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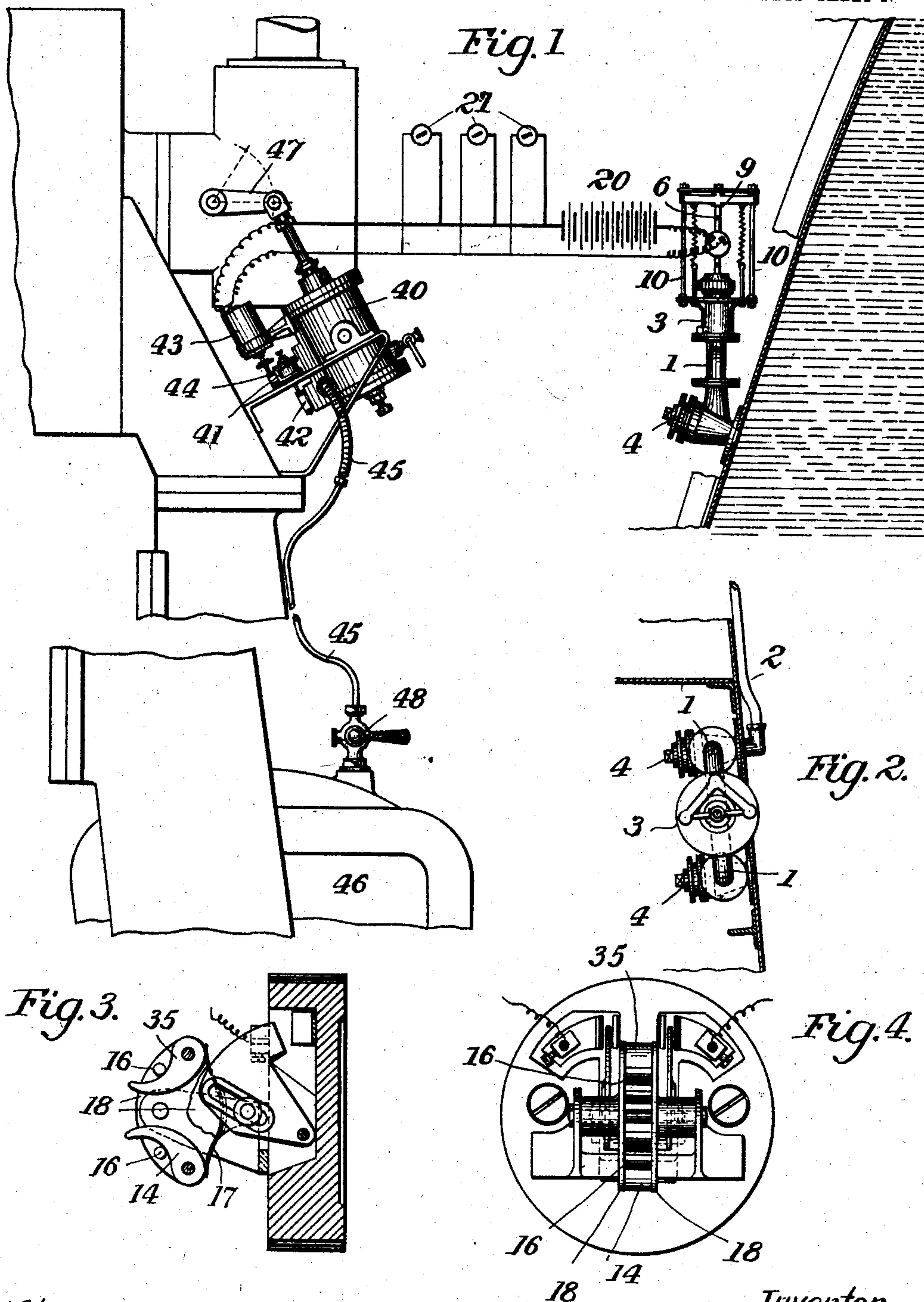
PATENTED OCT. 25, 1904.

A. KERR.
MARINE ENGINE GOVERNOR.

APPLICATION FILED FEB. 23, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

G. M. Freeman.
J. M. Gillman, Jr.

Inventor
Andrew Kerr
by Foster Freeman Mather

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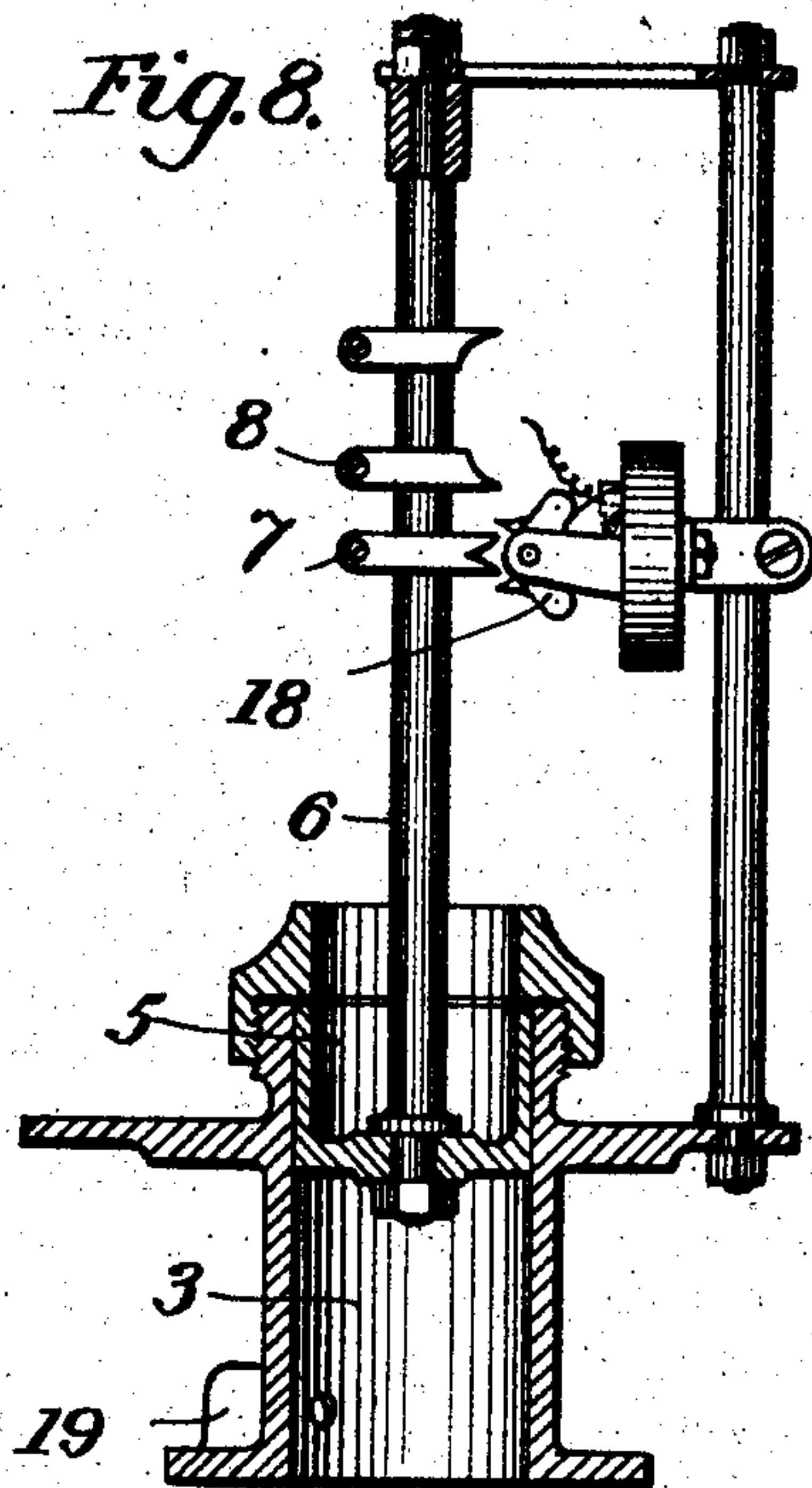
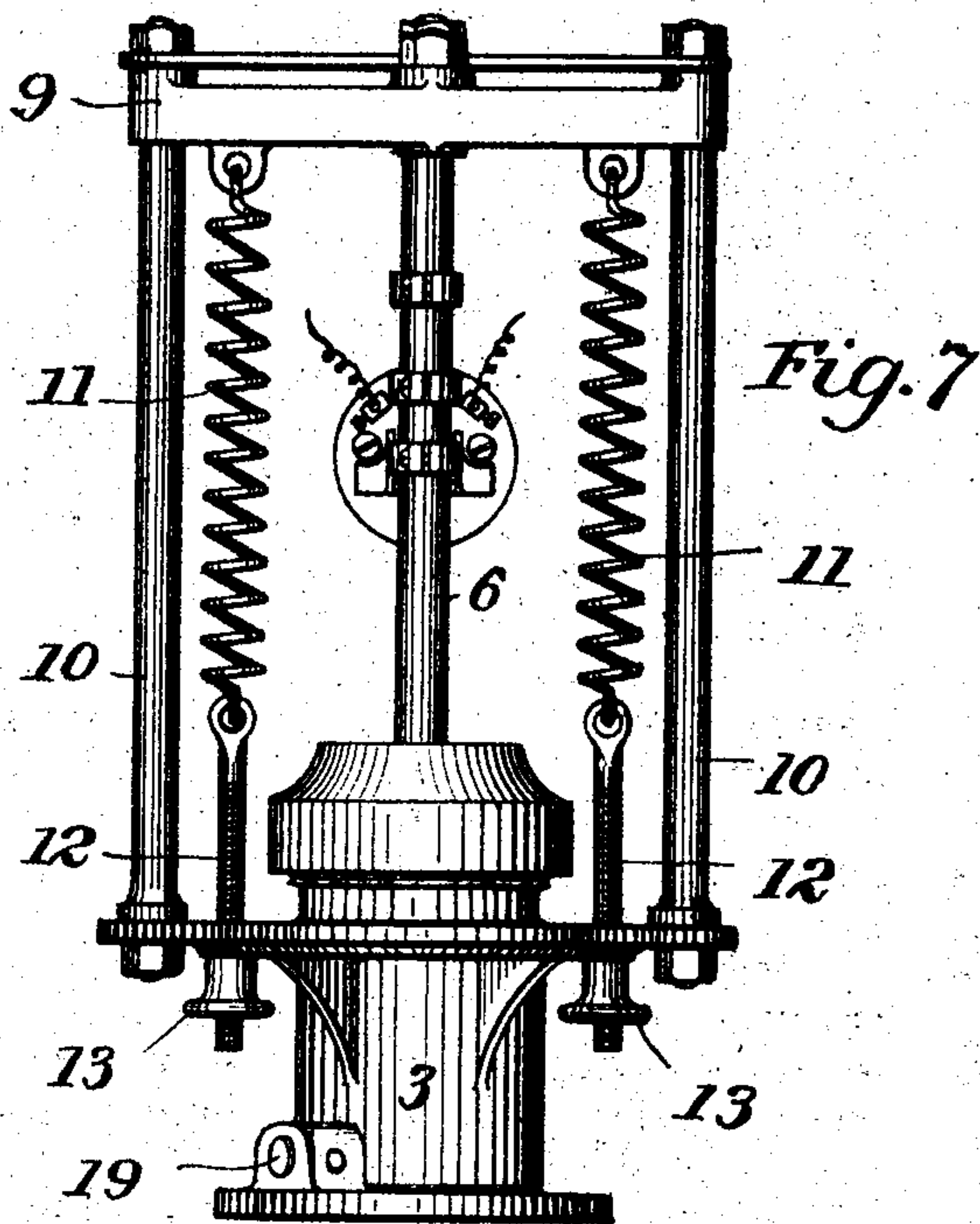
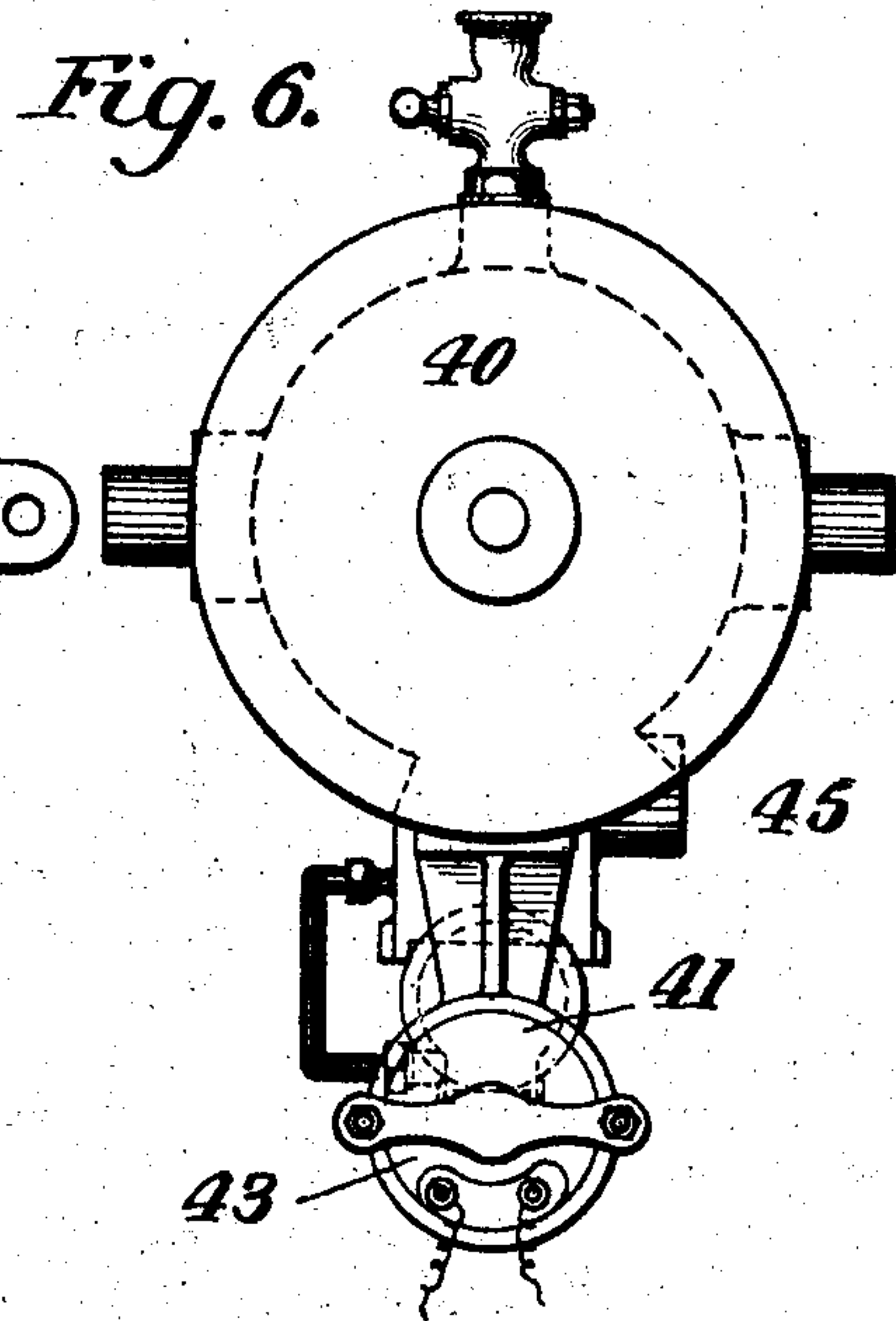
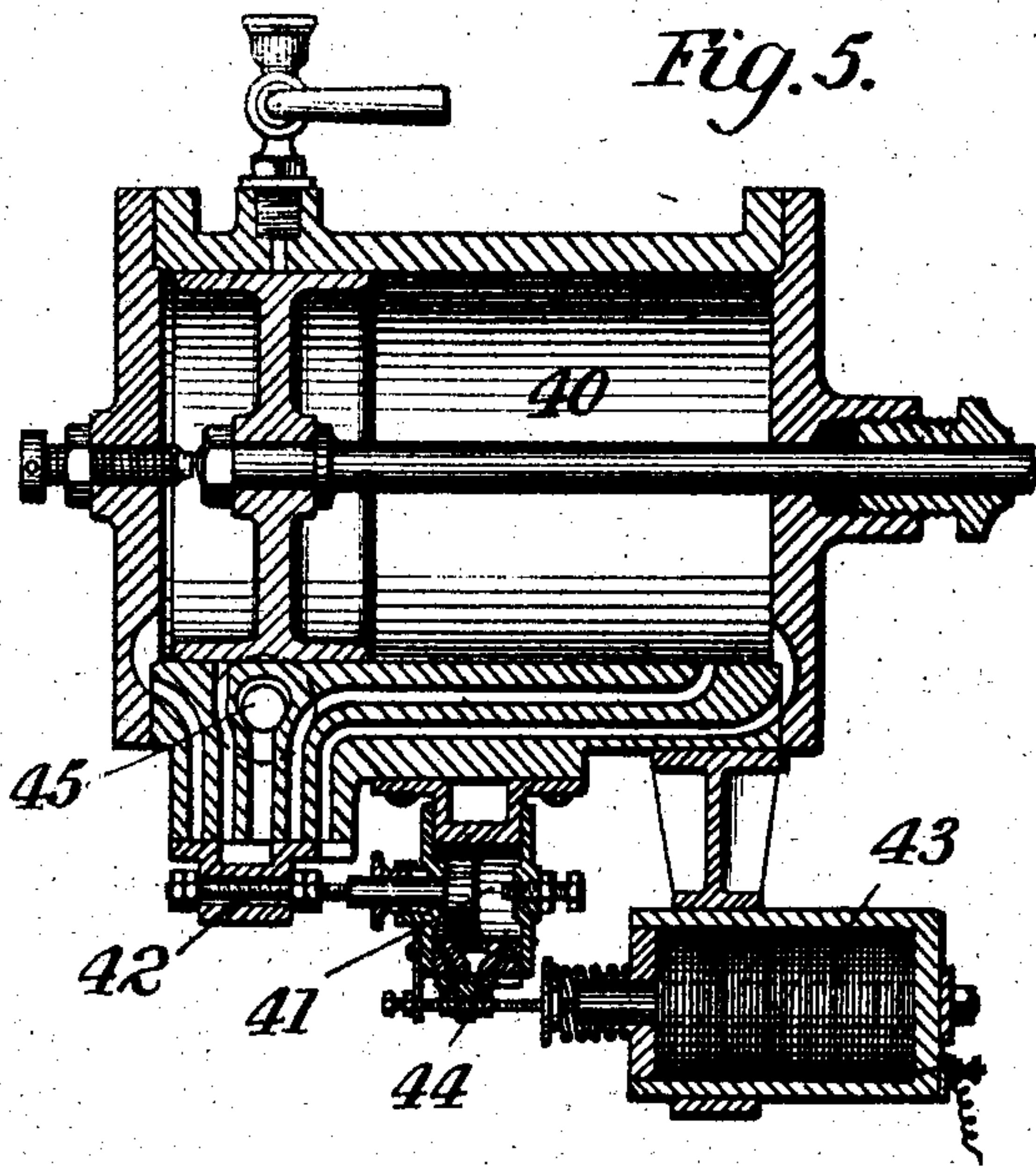
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G. H. Freeman
J. M. Gillman, Jr.

Inventor

Andrew Kerr
by J. H. Freeman & Son
Attys

UNITED STATES PATENT OFFICE.

ANDREW KERR, OF NEW BRIGHTON, ENGLAND.

MARINE-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 773,079, dated October 25, 1904.

Application filed February 23, 1904. Serial No. 194,935. (No model.)

To all whom it may concern:

Be it known that I, ANDREW KERR, marine engineer, a subject of King Edward the Seventh of Great Britain and Ireland, residing at No. 2 Mariner's View, Magazines, New Brighton, in the county of Cheshire, in England, have invented certain new and useful Improvements in Marine-Engine Governors, the same being an improvement on the apparatus for which I obtained a grant of Letters Patent of Great Britain and Ireland aforesaid, dated May 25, 1901, and numbered 10,804; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and the numerals of reference marked thereon, which form a part of this specification.

My invention relates to the shutting and opening of the throttle or other valves which control the supply of steam in marine engines in advance of what is known as "racing" and "non-racing" of the engines. For these purposes I provide a special governor placed near the bottom of the vessel, preferably convenient to the propeller, and which consists of a cylinder provided with a water-tight piston and of a piston-rod and a communication-pipe with two separate cocks attached to the ship's skin, leading through one cock directly and through the other by an auxiliary pipe from the sea-water to the end of the cylinder.

To the free end of the piston-rod I attach a cross-bar with adjustable springs, which regulate the travel of the piston according to the head of water occasioned by the rise and fall of the stern of the vessel or due to the water leaving the propeller.

Upon the piston-rod I place two or more adjustable arms or levers, one of which as the piston moves into the cylinder one revolution or more in advance of racing engages a pawl which turns an electric switch or electric contact maker and breaker in circuit with a source of electricity operating a suitable motor which actuates a valve or valves, so as to supply air or steam to an auxiliary cylinder

in communication with the condenser, whereby the piston in the auxiliary cylinder is caused to shut the valve controlling the supply of steam to the engine. The return movement of the piston-rod brings another of the adjustable arms or levers into contact with another pawl on the electric switch a revolution or more in advance of the non-racing, thus breaking the circuit, and the action of the auxiliary cylinder is reversed by a spring which operates the valve or valves supplying air or steam to it. The speed of the piston is regulated by a valve or cock on the exhaust-pipe.

In order that my said invention may be more fully understood, I shall now proceed to refer to the figures on the sheet hereunto annexed, in which—

Figure 1 is an elevation of an apparatus embodying the present invention, a portion of the stern of a vessel in which the apparatus is arranged being shown in section. Fig. 2 is a plan view of a portion of the apparatus. Figs. 3 and 4 are detail views of the automatically-actuated electric switch. Figs. 5 and 6 are respectively a longitudinal sectional view and an end elevation of the throttling-cylinder and its valve-actuating means. Fig. 7 is an elevation, on an enlarged scale, of the automatic governor. Fig. 8 is a side elevation, partly in section, of the same.

Referring to the drawings, in the several figures of which like reference characters designate corresponding parts, the cylinder 3 is exposed to the contents of the communication-pipe 1 at one end and to the air at the other and receives a water-tight piston 5, while the piston-rod 6 carries two or more adjustable arms or levers 7 and 8 and is provided at the free end with a cross-bar 9, working in framed guides 10 10 and having attached to it two adjustable springs 11 11, by which the travel of the piston is regulated according to the head of water produced by the rise and fall of the vessel's stern or the water leaving the propeller. Each spring 11 is adjusted by means of a screw-bolt 12 and nut 13. The cylinder is placed below the water-level in the tunnel of the vessel, and a petcock 19 is provided to allow any accumulated air to escape from it while being

filled. The cocks 4 4 of the communication-pipe are attached to the skin of the ship as near the propeller as practicable, and one of them is furnished with an auxiliary pipe 2, reaching aft below the propeller to catch a following sea, while the other cock, being twenty to thirty feet forward of the propeller, catches a head sea. This special governor is inclosed in a box-casing for its better protection.

By the adjustment of the springs 11 11 to allow the descent of the piston one or more revolutions in anticipation of racing one of the arms or levers 7 will be brought into contact with an insulated pawl 14, which turns a switch 15 on the frame carrying the guides, thereby bringing a contact-maker into contact with a terminal and completing the circuit with a dynamo or battery 20 and an electric magnet 43 or solenoid, which operates the valve 44 of an auxiliary cylinder 41 and allows the piston of such cylinder to operate the valve 42 of a throttling-cylinder 40, the exhaust-ports of said cylinders being connected by a pipe 45 with a condenser 46. The piston of the throttling-cylinder 40 is connected by a link 47 with the throttle-valve of the engine, and a valve or cock 48 is provided for regulating the speed of the piston in the throttling-cylinder.

The throws of the pawls 14 and 35, which are attached to a movable plate 18, are limited in one direction by bolts 16 16, carried on this movable plate, and in the other by a hooped spring 17, which forces them back to the bolts after the arms or levers 7 and 8 have passed their points. On the return movement of the piston to its normal position the arm 8, adjusted to engage the pawl 35 (the point of which had been turned to the position originally occupied by that of the other pawl 14) one or more revolutions in advance of non-racing, thereby breaks contact with a terminal and deenergizes the electromagnet or solenoid 43 of the auxiliary cylinder, allowing a spring to restore the valve to its normal position, and thereby reversing the action of the piston and opening the throttle-valve.

The speed of the auxiliary piston is regulated by a valve or cock on the exhaust-pipe.

Ordinary switches (such as are used to turn electric lamps on or off) on wires leading to any part of the ship complete the circuit with the electromagnet or solenoid and dynamo and shut or open the throttle-valves by hand. Any number of such switches, which are conventionally illustrated at 21, may be provided over the ship.

Without limiting myself to the precise details of the method, construction, and arrangement of parts of my invention as described and shown, I claim—

1. In an automatic governor for marine engines, the combination of a cylinder arranged below the water-level in the tunnel of a ship, near the propeller, and having a plurality of water-inlets connected therewith, a cock for controlling the escape of air from the cylinder, a water-tight piston within the cylinder having a plurality of arms mounted on its rod outside of said cylinder, a bar connected to and projecting on opposite sides of said piston-rod and engaging suitable stationary guides, springs adjustably connected to said bar on opposite sides of the piston-rod and adapted to regulate the stroke of the piston, an electric switch having pawls projecting into the path of the arms on the piston-rod, means for controlling the supply of steam to the engine, a source of electricity, and an electric circuit including said source of electricity, said switch, and said means for supplying steam to the engine.

2. In an automatic governor for marine engines, the combination of a cylinder arranged below the water-level in the tunnel of a ship, near the propeller, and having two water-inlets connected therewith, a cock for controlling the escape of air from the cylinder, a water-tight piston within the cylinder and having a rod projecting from the cylinder and provided outside of said cylinder with a plurality of arms, a bar connected to and projecting on opposite sides of said piston-rods and engaging suitable stationary guides, springs adjustably connected to said bar on opposite sides of the piston-rod and adapted to regulate the stroke of the piston, an electric switch having pawls projecting into the path of the arms on the piston-rod, a throttling-cylinder, a piston within said cylinder and connected with the main throttle-valve of the engine, an auxiliary cylinder, a piston therein connected with and adapted to operate the valve of said throttling-cylinder, a solenoid for actuating the valve of said auxiliary cylinder, and an electric circuit including said source of electricity, said switch, and said solenoid.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANDREW KERR.

Witnesses:

HUGH HYNDMAN,
GEORGE M. ATKINSON.