

No. 681,897.

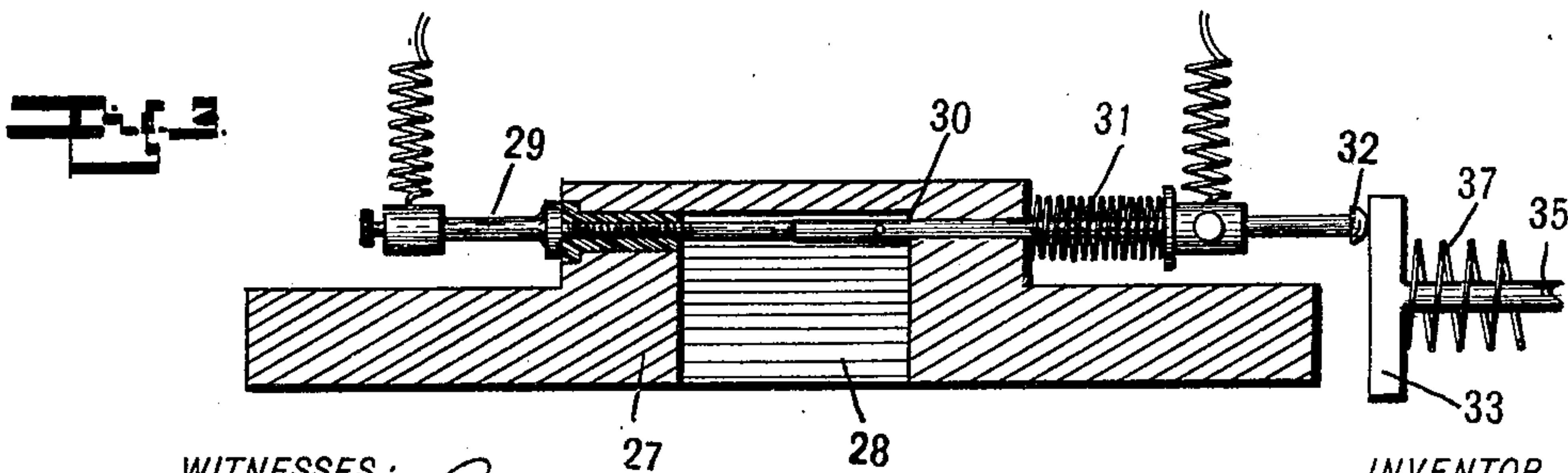
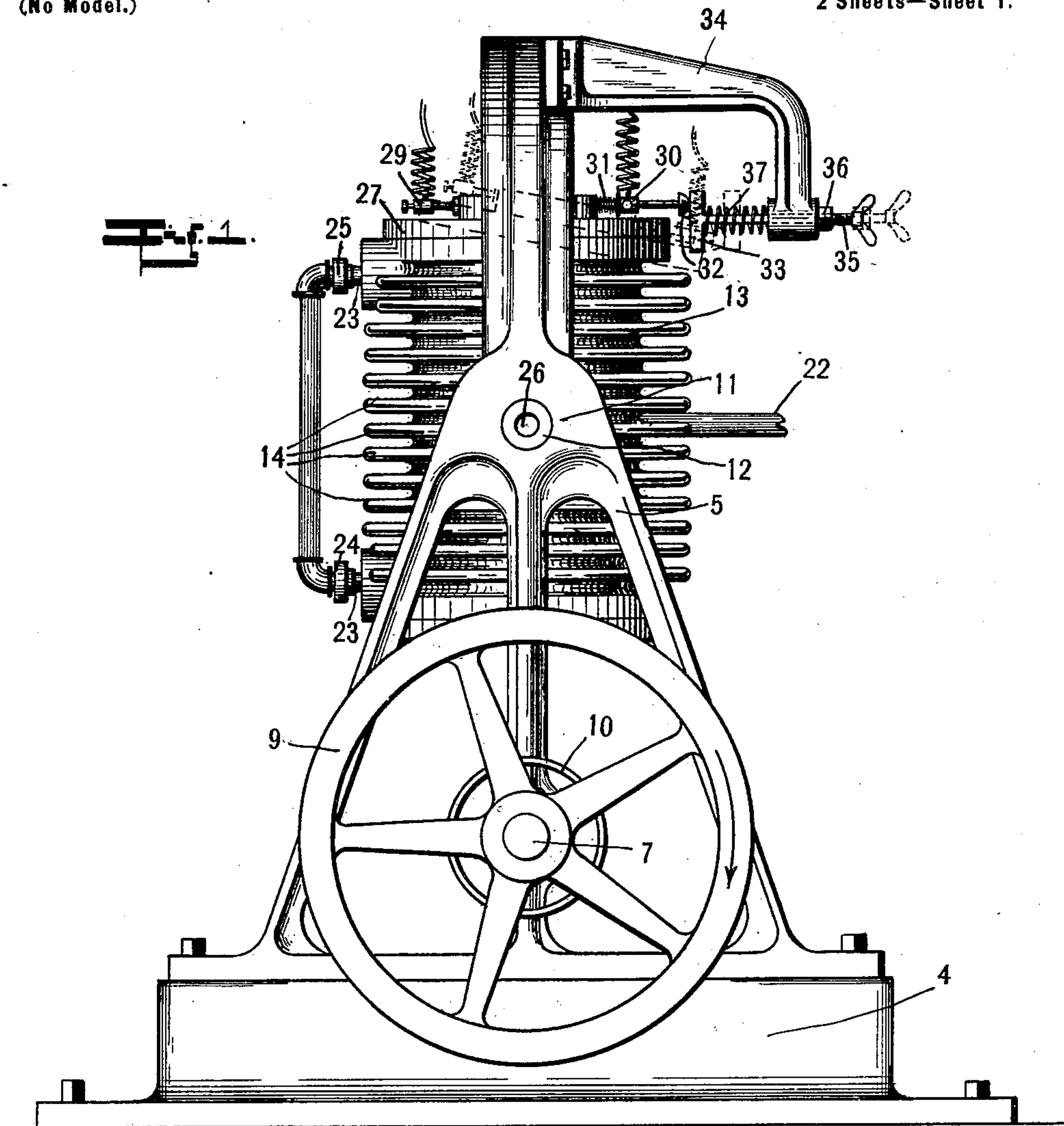
Patented Sept. 3, 1901.

C. H. WANEE.
SPARKING IGNITER FOR GAS ENGINES.

(Application filed Oct. 20, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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Bertha M. Ballard.

INVENTOR

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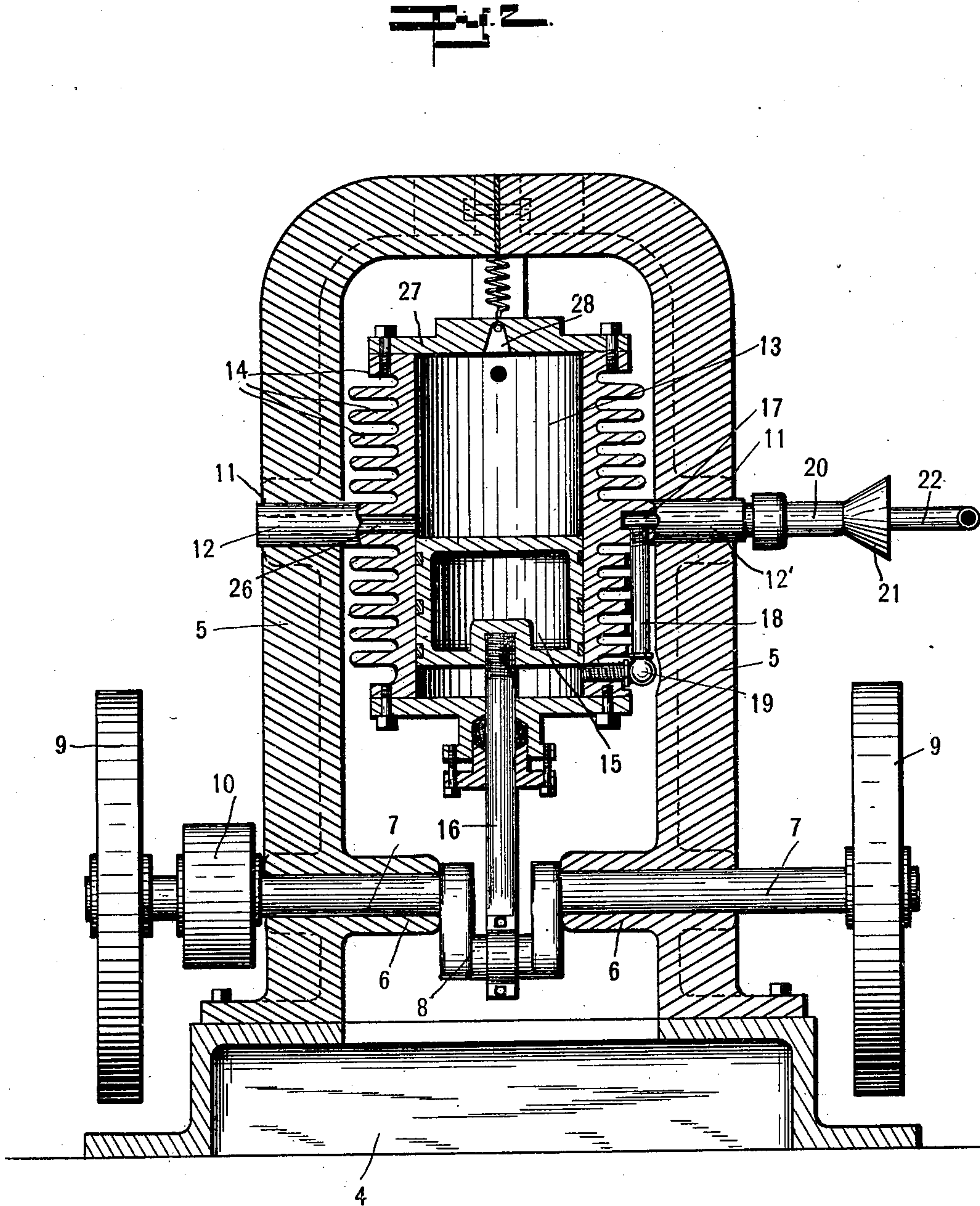
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UNITED STATES PATENT OFFICE.

CHARLES H. WANEE, OF INDIANAPOLIS, INDIANA.

SPARKING IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 681,897, dated September 3, 1901.

Application filed October 20, 1900. Serial No. 33,722. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. WANEE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Gas-Engine, of which the following is a specification.

My invention relates to an improvement in gas-engines.

10 The object of my invention is to produce a gas-engine of simple construction and with the cylinder mounted so as to oscillate, and thus control the movements of the sparking mechanism.

15 A further object is to so construct and arrange the several parts that they may be made with a minimum amount of labor and be easily assembled.

20 The accompanying drawings illustrate my invention.

Figure 1 is a side elevation. Fig. 2 is a central vertical axial section. Fig. 3 is a sectional detail at right angles to Fig. 2.

25 In the drawings, 4 indicates a bed-plate, to the upper face of which is bolted a pair of side frames 5 5, detachably secured to each other at their upper adjacent ends. Each of said frames 5 is provided near its lower end with a crank-shaft bearing 6, within which may be 30 mounted a crank-shaft 7, having a center crank 8, which lies between the adjacent ends of bearings 6. The crank-shaft 7 is introduced into the bearings of the side frames before said frames are secured together, and said shaft is then provided at its outer ends with suitable balance-wheels 9 and a driving-pulley 10. At some distance above bearing 6 each side frame 5 is provided with a bearing 11. Said bearings register and are adapted 40 to receive a pair of diametrically-opposed trunnions 12 and 12', formed upon the cylinder 13. In order to facilitate the rapid cooling of the cylinder 13, I form on the periphery thereof a series of circumferential flanges 14, thus materially increasing the radiating-surface. Mounted so as to reciprocate within 45 cylinder 13 is a piston 15, provided with a piston-rod 16, projecting through the lower head of the cylinder, said piston-rod being 50 secured in any desired manner to the crank 8. Trunnion 12' is provided with an axial bore 17, to the inner end of which is con-

nected a pipe 18, leading into the lower end of cylinder 13, beneath piston 15, and a suitable check-valve 19 is maintained in said 55 pipe. The outer end of the trunnion 12' projects somewhat beyond the frame, and to this projecting end, by means of any suitable union, I secure a supply-pipe 20, which is provided with a bell-shaped mouth 21, through 60 which the air-supply is drawn. Leading into pipe 20 is a gas-supply pipe 22, provided with a suitable regulating-valve. Leading from the lower end of cylinder 13 is a pipe 23, which leads into the upper end of said cylinder. 65 Mounted within pipe 23, one preferably near each end, is a pair of check-valves 24 and 25. Formed through trunnion 12 is an exhaust-passage 26, to the outer end of which any suitable exhaust-pipe may be connected. 70

The ignition of the compressed explosive charge is accomplished in the following manner: The upper end of the cylinder 13 is closed by a head 27, provided on its inner face, near its center, with a recess 28. Projecting into recess 28 is a terminal 29, which 75 terminal should be preferably insulated from the head. Diametrically opposed to terminal 29 and projecting into recess 28, so as to cooperate with said terminal 29, is a second 80 terminal 30, which is reciprocally mounted within the head and is held normally separated from said terminal 29 by means of a spring 31. Terminal 30 is provided at its outer end with a head 32, which is adapted 85 to be moved by the oscillation of the cylinder into engagement with a yielding adjustable stop 33, carried by a bracket 34, secured to the upper ends of frames 5. Stop 33 is carried by a spindle 35, reciprocally mounted 90 in the end of bracket 34 at right angles to the axis of the engine. Upon the outer end of spindle 35 is mounted an adjusting-nut 36, and said nut is normally held in engagement with the bracket by means of a spring 37, 95 mounted between the bracket and stop 33, said spring being slightly stronger than spring 31.

In operation a new charge of mixed gas and air is drawn through passage 17, pipe 18, 100 and check-valve 19 into the lower end of the cylinder by an upward movement of the piston, said movement resulting in an oscillation of the cylinder around its trunnions 12

and 12', so as to throw the upper end of said cylinder away from stop 33. The downward movement of the piston then results in a compression of the charge in the lower end of the cylinder, and when the said pressure is sufficient to pass the check-valves 24 and 25 the new charge is forced into the upper end of the cylinder through pipe 23, the exploded charge at the same time passing out through the exhaust 26. This movement of the piston causes an oscillation of the cylinder in the other direction, so as to bring head 32 into contact with stop 33. This contact first results in a compression of spring 31 and a bringing together of terminals 30 and 29. Spring 37 then yields until the point of maximum oscillation is reached. A continued upward movement of the piston causes a return oscillation of the cylinder, stop 33 following the head 32 and maintaining the terminals in contact until nut 36 returns into contact with the bracket 34. This should occur about the time the piston reaches its extreme upward point, and a continued rotation of the crank-shaft allows an expansion of spring 31 and a consequent spark due to the separation of the terminals. The exact point of separation of the terminals may be regulated by an adjustment of nut 36, so as to control the point where the spring 31 is allowed to expand.

I claim as my invention—

1. In a gas-engine, the combination with a

crank-shaft, of an oscillatory cylinder, a piston mounted therein and connected to said crank-shaft, whereby the cylinder will be oscillated by the reciprocation of the piston, a pair of cooperating terminals carried by said cylinder, one of said terminals being movable toward and from the other, and a stop arranged in the path of movement of the movable terminal.

2. In a gas-engine, the combination with a crank-shaft, of a cylinder arranged to oscillate upon an axis parallel with the crank-shaft, a piston mounted therein and connected to said crank, a pair of cooperating terminals carried by said cylinder, one of said terminals being movable toward and from the other, a spring normally separating said terminals, a yielding stop arranged in the path of movement of said movable terminal, and means for adjusting the position of said stop.

3. In a gas-engine, the combination with a crank-shaft, of a cylinder mounted so as to oscillate about an axis parallel with the crank-shaft, a pair of terminals carried by said cylinder one of said terminals being movable toward and from the other, yielding means for normally separating said terminals, and a yielding stop arranged in the path of movement of said movable terminal.

CHARLES H. WANEE.

Witnesses:

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