Dec. 30, 1924.

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F. FULGORA

SPARK PLUG AMPLIFYING MEANS

Filed Feb. 14, 1920

Fig. 1.

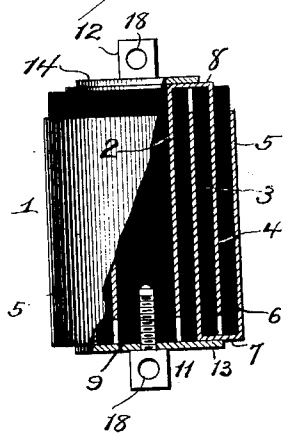


Fig. 2.

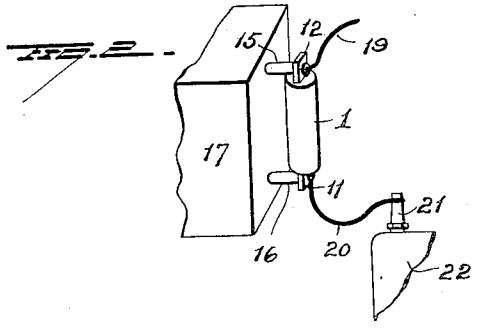
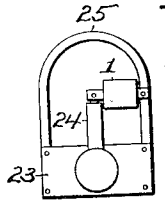


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRED FULGORA, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JAMES N. McGRATH, JR., OF PITTSBURGH, PENNSYLVANIA.

SPARK-PLUG-AMPLIFYING MEANS.

Application filed February 14, 1920. Serial No. 358,739.

To all whom it may concern:

Be it known that I, FRED FULGORA, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Spark-Plug-Amplifying Means; 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 devices for internal combustion engines and more particularly to spark plug amplifying means,—one object of the invention being to provide a simple and efficient means which may be easily applied so as to be disposed in circuit across the terminals of the secondary of the induction coil, or generator in a sparking circuit and operate effectually to amplify the sparks between the sparking terminal of a plug, by producing sparks of high frequency.

With this and other objects in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claim.

In the accompanying drawings; Figure 1 is a view partly in section and partly in elevation showing my improved amplifier or condenser; Figure 2 is a view showing the application of the same across the secondary terminals of the spark coil of an internal combustion engine ignition system, and Figure 3 is a view illustrating the connection of the amplifier in parallel to the secondary of a magneto generator.

1 represents my improved amplifier or condenser,—the same comprising a plurality of metal cylinders 2, 3, 4, 5 separated by high insulating material 6. The cylinders are arranged in two sets, the cylinders of each set alternating with the cylinders of the other set, and the cylinders of one set are electrically connected by a connector 7 at one end of the amplifier, while the cylinders of the other set are electrically connected at the other end of the amplifier by a connector 8. The inside cylinder 2 of the amplifier is filled with insulating material 9 and into respective ends of this central body of insulating material, the threaded shanks 10 of connectors 11, 12 are inserted. The connector 11 holds in place, a metal disk 13 which engages the connector 7 of one set of cylinders and serves to electrically connect the same with said connector 11. In a similar manner, the connector 12 holds a disk 14 in place, the latter engaging the connector 8 of the other set of cylinders and electrically connecting the latter with the connector 12. Thus it will be seen that one side of the amplifier is connected with the connector 11 and that the other side is connected with the connector 12.

The amplifier may be of such length as to be disposed between the binding posts 15, 16 of an induction or spark coil 17, such as employed in ignition circuits of internal combustion engines, and in order to facilitate the application of the connectors 11, 12 to said binding posts, they are perforated as at 18. In Figure 2 of the drawing, a wire 19 from the timer of an ignition system is shown connected with the binding post 15 of the spark coil and a wire 20 is shown connecting the other binding post 16 of said spark coil with a spark plug 21 on an engine 22, while the amplifier connects said binding posts and is therefore placed across the terminals of the secondary of said spark coil.

In Figure 3, the application of the amplifier is shown when employed with a magneto 23. The amplifier 1 is connected with a commutator or collector brush 24 of the magneto and with the field magnet frame 25,—the amplifier being thus disposed so as to bridge the secondary side of the magneto.

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

An amplifier for ignition systems comprising a pair of concentric cylinders, the inner cylinder being open at both ends, an annulus bridging one end of the space between the cylinders and electrically connecting the cylinders, a second pair of similar concentric cylinders alternating with the first pair of cylinders, an annulus bridging the space between said second cylinders and electrically

connecting the cylinders at the ends opposite the first-mentioned annulus, insulation filling all the cylinders, a disk fitted against each annulus, and connectors carried by the disks and penetrating the central portion of the insulation to secure all the parts together.

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

FRED FULGORA.

Witnesses:

GEORGE R. CAREY,

JAMES N. M. GRATH, Jr.