

No. 655,406.

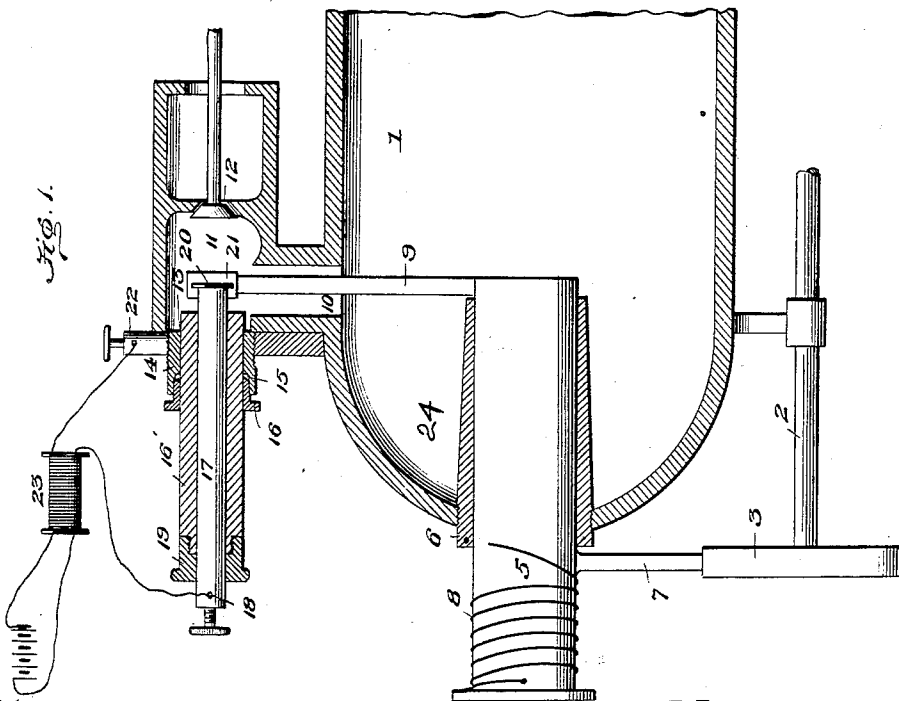
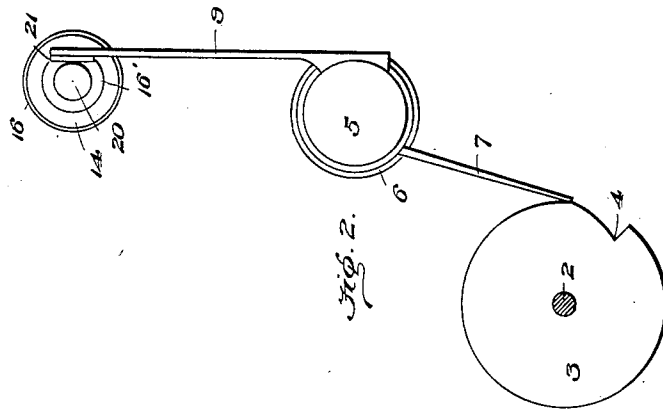
Patented Aug. 7, 1900.

J. G. MACPHERSON.

ELECTRIC SPARKER FOR GASOLENE ENGINES.

(Application filed Nov. 22, 1899.)

(No Model.)



Witnesses:

Wm. A. Hines
H. O. Benjamin

John G. MacPherson.
Inventor

-by- *David P. Moore*
Atty.

UNITED STATES PATENT OFFICE.

JOHN G. MACPHERSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
THE MACPHERSON AUTOMOBILE COMPANY, OF NEW JERSEY.

ELECTRIC SPARKER FOR GASOLENE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 655,406, dated August 7, 1900.

Application filed November 22, 1899. Serial No. 737,864. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. MACPHERSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electric Sparkers for Gasolene-Engines, of which the following is a specification.

This invention relates to an improved electric sparker for gasolene-engines; and one object is to provide a sparker which is certain in operation and which is adapted to operate exactly when the piston of the engine has reached its full forward limit and compressed the gas within the firing-head of the cylinder, yet the construction is such that the spark will take place at an earlier point of travel of the piston-head, thus enabling the control of the speed of the engine.

Another object of my invention is the provision of a sparker which may be operated by a battery and dispense with the use of vibrating coils, employing in place thereof a simple spark-coil.

Another object of my invention is to provide a sparker for gasolene-engines which automatically cleans itself and takes up all wear and tear upon the sparking-points thereof.

A further object of my invention is to provide a simple, durable, and thoroughly practical electric sparker for gasolene-engines which is quick and positive in its action.

To attain the desired objects, the invention consists of an electric sparker embodying novel features of construction and combination of parts, substantially as disclosed herein.

In the drawings, Figure 1 is a transverse sectional view of a portion of a gasolene-engine cylinder with my sparker attached thereto; and Fig. 2 is an end view of the main parts of my sparker removed from operative position with the engine, but in their relative operative position.

Referring to the drawings, the numeral 1 designates the cylinder of the engine.

2 designates the shaft operated by the engine, which carries on its end a cam 3, having an angular or V-shaped notch or recess 4 in the periphery thereof.

Mounted in the end of the cylinder-head is a rod or shaft 5, which is held movably there-

in by means of a threaded nut or bushing 6, and carried by the shaft, outside of the cylinder-head, is an arm or projecting lever 7, and surrounding said shaft is a coiled spring 8, which is adapted to give the lever an upward movement against the cam.

Carried upon the inner end of the shaft 5 is a spring-arm 9, which is at right angles to the shaft and has its end projecting through the opening 10 of the cylinder-head into the gas-supply chamber 11, which is controlled by an ordinary valve 12. An opening 13 is made in the end of the supply-chamber, in which fits a threaded sleeve or bushing 14, having the depression or circular recess 15, in which fits the ring 16, and adapted to fit within the opening of the bushing is the insulator or hollow porcelain cylinder 16', the ring 16 being adapted to hold the insulator tightly in the bushing.

Fitting in the cylinder is the conductor or rod 17, which has the wire-connecting means 18, and adapted to hold this brass or rod into place is a small threaded sleeve 19.

Secured upon the inner end of the conductor is a circular platinum plate 20, which is adapted to be normally contacted by the square platinum plate 21, secured upon the end of the spring-arm 9.

The circuit may be made through any part of the engine; but I prefer to make it through the post 22, which is connected to the spark-coil 23.

From this description, taken with the drawings, the operation of my sparker will be readily understood and its numerous advantages fully appreciated; but the operation briefly stated is as follows: When the piston of the engine is upon its backward stroke, the gas enters into the cylinder, and as it returns the gas is compressed into the head or firing-chamber 24 of the cylinder, and as the shaft 2 revolves the notched cam the lever resting upon the cam is kept in the same position until it strikes the notch, when the spring upon the rod 5 gives the lever a quick upward movement and causes the platinum upon the end of the spring-arm to be quickly disconnected from the circular disk, thus causing a spark which ignites the gas within the firing-chamber, the explosion of the gas

forcing the piston on its backward stroke, this operation being repeated every revolution of the shaft 2. The end of the spring-arm is so contacted with the circular disk as to keep
5 the square plate and circular plates perfectly clean, as the end of the rod 5 when its arm is operated upon by the cam of the engine-shaft gives the spring-arm a very slight sliding movement before it disengages the square
10 plate from the edge of the circular plate.

It is evident that I provide a sparker for gasolene-engines which is very easy and accurate and also positive in its operation, very simple, durable, and inexpensive in construction, and thoroughly efficient and practical in
15 use.

I claim—

In combination with a gasolene and gas engine, of a sparker therefor, comprising an insulator mounted in the end of a gas-supply
20 chamber, a cylindrical conductor fitting in

said insulator, a circular disk carried upon the inner end of said conductor, a sleeve mounted in the head of the explosion-chamber, a shaft mounted in said sleeve, a spring-
25 arm carried by and at right angles to the inner end of said shaft the free end of said spring-arm extending into the gas-supply chamber, a plate carried by the free end of said arm in position to have its face contact
30 with the edge of the disk upon the conductor, and a spring tending to separate the disk and plate, and a cam for bringing them together provided with means to release the spring to disengage the disk and plate to make a spark. 35

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

JOHN G. MACPHERSON.

Witnesses:

CHAS. E. RIORDON,
DAVID P. MOORE.