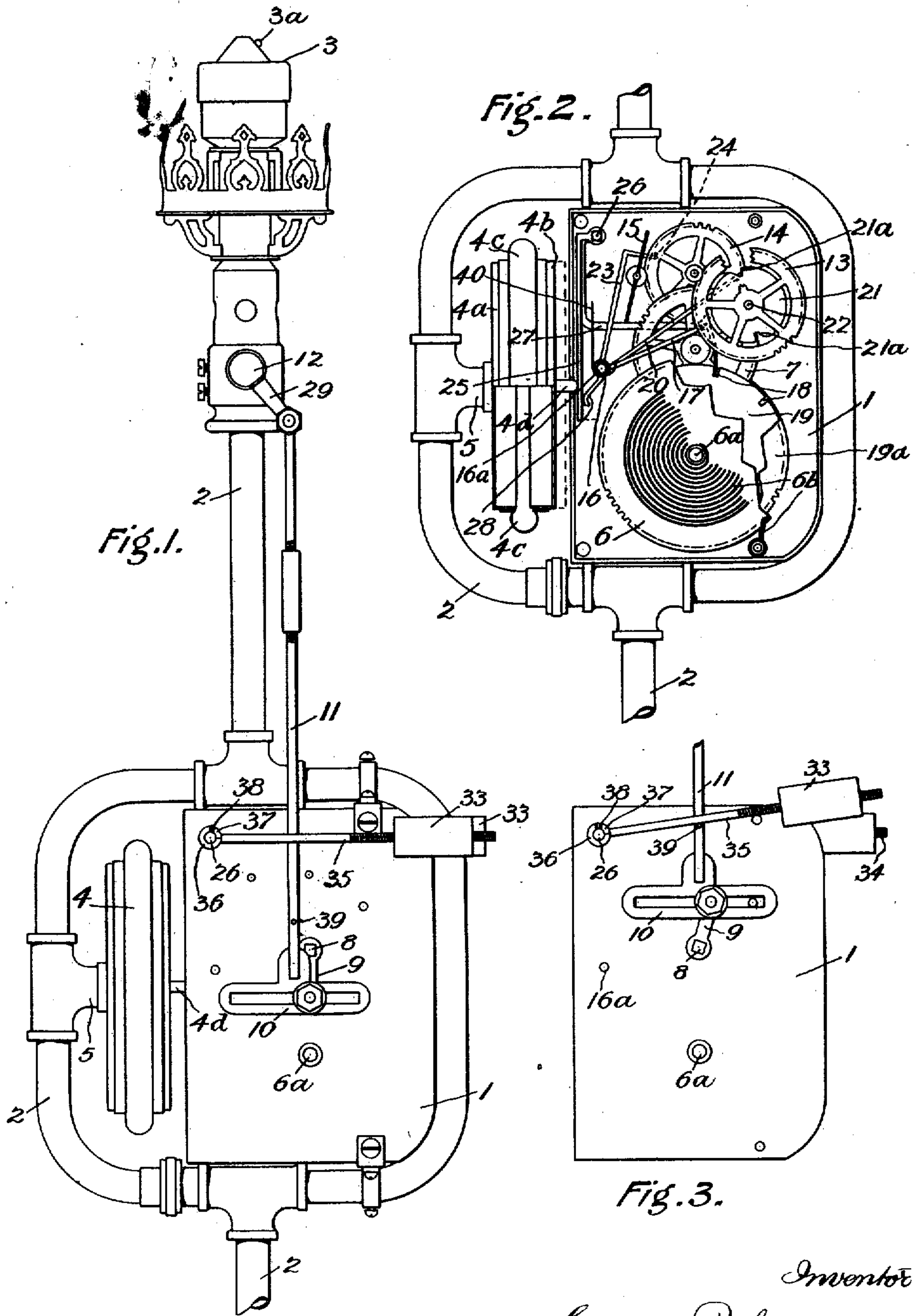


914,752.

Patented Mar. 9, 1909.
2 SHEETS—SHEET 1.



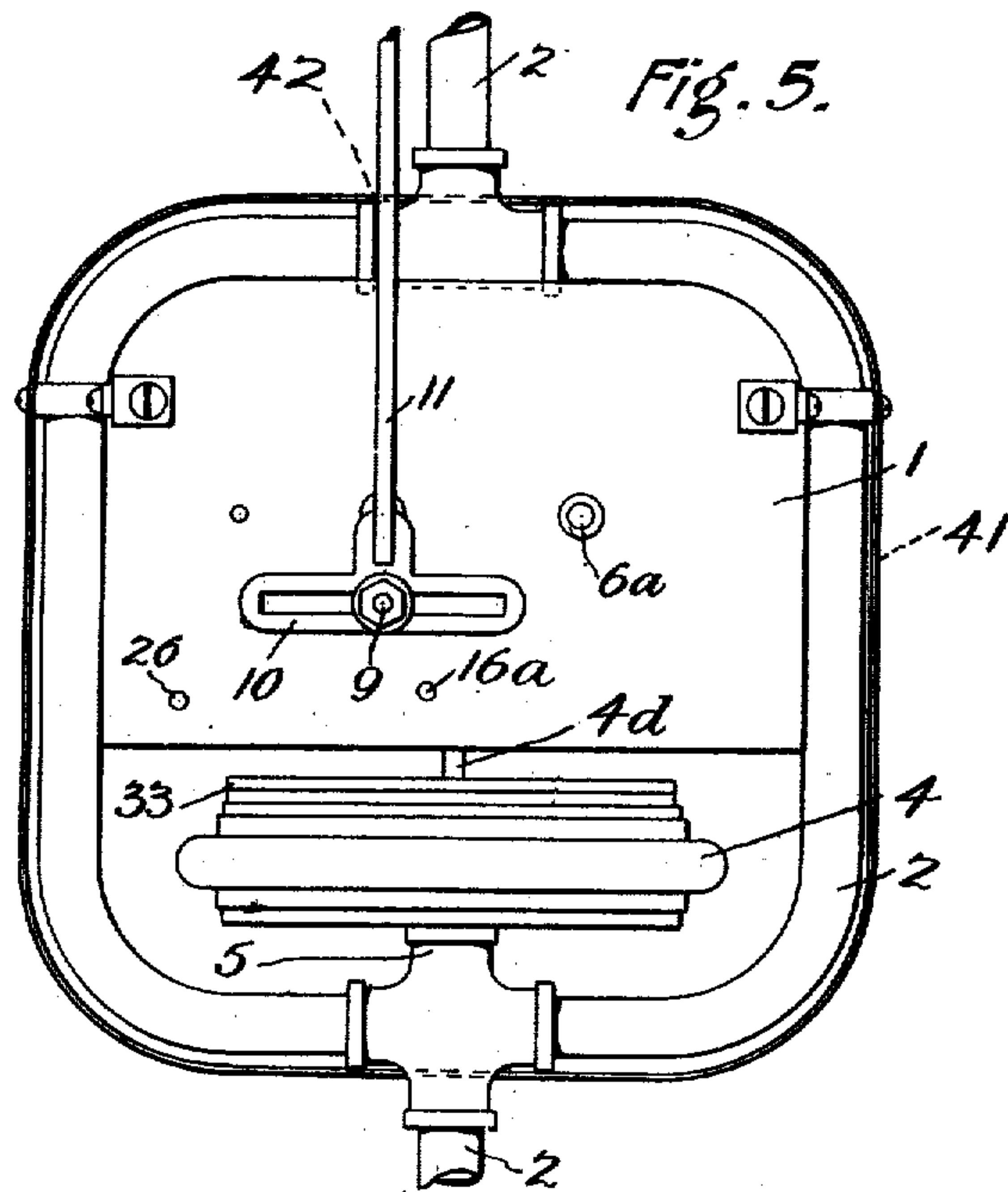
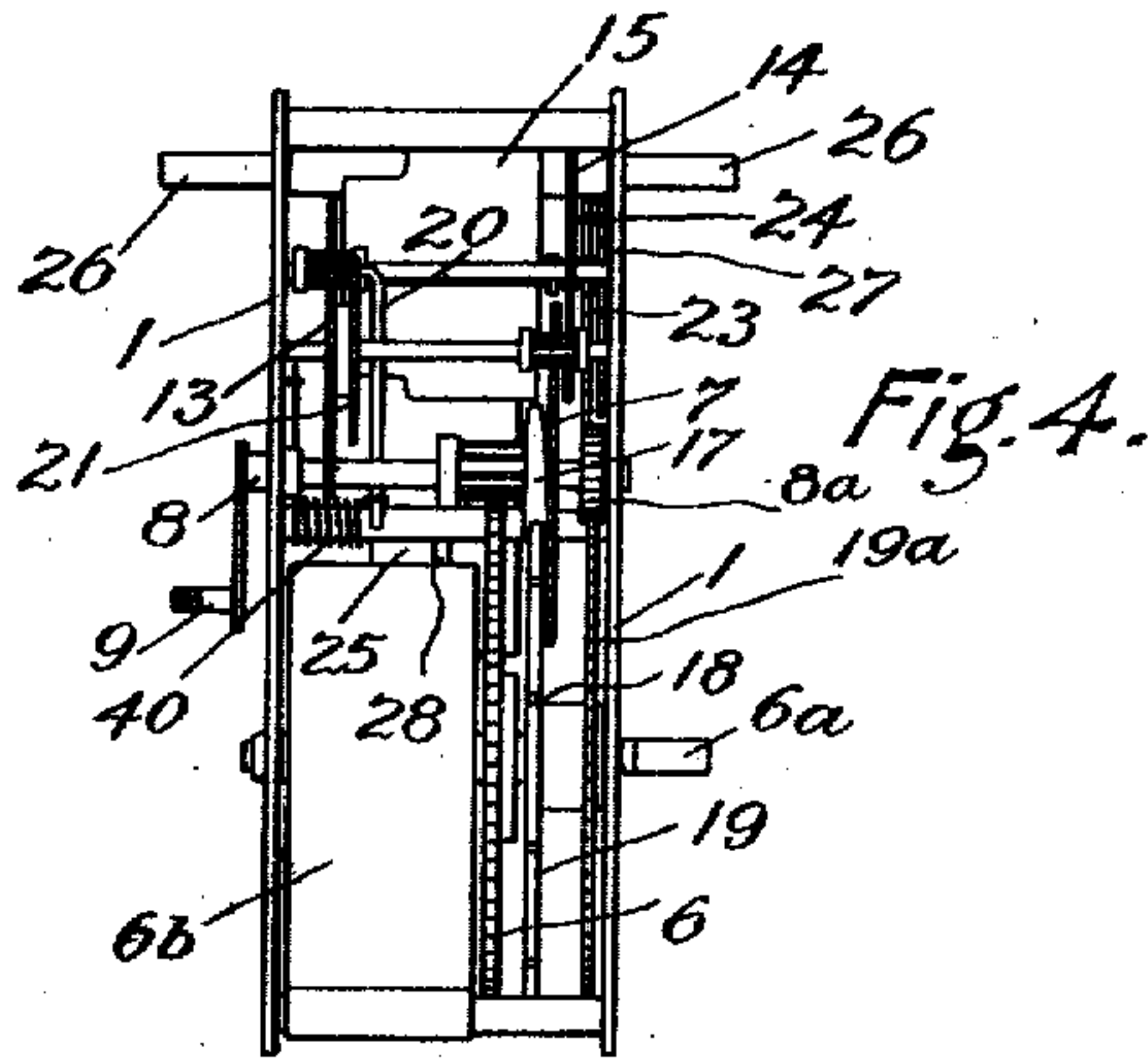
Witness
Charles Smith
A. J. Berrell

Inventor
George Robson.
by Harold Terrell
his atty.

914,752.

G. ROBSON.
PRESSURE CUT-OFF.
APPLICATION FILED MAY 18, 1908.

Patented Mar. 9, 1909.
2 SHEETS—SHEET 2.



Witnesses

Chas. H. Smith
A. J. Serrell

Inventor

George Robson.
by Harold Serrell
his atty.

UNITED STATES PATENT OFFICE.

GEORGE ROBSON, OF ST. KILDA, VICTORIA, AUSTRALIA.

PRESSURE CUT-OFF.

No. 914,752.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed May 18, 1908. Serial No. 433,429.

To all whom it may concern:

Be it known that I, GEORGE ROBSON, a subject of the King of Great Britain, residing at "Racine," Fitzroy street, St. Kilda, in the State of Victoria, Australia, have invented certain new and useful Improvements in Pressure Cut-Offs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is devised to provide means for enabling a number of gas lights to be turned on and off from one point or station by varying the pressure of the gas in the pipes supplying such lights.

It relates particularly to that class of lights in which the well known type of incandescent burner having a pilot light is used but it is obvious that it may be employed with any burner provided with a pilot light. Each burner or set of burners will be provided with an apparatus as hereinafter set forth and all such lights may be turned on and off from one point.

I am aware that lamplighter contrivances operating by clockwork mechanism alone or by pressure have been employed previously.

I shall now describe my invention reference being made to the accompanying drawings in which—

Figure 1 is an elevation of apparatus embodying my invention. Fig. 2 is an elevation partly in section showing the expanding member or body and the clockwork mechanism with one side of the frame removed hereinafter to be described. Fig. 3 is an elevation of the clockwork mechanism and connections. Fig. 4 is a side elevation of Fig. 3 with parts removed. Fig. 5 is an elevation of apparatus in which the mechanism is arranged to be operated by a vertically moving expanding member.

I provide a clockwork mechanism contained in the frame 1. By clockwork I mean such class of wheel mechanism as is usually applied to chronological instruments. This is similar in construction to the striking mechanism of an ordinary clock, and may be mounted in any suitable manner on the pipe 2 leading to the burner 3. I provide also an expanding member or body 4 which may consist of a stationary member 4^a connected to the branch 5 and a moving member 4^b the two members being hermetically joined by an air tight leather ring 4^c (see Fig. 2).

Referring to the clockwork mechanism (see Figs. 2 and 4) the wheel 6 on spindle 6^a which the spring 6^b operates drives a second wheel 7 the latter having a projecting spindle 8. This spindle 8 is provided with a crank 9 which slides in a link 10 secured to the rod 11 for operating the tap or cock 12 of the burner 3. The mechanism contains governing wheels 13 and 14 a fly 15 and a trigger 16 having a spindle 16^a mounted in the frame 1 of the clockwork. The trigger 16 is provided with a number of arms. One arm 17 is designed to drop into slots 18 formed in the periphery of a disk 19 turning on the main wheel axle 6^a, and being driven by pinion 8^a gearing with wheel 19^a. Another arm 20 operates on a disk 21 with slots 21^a secured on the spindle 22 of the governing wheel 13. Another arm 23 engages pins 24 secured on the governing wheel 14 stopping the mechanism when the first arm 17 drops into one of the peripheral slots 18.

A trigger plate 25 is provided secured on a spindle 26 moving in the frame 1 of the clockwork mechanism. The spindle has an arm 27 to engage the pins 24 on the governing wheel 14 and the plate 25 is designed to operate the trigger 16 by an arm 28 on the latter. The trigger plate 25 is operated by the pin 4^d of the member 4 when the latter is expanded (as shown by dotted lines in Fig. 2) by the extra pressure of gas as will be hereinafter described. The tap or cock 12 of the burner 3 is of that well-known type used with incandescent burners having a pilot light, by which, in one position of the tap the pilot burner 3^a is supplied with gas and in the other position the main burner is supplied. The end of the rod 11 before mentioned operated from the crank 9 is attached to an arm 29 on the tap 12.

The sizes of the wheels of the mechanism, the number and positions of the peripheral slots in the disks 19 and 21 and the pins 24 on the governing wheel 14 are so arranged that when the trigger plate 25, and from this the trigger 16, has been operated by the expansion of the member 4 and the latter is again collapsed the mechanism will operate to move the crank 9 through a half turn and then will be stopped by the engagement of the trigger arms with their respective slots and pins. The throw of the crank 9 is such that on the said half turn the rod 11 will be moved a sufficient distance to turn the tap or cock 12 of the burner 3 from the full on

position to the position in which the pilot light only is on or vice versa. I would have it understood that the construction of the clockwork mechanism may be varied without departing from the nature of my invention.

A simplified form of apparatus is shown in Fig. 5 where the member 4 is arranged to work vertically; the clockwork mechanism in this case will be the same as that described but it will be observed that it lies in a position at right angles to its position in Fig. 1. The member 4 is so adjustably weighted by the weights 33 that at the ordinary gas pressure it will not be expanded sufficiently to operate the trigger plate 25 before described but will be made to so operate by raising the pressure of the gas the predetermined extent. The raising of the pressure of the gas will be performed at the point or station from which it is desired to operate by well known means.

I preferably arrange the member 4 to work in a horizontal direction (see Figs. 1, 2 and 3.) In this case the member itself will not be weighted but will be kept in an unexpanded condition by the action of the trigger plate 25 the latter having two adjustably weighted levers 34 and 35 arranged on its spindle 26. One lever 34 is secured on the spindle and the other 35 is loose with a projection 36 on its boss 37 engaging with a pin 38 on the trigger plate spindle 26. A spring 40 (see Figs. 2 and 4) is provided surrounding the trigger 16 one end being attached to the frame 1 and the other end to one of the trigger arms which tends to bring the various trigger arms into and retain them in engagement with their respective slots and pins. When the rod 11 before described is being raised by the crank 9 a pin 39 on such rod will raise the loose weighted lever 35 (see Fig. 3) thus taking part of the weight off the trigger plate 25 and consequently off the expanding member 4 and allowing a less pressure to expand the latter. This provides self regulation to the extent of allowing the turning off of the gas in the morning to be performed at a lower pressure than is required for the turning on of the gas in the evening. Another object is to prevent the fluctuation of the pressure by consumption or other causes, from operating the apparatus when not required. It is obvious that the weights 33 on the weighted levers 34 and 35 will be adjusted to suit varying pressures of gas. For instance if the day pressure were thirty-tenths (the gas pressure being measured in tenths of an inch of water above atmospheric pressure as is usual) the evening pressure thirty-five tenths and the early morning pressure (say from 12 o'clock mid-night till dawn) fifteen tenths, the weights on the levers 34 and 35 would be adjusted so that the combined weights would

give a pressure on the member 4 equal to about forty-tenths and the loose weighted lever 35 a pressure of say about twenty-tenths.

Assuming that the evening pressure is about to be put on and it is desired to light up, the present pressure being thirty-tenths, the pressure is raised until it overcomes the pressure due to the weights on the member 4 (forty-tenths as before mentioned). The member 4 will be expanded the trigger plate 25 operated and the trigger arms 17, 20 and 23 disengaged from the slots 18 and 21^a and pins 24 respectively. The arm 27 prevents the mechanism from operating by engagement with one of the pins 24. If now the gas pressure be brought down to thirty-five tenths or lower the member 4 will be sufficiently collapsed by the weighted trigger plate 25 to allow the disengagement of the arm 27 from the pin 24 before mentioned thus allowing the mechanism to operate moving the rod 11 upward and turning on the gas to the burner. When the rod 11 has almost completed its stroke the pin 39 on same comes into contact with the loose weighted lever 35 and raises the latter. This removes twenty-tenths pressure from the member 4 and allows the thirty-five-tenths gas pressure to expand the same and operate the trigger plate 25 the mechanism being stopped by the arm 27 engaging with one of the pins 24 on the governing wheel 14. When the parts of the apparatus are in the positions hereinbefore last described, the gas is turned on notwithstanding the fact that the rod 11 has not yet fully completed its stroke.

At twelve o'clock midnight when the pressure of gas is reduced to fifteen-tenths as before mentioned the pressure on the member 4 due to the secured weighted lever 34 (namely twenty-tenths) will overcome the pressure of the gas and collapse the member 4 allowing the arm 27 to come out of engagement with the pin 24 and allowing the mechanism to complete the stroke of the rod 11 the gas remaining in the full on condition.

When the day pressure of twenty-tenths has been applied and then reduced again to about fifteen-tenths the mechanism will be allowed to operate, the rod 11 will be lowered and the loose weighted lever 35 resting on the pin 39 will move down with it and the projection 36 on the boss 37 of the lever will come into contact with the pin 38 on the trigger plate spindle 26 putting the full weight on the trigger plate 25. The mechanism will continue operating till the rod 11 completes its stroke when it will be stopped by the engagement of the trigger arms as before described and the mechanism will be in a position to repeat the cycle of operations described. It will be observed that the pressure of gas will be required to be raised

to about forty-tenths before the apparatus is again operated.

The apparatus described will be applied to each of the lights that it is desired to operate and the weights will be adjusted to suit the pressures used in different systems. The apparatus will be covered by any suitable form of dust tight casing 41 as shown in Fig. 5. The casing may be constructed of sheet metal or be a light casting and will have a perforation 42 through which the rod 11 passes. The casing 41 may have a felt or other non-conducting lining.

I claim:—

1. In an apparatus for automatically turning on and off the lights of gas burners, and in combination, means adapted to expand and contract with an increase and decrease of gas pressure, a motor, means actuated by the aforesaid means to partially release the motor upon an increase in the gas pressure, means then operative upon a decrease in the gas pressure for completing the motor release, a gas burner and means actuated by said motor for turning on and off the gas.

2. In an apparatus for automatically turning on and off the lights of gas burners, and in combination, means adapted to expand with an increase in the gas pressure, a spindle 26, a plate 25 connected to said spindle and adapted to be actuated by said expansive means, a lever also connected to said spindle, a weight adjustably mounted on the said lever to counteract the effect of an increase in gas pressure on the said expansive means, a motor, means whereby the movement of the aforesaid means releases the motor, a crank arm actuated by the said

motor, a gas burner, a tap therefor, a rod pivotally connected at one end to the said crank arm and at the other end to the said tap, and means for stopping the said motor on each half revolution of the said crank arm.

3. In an apparatus for automatically turning on and off the lights of gas burners, and in combination, an expanding device adapted to be actuated by the rise and fall of the gas pressure, regulatable means for controlling the action of the gas pressure on the said expanding device, a gas burner, a motor, means actuated by the expanding device for releasing said motor, and means actuated by the motor for turning on and off the gas to the said burner, and means for stopping the motor after the same has actuated the last aforesaid means to turn on or off the gas.

4. In an apparatus for automatically turning on and off the lights of gas burners and in combination, means adapted to expand with an increase in the gas pressure, a motor, means whereby the movement of the aforesaid means releases the said motor, a gas burner, means actuated by said motor for turning on and off the gas to the said burner and means operative in turning off the gas from the said burner whereby the same may be effected at a less variation in the gas pressure than that required in turning on the gas to the burner.

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

GEORGE ROBSON.

Witnesses:

ALICE HARKER,
FLORENCE SINCLAIR.