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(By judicial change of name now E. B. PARKHURST.)

SPARKING MECHANISM FOR GAS OR GASOLENE ENGINES.

(Application filed Oct. 16, 1901.)

(No Model.)

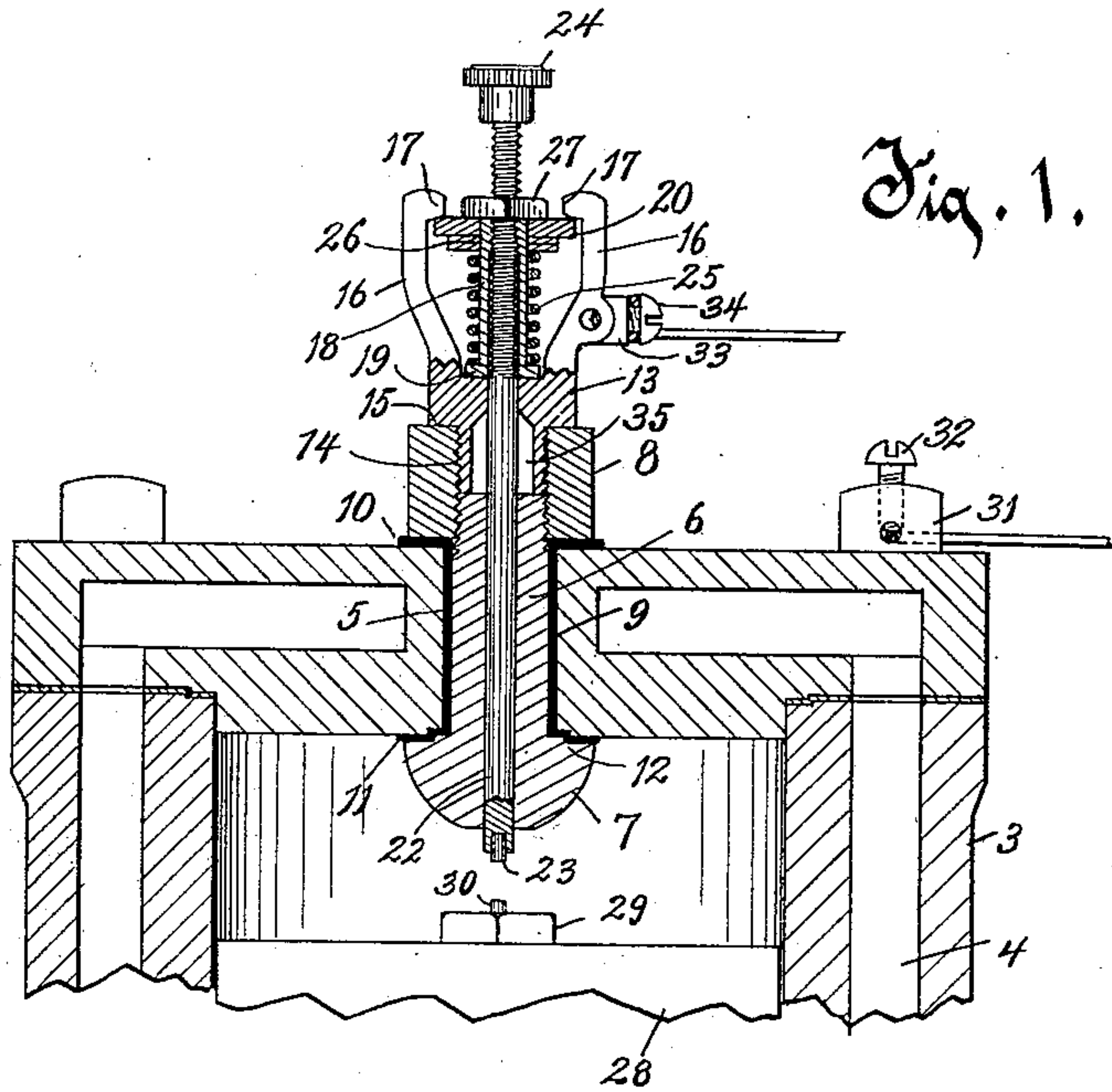
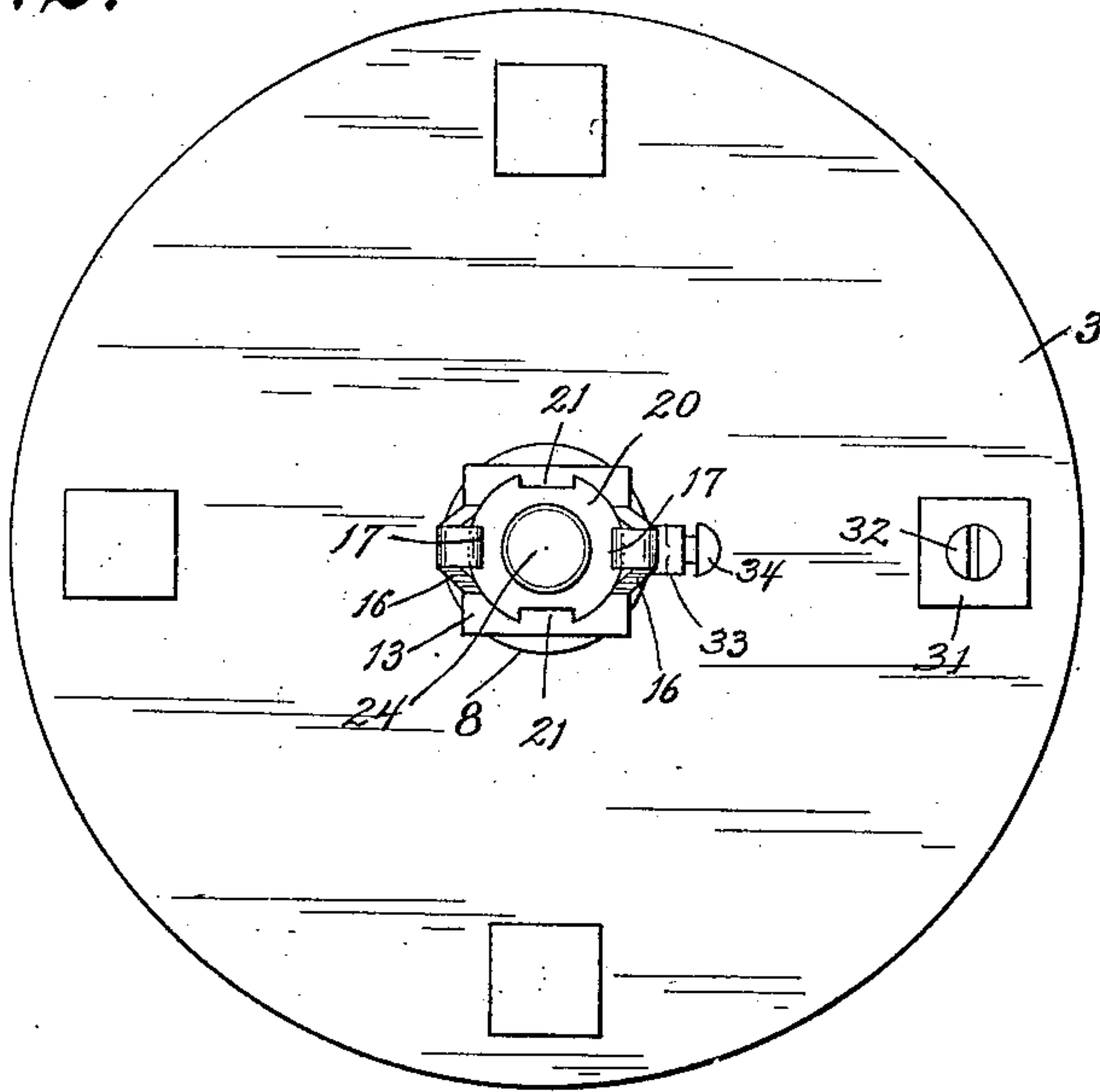


Fig. 1.

Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SPARKING MECHANISM FOR GAS OR GASOLENE ENGINES.

SPECIFICATION forming part of Letters Patent No. 713,194, dated November 11, 1902.

Application filed October 16, 1901. Serial No. 78,782. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. BEAN, (by judicial change of name now EDWARD BEAN PARKHURST,) residing at Milwaukee, in the
5 county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Sparking Mechanism for Gas or Gasolene Engines, of which the following is a description, reference being had to the accompanying
10 drawings, which are a part of this specification.

My invention has relation to improvements in sparking mechanism for gas or gasolene engines.

15 The primary object of the invention is to provide sparking mechanism of such improved construction that it is possible always to determine at a glance whether or not the electrodes properly contact.

20 A further object relates to providing means for readily adjusting one of the electrodes, so as to provide for proper contact.

A still further object is to provide for ready removal of one of the electrodes for the pur-
25 poses of repair or for the substitution of another therefor.

With the above primary and other incidental objects in view the invention consists of the devices and parts or their equivalents,
30 as hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 represents a vertical sectional fragmentary view of so much of the cylinder of an ordinary gas or gasolene engine as is necessary
35 to illustrate in connection therewith my improved sparking mechanism, and Fig. 2 is a plan view of Fig. 1.

Referring to the drawings, the numeral 3 indicates the cylinder of the engine surrounded
40 by the usual water-jacket 4 and being otherwise of an ordinary form of construction. The end of the cylinder is provided with an opening 5. Fitting in this opening is a sleeve 6, the inner end of said sleeve being provided
45 with a head 7, having, preferably, a rounded or convex inner face and a flat outer face, the latter face bearing against the inner side of the end of the cylinder. The outer end
50 of the sleeve extends beyond the end of the cylinder, and this extended portion is screw-threaded exteriorly. Engaging these screw-

threads is a nut 8. Interposed between the sleeve and the bordering wall of the opening 5 is an insulating tubular jacket 9. This insulating-jacket is provided at opposite ends
55 with outwardly-extending flanges. The outer flange 10 is clamped to the outer surface of the end of the cylinder by means of the nut 8, which is turned down tightly thereagainst, and the inner flange 11 is clamped between
60 the inner side of the end of the cylinder and the flat outer side of the head 7. This flat side of the head is preferably shouldered, as indicated by the numeral 12, in order to form a more effectual means for securing the
65 flange 11.

The numeral 13 indicates a tubular bracket, which is provided at its inner end with a threaded stem 14, which stem engages the interior threads of the nut 8. A shoulder 15
70 on the bracket bears firmly against the outer side of the nut when the stem is screwed down into the nut to its full extent. Extending outwardly from the outer side of the bracket are two arms 16 16. The extremities of these arms
75 are provided with inwardly-turned lugs 17 17. Arranged between the arms 16 is a small tube 18, which at its inner end is provided with a flange 19, said flange being seated against the outer side of the bracket 13. Loosely sur-
80 rounding the outer end of this tube is a centrally-apertured disk 20, which is provided peripherally at diametrically opposite points with recesses 21 21. The numeral 22 indicates one of the electrodes of the sparking
85 mechanism, said electrode provided at its inner end with a contact-point 23 and at its outer end with a knurled disk 24, said disk forming a convenient means for turning the electrode. This electrode is adapted to pass
90 through the tube 18, bracket 13, and sleeve 6 and to extend far enough into the cylinder to make contact with the other electrode, hereinafter referred to. The outer portion of the electrode is threaded, as clearly shown in Fig.
95 1, and these threads are adapted to engage interior threads at the outer end of the tube 18. A coiled spring 25 surrounds the tube and is confined between the flange 19 of said tube and one or more washers 26, arranged
100 against the disk 20. By increasing or diminishing the number of washers employed the

tension of the spring may be readily regulated.

A jam-nut 27 engages the threads of the electrode 22 and is adapted to be turned down against the outer side of the disk 20.

Working within the cylinder 3 is the usual piston 28. The end of this piston has projecting therefrom the other electrode 29, which is provided with a contact-point 30.

The numeral 31 indicates a binding-post extending from the cylinder, to which an electrical conductor leading from any suitable source of electrical energy may be secured by means of a binding-screw 32. A similar binding-post 33 extends from one of the arms 16 and another electrical conductor and, leading from the source of electrical energy, is adapted to be connected thereto by means of a binding-screw 34. In assembling the parts the electrode 22, the tube 18, the spring 25, surrounding the tube, the disk 20, the washers thereagainst, and the jam-nut 27 are adjusted together in an obvious manner. The electrode 22 is now passed through the bracket 13 and the sleeve 6. In order to accomplish this, the recesses 21 of the disk 20 must be brought into registration with the lugs 17 at the outer ends of the arms 16 in order to prevent said lugs from offering any impediment to the free insertion of the electrode. After the disk passes the lugs 17 said disk can then be turned so as to bring the recesses 21 out of registration with the lugs 17, and hence provide for the parts being held in proper engagement.

In the operation of the sparking mechanism when the piston 28 is moved outwardly to its full extent the contact-point 30 of its electrode 29 will make contact with the point 23 of the electrode 22, thereby completing the electrical circuit, said circuit being completed from the source of electrical supply to the binding-post 31, thence through the metal of the cylinder to the piston, from the piston to the contact-point 30, thence to the contact-point 23, thence through the electrode 22, thence to the bracket 13 and by the arm 16 to the binding-post 33, and from said binding-post through the electrical conductor back to the source of supply. It will be seen that the current is effectually prevented from passing from the electrode 22 to the cylinder 3 by reason of the interposition of the insulating-jacket 5. After the points 30 and 23 thus make contact the piston at once begins its return stroke, and hence said points are separated and a spark is produced, which ignites the gas in the cylinder and causes an explosion. When the points 30 and 23 contact, the electrode 22 is caused to move outwardly against the contrary force exerted by the spring 25. It will therefore be evident that the operator is always able to determine merely by a glance whether or not the electrodes are making proper contact, inasmuch as if by observation it should be found that the electrode 22 does not move outwardly or

does not move outwardly a sufficient distance this demonstrates that the proper contact is not being made, or, on the other hand, if the electrode should move outwardly too far this demonstrates that the contact is too great. Under such conditions it will be apparent that all that is necessary to be done in order to properly regulate the contact is merely to turn the electrode 22, and this will cause the same to move farther inward or farther outward, in accordance with which particular adjustment is desired and in accordance with the direction of turning of the electrode.

The spring 25 not only acts as a cushion to relieve the contact-point 23 of excessive shock, but it also acts to return the electrode 23 to its normal position after the electrode-point 30 ceases to act thereon.

Attention is furthermore directed to the fact that when it is desired to remove the electrode 22 and attached parts for the purpose of repairs or for the purpose of substituting a new electrode this is readily accomplished merely by turning the disk 20 until the recesses 21 thereof are in registration with the lug 17, when of course said electrode and connected parts may be readily drawn outwardly.

While I have herein shown and described certain details of construction, yet I do not wish to be understood as restricting myself specifically thereto, inasmuch as various modifications may be adopted without departing from the spirit and scope of my invention.

In order to prevent leakage from the cylinder, I provide the lower end of the bracket 13 with a chamber 35, adapted to contain a suitable packing.

What I claim as my invention is—

1. In sparking mechanism, the combination of a cylinder, an electrode passing through the end of the cylinder, said electrode having its outer portion threaded, a bracket extending outwardly from the end of the cylinder, a tube bearing against the bracket, said tube having interior threads which the threads of the electrode engage, a disk on the outer end of the tube, a spring surrounding the tube and bearing at its outer end against the disk, a stop on the electrode bearing against the opposite face of the disk, means for releasably locking the disk to the bracket, whereby when released the electrode and connected parts may be removed, a movable electrode within the cylinder and adapted when moved in one direction to contact with the other electrode and cause said other electrode to move outwardly against the action of the spring, and an electrical circuit within which the electrodes are located, said circuit being completed when the electrodes contact, and being broken when the electrodes separate, the separation causing a spark and a consequent explosion of the explosive agent in the cylinder.

2. In sparking mechanism, the combination of a cylinder, an electrode passing through the end of the cylinder, a bracket extending

outwardly from the end of the cylinder, a disk carried by the electrode, means for releasably locking the disk to the bracket, whereby when released the electrode and connected parts may be removed, a movable electrode within the cylinder and adapted, when moved in one direction, to contact with the other electrode, and an electrical circuit within which the electrodes are located, said circuit being completed when the electrodes contact, and being broken when the electrodes separate, the separation causing a spark and a consequent explosion of the explosive agent in the cylinder.

3. In sparking mechanism, the combination of a cylinder, an electrode passing through the end of the cylinder, a bracket extending outwardly from the end of the cylinder, said bracket provided with an outwardly-extending arm having an inwardly-extending lug, a disk carried by the electrode, said disk provided with a recess which when brought into registration with the lug of the arm permits the electrode and connected parts to be inserted in place, or removed, a movable electrode within the cylinder and adapted, when moved in one direction, to contact with the other electrode, and an electrical circuit within which the electrodes are located, said circuit being completed when the electrodes contact, and being broken when the electrodes separate, the separation causing a spark and a consequent explosion of the explosive agent in the cylinder.

4. In sparking mechanism, the combination of a cylinder having an opening in the end thereof, an insulated sleeve in said opening, the outer end of the sleeve being threaded and projecting beyond the outer end of the cylinder, a nut engaging said threaded end of the sleeve, a bracket having a threaded engagement with the nut, and said bracket also having an outwardly-extending arm, the arm being provided with an inwardly-extending lug, an electrode passing through the bracket and sleeve, said electrode having its outer end threaded, a tube through which the electrode passes, said tube bearing against the bracket, and said tube provided with interior threads which the threads of the electrode

engage, a disk on the outer end of the tube, said disk provided with a recess which when brought into registration with the lug of the arm adapts the electrode and connected parts to be inserted in place, or removed, a spring surrounding the tube and bearing against the disk, a jam-nut on the electrode and turned against the opposite face of the disk, a movable electrode within the cylinder and adapted, when moved in one direction, to contact with the other electrode and cause said other electrode to move outwardly against the action of the spring, and an electrical circuit within which the electrodes are located, said circuit being completed when the electrodes contact and being broken when the electrodes separate, the separation causing a spark and a consequent explosion of the explosive agent in the cylinder.

5. In sparking mechanism, the combination of a cylinder, an electrode passing through the end of the cylinder, a bracket extending outwardly from the end of the cylinder, said bracket provided with an outwardly-extending arm having an inwardly-extending lug, a tube projecting from the bracket, and into which tube the electrode extends and has threaded engagement therewith, a disk carried by the tube, said disk provided with a recess which, when brought into registration with the lug of the arm, permits the electrode and connected parts to be inserted in place, or removed, a spring surrounding the tube and disposed between the bracket and the disk, a movable electrode within the cylinder and adapted, when moved in one direction, to contact with the other electrode, and an electrical circuit within which the electrodes are located, said circuit being completed when the electrodes contact, and being broken when the electrodes separate, the separation causing a spark and a consequent explosion of the explosive agent in the cylinder.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES E. BEAN.

Witnesses:

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