

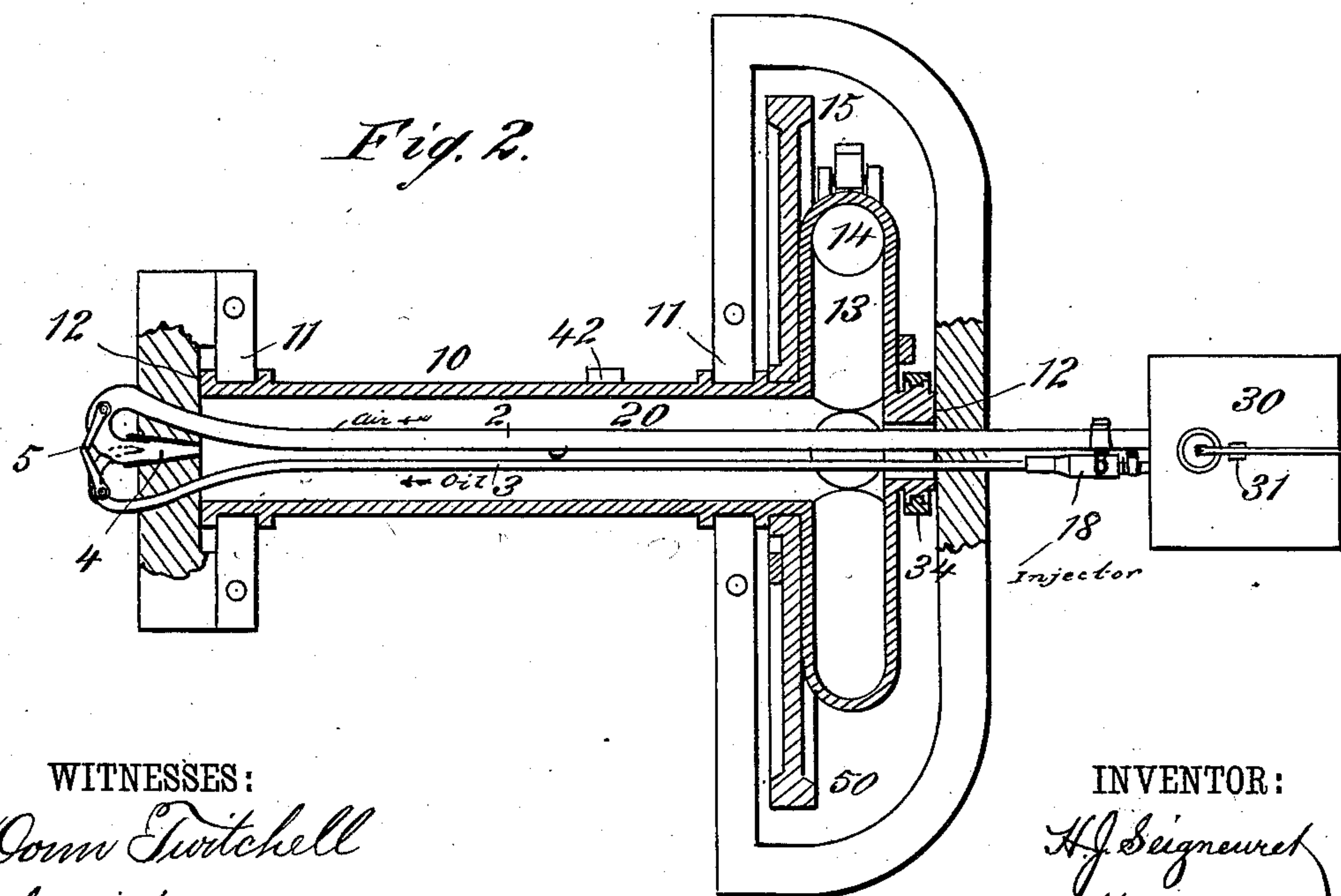
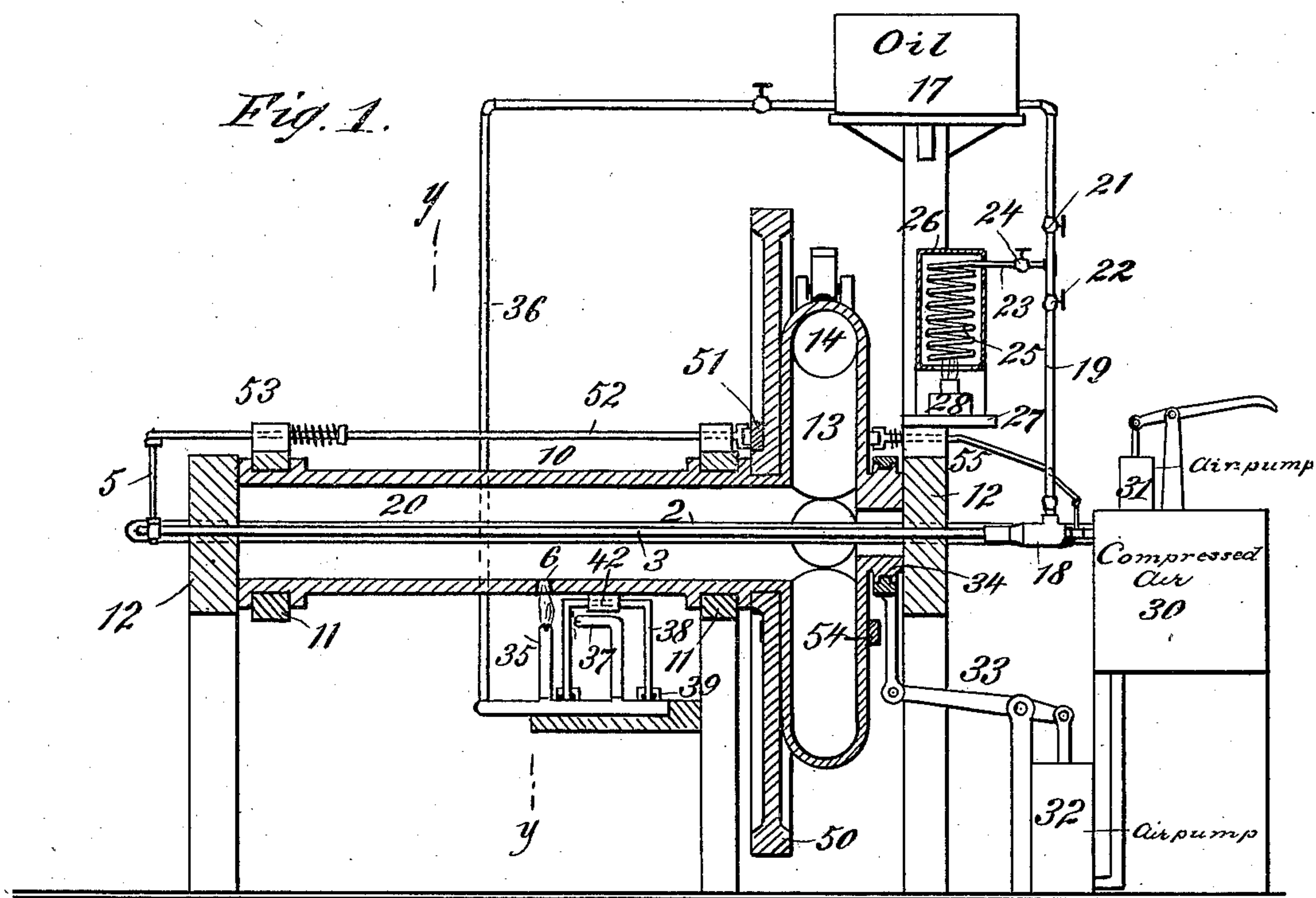
(No Model.)

3 Sheets—Sheet 1.

H. J. SEIGNEURET.
REACTION WHEEL.

No. 364,866.

Patented June 14, 1887.



WITNESSES:

Donn Twitchell
C. Sedgwick

INVENTOR:

H. J. Seignuret
Munn & Co.

BY

ATTORNEYS.

(No Model.)

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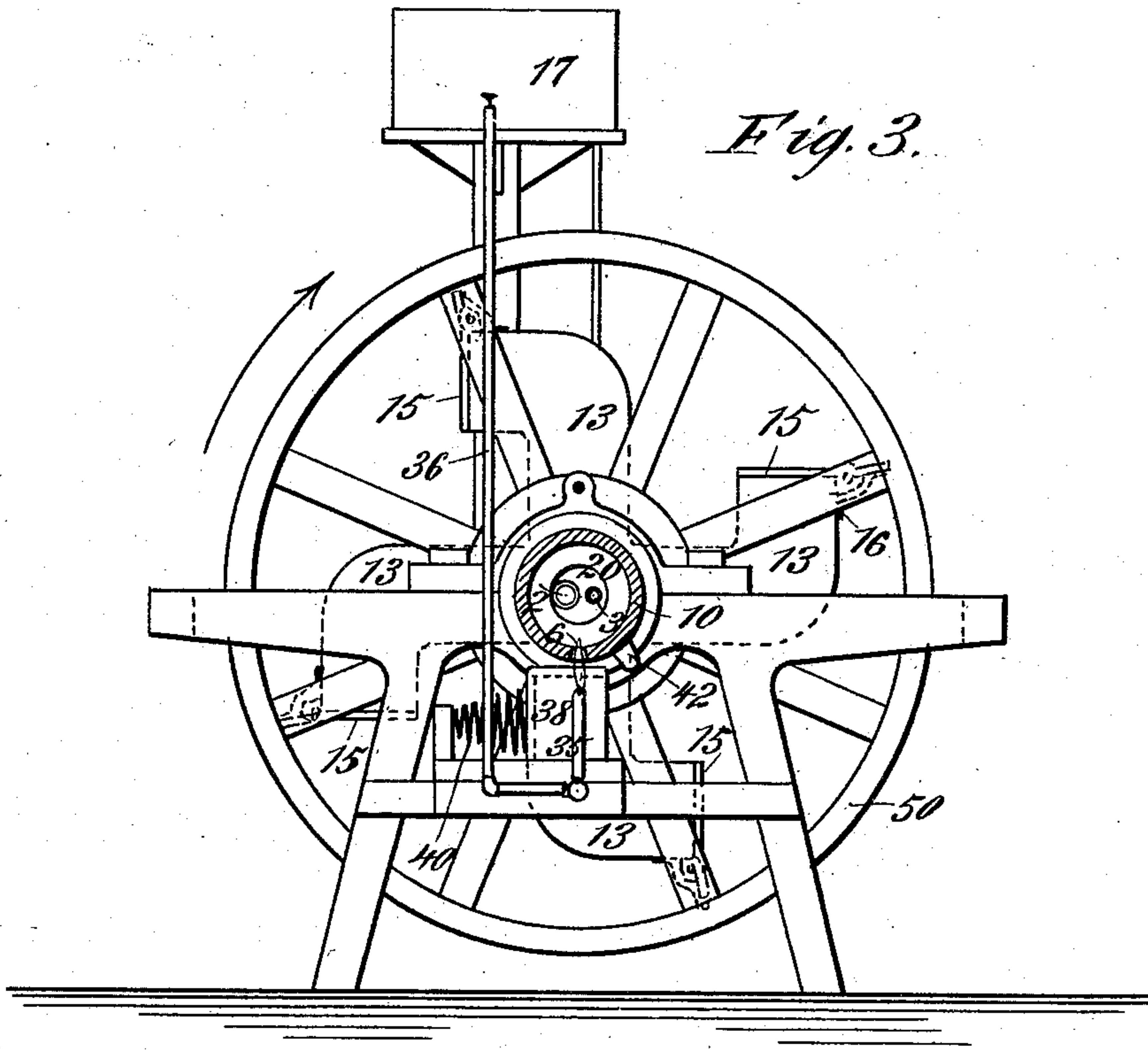
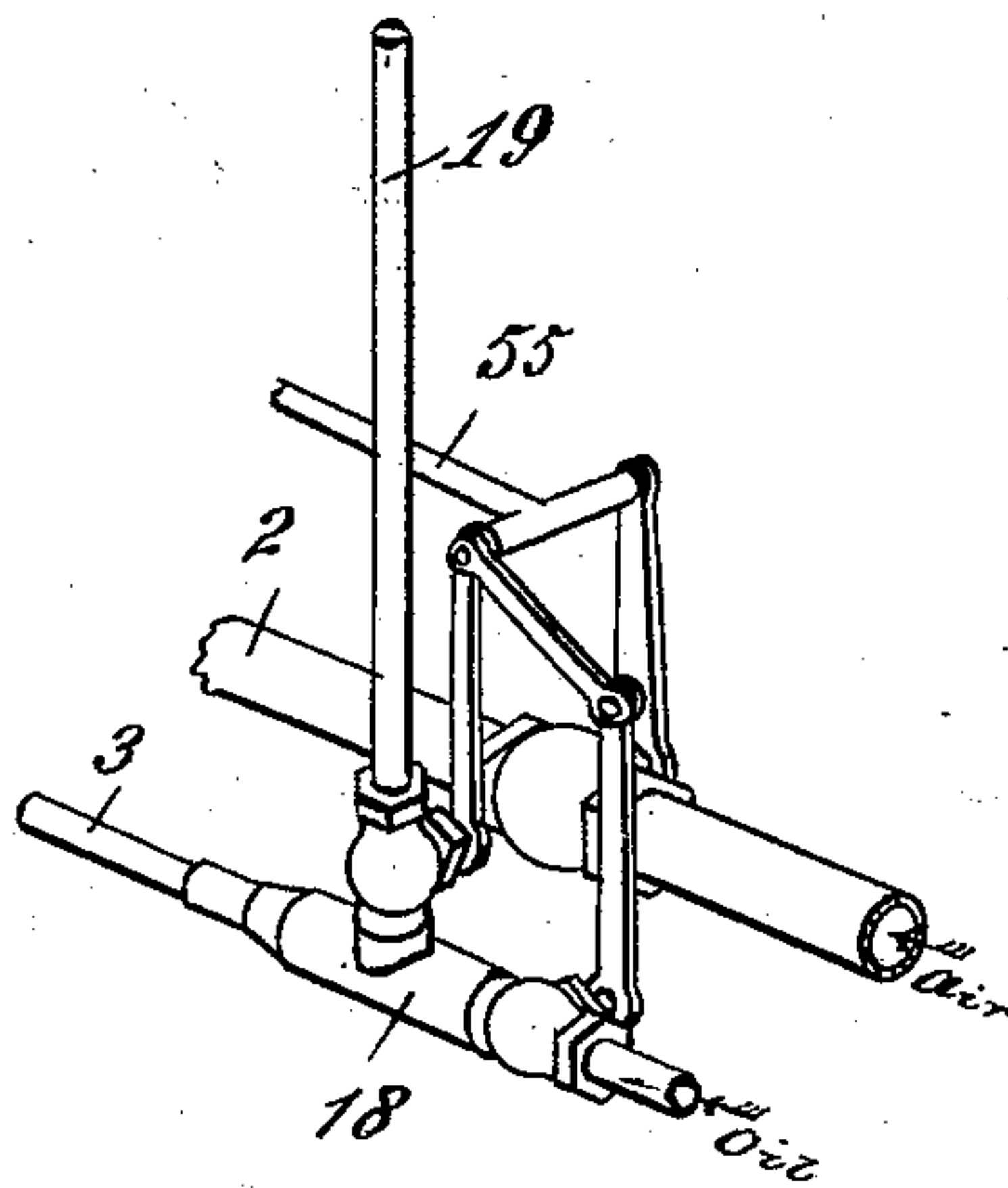


Fig. 4.



WITNESSES:

Donn Twitchell
C. Sedgwick

INVENTOR:

H. J. Seignuret
Munn & Co

BY

ATTORNEYS.

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Fig. 5.

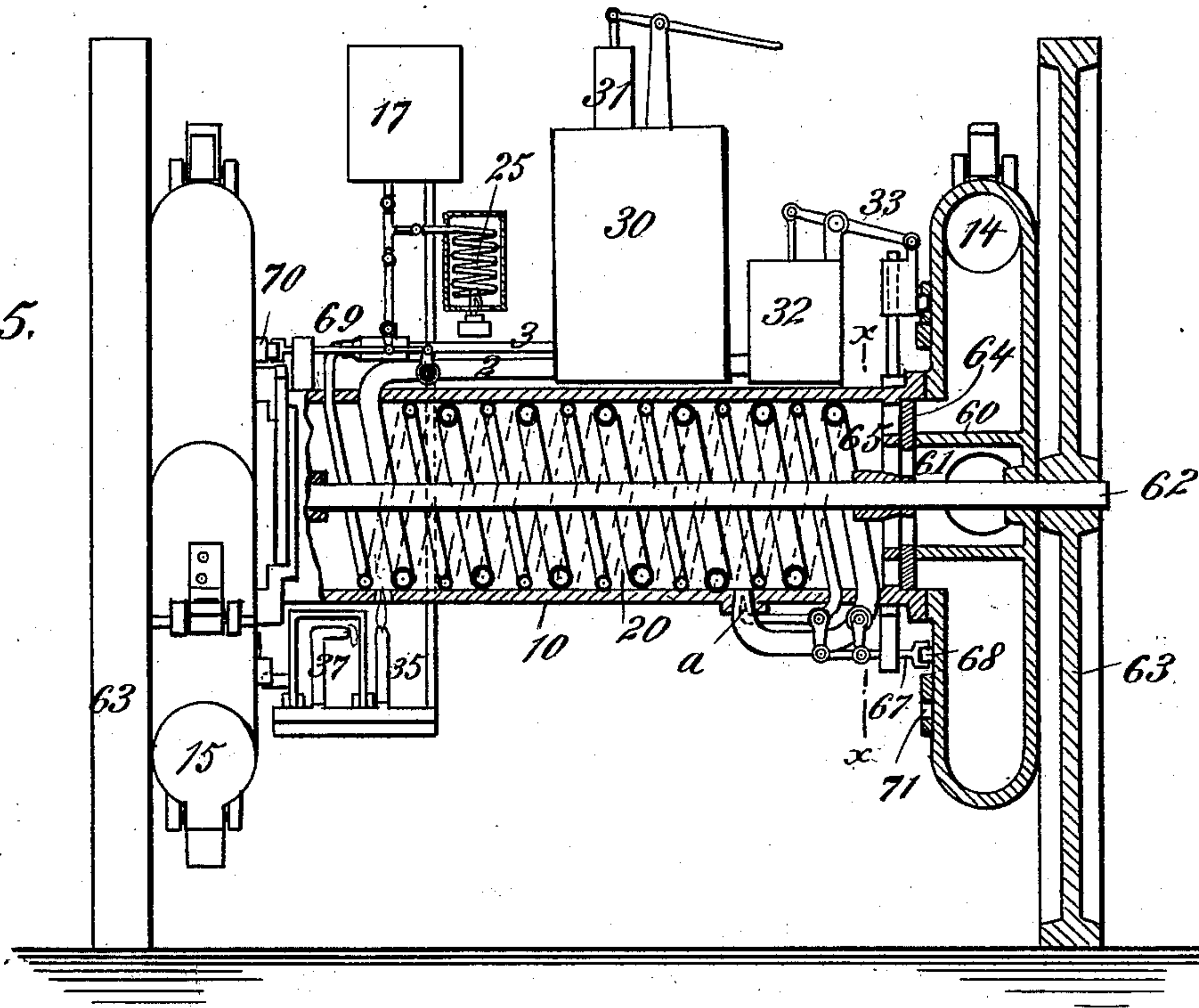
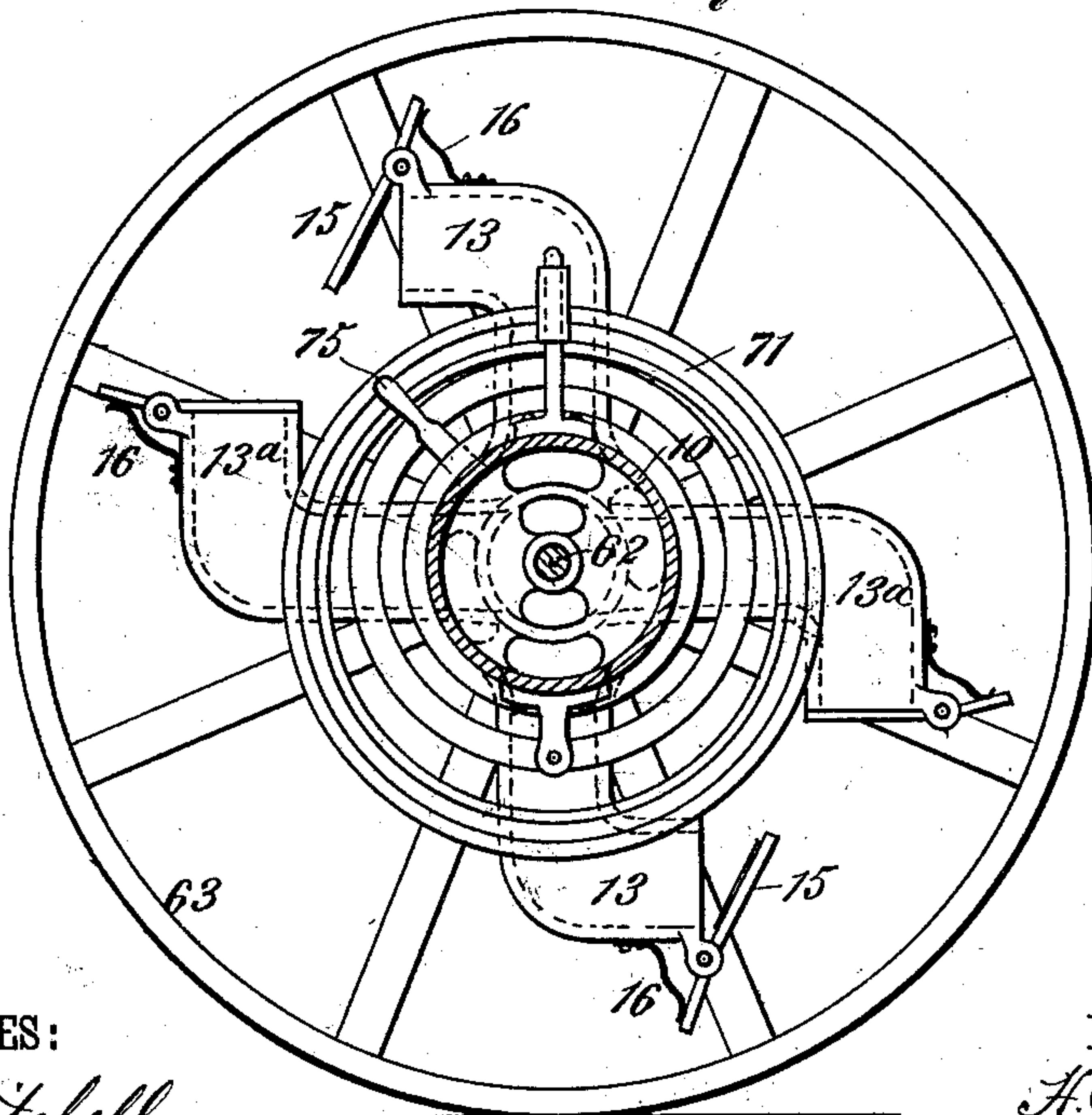


Fig. 6.



WITNESSES:
Dorm Twitchell
Co. Sedgwick

INVENTOR:
H. J. Seignuret
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HIPPOLYTE JOSEPH SEIGNEURET, OF HENDERSON, MINNESOTA.

REACTION-WHEEL.

SPECIFICATION forming part of Letters Patent No. 364,866, dated June 14, 1887.

Application filed March 9, 1887. Serial No. 230,228. (No model.)

To all whom it may concern:

Be it known that I, HIPPOLYTE JOSEPH SEIGNEURET, of Henderson, in the county of Sibley and State of Minnesota, have invented
5 a new and Improved Reaction-Wheel, of which the following is a full, clear, and exact description.

This invention relates to a novel form of motor or gas engine wherein the parts are so
10 arranged that the force resulting from the explosion of a small quantity of gas will operate upon and in connection with a reaction-wheel that is so mounted that it may revolve and its power may be transmitted in such manner as
15 may be desired, the invention consisting, essentially, of a novel construction of the wheel proper, a novel means for combining gas and air necessary to produce the explosion, a novel means for providing for the vaporizing of the
20 hydrocarbon oil from which the gas is made, and a novel means for relighting the exploding jet in case such jet should be extinguished at the time of the explosion; all as will be hereinafter more fully described, and specifically
25 pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

30 Figure 1 is a central longitudinal sectional view of my improved form of reaction-wheel. Fig. 2 is a central sectional plan view of the same. Fig. 3 is a cross-sectional view taken on the line *yy* of Fig. 1. Fig. 4 is a detailed view
35 illustrating the construction of one of the valve-operating mechanisms. Fig. 5 is a side elevation, in partial central section, of a double reversible wheel; and Fig. 6 is a cross-sectional view taken on the line *xx* of Fig. 5.

40 In constructing such a wheel and its connections, as is illustrated in Fig. 1, I provide a casing, 10, that is mounted upon bearings 11, and between abutments 12, the ends of the casing abutting squarely against said abutments 12, the joints between the two being
45 practically air-tight joints.

At a point near one end of the casing 10 I arrange one or more radial arms, 13, which said arms are formed with openings 14 at their
50 overturned ends; as illustrated in Fig. 3, the arms represented in Fig. 3 being practically the same in construction as those now under

consideration. The openings 14 of the arms 13 are closed by valves 15, said valves being normally held in their closed position by
55 springs 16.

Two pipes, 2 and 3, which may be straight or coiled, pass through the abutments 12 and through the chamber 20 within the casing 10, one end of the pipe 2 being carried backward
60 through a central opening, 4, formed in one of the abutments 12; and the corresponding end of the pipe 3 is also turned backward so to as enter a properly-located aperture that is formed in the bent end of the pipe 2, the two pipe ends
65 being open, so that there is practically a double concentric nozzle that is directed toward the chamber 20. The valves are arranged in the bent ends of the pipe 2 and 3, and the stems
70 of said valves are operated upon in a manner to be hereinafter described.

The pipe 3 leads upward to an oil tank or reservoir, 17, an injector, 18, being arranged at the point where the pipe 3 branches off to
75 so extend upward, and in the upwardly-extending branch 19 of the pipe 3 there are arranged valves 21 and 22, between which valves the pipe 19 is tapped by a pipe, 23, that is provided with a stop cock or valve, 24, and the end of this pipe 23 is coiled, as represented at 25, and
80 arranged within a casing, 26, that is mounted above a bracket, 27, upon which a lamp, 28, is supported.

The pipe 2 leads directly to the compressed-air reservoir 30, and in connection with this
85 compressed-air reservoir I arrange a hand-pump, 31, and a power-pump, 32, the piston of the power-pump 32 being operated by a lever, 33, that is operated by an eccentric, 34, formed upon the casing 10.

The casing 10 is formed with an opening, 6, beneath which there is arranged a burner, 35, said burner being supplied by a pipe, 36, which leads to the storage tank or reservoir 17. The pipe 36 also supplies a burner, 37, that is provided with a hood, 38, said hood being mounted
95 in ways 39, and normally held in the position in which it is shown in Fig. 3 by a spiral spring, 40; but the hood 38 extends upward within the path of a cam, 42, that is carried by
100 the case 10, so that as said case revolves the hood will be moved upward against the tension of the spring 40, so that its jet or flame will be directed over the burner 35, the parts being

so timed that the burner 35 will be ignited just prior to the time when the opening 6 is brought into register with said burner.

A balance-wheel, 50, is connected to the casing 10, and this balance-wheel may also serve as a pulley by which the power, derived as will be hereinafter described, may be transmitted through the medium of a belt to such point as may be desired. Upon one face of the wheel 50 there is formed a cam-faced ridge, 51, against which there is held one end of a rod, 52, said rod being mounted to slide above the casing 10, and being held in contact with the cam 51 by any proper form of spring—for instance, by such a spring as is shown at 53. The other end of the rod 52 is connected to the valve-stems 5, the parts being so arranged that just as the opening 6 reaches the jet 35 the valves will be opened and the pressure on the chamber 30 will force air outward through the nozzle of the tube 2, and a certain quantity of the gasified oil contained within the tube 3 will also be carried outward and into the chamber 20.

Upon the outer faces of the arms 13 there is arranged a cam-ridge, 54, which operates upon a rod, 55, that controls valves located at the opposite ends of the tubes 2 and 3, and this rod 55 is also connected with the stem of the injector 18, the timing of the cams 51 and 54 being such that as one cam acts to close its valve the other will act to open the valves arranged in connection with the rod upon which the cam operates.

In starting a motor or reaction wheel constructed as above described the lamp 28 is lighted, the valve 22 is closed, and the valves 21 and 24 are opened, thus permitting oil from the reservoir 17 to enter the coil 25, after which the valve 22 is opened, the injector 18 being at this time open. As the gas will then be made it will find its way downward and into the pipe 3. The hand-pump 31 is operated, and after an initial supply of gas has been generated by heating the oil within the coil 25 the valve 24 is closed, when, if the jets 35 and 37 be lighted, the combined air and gas forced through the chamber 20 will be exploded, and the lighter gases generated by this explosion will find vent through the openings 14 of the arm 13, thereby forcing the arms and the casing in the direction of the arrow shown in connection therewith in Fig. 3, this movement being brought about by the recoil resulting from the explosion.

The heat generated by the explosion within the chamber 20 will be found to be sufficient to vaporize the oil within the tube 3, so that at each opening of the valve located near the nozzle of the pipe 2 a certain quantity of gas will find its way into the chamber 20, to be exploded by the action of the jet 35 when the opening 6 comes in register with the said jet; but just before said opening does come in register with the jet the cam 42 will have acted to throw the hood 38 back, so that the flame of the jet 37 will be free to impinge against the

tip of the burner 35, the hood being forced backward to a position to shield the jet 37 prior to the explosion within the chamber 20.

In Figs. 5 and 6 I illustrate a construction wherein the casing 10 is provided at each end with wheels, each formed with two sets of arms, one set of arms being shown at 13, while the other is shown at 13^a. The arms 13 open into an annular chamber that is separated by a wall, 60, from a central cylindrical chamber, 61, with which the arms 13^a communicate. In this case the arms 13 and 13^a are held to the casing 10 by a central shaft, 62, upon each end of which there is mounted a wheel, 63, which wheels may be balance-wheels or wheels upon which the motor is supported when used as a traction engine or motor. In this kind of engine the casing 10 is fixed to a truck or foundation and does not revolve; but the wheels, being attached to the arms, follow them in their revolutions. A central disk, 64, is fitted to the inner face of each set of arms, and this disk is held against a disk, 65, that is made integral with the casing 10. The disk 64 is movable, and is provided with a handle, 75, and in this disk 64 there are arranged two sets of apertures, one set of apertures being arranged so that they may be thrown into register with a corresponding set of apertures formed in the disk 65, whereby communication with the chamber 61 will be established, while the second set of apertures in the disk 64 may be thrown into register with another set of apertures formed in the disk 65, so as to establish communication between the chamber 20 and the annular chamber beyond the wall 60. The pipes 2 and 3 in this case are led in through the walls of the casing 10, instead of through the ends thereof, and are coiled within the chamber resting against the inner faces of the walls thereof, both pipes being finally carried outward and then upward to enter the chamber in the form of a double nozzle, as is shown at *a*. The valves arranged in connection with the nozzle are in this case acted upon by a stem, 67, that is thrown by a cam, 68, that is arranged as is clearly shown in Fig. 5, while the injector and the valves arranged in connection with the pipes at points between the reservoir and the case are operated by a rod, 69, that is thrown by a cam, 70, carried by the other set of arms. The force-pump by which the air-compressor is charged is in this case operated by an eccentric groove, 71, within which groove there rides a projection from a slide that is connected to the lever of the force-pump.

With such a construction as has just been described, it will be seen that by shifting the position of the disk 64, which may be done by throwing its handle 75, communication with either the arms 13 or the arms 13^a may be established, so that the direction of rotation of the arms and the wheels arranged in connection therewith may be reversed, the direction of rotation depending upon which set of arms the products of the explosion are

led to. This last kind of engine, which may be stationary or fitted on a truck for road travel, can also be fitted to a double-paddle-wheel boat by so adjusting the parts that the explosion will take place only while the orifices of exit of explosion are under water. It can also be fitted to a screw-propeller.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a casing having a chamber, of a means for supplying air and gas thereto, a means for exploding the gas therein, and revoluble tubes open at one side only, said tubes being secured to the chamber and in communication therewith, substantially as shown and described.

2. The combination, with a revoluble case having an inner chamber and one or more extending arms, the extending portions of which are open at one side only, of a gas-supplying attachment and a gas-exploding attachment, substantially as shown and described.

3. The combination, with a revoluble casing having an inner chamber and one or more arms extending outward at an angle to the axis of the casing and open at one side only in their extending portions, of a gas-supplying attachment, a gas-igniting jet, and a protected gas-jet arranged in connection with said igniting-jet, substantially as described.

4. The combination, with a casing having an inner chamber and mounted to revolve in bearings, of abutments arranged in connection with the casing, arms connected to the casing and open only at one side in their extending portions, but being in communication with the chamber within the casing, gas and air supplying tubes leading through the chamber, and an igniting-jet arranged in connection with an aperture formed in the casing, valves arranged in connection with the supply-pipes, and a valve-operating mechanism, substantially as described.

5. The combination, with a revolubly-mounted casing, of abutments arranged in con-

nection therewith, hollow tubes or arms that are mounted so as to be in communication with the chamber within the casing, valves connected to the arms and arranged to close their outer open ends, tubes leading through the abutments and through the chamber within the revoluble casing, valves arranged in connection with the tubes, a valve-operating mechanism, substantially as described, an igniting-jet, a protected jet arranged in connection with the igniting-jet, and a means for establishing communication between the protected jet and the igniting-jet, substantially as set forth.

6. The combination, with a casing, 10, formed with an aperture, 6, and mounted in bearings 11 and between abutments 12, of a hood mounted to slide beneath the casing, a spring arranged in connection with the hood, a cam carried by the casing and arranged so that it may be thrown against the hood, a burner, 37, mounted within the hood, an igniting-burner, 35, mounted outside of the hood, hollow arms or tubes carried by the casing, said arms being open at one side only, and a means for supplying combined gas and air to the interior of the casing, substantially as shown and described.

7. The combination, with a revolubly-mounted casing, 10, having arms 13, the extending portions of which are open at one side only, said arms being in communication with a chamber within the casing, of gas and air tubes leading through said chamber, a coil, 25, whereby an initial supply of gas is obtained, a storage-reservoir in connection with the air-supply pipe, a means for supplying the air to said reservoir, an oil-supply tank in connection with the gas-supply pipe, and a means, substantially as described, for igniting the gas within the chamber, as and for the purpose stated.

HIPPOLYTE JOSEPH SEIGNEURET.

Witnesses:

PETER MORGAN,
HERMANN OHDE.