

No. 730,519.

PATENTED JUNE 9, 1903.

J. S. DIKEMAN.
SPARKING MECHANISM.
APPLICATION FILED JAN. 3, 1903.

NO MODEL.

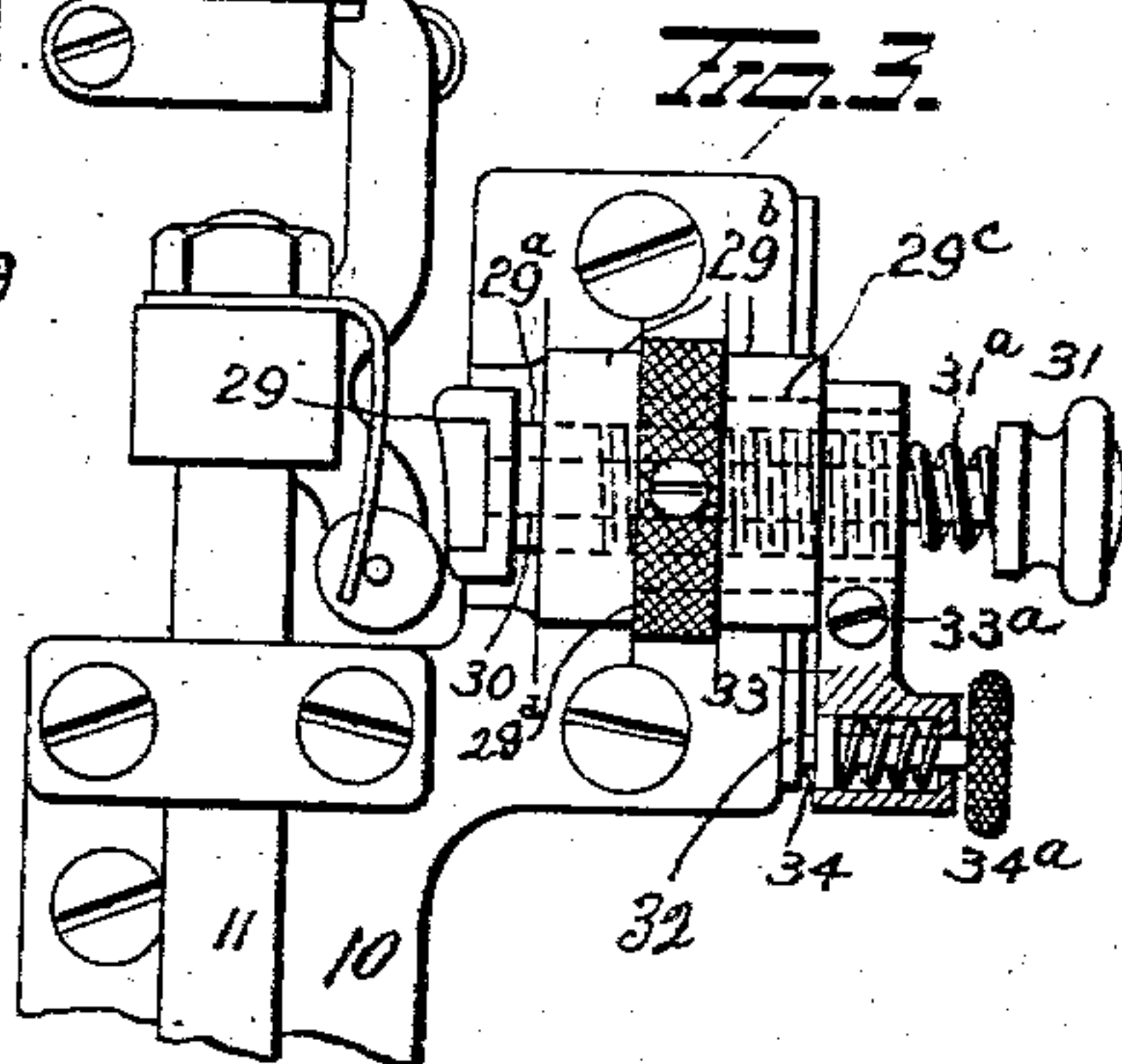
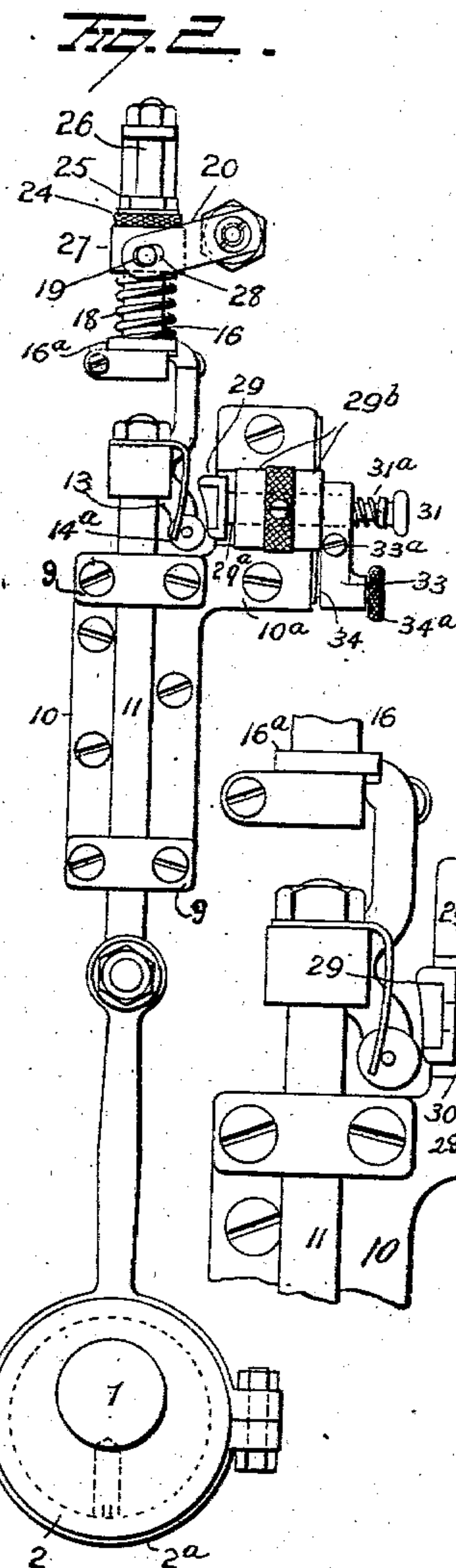
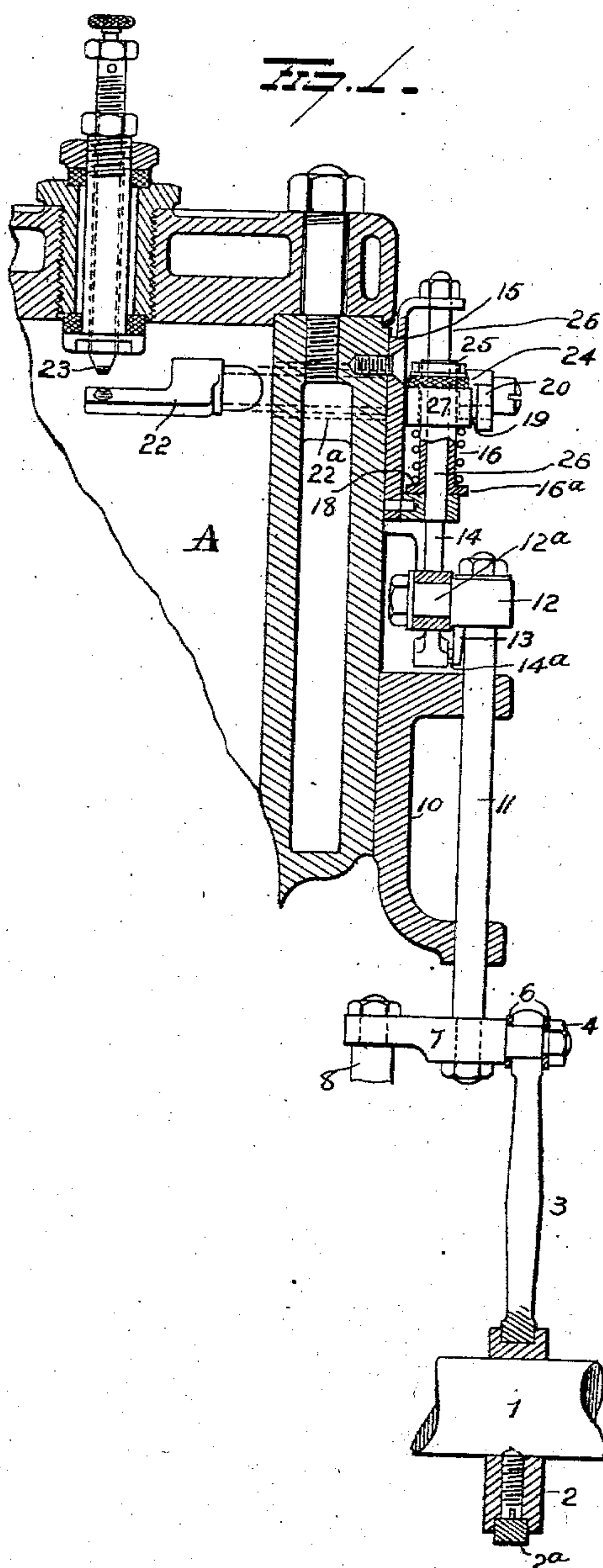
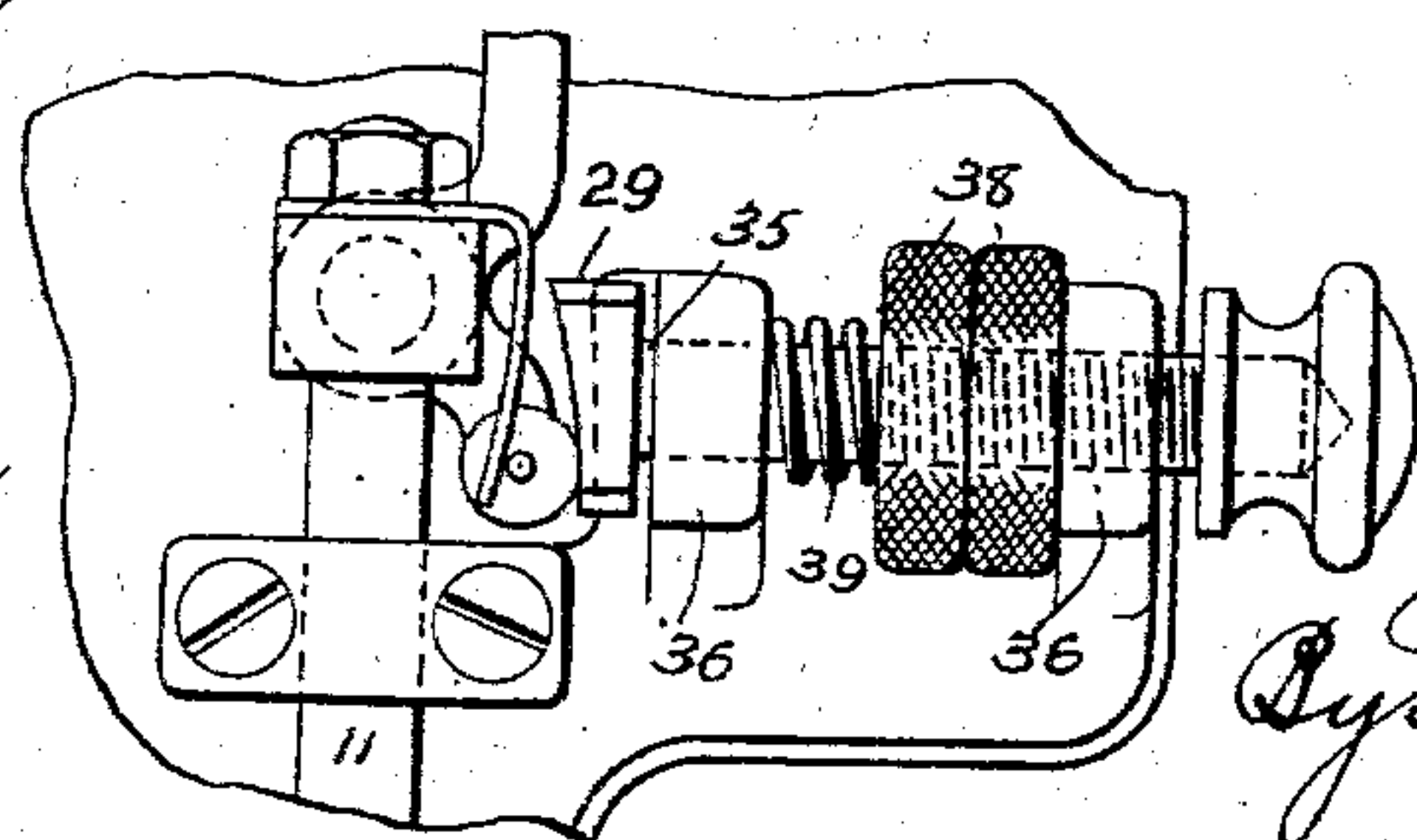


Fig. 4.



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SPARKING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 730,519, dated June 9, 1903.

Application filed January 3, 1903. Serial No. 137,730. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. DIKEMAN, a resident of Torrington, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Sparking Mechanism; 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 art to which it appertains to make and use the same.

My invention relates to an improvement in sparking mechanism for explosive-engines, and more particularly to self-starting features thereof, the object of the invention being to provide improvements upon the construction disclosed in Patent No. 687,874, granted to me December 3, 1901, which will permit a spark to be made at any time to start the engine with a partial compression of the charge.

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, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view, partly in section, illustrating my improvements applied to an engine. Fig. 2 is a front view of the sparking mechanism removed. Fig. 3 is an enlarged detail view of the spark-timing mechanism, and Fig. 4 is a view illustrating a modification.

A represents the cylinder of an explosive-engine, and 1 the crank-shaft. On the crank-shaft 1 and preferably back of the fly-wheel (not shown) a cam or eccentric 2 is secured by a set-screw, as shown, and is adapted to turn in a sectional ring 2^a, carried by one end of a rod or pitman 3, and oscillate the latter. The upper end of the pitman is bored to receive the round end on an angular cross-bar 7, which latter is screw-threaded at its end to receive a nut 4 and secure the parts together, and interposed washers 6 between the opposite faces of rod or pitman 3, bar 7, and nut 4. The other end of bar 7 is bored to receive a pump-plunger 8, secured thereto by a nut screwed onto the plunger above the cross-bar. This plunger 8 is connected with and adapted to operate the pump (not shown) for supplying air, gas, liquid, or a mixture to the engine simultaneously with the operation of

the sparking mechanism and by means of the same eccentric 2.

To the side of the cylinder A a bracket 10 is secured by screws or other means and is provided with aligned angular bearings for a sliding angular rod 11, which latter is held in the bearings against displacement by screw-held caps or strips 9. The lower end of this rod 11 is milled square to a shoulder securely held in an angular hole in the central portion of cross-bar 7 by a nut screwed into the rounded and threaded extreme lower end thereof, hence holding the shoulder firmly against the upper face of the bar to make a rigid connection. The upper end 11 of this rod is also milled square to form a shoulder, and an angular sleeve or ring 12 is held down onto said shoulder by a nut screwed onto the circular threaded end of the rod, and said sleeve or ring 12 is made on one side with an integral pintle 12^a, on which a cam-lever 14 is fulcrumed between its ends and secured thereon by a nut. The lower end of cam-lever 14 is enlarged and made with an outwardly-projecting pin 14^a, against which the free end of a flat spring 13 bears, said spring being secured beneath the nut on the end of rod 11 and holds the lower end of the cam-lever against a cam 29 for a purpose which will more fully hereinafter appear. The other or upper end of the cam-lever 14 is notched to engage an angular flange 16^a at the lower end of a sliding sleeve 16, mounted on a vertical rod 26, supported in a bracket 15, secured to the side of the engine-cylinder. This sleeve 16 has mounted thereon a collar 27, having a pintle or pin 19 at one side disposed in a slot 28 in the crank-arm 20, and a coiled spring 18 is located on sleeve 16 between flange 16^a and the collar 27 to hold the latter against an adjustable ring 24, screwed onto the upper end of the sleeve and adapted to be screwed up and down to adjust the position of the collar 27 and the tension of spring 18. A stationary nut 25 is also screwed onto the extreme upper end of sleeve 16 to limit the upward movement of adjusting-ring 24. The crank-arm 20 is secured on the end of a sparking shaft or lever 22, projecting into the cylinder A, supported in a sleeve 22 and forming the movable contact-point of the device. This sparking-lever is adapted to make and break contact with a contact-point 23,

supported in the end of the cylinder and insulated therefrom, as shown. By so constructing this portion of my improvements it will be seen that when rod 11 is elevated to

5 raise the cam-lever the latter engaging the flange 16^a at the lower end of sleeve 16 will, through the medium of spring 18, elevate collar 27 and move the sparking-lever to bring the contact-points together. When in this

10 position, cam 29 will serve to move the cam-lever out of engagement with sleeve 16 and permit the separation of the contact-points to make a spark and the parts to return to their former or normal position.

15 The bracket 10 is provided on one side with an extension 10^a, made with alined bearings 29^b for an externally-screw-threaded tube 29^a, meshing with the internal threads of a sleeve 29^c, on which a collar or ring 29^d is secured

20 between the bearings 29^b to prevent longitudinal movement of the sleeve 29^c. A rod 30 is mounted in tube 29^a and projects at both ends beyond the same and carries at its inner end the cam 29, heretofore referred to,

25 which latter is made angular or flat on its lower edge to move along a flat face of the bracket and prevent rotary movement of the cam. A knob or button 31 is secured on the outer end of this rod 30, and a coiled spring

30 31^a is located on the rod between knob 31 and the end of tube 29^c to normally hold the cam against the inner end of said tube. On the outer end of sleeve 29^c a split pawl-lever 33 is securely clamped by a set-screw 33^a

35 and carries at its free end a spring-pressed pawl 34, having a knob 34^a to facilitate the withdrawal of the pawl from any of a series of holes or sockets in a plate 32. This plate

40 32, having holes therein to receive the pawl, is adapted to hold the cam 29 in any position desired, as the turning of lever 33 turns sleeve 29^c, moves 29^a longitudinally, and adjusts the cam 29 toward or away from the cam-lever 14 to vary the time of release of lower

45 cup 16^a by the cam-lever.

By securing the cam 29 on rod 30, as above explained, the operator can at any time that the contacts are together push knob 31 inward to move cam 29 against the lever 14 and

50 compel its release of cup 16 and the consequent separation of the contact-points to make a spark and explode the partially-compressed charge. This enables the starting of the engine at any position of the piston when

55 there is a partially-compressed charge in the cylinder, for as soon as the spark is made knob or button 31 is released and spring 31^a will return the cam to its normal working position.

60 In the form of my improvements shown in Fig. 4 the cam 29 is shown secured upon a screw-threaded rod 35, mounted loosely in bearings 36 and having a knob 37 on its outer end. Lock-nuts 38 are screwed onto

65 the rod between the bearings, and a coiled spring 39 is located on the rod between a bearing 36 and the nuts to normally hold the

latter against the other bearing and the cam 29 in working position. These nuts can of course be adjusted to time the spark, and by

70 forcing knob 37 inward the spark can be made at any time, spring 39 serving to return the cam to its normal position when the knob is released.

A great many other changes might be made

75 in the general form and arrangement of parts described without departing from my invention, and hence I do not confine myself to the precise details set forth, but consider myself at liberty to make such slight changes and

80 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 Patent, is—

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1. In a sparking mechanism, the combination with a stationary and a movable contact-point, of a cam-lever for moving the contact-points together, a spring for separating the contact-points, a cam for moving the lever to

90 permit the operation of the spring and means for adjusting the position of the cam toward and away from the cam-lever to vary the time of sparking, and a push-rod connected with the cam to permit the movement of the

95 cam and consequent separation of the contact-points.

2. In a sparking mechanism, the combination with a stationary and a movable contact-point, of a rod, means for oscillating the same,

100 a cam-lever fulcrumed on the rod, a stationary rod, a sliding sleeve thereon having a flange at one end, a collar loose on the sleeve, a spring between the collar and flange, an adjusting-ring above the collar, a pin on the

105 collar engaging mechanism controlling the movable contact-point, said cam-lever engaging the flange to raise the sleeve and collar and bring the contact-points together, and a cam in the path of said lever to throw it out

110 of engagement with the flange and permit the contact-points to separate and make a spark.

3. In a sparking mechanism, the combination with a sliding support and a cam-lever fulcrumed between its ends on said support,

115 of a sliding sleeve having a flange at one end, engaged by the cam-lever, a collar loose on the sleeve, a spring between the flange and collar, an adjusting-ring screwed onto the sleeve above the collar, a nut screwed onto

120 the sleeve above the ring, a pin on the collar, a slotted crank-arm to receive the pin, a movable contact-point operated by the crank-arm, and means for engaging the cam-lever to disengage it from the flange on the sliding

125 sleeve.

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

JOSEPH S. DIKEMAN.

Witnesses:

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R. H. CHAPMAN.