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H. A. BARTALOTT

SPARK PLUG

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1,492,237

Fig. 1.

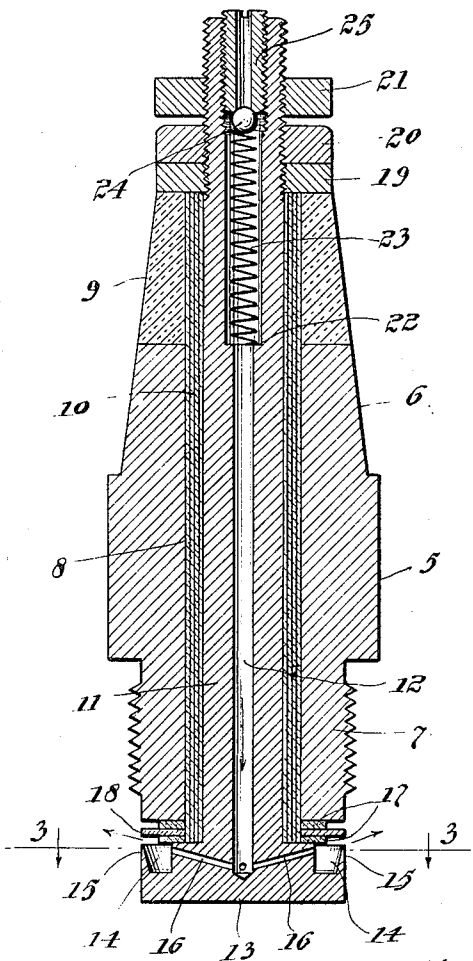


Fig. 2.

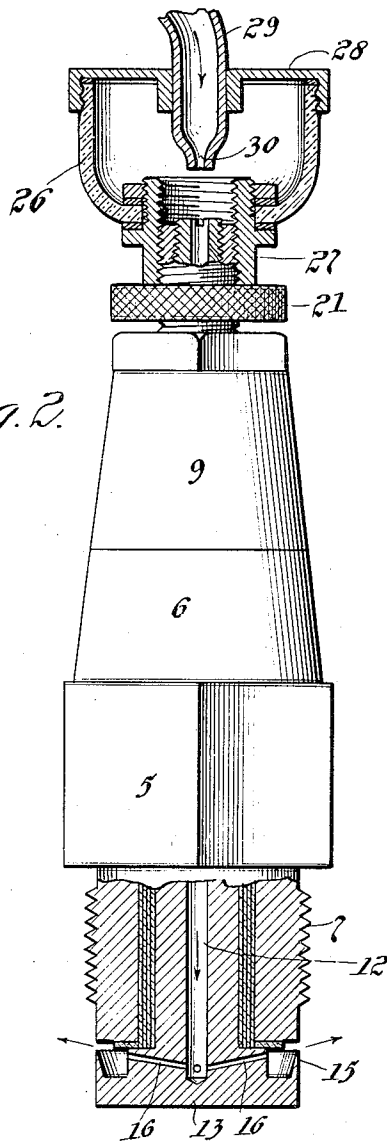
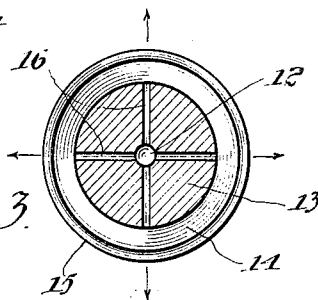


Fig. 3.



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UNITED STATES PATENT OFFICE.

HERMAN A. BARTALOTT, OF CHICAGO, ILLINOIS.

SPARK PLUG.

Application filed July 18, 1921. Serial No. 485,769.

To all whom it may concern:

Be it known that I, HERMAN A. BARTALOTT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Spark Plugs, of which the following is a specification.

My invention relates to spark plugs for the ignition systems of internal combustion engines, and has among its objects the provision of a structure wherein the sparking may take place at a point or at divers points around the entire lower portion of the plug. Another object is the provision of effective and dependable means for keeping the sparking terminals free from carbon deposits which so frequently foul these elements in other types of spark plugs. A further object is the provision of means whereby a quantity of air or liquid may be passed through the plug and into the cylinder of the engine, and I have also provided the plug with means for causing a double jump for each spark which acts as an intensifier and produces a hotter and larger spark. Other objects are the provision of a spark plug that is simple in construction, made of few and substantial parts which may be rapidly assembled and economically manufactured so that the plug may be sold the user for a reasonable price. All the foregoing and other objects I prefer to accomplish in substantially the manner herein-after fully described, and as more particularly pointed out in the claims. Reference will now be made to the accompanying drawings that form a part of this specification, in which—

Figure 1 is a central longitudinal or axial section of my improved spark-plug, showing a double spark gap.

Figure 2 is a side elevation thereof showing the lower portion in section to illustrate a single spark gap and showing the manner of securing a primer to the upper portion of the plug, the primer being shown in section.

Figure 3 is a transverse section on line 3—3, Figure 1.

In the drawings, I have employed the same reference characters to designate like parts throughout the several views, and by referring to Figure 1, it will be seen my improved plug preferably comprises a suitably shaped body element, the central por-

tion 5 whereof is angular in cross-section and the upper and lower portions 6 and 7 respectively are somewhat conical in shape, the lower portion being threaded externally in the usual manner of spark-plugs. The body element is provided with a smooth axial bore 8 that extends from end to end thereof and through the central portion of an insulation cap 9 positioned upon the top of the upper conical section of the body element. Inserted in and fitting this bore 8 is an insulating sleeve 10 that is preferably a hollow cylinder of mica that is long enough to project a slight distance below the bottom edge of the threaded lower portion of the body element.

The stem of the plug consists of an elongated rod 11 having a central bore 12 extending from its upper end to adjacent its lower end, as seen in Figures 1 and 2 of the drawings, and the lower end of the stem is provided with a disk-like head or enlargement 13 of substantially the diameter of the lower end portion of the body element. The upper surface of this head abuts against the lower extended portion of the mica insulating sleeve 10 where the latter projects out of the body element. A channel 14 is formed concentric with and adjacent the peripheral edge of the head upon the upper surface of the latter so that a slightly tapered rim 15 is provided that points upwardly toward and is spaced a slight distance from the lower end of body element 5. A plurality of radially disposed lateral passageways or outlet ports 16 are provided in head 13 that connect at their inner ends with bore 12 of stem 11 and discharge at their outer ends into channel 14, so that air or fluid sucked in through bore 12 upon the suction stroke of the engine piston will draw the air or fluid through passageways or ports 16 and discharge it against rim 15 with sufficient force to keep it clear of carbon or oil and prevent the fouling of the rim which is one of the sparking terminals of the plug, and at the same time cooling said parts.

Interlaid between washers or disks 17 of insulating material is a metal disk 18 that has its edge extended beyond the edges of the insulators 17 and which is substantially the same diameter as head 13 of the stem. The insulators 17 and metal disk 18 surround the lower projection end portion of

insulator sleeve 10 and are interposed between the upper surface of head 13 and the lower end of body element 5, so that two sparking gaps are provided between the terminals of the plug, and said insulators and disk 18 are retained in position by screwing a nut 19 and lock nut 20 down upon the upper extended portion of stem 11 that is threaded to receive these elements. A knurled clamping nut 21 is provided for the purpose of securing the end of the usual conductor wire to the plug.

The upper portion of bore 12 of the stem is widened to provide a shoulder 22 that provides a seat for the adjacent portion of a spring 23 for a check-valve-ball 24 that is engaged by the upper or opposite end of the spring, and in order to provide a seat for the valve ball I thread the upper portion of the enlarged bore 12 and screw therein a hollow plug 25. By adjusting this plug up and down greater or less tension is provided upon the spring 23 so that the quantity of air or fluid may be controlled, and by screwing the plug entirely down into the bore of the stem the tension on the spring will become so great as to seat the ball so firmly that no air or fluid will pass the same.

In the modified structure, I have eliminated the metal disk 18 between the lower end of the body element and head 13 so that but a single sparking gap is provided. I have utilized a cup 26 that is fitted upon a suitable flanged sleeve 27 to be screwed upon the upper end portion of stem 11 above the knurled nut 21, as seen in Figure 2 of the drawings. The closure cap 28 is centrally apertured and provided with a tube or pipe 29 that passes inside the cup to adjacent the inner end of sleeve 27 where it is reduced in diameter and bore to provide a nozzle 30. The tube 29 leads to a suitable source of supply of the element that it is desired to discharge into one plug for the purpose of priming or for other purposes.

It will be understood that other modifications besides those illustrated and described herein may be made without materially departing from the principles of my invention, and I do not wish it understood

that I am limited to the precise structures herein disclosed.

What I claim is:

1. A spark plug comprising a body, a stem extended therethrough and provided with a central passageway, a disk-like head upon the lower end of said stem, an insulation sleeve surrounding said stem and insulating said head from the lower end of said body, and a peripheral sparking flange on the upper portion of said head, said stem provided with lateral passage-ways leading from said central passageway and opening opposite and against said flange.

2. A spark plug comprising a body, a stem extended therethrough and provided with a central passageway, a disk-like head upon the lower end of said stem; said head provided with a concentric channel upon its upper surface adjacent the edge whereby a peripheral upstanding flange is provided that is spaced a slight distance from the lower end of said body, a disk interposed between and insulated from said body and flange; said stem provided with lateral passage-ways leading from said central passageway and opening opposite and against said flange, and said flange and disk being so arranged with respect to said body that two concentric annular sparking gaps are provided in the path of the discharge from said passageways.

3. A spark-plug comprising a body, a stem extended therethrough and provided with a central passageway, a disk-like head upon the lower end of said stem the periphery of which provides with said body the terminals for a spark-gap, insulation material surrounding said stem within said body and extending laterally adjacent the lower end thereof to insulate said stem and head from said body; said stem provided with lateral passageways leading from said central passageway and opening opposite and against said terminals.

Signed at Chicago, county of Cook, and State of Illinois, this 1st day of July, 1921.

HERMAN A. BARTALOTT.

Witness:

FLORENCE MITCHELL.