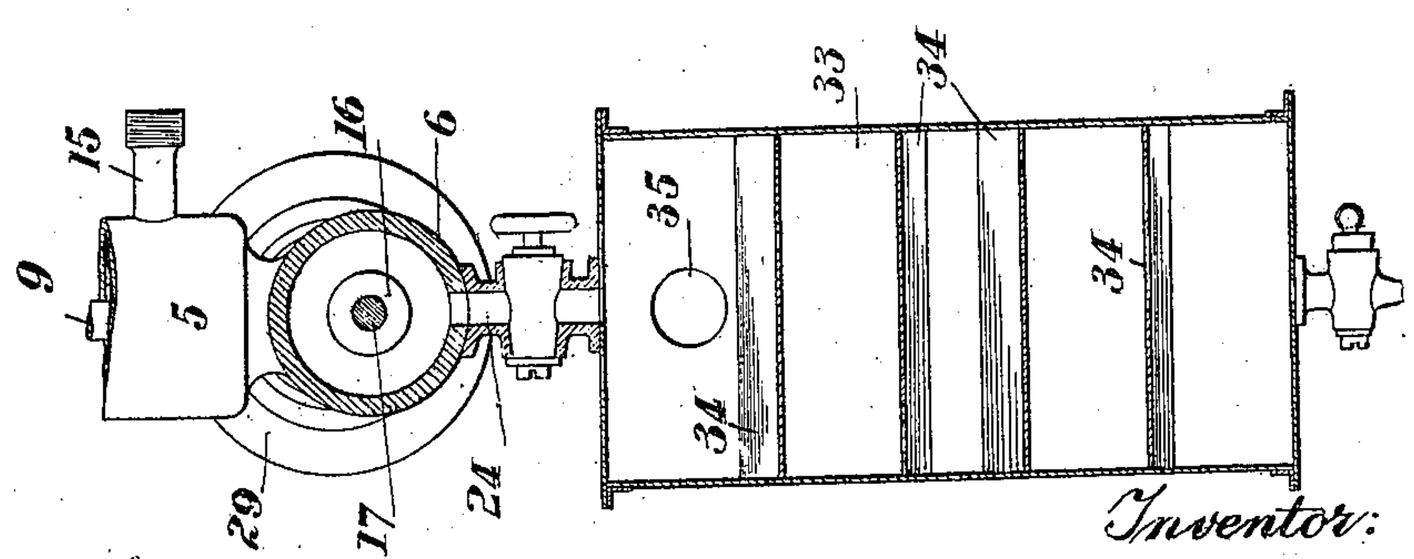



Fig. 2.

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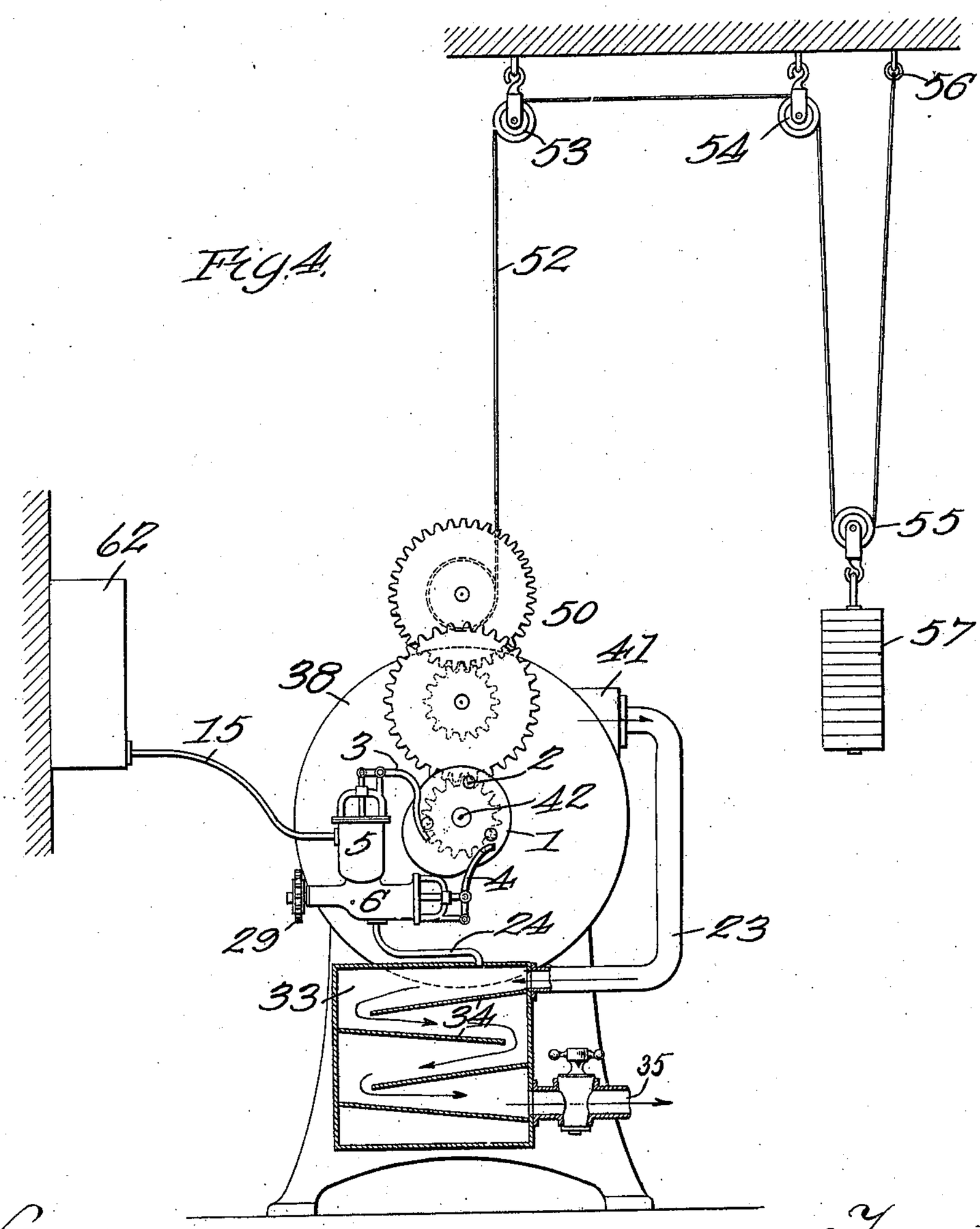
3 SHEETS—SHEET 2.

FIG. 4.

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3 SHEETS—SHEET 3.

Fig. 6.

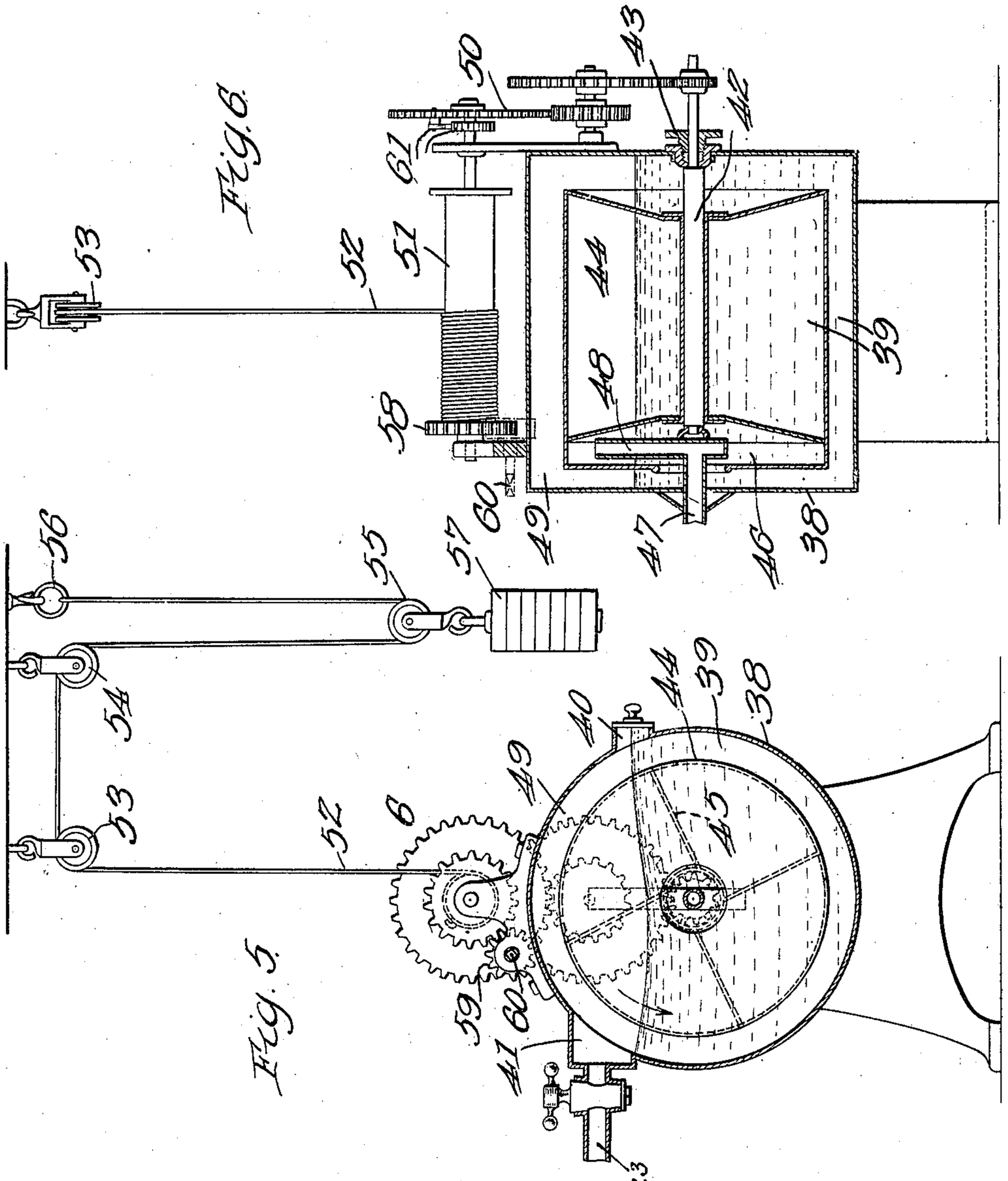


Fig. 5.

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# UNITED STATES PATENT OFFICE.

HENRI MAURICE PIÉPLU, OF PARIS, FRANCE.

## CARBURETER.

975,156. Specification of Letters Patent. Patented Nov. 8, 1910.

Application filed March 29, 1909. Serial No. 486,558.

*To all whom it may concern:*

Be it known that I, HENRI MAURICE PIÉPLU, a citizen of the French Republic, and resident of Paris, France, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to improvements in carbureters of that type in which carbureted air is produced in accordance with and controlled by consumption thereof.

One of the features of my invention consists in providing a regulating device for the oil through which the same flows by gravity into the carbureter and which is controlled by mechanism for supplying the air to the carbureter so as to supply oil thereto in predetermined quantities proportioned to the supply of air and wherein the supply of air and oil are both controlled by consumption of the carbureted air.

The invention will be more fully described in connection with the accompanying drawings and will be more particularly pointed out in and by the appended claims.

In the drawings:—Figure 1 is a view partly in section and partly in elevation showing the controlling device for the oil in connection with one form of carbureter and also showing a portion of the air supplying means operatively connected with the oil controlling device to operate the same. Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1. Fig. 3 is a sectional view of the modified form of carbureter. Fig. 4 is a view partly in elevation and partly in section of a complete apparatus embodying my invention. Fig. 5 is a vertical sectional view of Fig. 4 with the oil controlling device and carbureter omitted. Fig. 6 is a sectional view of the device shown in Fig. 5.

Like characters of reference designate similar parts throughout the different figures of the drawings.

First referring to Figs. 4, 5, and 6, the mechanism for supplying air is shown as consisting of a casing 38 adapted to contain a body of liquid 39 and provided with a closable opening 40 through which the casing may be filled. An air outlet 41 is provided for said casing and is connected by a pipe 23 with the carbureters 33. Within the casing 38 a shaft 42 is provided, which extends through a suitable stuffing box 43, and on which shaft a drum or rotor 44 is mounted. This drum or rotor, and the parts with which it is associated may conveniently be termed a pump, and the rotor is provided with a plurality of partitions 45 forming air buckets. At one end of the rotor a chamber 46 is provided into which an air inlet 47 projects. Said air inlet may, if desired, be provided with a non-return valve not shown, and also a vertical extension 48, extending above the level of the liquid 39. When the drum or rotor 44 is rotated air is drawn in through 48 in the direction of the arrows and is forced outwardly into the casing above the level of the liquid at 49 and is discharged through pipe 23 into the carbureter 33.

A convenient means for operating the rotor 44 may consist of a train of gears 50 connecting the shaft 42 with a windlass or rope drum 51 about which one end of a rope 52 is trained. As shown said rope 52 extends over a pulley 53 and laterally over a second pulley 54 and downwardly over an idler 55 and upwardly therefrom where it is fixed to a ring 56. A suitable weight 57 is suspended from the idler 55 and serves to actuate the drum 51. At one end of the drum 51 a gear 58 is mounted and meshes with a gear 59 having a shaft 60 to which a wrench or like implement, not shown, may be applied to wind the rope 52 about the drum 51 and raise the weight 57 to a starting position. A suitable pawl and ratchet device 61 may be interposed in the gearing 50 so that when said rope is wound up the rotor 44 will not be actuated.

The carbureter 33 may consist of a casing provided with suitable partitions or diaphragms 34 affording a circuitous path for the air in its passage therethrough and as shown said carbureter has an inlet at the connection of pipe 23 therewith and an outlet through pipe 35. Pipe 35 forms the consumption or supply pipe leading to the jet or other points of consumption not shown. Reference will next be made to the oil controlling device whereby oil is admitted to

the carbureter in predetermined proportions relative to the admission of air thereto and reference will be made to Figs. 1 and 4.

As shown the oil controlling device comprises a structure including an inlet cylinder 5, an outlet or discharge cylinder 6, communicating therewith and a second cylinder 7 interposed between said cylinders 5 and 6 and provided with adjustable means therein for controlling admission from cylinder 5 to cylinder 6. As shown cylinder 5 is connected with a source of supply of oil 62 by means of pipe 15 and the arrangement is such that the supply is fed by gravity. In order to exclude air from the cylinder or chamber 5 one end thereof is sealed by a diaphragm 10 which is interposed between a seat formed on said cylinder and a ring 11 conveniently forming a part of the valve stem guide or frame 12. The chamber 5 is provided with an outlet 5′, preferably at its bottom, and the outlet is flared at $5^2$ to form a seat for a valve 8. The valve 8 is provided with a valve stem 9 which extends upwardly through the diaphragm 10 and the latter may be secured thereto in any desirable manner such as by the nuts shown. It will be seen that by this arrangement movement of the valve 8 can be effected and the chamber 5 will always be closed by the diaphragm 10. The valve stem 9 projects upwardly to a bore 14 in the frame 12 and is guided by a cap 13 secured to the top of the frame 12. The bore 14 is preferably enlarged with respect to the stem 9 so as to provide for a spring which is interposed between the cap 13 and the nuts heretofore referred to. The spring serves to normally seat the valve 8 and close the outlet 5′. An arm 31 on the frame 12 forms a pivotal bearing for an operating lever 3 which is connected with the valve stem 9 and is operated in a manner which will hereinafter be more fully described. The chamber 5 delivers to said second or intermediate cylinder or chamber 7 having a piston 25 provided with a threaded stem 26 for adjusting the capacity of said chamber. The stem 26 is grooved longitudinally to receive a set screw 30 to prevent rotation of the stem 26 and piston 25. A nut 27 has threaded connection with the stem 26 and is rotatively mounted in the cylinder 7 as shown and is held in place therein by a cap 7′. A hand wheel 29 is fixed on the nut 27 by a screw 28 and when the hand wheel 29 is turned longitudinally adjusting movement is imparted to the piston 25.

The outlet or delivery casing or cylinder 6 is provided with an inlet 6′ having a flared seat for receiving the valve 16. The valve 16 is provided with a valve stem 17 and the casing or chamber 6 is closed at its outer end by a diaphragm 18. The diaphragm 18 is clamped between a ring 19 and a seat formed on the casing 6 so as to close the latter to the outer air. The valve stem 17 extends through the diaphragm 18 and is provided with nuts for clamping said diaphragm to the valve stem. A valve stem guiding structure or frame 22 extends outwardly from the ring 19 and is bored to receive the stem 17, the same being guided by a cap 21 and screwed on the structure 22. A spring 20 is interposed between the cap 21 and one of the nuts hereinbefore described to normally hold the valve 16 in a closed or seated position. An arm is formed on the frame 22 and a lever 4 is pivoted to said arm and is connected with the valve stem 17 for operating the same as will hereinafter be more fully set forth. The outlet or delivery casing 6 is connected with the carbureter 33 by a valve connection 24 to deliver the oil to the upper portion of the carbureter and permit it to flow downwardly in a tortuous path and intermingle with the upwardly flowing currents of air.

In the specific construction shown the oil controlling device is driven from the air supplying mechanism or pump by providing on the shaft 42 a disk 1, having a plurality of pins or equivalent parts 3 spaced at equal distances apart from each other on said disk. The levers 3 and 4 are so disposed as to bring their free ends into the path of movement of said pins 2 and the arrangement is such that the levers 3 and 4 will be sequentially actuated first to open valve 8 and sebsequently open valve 16, it being clear from the foregoing description that the springs close the valve immediately after the pins 2 pass from engagement therewith.

It will be seen from the foregoing that the oil has flowed by gravity from the source of supply 62 until it reaches the carbureter 33 and by this arrangement I thereby avoid the provision of pumps and the like for advancing the oil through its course.

It will be further noted that in operation oil is only admitted to the carbureter 33 when consumption of the carbureted air is taking place and that the admission of oil is such that the quantities admitted will always be completely taken up by the incoming air and that after the operation has been once started no interruption takes place in restarting because of the fact that the carbureter 33 always contains a quantity of carbureted air.

It will also be seen that the adjusting piston or member 25 may be adjusted throughout a considerable range of movement to limit the passage of oil from the intake chamber 5 to the delivery chamber 6 in proportion according to the requirements of conditions under which the apparatus is operating. The provision and operation of

the inlet and outlet valves 8 and 16 provides an effective intermittent speed and insures an economical utilization of the oil and the closing of the chambers 5 and 6 amply protects the oil until it has reached the carbureter.

In the modified construction shown in Fig. 3 the partitions 37 are spirally formed about a body 36 and extend from the intake 23 to the outlet 35.

I claim:—

1. A device of the class described comprising in combination, a carbureter, an oil controlling device connected with said carbureter and with a source of supply of oil, said device including a controlling means for admitting oil, a discharging means-communicating with the controlling means and independent thereof for controlling the discharge of oil, and adjusting means for controlling the volume of oil passing from said controlling to said discharging means and mechanism supplying air to said carbureter and operatively connected with said controlling and discharging means to operate the same.

2. A device of the class described comprising in combination, a carbureter, an oil controlling device connected with a source of supply and with the carbureter and providing a single path for the oil to flow by gravity through said device to said carbureter, said device including separate elements acting independently and alternately with respect to each other for permitting passage of oil therethrough and mechanism for controlling the volume of oil passing therethrough, and means for supplying air to said carbureter and operatively connected with said elements.

3. A device of the class described comprising in combination, a carbureter, an oil controlling device connected with a source of supply with said carbureter and providing a single path for the oil to flow by gravity to said carbureter, a plurality of valves acting independently and alternately for controlling the passage of oil through said path, means interposed between said valves for adjusting the quantity passing thereby, and mechanism for supplying air to said carbureter and operatively connected with said valve to operate the same intermittently.

4. A device of the class described comprising in combination, a carbureter, an oil controlling device connected with a source of supply and with said carbureter and providing a single path for the oil to flow therethrough by gravity to said carbureter, said device including a plurality of valves operated independently and controlling the passage of oil, an adjustable device interposed in the path of oil between said valves for regulating the passage of oil, and mechanism for supplying air to said carbureter and operatively connected with said valves.

5. A device of the class described comprising in combination, a carbureter, an oil controlling device located above and connected with said carbureter and comprising an oil inlet chamber connected with a source of supply, a second chamber communicating with said inlet chamber, an inlet valve for controlling the discharge from said inlet chamber to said second chamber, a discharge chamber connected with said second chamber and with said carbureter, a valve controlling passage of oil from said second chamber to said discharge chamber, an adjustable piston in said second chamber for adjusting its capacity, means for supplying air to said carbureter, and operative connections between said means and said valve.

6. A device of the class described comprising in combination, a carbureter, an oil controlling device comprising an inlet chamber provided with an outlet and a diaphragm closing said chamber at one end, a valve for said outlet extending through said diaphragm, a second chamber to which said inlet chamber delivers, a piston in said second chamber for adjusting its capacity, an outlet chamber provided with an inlet communicating with said second chamber and having a connection with the carbureter, a diaphragm closing one end of said outlet chamber, a valve for said outlet chamber controlling the inlet thereof and extending through said diaphragm, means for supplying air to said carbureter, and operative connections between said means and valves for operating the latter from the former.

7. A device of the class described comprising in combination, a carbureter, an oil controlling device connected with said carbureter and comprising an oil inlet chamber connected with a source of supply, a second chamber communicating with said inlet chamber, an inlet valve for controlling the discharge from said inlet chamber to said second chamber, a discharge chamber connected with said second chamber and with said carbureter, a valve controlling passage of oil from said second chamber to said discharge chamber, an adjustable element in said second chamber for adjusting its capacity, and means for operating said valve.

8. A device of the class described comprising in combination, a carbureter, an oil controlling device comprising an inlet chamber provided with an outlet and a diaphragm closing said chamber at one end, a valve for said outlet extending through said diaphragm, a second chamber to which

said inlet chamber delivers, a piston in said second chamber for adjusting its capacity, an outlet chamber provided with an inlet communicating with said second chamber and having a connection with the carbureter, a diaphragm closing one end of said outlet chamber, a valve for said outlet chamber controlling the inlet thereof and extending through said diaphragm, and means for operating said valve.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

HENRI MAURICE PIÉPLU.

Witnesses:

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GREGORY PHELAN.