

No. 724,945.

PATENTED APR. 7, 1903.

W. ROCHE.  
IGNITION PLUG FOR EXPLOSIVE ENGINES.  
APPLICATION FILED AUG. 16, 1902.

NO MODEL.

Fig. 1.

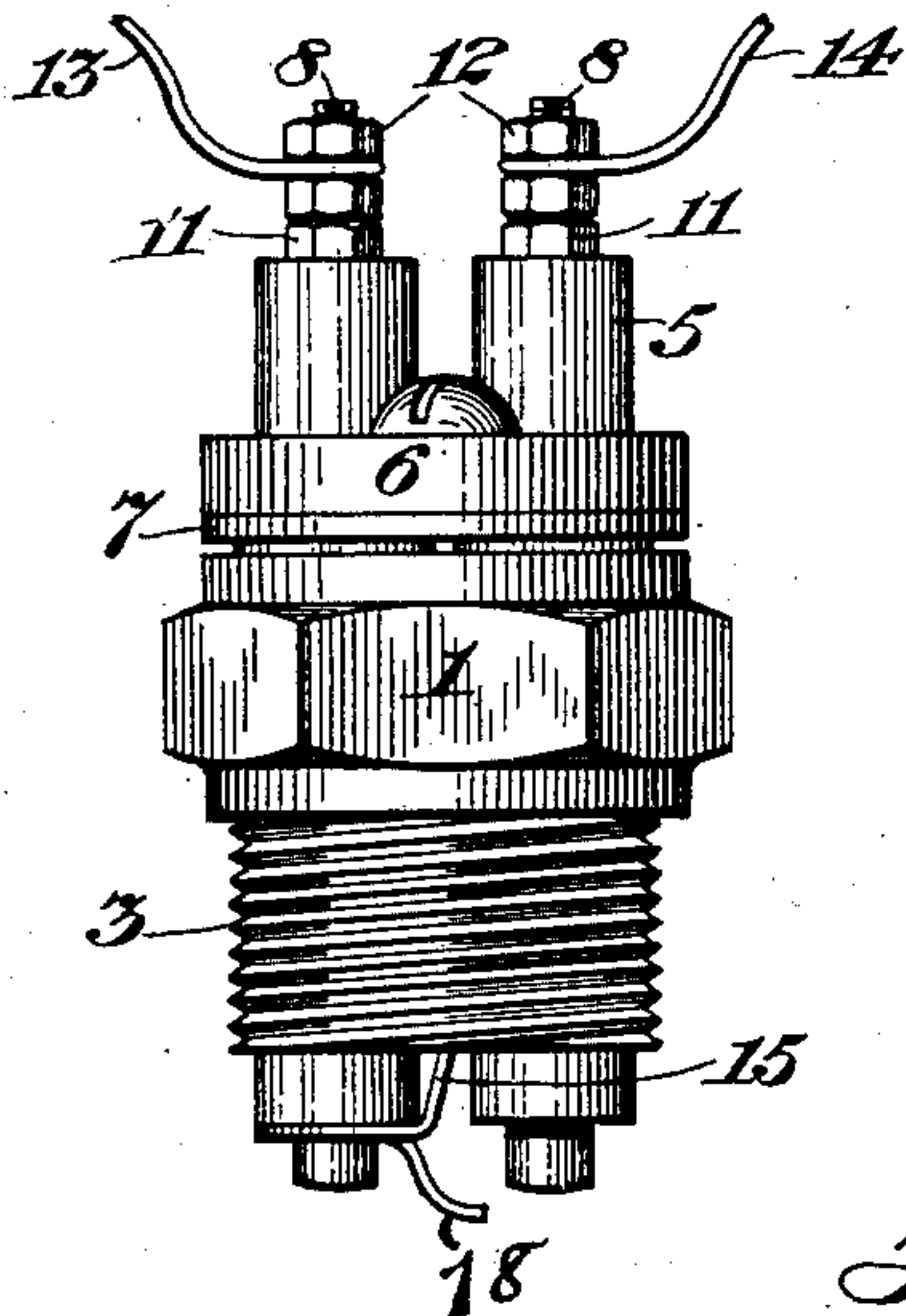


Fig. 2.

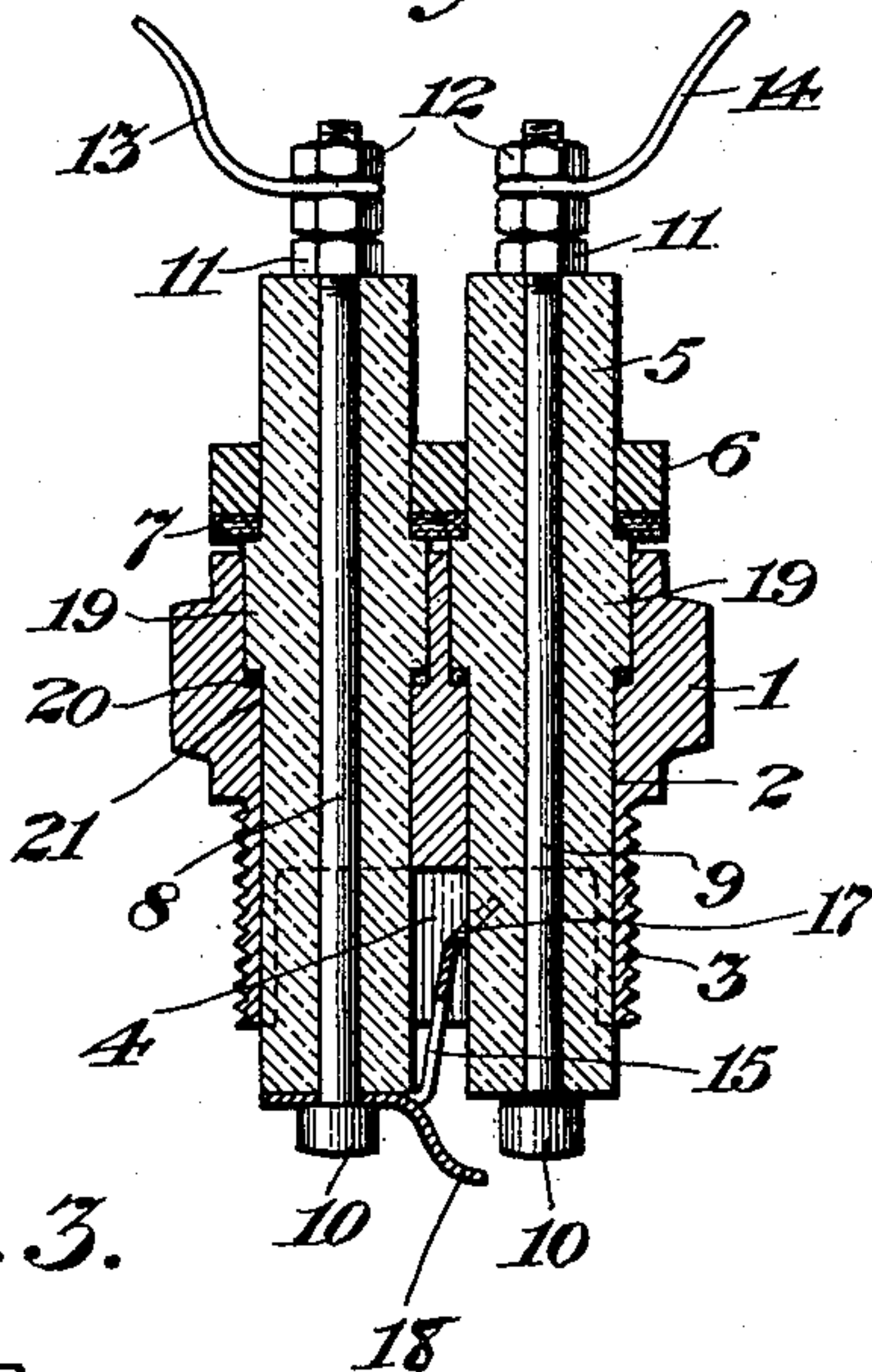


Fig. 3.

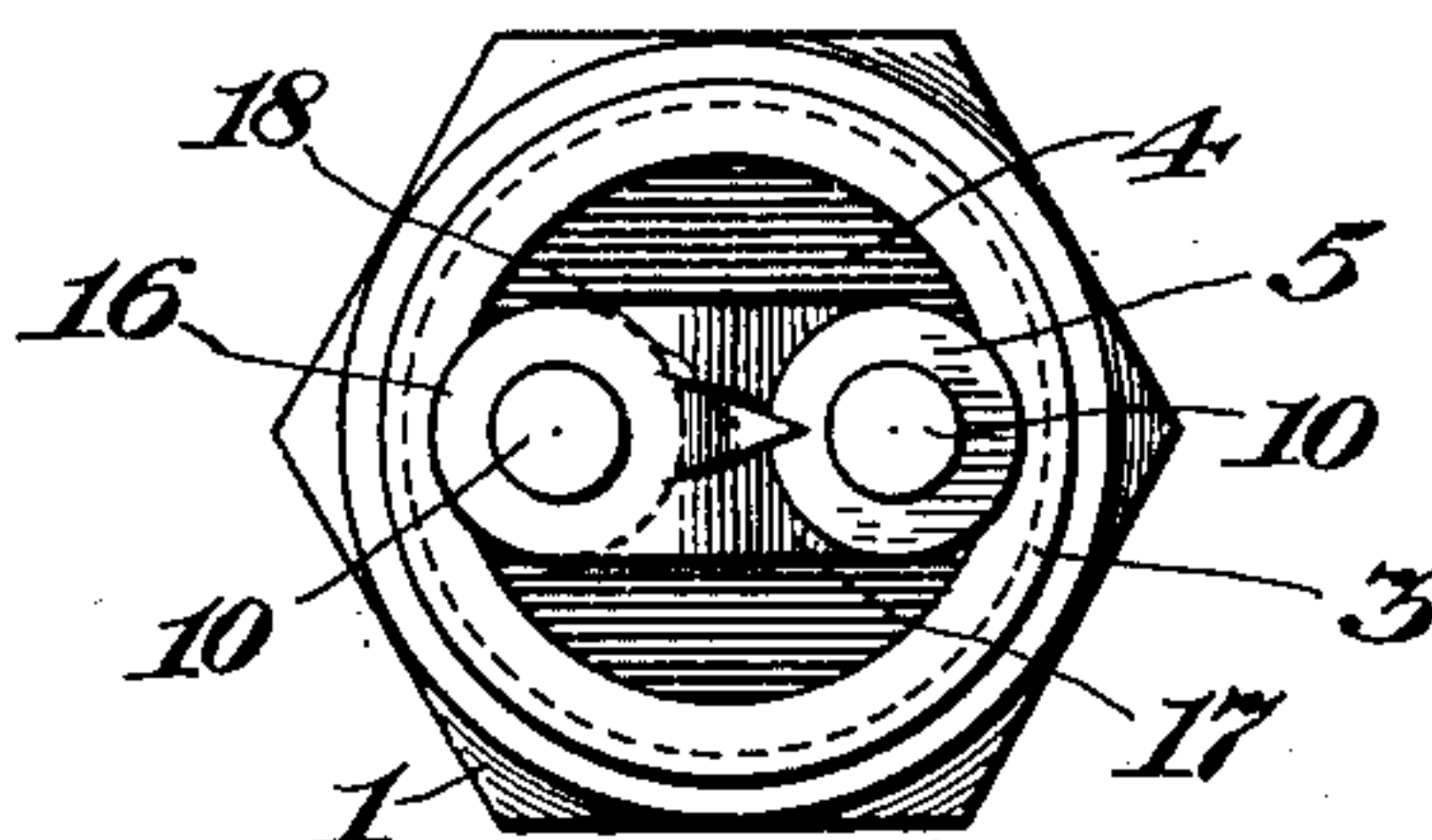
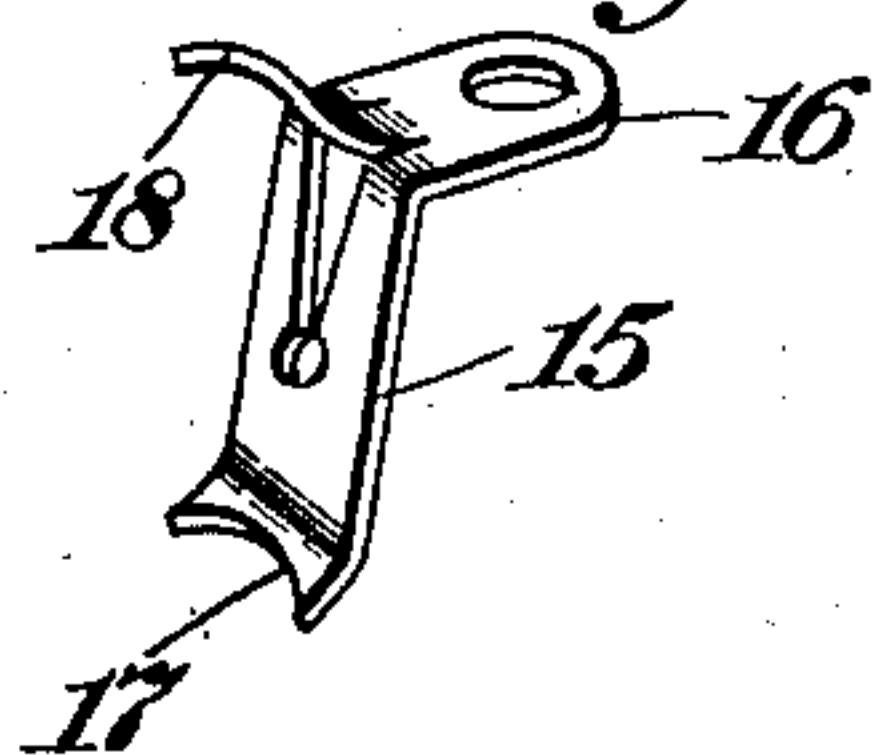


Fig. 4.



Witnesses  
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# UNITED STATES PATENT OFFICE.

WILLIAM ROCHE, OF JERSEY CITY, NEW JERSEY.

## IGNITION-PLUG FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 724,945, dated April 7, 1903.

Application filed August 16, 1902. Serial No. 119,843. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM ROCHE, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Ignition-Plugs for Explosive-Engines, of which the following is a specification.

This invention relates to ignition-plugs for explosive-engines; and its primary object is to insure a regular and uniform action of the sparking devices by providing the same with complete and effective insulating means.

A further object of the invention is to insure the direction of the electric current to the sparking-point, thus avoiding premature or ineffective sparking.

A further object of the invention is to provide a chamber adjacent to the sparking-point for the reception and compression of spent gases, whereby fresh gas will at all times be presented at the point of ignition.

A further object of the invention is to provide a plug comprising readily adjustable and removable parts.

The construction of the improvement will be fully described hereinafter in connection with the accompanying drawings, which form part of this specification, and its novel and characteristic features will be defined and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of an ignition-plug embodying the invention. Fig. 2 is a central vertical section of the same. Fig. 3 is a bottom plan view of the plug, and Fig. 4 is a perspective view of the sparking clip detached.

Corresponding parts in all the figures are denoted by the same reference characters.

The reference-numeral 1 designates the body or cylindrical casing of the plug, formed with parallel longitudinal circular passages 2 and having a depending externally-threaded annular flange 3, forming a chamber 4 for spent gases. Within each of the circular passages 2 is supported an insulating-tube 5, preferably of porcelain and of sufficient length to extend well above the upper end of the body of the plug and below the lower end of the threaded flange thereof. A cap 6, formed with openings for the passage of the

insulating-tubes, is removably secured to the top of the plug and insulated therefrom by washers 7, preferably of asbestos. The conductor-rods 8 and 9 extend through the porcelain tubes 5, each of said rods having a head 10 at its lower end and being threaded at its upper end to receive adjusting-nuts 11 and clamping-nuts 12 for securing the wire conductors 13 and 14.

15 designates a clip, preferably made of steel, bent transversely to form an ear 16, perforated to receive the headed conductor-rod 8. The clip 15 is also bent at its upper end to form a lip 17, having its edge hollowed out to fit against the insulating-tube of the rod 9. A finger 18 is struck up from the body of the clip and bent downward so that its point is in proximity to the head 10 of the conductor-rod 9. The clip 15 is applied to one of the conductors, (in the present instance the rod 8,) as best shown in Fig. 2, and when so applied the body portion of the clip extends between the insulating-tubes. The importance of this position of the clip is that in case the current should jump from the end of either of the rods to the body portion of the plug it would pass to that portion of the clip extending between the insulating-tubes, and thus be conducted to the finger 18. The reason of this is that the distance between the body of the plug and the lip 17 of the clip is always less than that from any other two conductive portions—as, say, the head of one of the rods and the flange 3. Hence the current will follow the shortest road.

Each of the porcelain tubes is preferably formed with a collar 19, fitting within the upper portion of the passages 2, and insulating-packings 20, of asbestos, are interposed between said collars and annular shoulders 21, formed within the passages 2.

It will be seen that by the construction thus described the conductor-rods are each independently insulated from the metallic portion of the plug, as well as completely insulated from each other.

By the employment of the metallic clip the current is conducted directly to the sparking-point, and if through any loose adjustment of the parts or for any other cause the current passes into the body of the plug it



will be directed to the sparking-point through the clip. It will be obvious that the clip may be readily removed or renewed and may be used interchangeably upon the conductor-  
 5 rods. The adjusting-nuts 11 permit of the longitudinal adjustment of the rods 8 and 9 to compensate for wear.

A feature of importance of the improvement is the provision of the chamber 4 above  
 10 the igniting-point, as said chamber permits of the compression therein of the spent gases and the passage of fresh gas to the sparking-point, thus insuring a complete and effective ignition.

15 The parts of the device may be readily assembled and connected to the compression-chamber of an engine.

I would have it understood that the invention is not restricted to all of the details of  
 20 construction shown and described, but includes all such variations and modifications as may fall within the terms and scope of the following claims.

Having thus described my invention, I  
 25 claim and desire to secure by Letters Patent—

1. An ignition-plug for explosive-engines, made up of a body flanged at one end so as to form a chamber for gases, independently-  
 30 insulated conductor-rods extending through said body, and a clip device in contact with one rod and approaching the end of the other

to form a sparking-point and having a branch extending between the insulated tubes of such rods within the chamber, for the purpose set  
 35 forth.

2. An ignition-plug for explosive-engines, comprising a body portion formed with parallel passages, and a depending flange forming a chamber for spent gases, insulating-  
 40 tubes within said passages, conductor-rods within said tubes, and a clip in connection with one of said rods, having a finger approaching the other rod, and bent to form a branch to engage one of said insulating-tubes. 45

3. An ignition-plug for explosive-engines, comprising a body portion formed with parallel passages and having a projecting end flange forming a gas-chamber, insulating-  
 50 tubes within said passages, conductor-rods within said tubes, and a sparking clip provided with a perforated ear for attachment to one of said rods, a projected finger approaching the end of the other rod, and a lip adapted to bear against one of the insulating-tubes, and partially embrace the same, substantially as and for the purpose set forth. 55

In testimony whereof I have signed my name in the presence of the subscribing witnesses.

WILLIAM ROCHE.

Witnesses:

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 J. CLARK PYBAS.