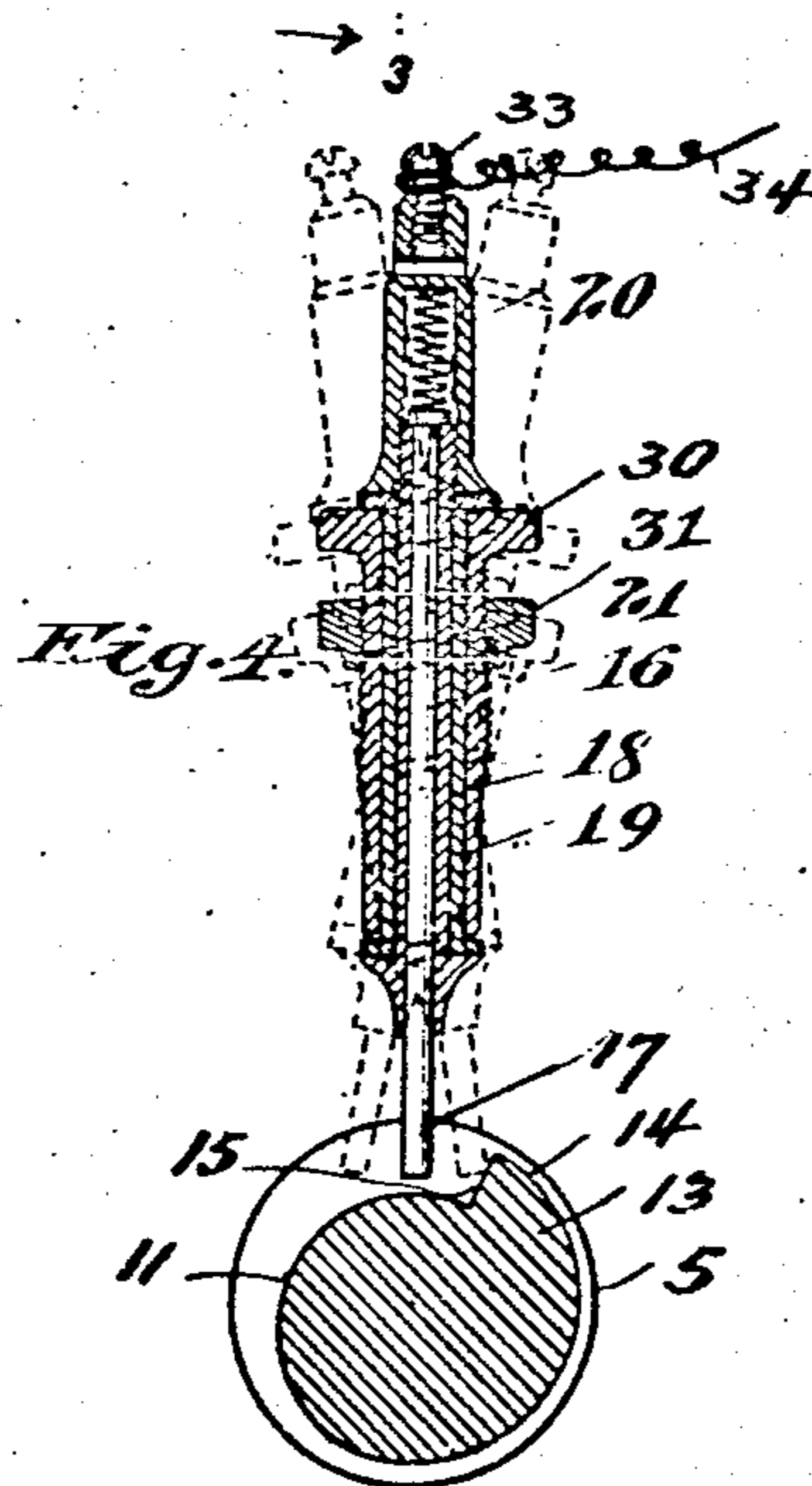
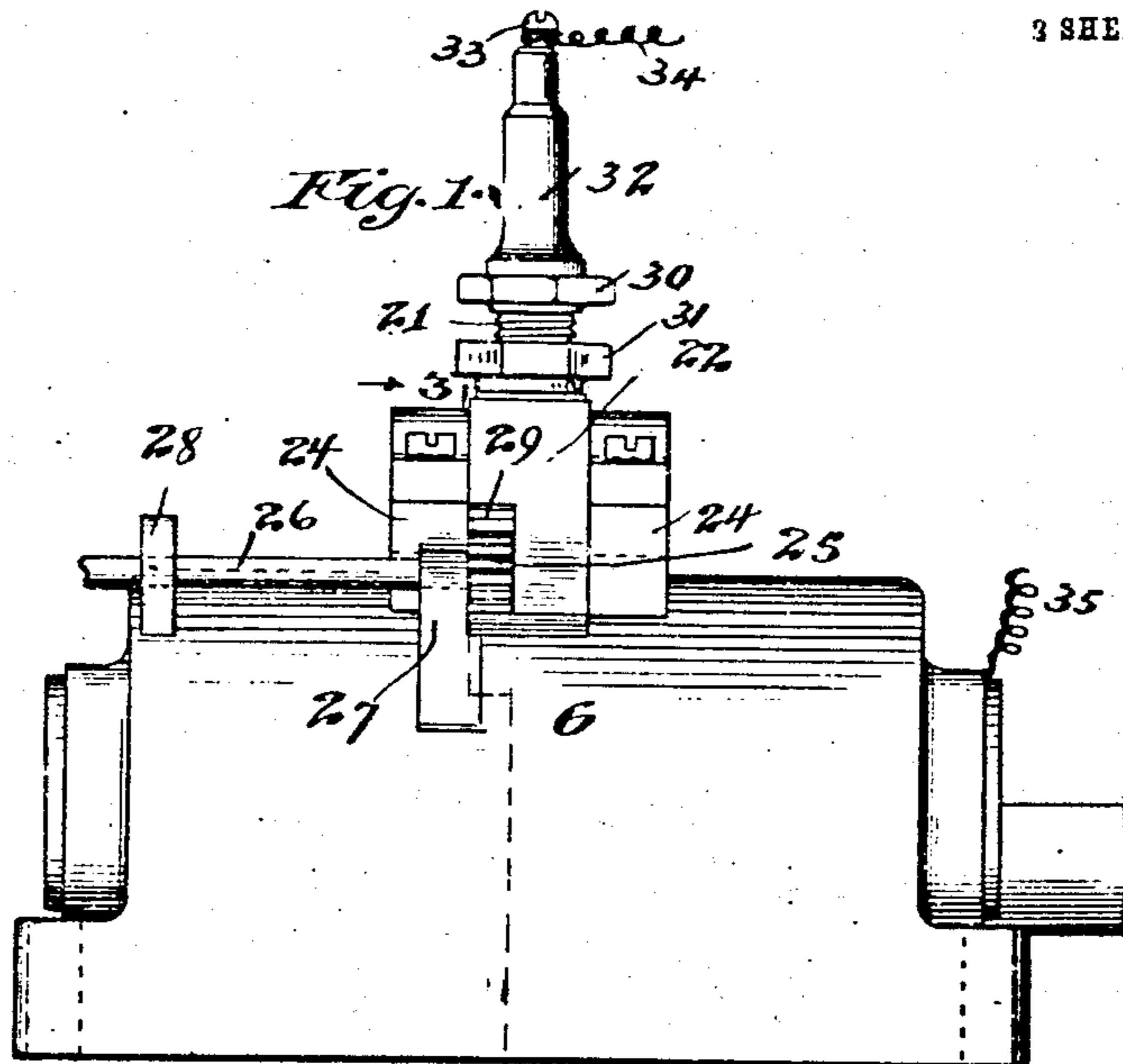


No. 845,354.

PATENTED FEB. 26, 1907.

C. T. HILDEBRANDT.
SPARKING IGNITION DEVICE.
APPLICATION FILED FEB. 17, 1905.

3 SHEETS—SHEET 1.



Witnesses,
J. J. Mann
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Inventor,
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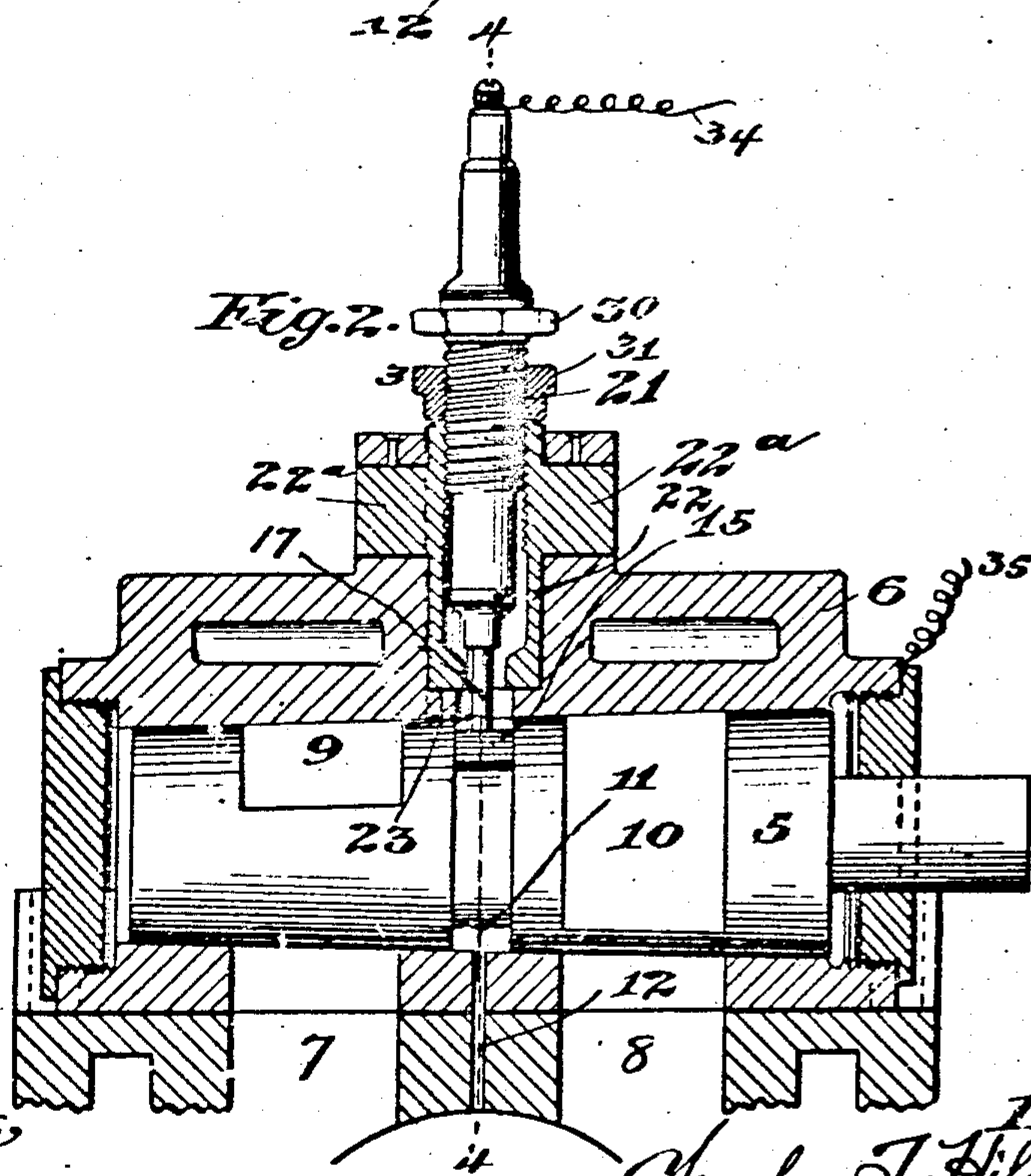
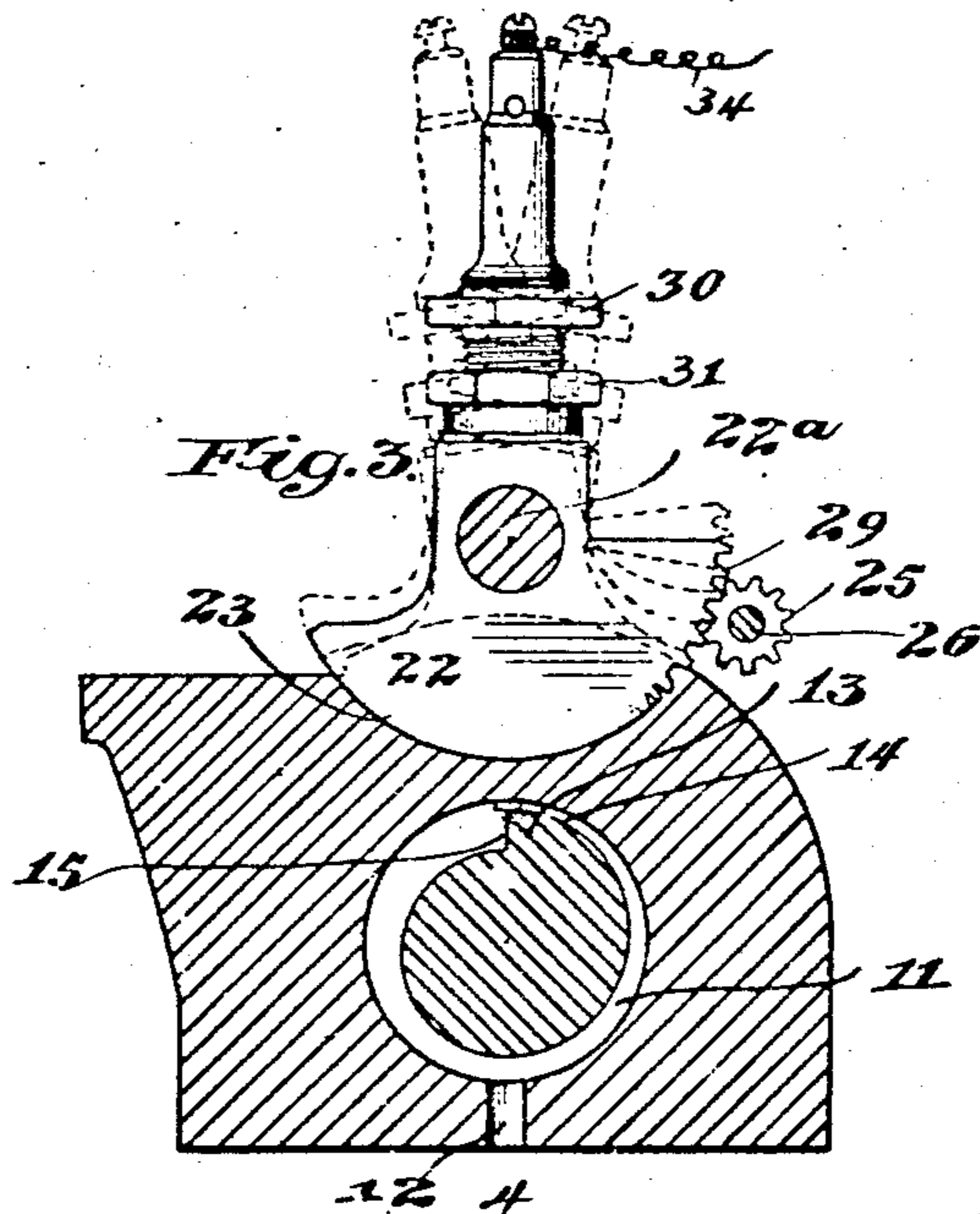
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2 SHEETS—SHEET 2.



Witnesses,
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UNITED STATES PATENT OFFICE.

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SPARKING IGNITION DEVICE.

No. 845,354.

Specification of Letters Patent.

Patented Feb. 28, 1907.

Application filed February 17, 1905. Serial No. 246,138.

To all whom it may concern:

Be it known that I, CHARLES T. HILDEBRANDT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sparking Ignition Devices, of which the following is a specification.

This invention relates to improvements in ignition devices more particularly adaptable to gas and vapor engines, and refers more particularly to an electrical sparking device.

The principal object of the invention is to provide a device which shall be certain and reliable in its operation and shall be capable of easy manual adjustment through a readily-accessible adjusting means to vary the time at which the sparking occurs relatively to the movement of the piston of the engine; and to this end the invention consists in a novel adjustable sparking device, substantially as hereinafter described, and more particularly pointed out in the claims.

The invention has been designed more particularly as an improvement upon the sparking device disclosed in Letters Patent to E. W. Brooks, No. 737,202, August 25, 1903, and in order that the improvement may be fully understood I will first briefly describe such parts of the valve and ignition mechanism as are old and disclosed in the aforesaid Letters Patent.

In the drawings, which illustrate the preferred mechanical embodiment of the invention, Figure 1 is a side elevational view of the valve of an engine; showing the application of my improved adjustable ignition device thereto. Fig. 2 is a vertical sectional view taken in the plane of the axis of the valve of the engine and illustrating the interior mechanism of my improved igniter. Fig. 3 is a transverse sectional view on the offset line 3 3 of Fig. 1, and Fig. 4 is a detail cross-sectional view on the line 4 4 of Fig. 2.

The present invention is herein shown as built upon the ignition device disclosed in the Letters Patent to Brooks hereinabove referred to, the invention of the said Brooks patent being shown as embodied in connection with an engine employing a rotary valve, such as is shown and described in Letters Patent No. 441,029, granted November 18, 1890, to W. S. Sharpneck. Briefly describing, therefore, such parts and features

as are old in either or both of the Letters Patent above referred to, 5 designates a rotary valve-body arranged within a suitable valve-casing 6, provided with inlet and outlet ports 7 and 8, respectively, which communicate with the interior of the cylinder and which are adapted to be opened and closed at the proper times by the rotation of the valve-body 5, having inlet and exhaust passages 9 and 10, respectively, formed therein. The valve 5 is rotated continuously, the gas being admitted at one part of the revolution and exhausted during another part of the revolution, or, in other words, there is an explosion and corresponding exhaust for each revolution of the valve.

Referring now more particularly to the igniter mechanism, 11 designates an annular groove formed in the valve-body at a point between the two ports 9 and 10 and forming in conjunction with the casing of the valve a closed annular chamber, which communicates with the interior of the engine through a gas-passage 12, extending downwardly through the casing at a point in register with said groove.

13 designates a cam projection formed or secured within the annular groove 11 and provided with a cam-surface 14, which extends eccentrically to the axis of the valve-body and terminates at its rear end, considered with reference to the direction of movement of the valve-body, in an abrupt drop or shoulder 15, the opposite end of the cam being inclined gradually, so as to move smoothly into engagement with a wiper.

16 designates a spring-pressed plunger, the lower end 17 of which constitutes a wiper adapted to cooperate with the cam 13 and forms in conjunction therewith a circuit-interrupter or sparking device. This plunger 16, as shown and described in the Letters Patent to Brooks hereinabove referred to, extends radially outward through the casing 6, being guided in a sleeve 18, which is surrounded by an insulating-sleeve 19, mounted in a threaded casing 21, said threaded casing having on its upper end an integral nut 30, by which it is adjusted, and a jam-nut 31. To the upper end of the tubular guide 18 is screwed a tubular cap 32, containing a spring 20, normally pressing the plunger 16 upon the cam and carrying a binding-post 33 for one of the wires 34, the

other wire being shown at 35. However, instead of mounting the plunger and its surrounding and actuating parts rigidly in the valve-casing I mount the threaded casing 5 21, which carries said parts, in and through a rocking block 22, which block is of a generally quadrant shape, as shown in Fig. 3, and snugly fits a correspondingly-shaped slot or seat 23, formed in the upper part of 10 the valve-casing and extending in a direction transversely of the valve-body and in vertical alinement with the annular ignition-chamber 11, as clearly shown in Fig. 2. In order to provide for an adjustment of this 15 rocking block, I provide the same with opposite laterally-extending pintles 22^a, which are journaled in bearing-blocks 24, mounted on the upper face of the valve-casing, as plainly shown in Fig. 1. As will be seen in 20 Fig. 2, the segment-block 22 is cored or chambered and internally threaded to receive the externally-threaded tubular member 21, carrying the plunger, which tubular member can be readily screwed into the seg- 25 ment-block the requisite distance to produce the desired wiping effect between the contacting elements of the igniter and secured by the jam-nut 31. The segment-block 22 is mounted to swing above and in a 30 direction transversely of the valve and longitudinally of the path of travel of the igniter-cam 13. It is evident, therefore, than an adjustment of said segment-block in one direction or the other will carry the tip of the 35 wiper 17 to one side or the other of the vertical plane in which lies the longitudinal axis of the valve-body, as clearly shown in Fig. 4, whereby the interruption and consequent sparking between the two electrodes 40 of the igniter will occur sooner or later in the circular travel of the cam 13, according to the adjustment of the reciprocating wiper 17.

Any suitable or convenient means may be employed for effecting the adjustment of the 45 segment-block carrying the reciprocating sparkler element, that herein shown comprising a pinion 25 on the end of a shaft 26, rotatably mounted in suitable bearings 27 and 28 on the outer surface of the valve-casing 6, said pinion engaging a segmental rack 50 29 on the upwardly and outwardly extending edge of the segment-block, it being understood that the outer end of the shaft 26 will be provided with any suitable actuating 55 means, or where the device is employed in

connection with a motor-vehicle will be suitably geared to an operating handle or wheel within convenient reach of the operator.

While I have described my invention in connection with and as an improvement 60 upon the igniter mechanism shown in the patent to Brooks hereinabove referred to and while it has been more especially designed for use in connection therewith, yet the adjusting means for the reciprocatory 65 member of the igniter constituting the chief novel element of the invention is obviously capable of use generally in connection with igniters employing a rotating cam or its equivalent, whether this latter be em- 70 ployed in association with a rotary valve or otherwise. Hence I do not, except to the extent indicated in specific claims, limit the invention to its association or combination with the parts hereinabove described as old in 75 the prior patents hereinabove referred to.

I claim—

1. In an ignition device for engines, the combination with a rotatable cam constituting one contacting element of a sparkler, of a 80 spring-pressed plunger the lower end whereof is adapted to wipe over said cam, a pivoted segment-block constituting a carrier for said spring-pressed plunger so mounted as to be adjustable longitudinally of the path of 85 travel of said cam, said segment-block having a segment-rack formed thereon, a pinion engaging said segment-rack, and a suitably-mounted actuating-shaft for said pinion, substantially as described. 90

2. In a gas-engine, the combination with a valve-casing and a rotatable valve therein suitably ported to control the inlet and exhaust of the engine, of an ignition-chamber formed in said valve and communicating 95 with the engine-cylinder, a cam constituting one contacting element of a sparkler mounted on said rotatable valve in said ignition-chamber, a pivoted segment-block mounted on said valve-casing and adjustable longitudi- 100 nally of the path of travel of said cam, a spring-pressed plunger mounted in said segment-block the lower end whereof is adapted to wipe over said cam, and means for adjusting said segment-block, substantially as de- 1 5 scribed.

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Witnesses:

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