

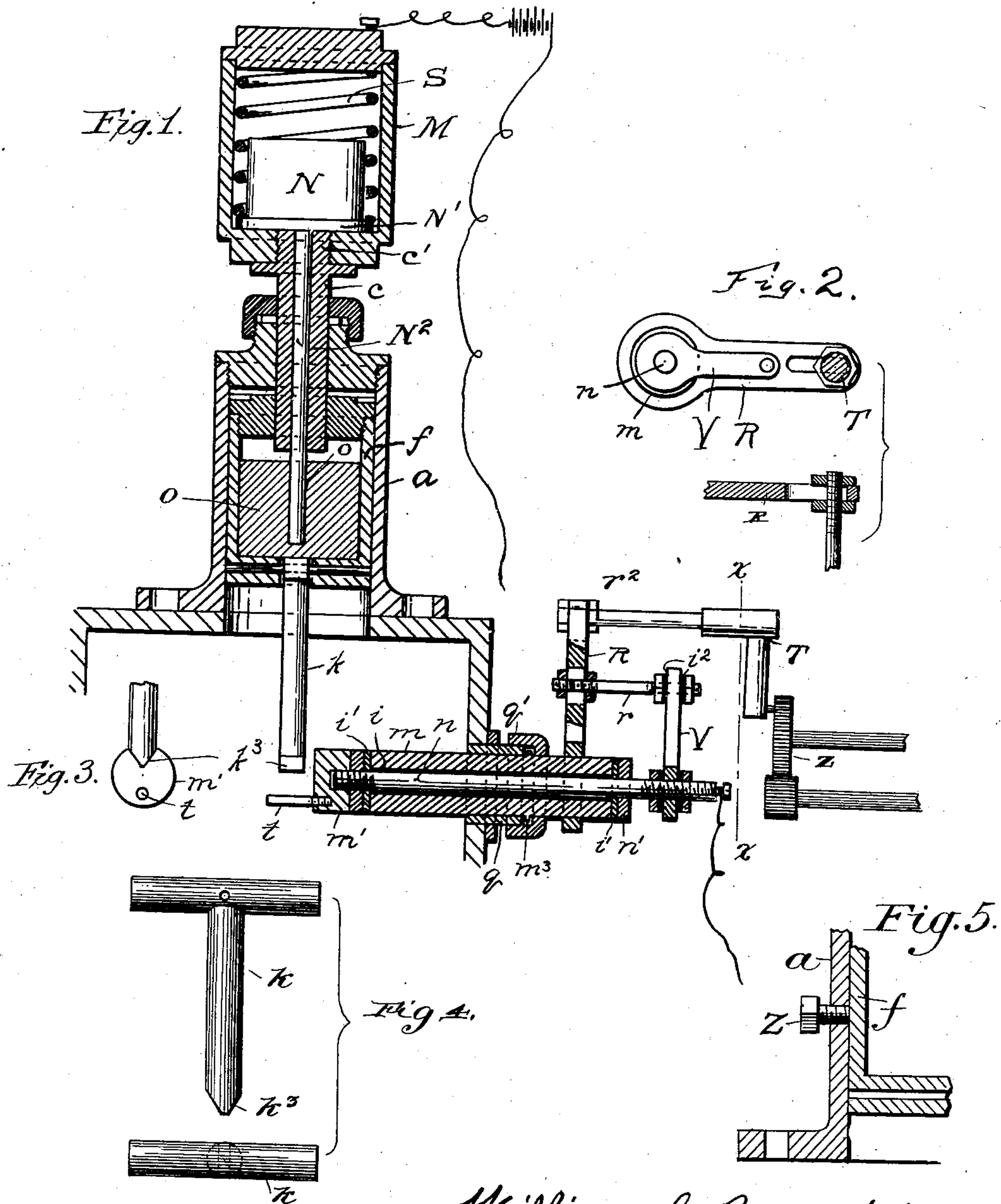
No. 735,674.

PATENTED AUG. 4, 1903.

W. C. MATTHIAS.  
SPARKING IGNITER FOR EXPLOSIVE ENGINES.

APPLICATION FILED JAN. 29, 1902.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM C. MATTHIAS, OF READING, PENNSYLVANIA.

## SPARKING IGNITER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 735,674, dated August 4, 1903.

Application filed January 29, 1902. Serial No. 91,724. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. MATTHIAS, a citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Sparking Igniters for Explosive-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 art to which it appertains to make and use the same.

This invention relates to improvements in sparking igniters for explosive-engines, and the object of the invention is to produce a spark by means of a wiping instead of a striking action and in which the rapidity of said sparking action may be regulated.

The action of my improved device is positive and the construction such that a spark will be created only when needed, as all danger of sparking accidentally is obviated.

The present invention is intended more particularly as an improvement on United States Letters Patent No. 682,856, issued to me on the 17th day of September, 1901.

The invention is fully described in the following specification and clearly illustrated in the accompanying drawings.

Figure 1 is a vertical sectional view of my device, and Fig. 2 is a view taken on line  $x$  of Fig. 1. Fig. 3 shows an end view of the igniter-tube, and Fig. 4 shows the electrode in detail. Fig. 5 shows in detail a section of the casing  $a$ .

The pin  $c$  shown in my above-mentioned patent is in the present case formed with a screw-threaded top  $c'$ , and has a cup  $M$  with closed top screwed thereon. Inside of this cup I provide a supplemental weight  $N$  of smaller diameter than the interior of said cup and formed with a flange  $N'$  at its bottom, upon which rests a coiled spring  $S$ , which also bears against the under side of the cover of said cup. This spring insures a more rapid return of the sparking pin  $k^3$  to its normal position and is especially useful in high-speed engines where the weight  $O$  alone would not operate quickly enough. Depending from this weight  $N$  is a rod  $N^2$ , which

passes entirely through the central opening in the pin  $c$  and enters the central opening  $o'$  in the weight  $O$ , located in the casing  $f$ , which opening in the present case does not extend entirely through said weight, but reaches nearly to the bottom thereof. The parts  $a$   $f$  are held in proper relative position by means of a set-screw  $z$ , which passes through  $a$  and bears against  $f$ .

The igniter-shaft  $m$  in the present case is in the form of a tube and has a shaft  $n$  passing through it and from which it is insulated along its entire length by a tube of insulating material  $i$  and a washer  $i'$ , also of insulating material, at either end, held in position by a nut  $n'$ . To the inner end of the shaft  $n$  is secured a plug  $m'$  of the same diameter as the tube  $m$ , which carries a finger  $t$ , adapted to wipe the depending end  $k^3$  of the sparking pin, making the spark as usual. The electrode  $K$  has a T-shaped head  $k'$  and is pivoted in the lower end of the casing  $f$  by means of a pin  $f^2$ . The weight  $O$  rests on this T-shaped head and tends to keep the depending end thereof  $k$  in proper position for engagement with the pin  $t$ .

The tube  $m$  has a collar  $m^3$  thereon and is secured to the engine-frame by means of a bushing  $q$  and a nut  $q'$ , and it has secured thereto an arm  $R$ , which arm is connected suitably to the motive power  $Z$ , as indicated by the shaft  $T$ , showing that it may be adjusted to regulate the rapidity of the sparking action.

To the outer end of the shaft  $n$  is connected a crank-arm  $V$ , which is in turn connected to said arm  $R$  through a pin  $r$ , which is insulated from the arm  $V$  at  $r^2$ .

It will be readily seen that the power applied to the arm  $R$  will give the sparking finger on the tube  $m$  the proper movement across the path of the depending end of the sparking pin  $k$ , and the stroke can readily be regulated by adjustment of the shaft  $T$  in the slot  $r^2$  of the arm  $R$ .

The crank  $V$  is connected to the operating-rod  $R$  and the shaft  $n$ , as shown, for the purpose of assuring the proper action of the sparking pin  $t$ , for it will prevent the tube  $m$  from slipping and acts as a safety-carrier.

As in my previous patent, above referred to, the pin *k* forms one pole and the finger *t* on the tube *m* the other.

The construction of the parts, except as to, 5 those already described, is substantially the same, the action being secured in a slightly-different manner.

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

1. In a sparking igniter for explosive-engines, a casing *a f*, carrying a pin *c* having a cup attached to its upper end in which is located a weight backed by a coiled spring, 15 said weight having a depending rod passing through said pin and entering a central opening in a weight *O* located inside said casing, and an electrode *K* pivotally mounted in said casing in combination with a sparking rod, 20 carrying a finger *t* and passing through and insulated from a tube *m* secured to the engine-

casing, and means for partly revolving said sparking rod and tube, substantially as and for the purpose set forth.

2. In a sparking igniter for explosive-en- 25 gines, a sparking rod comprising a tube *m* having a rod *n* passing therethrough, from which said tube is insulated its entire length and at its ends, said rod having a plug, carrying a sparking finger *t*, secured to one end 30 thereof, its other end secured to a crank-arm connected to an arm carried by said tube *m* and to which power is applied through an adjustable shaft *T*, substantially as and for the purpose set forth. 35

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

WILLIAM C. MATTHIAS.

Witnesses:

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