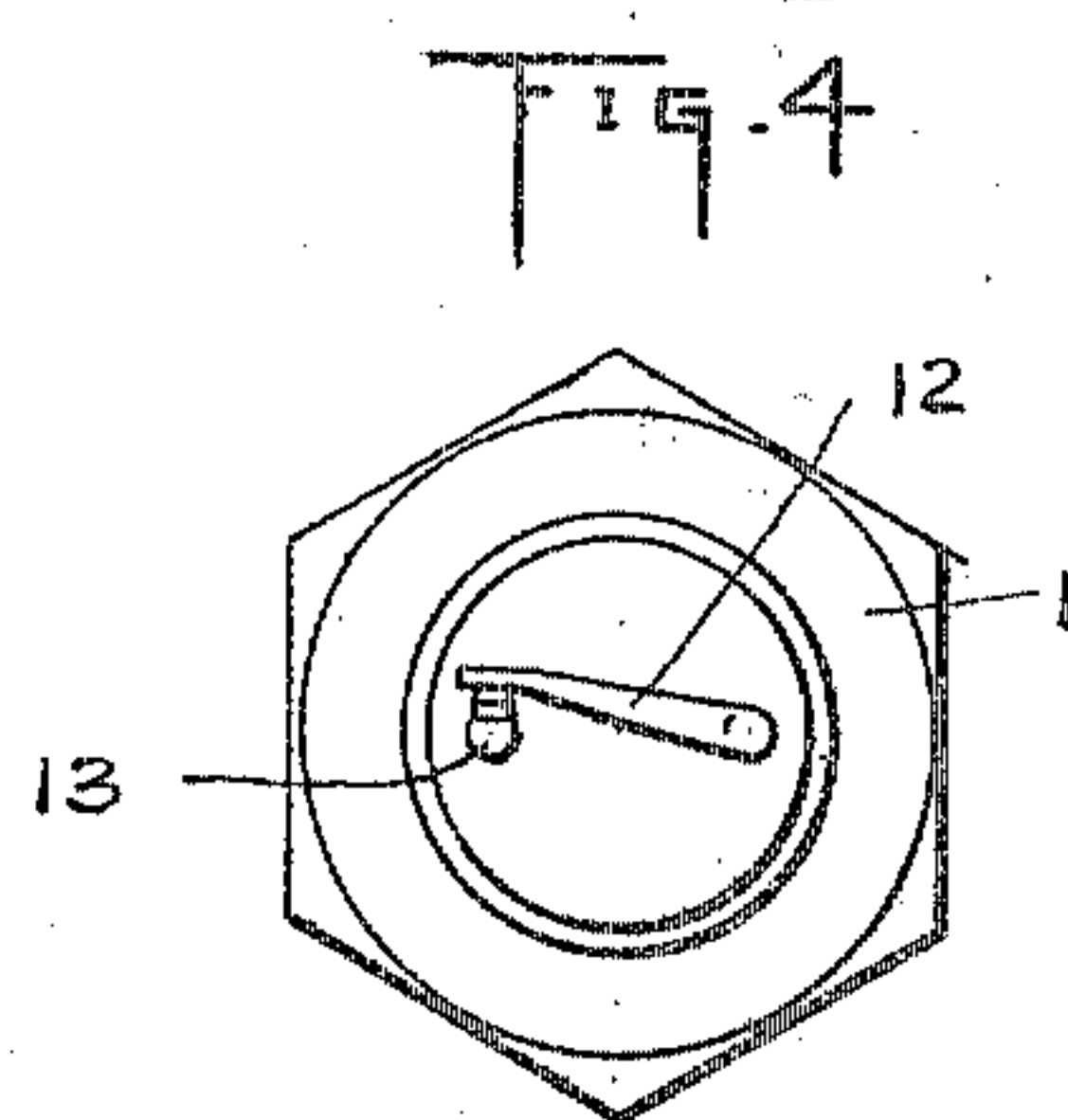
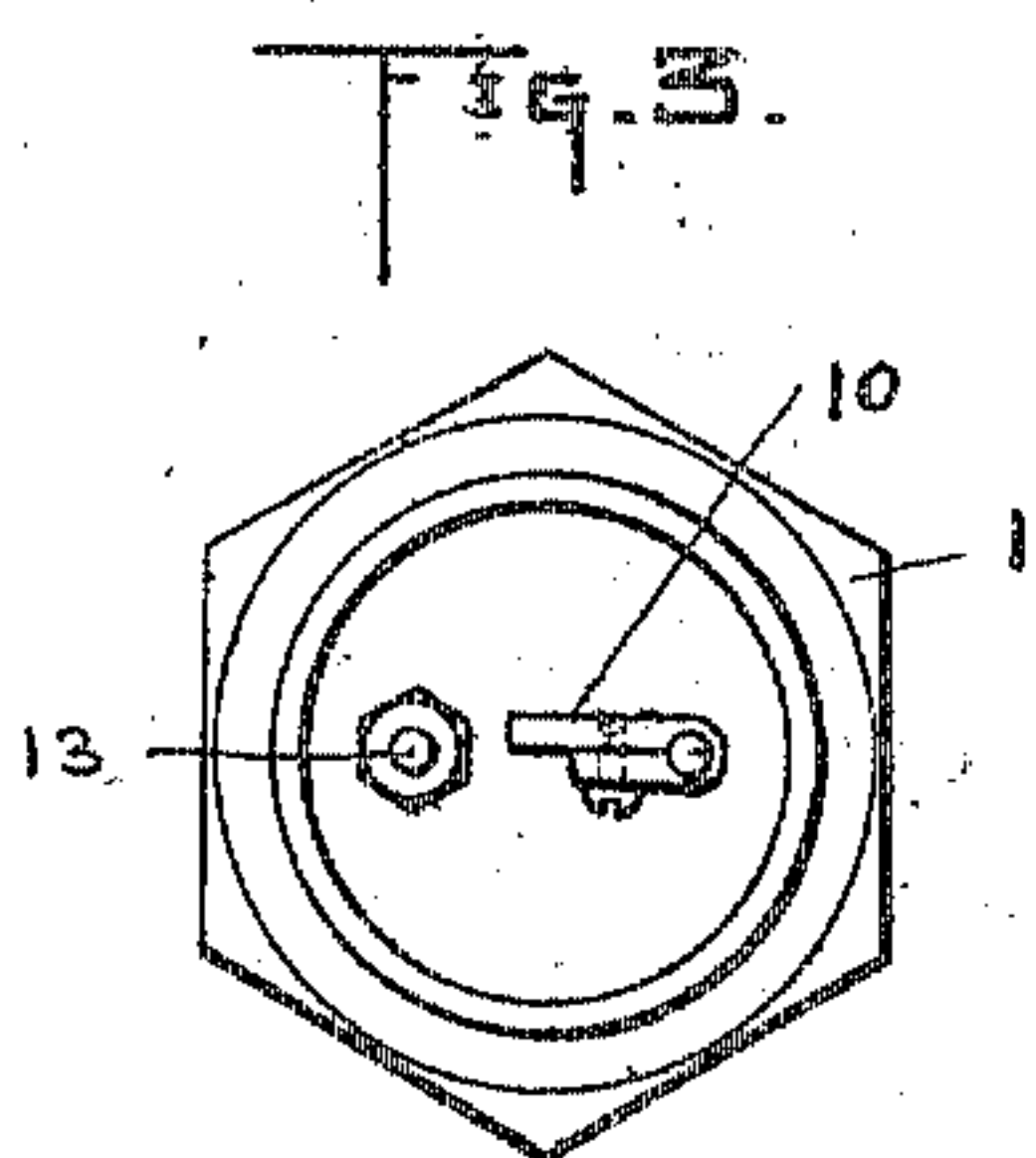
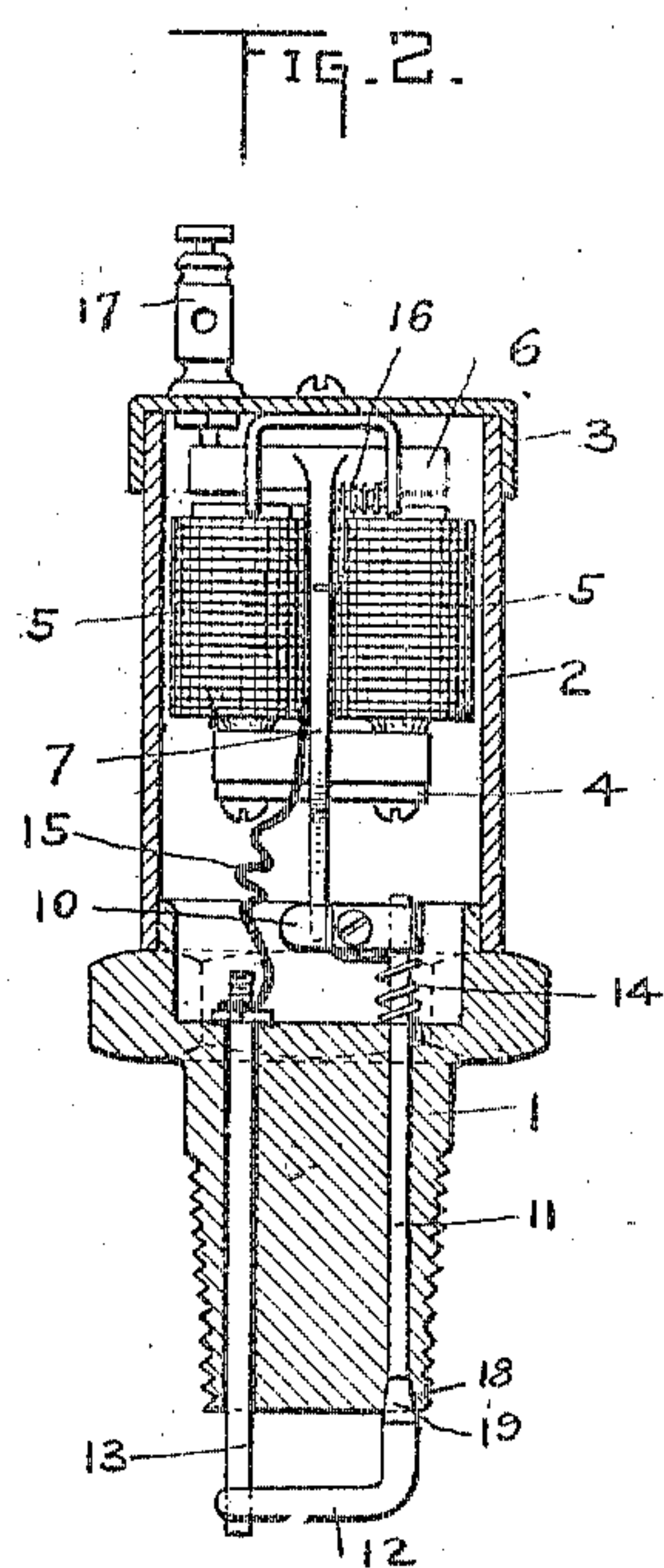
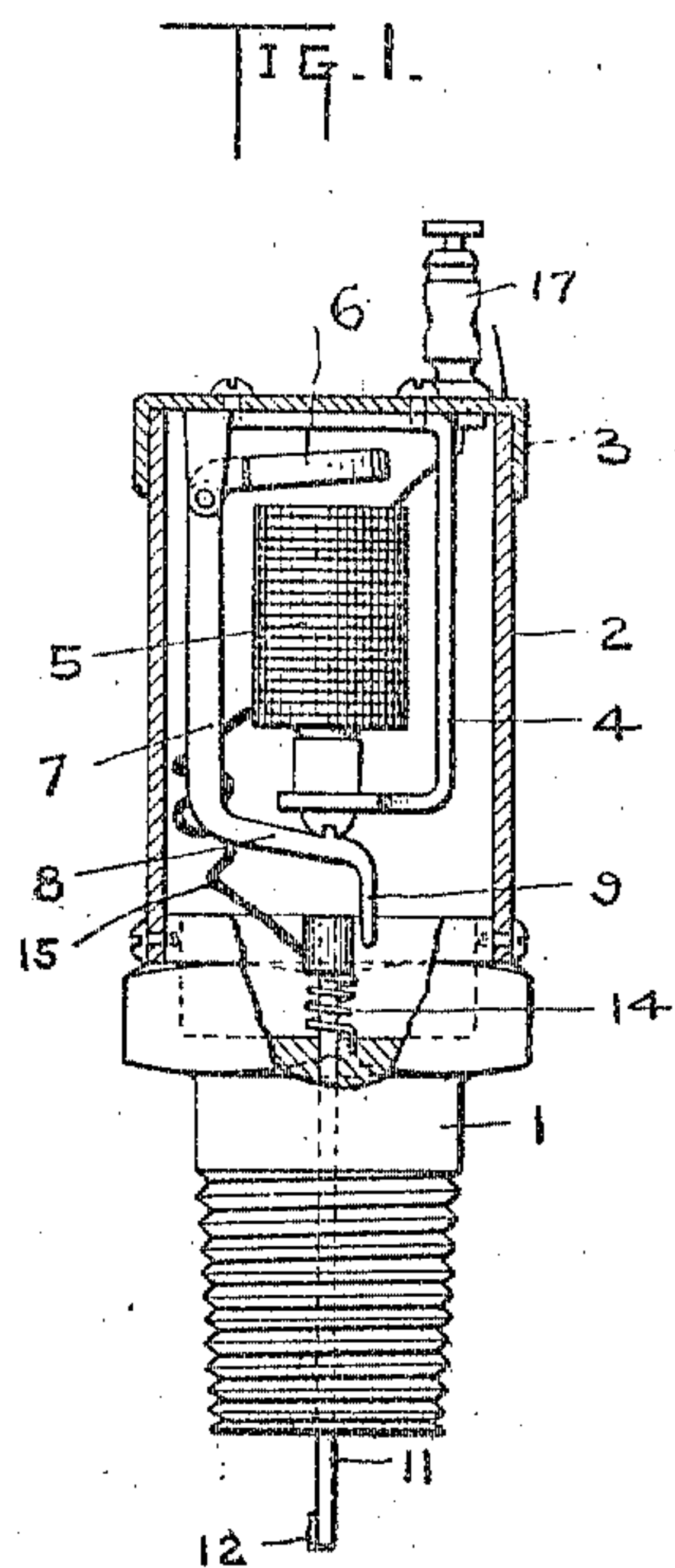


G. F. DILLIG.  
SPARKING IGNITER.  
APPLICATION FILED APR. 6, 1908.

967,344.

Patented Aug. 16, 1910.



Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE F. DILLIG, OF BALTIMORE, MARYLAND.

## SPARKING IGNITER.

967,344.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed April 6, 1908. Serial No. 425,437.

*To all whom it may concern:*

Be it known that I, GEORGE F. DILLIG, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Sparking Igniters, of which the following is a specification.

This invention relates to improvements in electrical igniters, and the object is to provide a magnetically operated make and break igniting or sparking device which will work effectively on a low amperage, and which is readily accessible and compact, and in which the moving parts are so constructed and arranged as to give an exceedingly quick action.

With the above object in view, the invention consists in the novel features of construction hereinafter fully described, particularly pointed out in the claims, and clearly illustrated by the accompanying drawing, in which—

Figure 1 is a vertical sectional view through the casing and cap, the plug being shown partly in section and partly in side elevation; Fig. 2, a vertical sectional view through the casing, cap and plug, said view being taken at right angles to Fig. 1; Fig. 3, a plan view of the upper portion of the plug, and Fig. 4, a bottom plan view of the same.

The igniting device consists of a plug 1 preferably screw-threaded in order to screw into the engine cylinder, a casing 2 inclosing the mechanism, and a cap 3 closing the upper end of the casing, said casing at its lower end fitting about a flange formed on the upper end of the plug, and detachably secured thereto by screws or in any other preferred manner. The cap 3 is similarly secured to the upper end of the casing.

Suspended from the under side of the cap by a suitable support 4, are two electro-magnets 5. A single electro-magnet could be used but I prefer to employ two as illustrated.

The upper ends of the magnets are supported a slight distance below the under side of the cap, leaving a space for the armature 6 which is pivotally supported. This armature is formed with a long striking-arm 7 which extends downwardly at one side of the magnets and is provided at its lower end with a laterally extending portion 8, the outer end of which is bent downwardly to form a striking-portion 9. This striking

portion 9 is disposed adjacent to a short laterally-extending arm 10 carried by the upper end of a rocking electrode 11 carried by the plug. The electrode 11 at its lower end projects below the plug and carries an arm 12 which is somewhat longer than arm 10 and which is normally held in contact with a fixed electrode 13 by a spring 14. This fixed electrode 13 is insulated from the plug and is connected with the electro-magnets by a wire 15. A spring 16 serves to force the armature away from the magnets when the latter are deenergized.

In order to secure a quick action of the movable electrode the speed of the armature must be multiplied, and this I accomplish by making the striking-arm considerably longer than the armature proper or that portion thereof which operates in front of the magnet poles. Likewise the contact-arm 12 of the movable electrode is made longer than the arm 11 thereof which is engaged by the striking-arm of the armature.

The magnets have their winding in series with the current supply, the fixed electrode and the body of the plug. The current is controlled by one of the usual forms of timers attached to the engine.

When the voltage of current used is high a primary sparking coil is unnecessary, but where the voltage is low such a primary coil must be used in the circuit.

A wire from one terminal of the supply connects to the timer on the engine, and the other terminal of the supply is grounded to the engine. From the timer, the circuit is made through the primary coil to the binding post 17 on the top of the sparking device, to which one terminal of the magnet coils is connected. Thence through the magnet coils and wire 15 to the electrode 13, and through this electrode to the movable electrode 11 which latter is a part of the ground by reason of the plug being in direct contact with the engine.

The operation is as follows: When the circuit is established by means of the timer or any other device, the magnets become energized and attract the armature. The movement of the armature causes its striking-arm to engage the arm 10 on the upper end of the rocking electrode and effect the movement of the latter to separate its contact-arm 12 from the fixed electrode. The circuit is thus broken and a spark passes be-



tween the contact-arm 12 and the fixed electrode. When the circuit is thus broken, the magnets become deenergized and both the armature and the rocking electrode are returned to normal position by the actions of springs 14 and 16. This operation is repeated in exceedingly rapid succession causing a perfect shower of fat, hot, sparks so long as the circuit remains unbroken by the timer.

The parts are so arranged that the striking-arm of the armature does not engage the arm 10 of the rocking electrode until the armature has almost reached the limit of its movement toward the magnets whereby the action of the movable electrode is very quick. The contact portions of the electrodes are provided with suitable platinum points.

At the lower end of the rocking electrode the plug is provided with a seat 18, preferably conical, and the electrode is formed with an enlargement 19 of corresponding shape to engage said seat. By this arrangement leakage of compression along the rocking electrode is prevented.

I do not limit my invention to the details of construction shown and described as they may be varied without departing from the spirit and scope thereof.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a sparking igniter, a plug, a casing carried by said plug, a fixed electrode carried by the plug and insulated therefrom, a rocking electrode carried by the plug having a contact-arm engaging the fixed electrode and an actuating-arm, a cap for the casing, an electro-magnet carried by the cap and depending into the casing, a pivotally mounted armature carried by the cap having a striking-arm extending downwardly at one side of the magnet to engage the ac-

tuating-arm of the rocking electrode, securing means for detachably securing the cap, casing and plug together, and an electrical connection between the fixed electrode and the magnet.

2. In a sparking igniter, a plug, a fixed electrode carried thereby and projecting beyond one end thereof and insulated therefrom, a rocking electrode carried by the plug and projecting beyond both ends of the plug, a contact-arm on one of the projecting ends of the rocking electrode engaging the projecting-end of fixed electrode, an actuating-arm on the other projecting end of the rocking electrode, a casing fitting on the plug, a cap for said casing, an electro-magnet and pivoted armature carried by the cap and depending into the casing, said armature having a striking-arm disposed to engage the actuating-arm of the rocking-electrode, and an electrical connection between the fixed electrode and the magnet.

3. In a sparking igniter, a plug, a fixed electrode carried thereby and insulated therefrom, a rocking electrode carried by the plug having a contact-arm engaging the fixed electrode and an actuating-arm, a casing carried by the plug, a cap for the open end of the casing, means detachably securing the plug, cap and casing together, an electro-magnet and pivoted armature carried by the cap and removably bodily therewith, said armature having a striking-arm disposed to engage the actuating-arm of the rocking-electrode, and an electrical connection between the fixed electrode and the magnet.

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

GEORGE F. DILLIG.

Witnesses:

W. B. DENT,  
H. W. SHAW.