

No. 724,649.

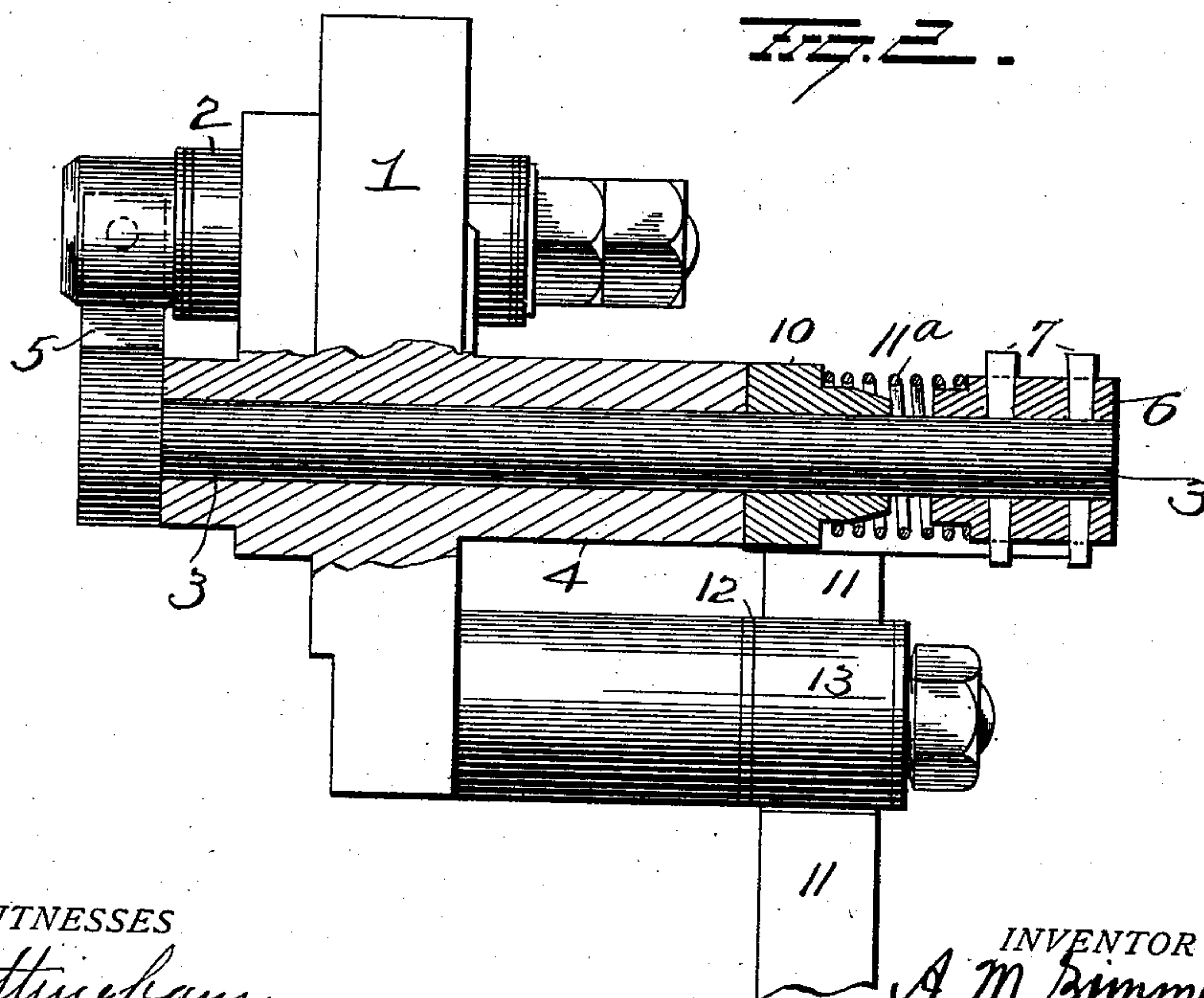
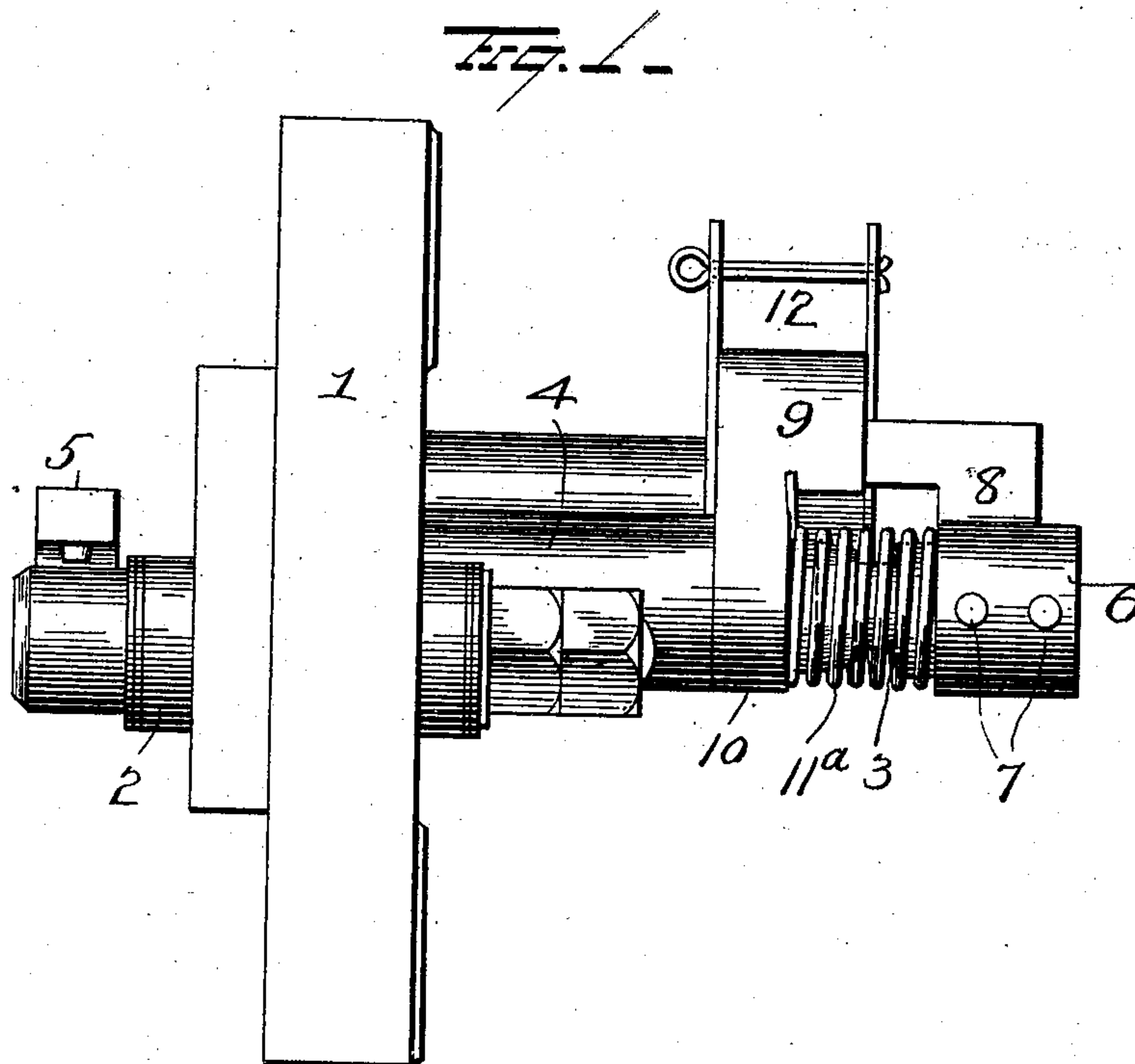
PATENTED APR. 7, 1903.

A. M. ZIMMERMAN.
SPARKING MECHANISM FOR ENGINES.

APPLICATION FILED JULY 26, 1902.

NO MODEL.

2 SHEETS--SHEET 1.



WITNESSES

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Ed Nottingham
G. F. Downing

INVENTOR

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A. M. Zimmerman
By H. A. Seymour
Attorney

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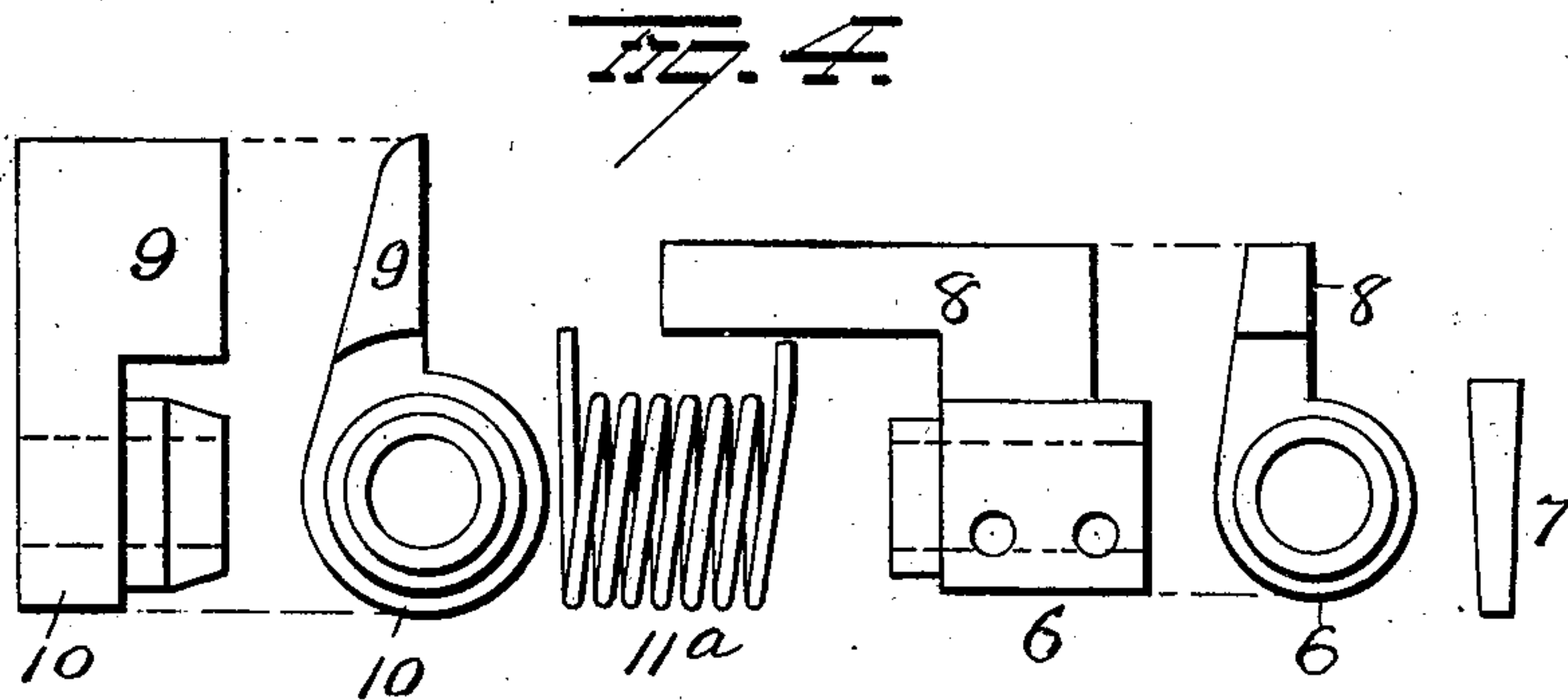
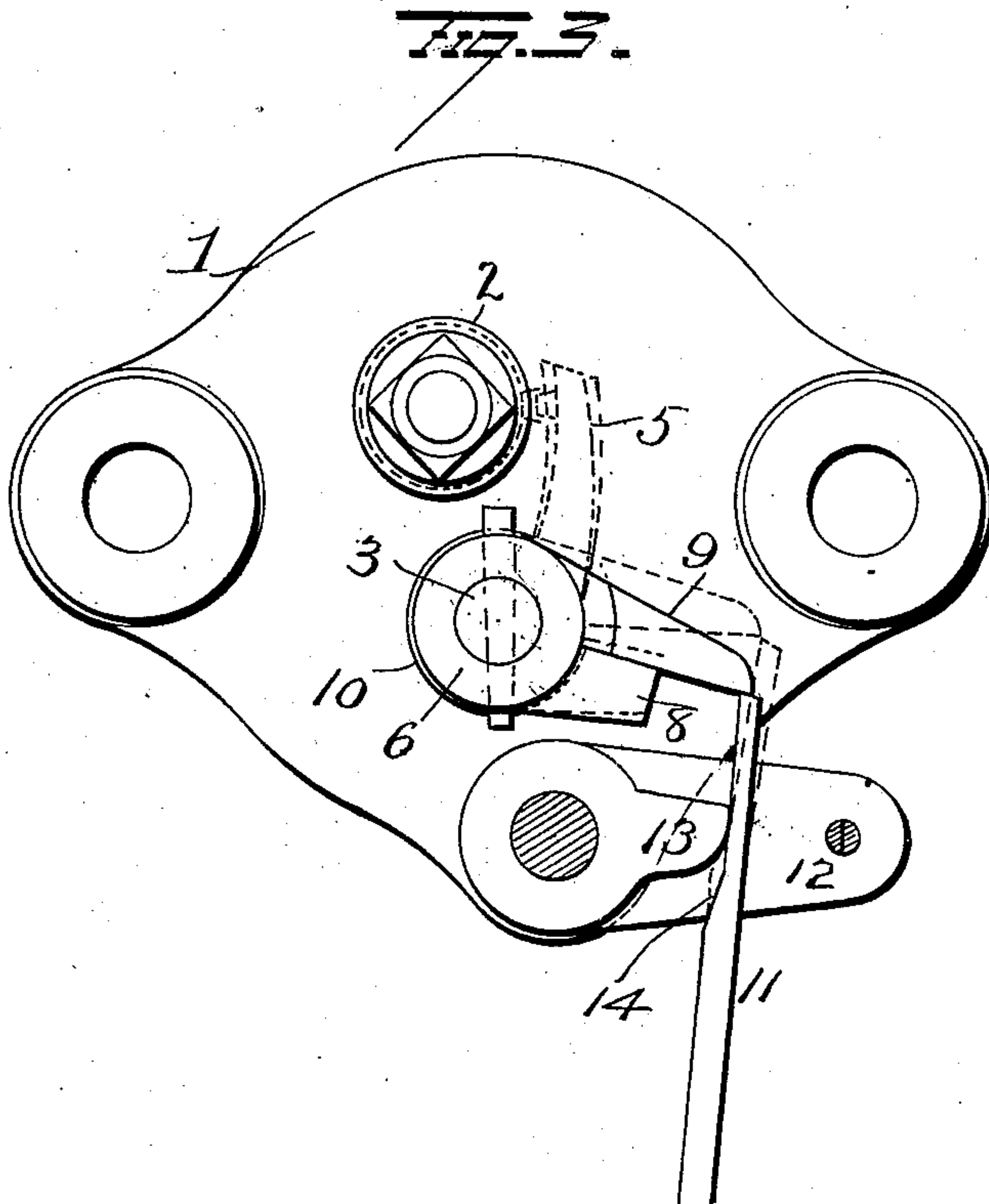
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UNITED STATES PATENT OFFICE.

ABRAHAM M. ZIMMERMAN, OF NEW HOLLAND, PENNSYLVANIA.

SPARKING MECHANISM FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 724,649, dated April 7, 1903.

Application filed July 26, 1902. Serial No. 117,179. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM M. ZIMMERMAN, a resident of New Holland, in the county of Lancaster and State of Pennsylvania, have
5 invented certain new and useful Improvements in Sparking Mechanism for Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the
10 art to which it appertains to make and use the same.

My invention relates to an improvement in sparking mechanism for engines, the object of the invention being to provide improved
15 mechanism of this character which will insure a gas-tight joint where the moving electrode joins the cylinder, and, further, to provide improved sparking mechanism which will be extremely simple in construction, perfect in op-
20 eration, and not liable to get out of repair.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described,
25 and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view. Fig. 2 is a side view, partially in section. Fig. 3 is a front view, and Fig. 4 illustrates details of construction.

30 1 represents a section of an engine-cylinder to which my improvements are attached, as will now be explained. Through the cylinder 1 the stationary electrode 2 is passed and tightly secured in place by packing-nuts, as shown. A shaft which I shall term the
35 "movable electrode" 3 is supported in an elongated bearing 4 and carries an enlarged arm or contact-point 5 to close and open the electrical circuit between the electrodes, making a spark to ignite a charge.
40

On the outer end of electrode 3 a sleeve 6 is secured by pins 7, passed through the sleeve and electrode, and said sleeve is made with an elbow 8 projecting beneath a trip-
45 arm 9, made integral with a sleeve 10, loose on the electrode and against the bearing 4. The sleeves 6 and 10 are each made at their adjacent ends with contracted collars to seat a coiled spring 11^a, whose function is to elastic-
50 ally couple the sleeves together and to hold the sleeve 10 against the bearing and the enlarged inner end of electrode 3 against the in-

ner end of the bearing to make a gas-tight connection, take up wear, and hence always prevent leakage at this point. It will be ob- 55
served that one free end of the coil-spring 11^a rests against the arm 9 of sleeve 10, while the other free end of the spring rests against the arm 8 of the sleeve 6, and hence the ends of the spring are permitted a free endwise move- 60
ment to allow of the contraction and expansion of the spring. One end of the spring is seated against the sleeve 6, which being secured to the shaft 3 operates to force the latter outwardly and retain its enlarged inner 65
end in snug contact with the inner wall of the explosion-chamber and maintain a gas-tight joint therewith. The other end of the spring seats against the sleeve 10, which is loosely mounted on the shaft and forces the 70
sleeve snugly against the outer end of the elongated bearing 4 and maintains a gas-tight joint therewith. Hence the spring not only imparts a rotary motion to the shaft, but serves to maintain a gas-tight joint at the in- 75
ner and outer end of its bearing.

Beneath trip-arm 9 and bearing against the outer end thereof is a trip-bar 11, operated by any desired mechanism and movable in a guide-frame 12, and a trip-bar guide 13 is pro- 80
vided to engage a beveled shoulder 14 on trip-bar 11 and move the latter from under the trip-arm and permit the contact-point 5 to move away from electrode 2 and make a spark to ignite the charge. 85

The operation of my improvements is as follows: As the charge is being compressed in cylinder 1 the trip-bar 11 will be moving trip-arm 9 upward, and through the medium of spring 11^a, engaging sleeve 6, electrode 3 is 90
moved to bring the contact-points together. A further upward movement of trip-bar 11 only serves to move trip-arm 9 away from elbow 8 and contract spring 11^a, and when the charge has been fully compressed the trip-bar 95
guide 13 will engage beveled shoulder 14 and move the trip-bar 11 from beneath the trip-arm 9, and spring 11^a will return the parts to their former positions, thus separating the contact-points, making a spark, and igniting 100
the charge.

A great many slight changes and alterations might be made in the general form and arrangement of the several parts described

without departing from my invention, and hence I would have it understood that I do not limit myself to the precise construction set forth, but consider myself at liberty to
5 make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a sparking mechanism, the combination with an electrode-shaft provided with a seat that fits against a stationary bearing within the explosion-chamber and forms a
15 gas-tight joint therewith, and having a sleeve rigidly secured to its outer end, of a sleeve loosely mounted on the shaft and seated against the outer end of the shaft-bearing to form a gas-tight joint therewith, a spring interposed between said sleeves and connected
20 therewith and constructed and arranged to elastically connect the two sleeves and impart a rotary motion to the shaft, and also im-

part an endwise movement to the shaft and a longitudinal movement to the sleeve loosely
25 mounted thereon, substantially as set forth.

2. In a sparking mechanism, the combination with a rotatable electrode-shaft having a seat which fits against a stationary bearing within the explosion-chamber and forms a
30 gas-tight joint therewith, of a sleeve connected to the shaft, a sleeve loosely mounted on the shaft and fitting against the outer end of the shaft-bearing and forming a gas-tight joint therewith, and a spring elastically connecting the two sleeves and constructed and
35 arranged to force the shaft outwardly and the loosely-mounted sleeve inwardly, substantially as set forth.

In testimony whereof I have signed this
40 specification in the presence of two subscribing witnesses.

ABRAHAM M. ZIMMERMAN.

Witnesses:

J. F. SELDERIDGE,
MILTON WENGER.