

No. 677,491.

Patented July 2, 1901.

C. ALLEN.
IGNITER FOR GAS ENGINES.

(Application filed Feb. 14, 1901.)

(No Model.)

2 Sheets—Sheet 1.

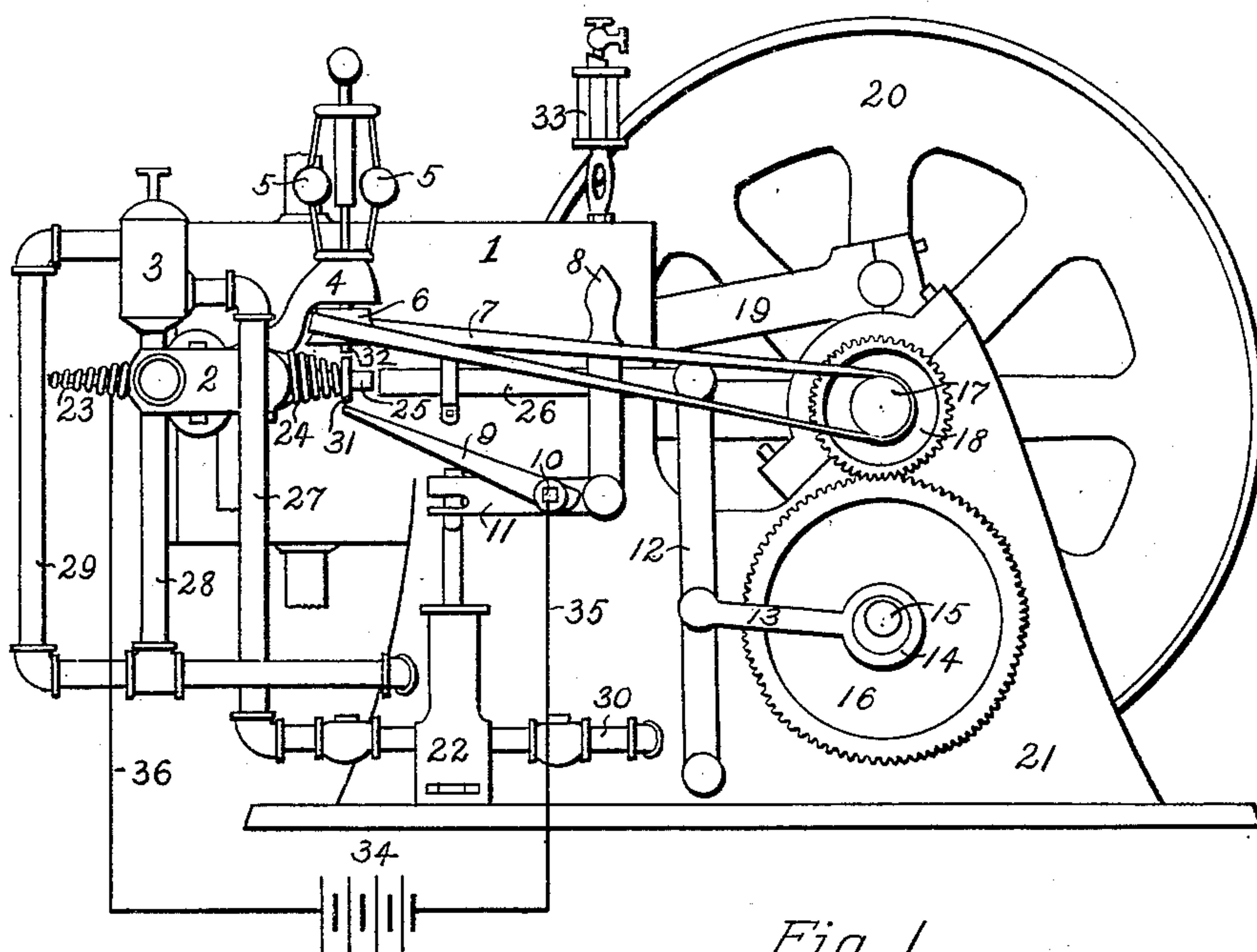


Fig. 1.

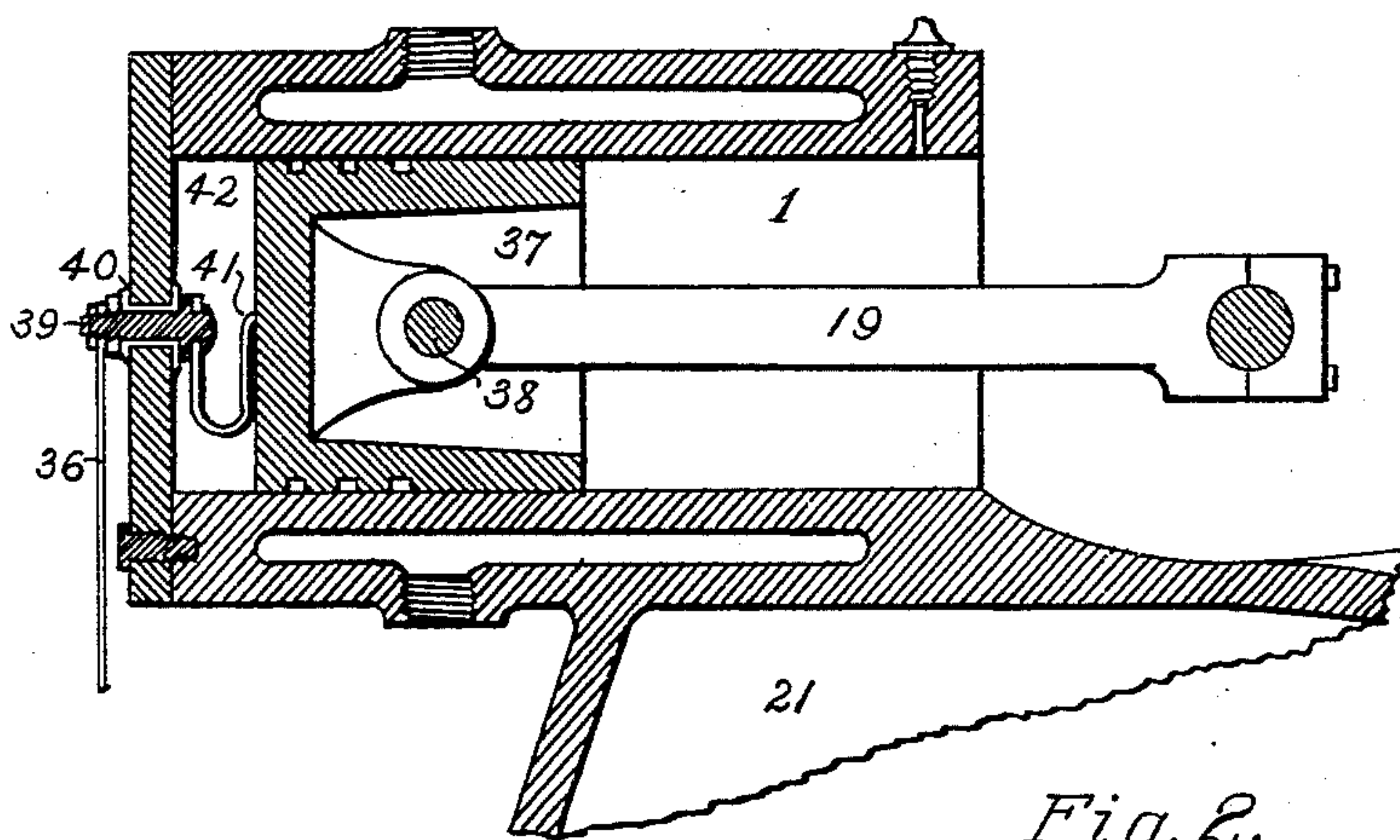


Fig. 2.

WITNESSES:

M. E. Kennedy.
Geo. R. Turner

INVENTOR

Clyde Allen
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ATTORNEY

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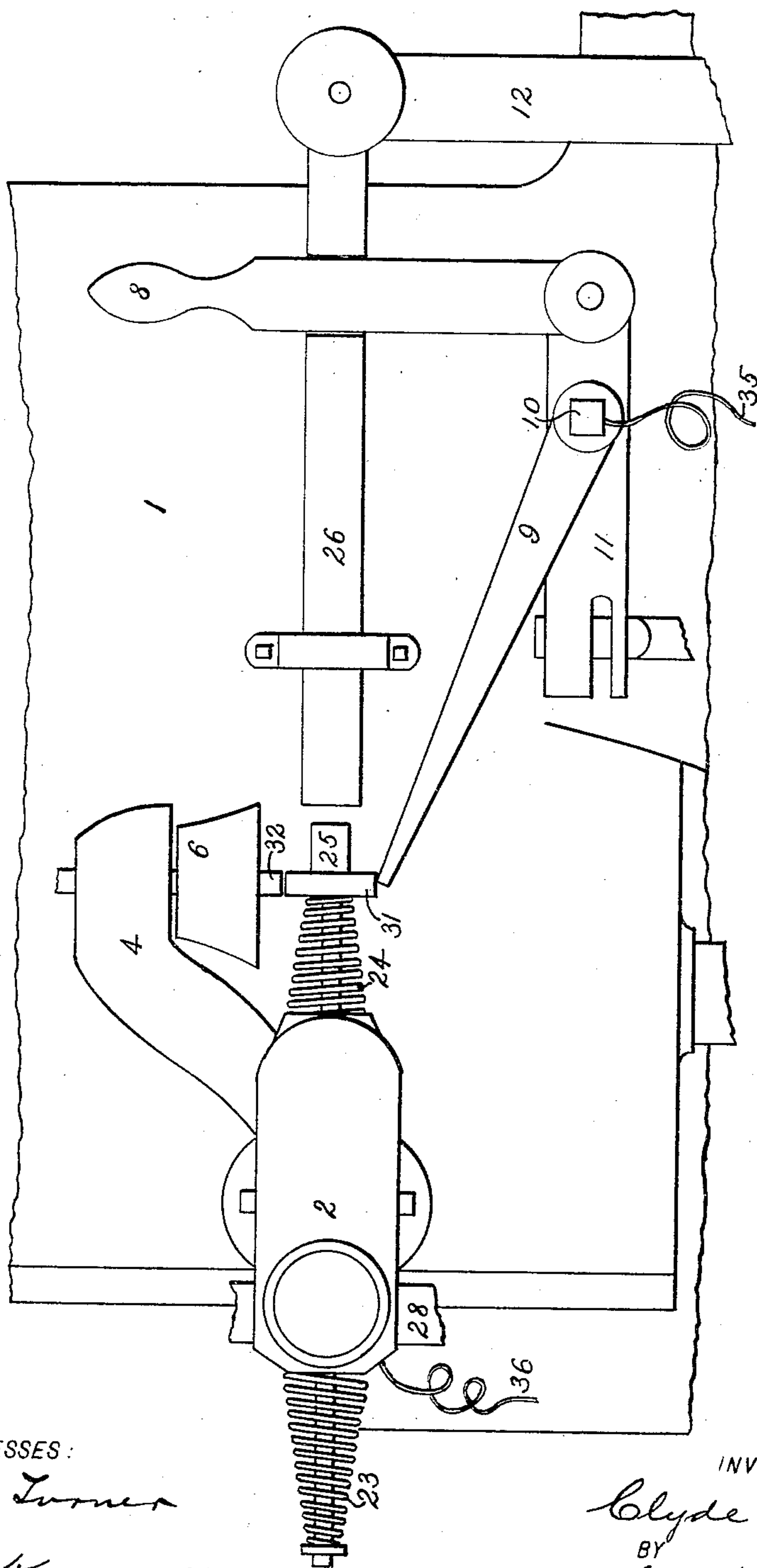


Fig. 3.

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UNITED STATES PATENT OFFICE.

CLYDE ALLEN, OF HAZLETON, IOWA.

IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 677,491, dated July 2, 1901.

Application filed February 14, 1901. Serial No. 47,194. (No model.)

To all whom it may concern:

Be it known that I, CLYDE ALLEN, a citizen of the United States of America, and a resident of Hazleton, Buchanan county, Iowa, have invented certain new and useful Improvements in Igniters for Gas-Engines, of which the following is a specification.

This invention relates to improvements in gas or vapor engines, and has for its objects the providing of a practical and simple device through which the igniting-spark may be made within the combustion-chamber of the cylinder and improved electrical connections and circuit-breaker for automatically regulating the production of the electric spark within the combustion-chamber. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a gasoline-engine, showing my improvements. Fig. 2 is a vertical section of the cylinder and piston, showing my improved igniting device in operative position; and Fig. 3 is an enlarged detail view of the valve-operating rods and the circuit-breaker.

Similar numbers refer to similar parts throughout the several views.

My improvements are designed to be used with any ordinary type of gasoline-engine, and are here represented as being applied to an open cylinder 1, placed upon the base 21, and which has a piston 37, with pivoted piston-rod 19, arranged to rotate the fly-wheels 20 on the primary shaft 17. This and the secondary shaft 15 have the square gearing 18 and 16, respectively, the latter by means of a cam 14 imparting a reciprocatory motion to the bar 26 through the medium of the pivoted levers 13 and 12.

A pump 22 draws a supply of gasoline from a reservoir (not here shown) into the supply-tank 3 through the pipe 27. The pump 22 has a bell-crank lever attached to its piston-rod, the member 8 of said lever being arranged to fit removably within a recess in the bar 26. Oil passes from the tank 3 into the carbureter 2, where it is vaporized, mixed with air, and drawn into the combustion-chamber 42 of the cylinder 1. The exhaust-valve is normally kept within its seat by the means of the spring 24. The exhaust-valve

stem moves within bearings in the walls of the carbureter 2 and is terminated by a nut having a projecting sleeve 31.

A belt 7, driven by the primary shaft 17, rotates the pulley 6, which is attached to the spindle 32 of the high-speed governor 5. As the speed of the engine increases beyond a proper limit the end of the spindle 32 is, through the action of the governor-balls 5, pushed down until it engages the sleeve 31 of the nut 25 at a moment when the exhaust-valve is raised from its seat, thus slowing down the engine until the governor lifts said spindle and releases the valve. The bar 26 operates to continuously lift the said exhaust-valve from its seat.

A conducting-bar 39 is set within an opening in the cylinder and insulated from the cylinder by a non-conducting packing-ring 40. This conductor is, by means of the wire 36, brought into connection with any suitable source of electrical energy. Attached to that end of the conductor 39 which extends within the combustion-chamber 42 of the cylinder 1 is a rod bent into a hook, as shown at 41, and which is a spring contact-piece, whose point comes in contact with the surface of the piston 37 when the latter has reached its limit of motion within the cylinder.

The battery 34 is connected with the circuit-breaker 9 by the wire 35. This circuit-breaker is attached to but insulated from the lower member of the bell-crank lever 11. The free end of the circuit-breaker 9 is so arranged as to come in contact with the sleeve 31 of the exhaust-valve nut 25 when the exhaust-valve is closed within its seat. This happens through the action of the reciprocating bar 26, which as it moves outward carries with it the upper member 8 of the bell-crank lever, raising the lower member 11 of said lever and the attached circuit-breaker 9 until the latter comes in contact with the sleeve 31 when the spring 24 has drawn the exhaust-valve back to its seat. As through the action of the cam 14 the movement of the reciprocating bar 26 is reversed its end impinges upon the nut 25, throws open the exhaust-valve, and causes the bell-crank lever to lower the arm 9, breaking the circuit as the sleeve 31 recedes from the end of said lever 9. It will be seen that when the engine

acquires unnecessary speed and the governor-balls 5 cause the spindle 32 to descend and hold open the exhaust-valve by engaging with the sleeve 31 the said sleeve is held out of
5 contact with the end of the circuit-breaker 9, breaking the circuit until a sufficient number of igniting-sparks have been omitted and the action of the engine slowed down. The governor thus automatically regulates the ex-
10 haust of the engine and the action of the sparker.

When the engine is started, gas is drawn from the carbureter to the combustion-chamber 42 of the cylinder, and as the piston re-
15 turns it compresses the gas within the combustion-chamber, the pressure closing both the inlet and exhaust valves. As the piston reaches its farthest limit of motion toward the cylinder-head it comes in contact with
20 the spring-sparker 41, and as it moves away the circuit through the engine is broken and an igniting-spark produced within the combustion-chamber. The action of the reciprocating-lever then keeps the circuit broken
25 until the piston returns toward the cylinder-head, when the current is reestablished and the gas again ignited.

As the spring-hook 41 is placed so as to retract a short distance through the pressure
30 action of the piston, the contact is always cer-

tain, and it has no pivotal connections subject to wear.

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

1. In a gasoline-engine having an electrical sparking device, the combination of the contact-piece 41, the insulated conductor 39, insulated lever 9 and valve-stem nut 25 with sleeve 31, with the cylinder 1, piston 37, con-
40 ductors 35 and 36 and suitable means for imparting an electrical current to said conductors, substantially as shown and described.

2. In a gasoline-engine having an electrical sparking device, the combination of the
45 cylinder 1, piston 37, valve-stem nut 25 with sleeve 31, governor 5 having spindle 32 adapted to engage said sleeve 31, with the insulated circuit-breaker 9, conductors 35 and 36, conductor 39, spring hook-shaped contact-
50 piece 41, and suitable means for imparting an electrical current to the conductors, all substantially as shown and described.

Signed by me at Hazleton, Iowa, this 9th day of February, 1901.

CLYDE ALLEN.

Witnesses:

H. E. MERRILL,
H. A. BURDICK.