

J. C. PYLE.
 SPARK INTENSIFIER FOR EXPLOSIVE ENGINES.
 APPLICATION FILED NOV. 18, 1919.

1,361,288.

Patented Dec. 7, 1920.

FIG. 1.

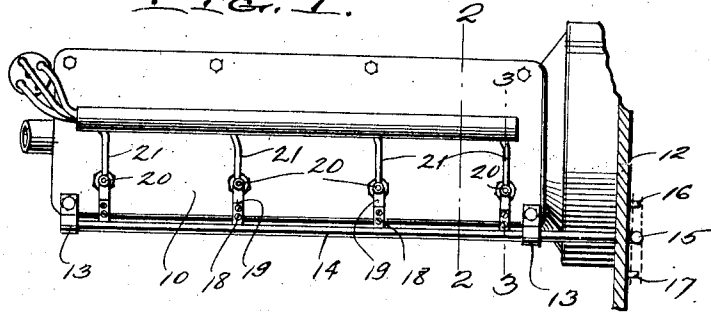


FIG. 2.

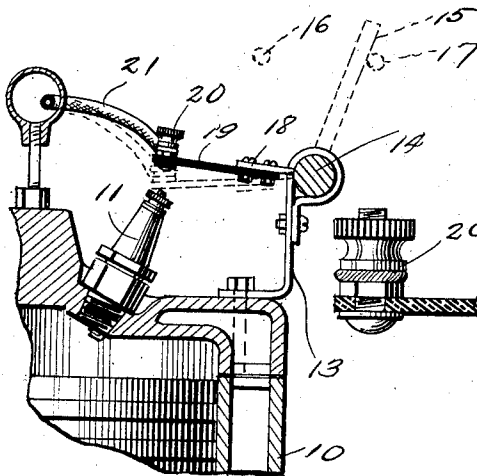
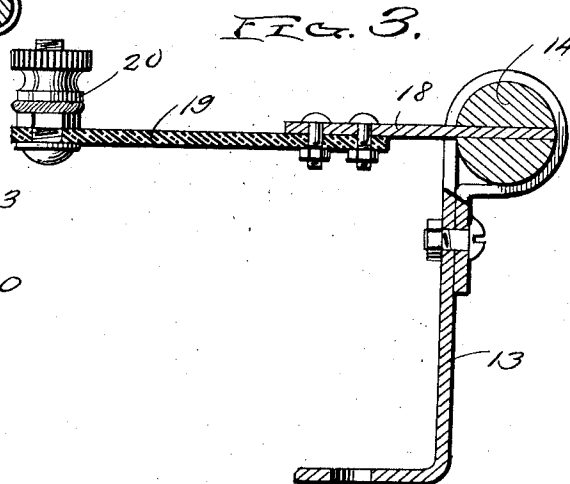


FIG. 3.



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SPARK-INTENSIFIER FOR EXPLOSIVE-ENGINES.

1,361,288.

Specification of Letters Patent.

Patented Dec. 7, 1920.

Application filed November 18, 1919. Serial No. 338,828.

To all whom it may concern:

Be it known that I, JOHN C. PYLE, a citizen of the United States, residing at Salina, in the county of Saline, State of Kansas, have invented certain new and useful Improvements in Spark-Intensifiers 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 new and useful improvements in attachments for explosive engines, and particularly to devices for intensifying the spark.

The principal object of the present invention is to provide a novel and improved device of this character whereby a spark gap can be formed at each spark plug of the engine and closed, at the will of the operator, thus obviating removing any of the parts of the engine.

Another object is to provide a novel and improved device of this character whereby the engine can be more effectively started when cold and at the same time prevent the accumulating of carbon on the spark plugs.

A further object is to provide a novel and improved device of this character whereby the carbon collected on the spark plugs can be easily and quickly burned off without the necessity of removing the plugs.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawing.

In the drawing:

Figure 1 is a top plan view of a portion of an automobile engine showing the invention applied thereto.

Fig. 2 is an enlarged vertical sectional view taken on the line 2—2 of Fig. 1, showing one of the spark gap arms and spark plug in side elevation.

Fig. 3 is an enlarged vertical sectional view taken on the line 3—3 of Fig. 1, through the spark gap arm in operative position, the inoperative position being shown in dotted lines.

The invention is adapted to be inserted in the path of the high tension current of the ignition system of an automobile or other gas engine, immediately at the spark plug terminals, thereby increasing the resistance of its path and allowing the current to build to a higher voltage than normal before

jumping the additional gap when this additional voltage will cause a spark to jump across the points of the spark plug in spite of the plug being fouled by dirty oil or carbon deposit.

Referring particularly to the accompanying drawing, 10 represents the cylinders of the engine, 11 the spark plugs thereof, and 12 the dashboard of the automobile.

Secured to the engine are the brackets 13 by means of which the shaft 14 is supported, the rear end of said shaft extending through the dashboard where it has its end turned at right angles, as shown at 15, to provide a handle by means of which the shaft may be rocked. On the dashboard are two stop pins 16 and 17, against which the handle is adapted to be moved when the shaft is rocked, for the purpose of limiting the rocking movement of the shaft. Secured to this shaft 14, at points opposite the individual spark plugs, are the flexible metal arms 18, each having secured to its free end a piece of suitable insulating material 19. Secured through the outer end of the insulating material 19 is a metal bolt or binding terminal 20 to which is connected one end of the electrical conductor wire 21, said wire having been detached from the adjacent spark plug.

When it is desired to produce a spark gap between the spark plug and the terminal 20, the handle 15 is moved to position against the stop pin 16, which raises the arm 18 a sufficient distance above the spark plug to establish the desired gap. This causes an increase in the tension or voltage of the current before making the jump between the points of the plug, within the cylinder of the engine, with the result that any oil or carbon deposit on the points of the plug will be cleanly and properly burned off, and the operation of the engine facilitated. This is especially valuable and desirable in cold weather where, when the engine is started in a cold condition the plugs quickly become coated with carbon. The present device effectively prevents this collection of carbon. Furthermore, the carbon is burned from the plug without the necessity of removing the plug from the engine. Again, the arm can be moved into or out of gap forming position while the automobile is running, thus enabling the driver to quickly clean the plugs should any of the cylinders miss.

While I have shown and described the intensifier as applied to an automobile engine, I wish it understood that the same is more especially adapted for use in connection
5 with aeroplane engines.

Furthermore, I have shown and described a specific embodiment of mechanism for moving the arm toward and away from the spark plug, I wish it understood that other
10 methods and mechanisms may be used with equal effectiveness and yet be within the spirit of the invention and the scope of the claims. It will be further understood that the number of the arms may be increased
15 or decreased in accordance with the number of cylinders of the engine with which the invention is used.

What is claimed is:

1. The combination with an explosive engine and its ignition system including the
20 spark plugs, of brackets mounted on the engine, a shaft rotatably supported by the brackets, arms carried by and movable with the shaft into contact and spaced relation to
25 the plugs at times, and contact means on the arms included in the ignition circuit and insulated from the arms for producing a jump spark between the plugs and the same.

2. A spark intensifier for explosive engines comprising a bracket adapted to be
30 mounted on an engine, a rock shaft rotatably supported by the bracket, a metallic arm carried by the shaft and movable therewith, an insulation member carried by the
35 metallic arm, and a circuit wire terminal carried by the outer end of the insulation member and having a spark plug engaging contact.

3. A spark intensifier including a bracket having a bearing eye, a shaft rockingly supported in said eye, a radial metal arm carried by and movable with the shaft, a strip of insulation secured to and extending from
40 the outer end of the arm, and a metallic binding screw secured through the outer end
45 of the strip of insulation for connection of the circuit wire therewith, the binding screw having a spark plug contacting portion.

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

JOHN C. PYLE.

Witnesses:

SARAH D. SMITHER,
C. C. GEMMIEL.