

E. M. BENFORD.
IGNITION DEVICE.
APPLICATION FILED JAN. 30, 1908.

908,835.

Patented Jan. 5, 1909.

Fig. 1.

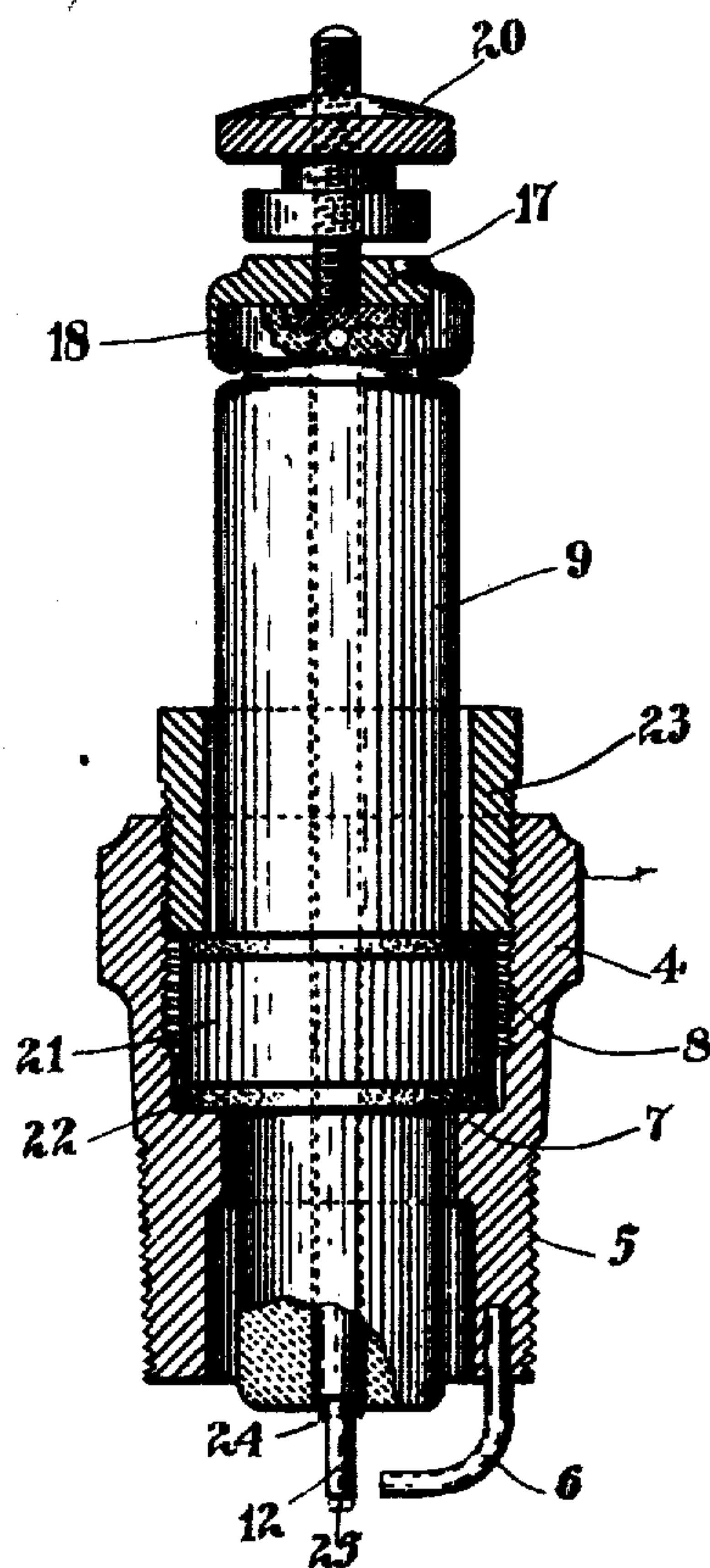


Fig. 2

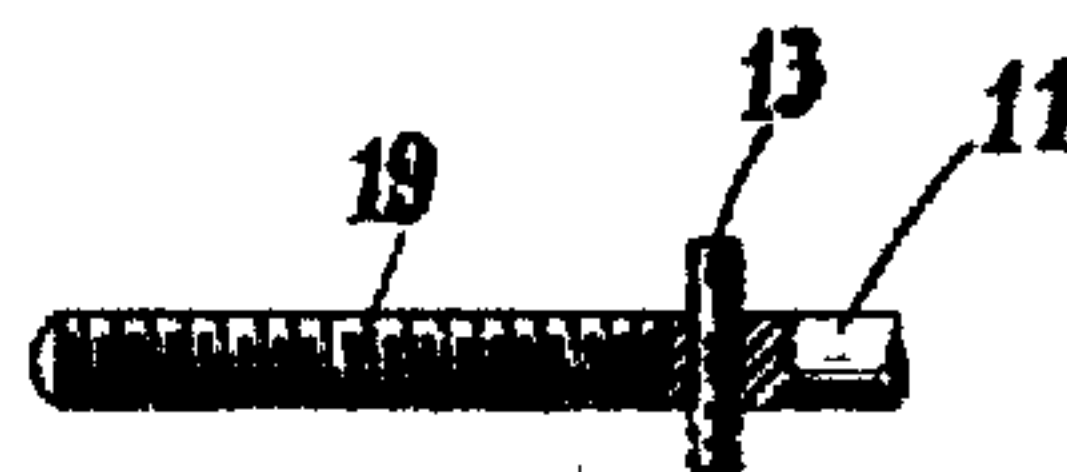
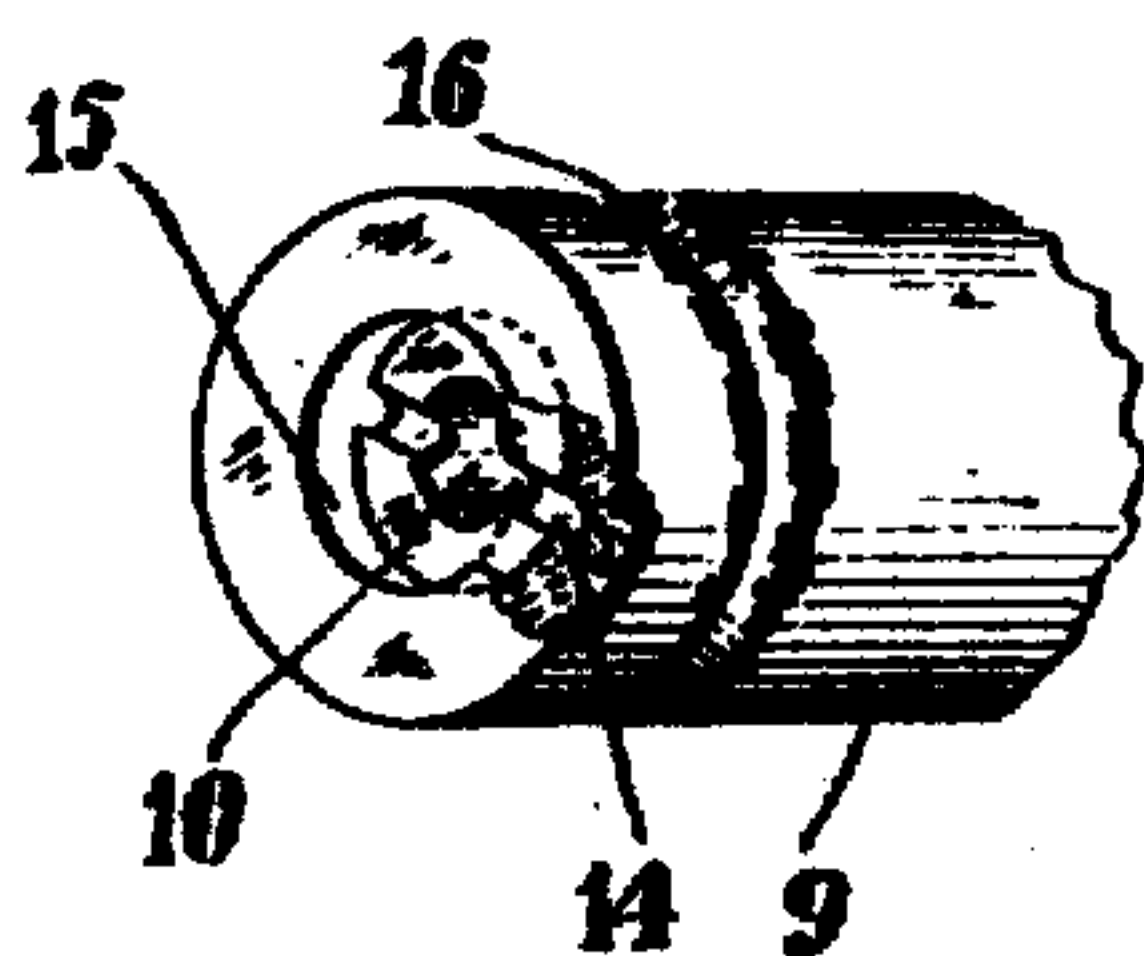


Fig. 3.



Witnesses:

C. C. Foss.
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Inventor,
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By his Attorney, *F. A. Richards.*

UNITED STATES PATENT OFFICE.

EDWARD M. BENFORD, OF MOUNT VERNON, NEW YORK.

IGNITION DEVICE.

No. 908,835.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed January 30, 1908. Serial No. 412,394.

To all whom it may concern:

Be it known that I, EDWARD M. BENFORD, a citizen of the United States, residing in Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Ignition Devices, of which the following is a specification.

This invention relates to ignition devices and has for an object to provide an improved device of this character.

The invention is particularly designed to produce an ignition device or spark plug which may have its insulation made of porcelain and have the conductor for the sparking point so carried by this porcelain and the porcelain so carried by the metal shell that the contractions and expansions due to change of temperature will not break the porcelain; and one wherein the conductor will be free from the porcelain except at one end where it will be securely held against displacement either axially or angularly although the binding nut is screwed upon it.

In the drawings accompanying and forming a part of this specification Figure 1 is an enlarged view showing a practicable embodiment of this present invention; certain portions are shown in elevation and certain portions are shown in central section. Fig. 2 is a broken away portion of the conductor; and Fig. 3 is a broken away perspective view of the outer end of the porcelain insulator.

The shell, designated by 4, will be of some suitable construction, and in the present instance is shown as having a screw threaded portion 5 for engagement with the engine casing to which it may be applied, and the shell is shown as carrying a sparking point 6 for cooperation with the sparking point carried by the insulator. This shell is shown as having an outwardly facing shoulder 7 and as being internally screw threaded at 8 above such shoulder. The porcelain member 9 is provided with a longitudinal bore 10 in which is mounted the conductor 11 which carries the sparking point 12 which will cooperate with some other sparking point, as for instance the sparking point 6. The diameter of the bore 10 is larger than the diameter of the conductor 11 so that this is practically loose within the insulation afforded by the porcelain member. This porcelain member is in the nature of an insulation tube. The conductor or stem, as was before stated,

has a free fit within the insulation tube and is secured to said insulation tube at the outer end. The stem is shown as having a projection for engaging a socket or notch in the insulator; in the present instance the projection is shown as a pin 13 passing through and fast with the stem 11, which pin 13 will be seated in a notch 14 in the bottom of a recess 15 in the end of the insulator. The end of the insulator is also shown as having a circumferential groove 16. A cap 17 having a thin flange 18 will be screwed on to the screw threaded portion 19 of the conductor stem 11.

The manner of assembling the device is substantially as follows: The stem 11 will be inserted through the porcelain insulator 9 and the projection 13 carried thereby will be seated in the notch or socket 14, after which cement will be filled into the socket 15 above the pin or projection 13 and then the cap 17 will be screwed down until it engages the top or end of the porcelain insulator, after which the flange 18 of the cap will be turned over into the groove 16 for securely holding the cap in position. The portion of the screw threaded end 19 which is above the cap 17 will receive a binding nut 20 and will thereby become the binding post for the sparking point 12; and there will thus be a continuous line of metal from the sparking point to the binding post; that is, an integral line of metal extends from the sparking point to the binding post or means of attachment to the wiring. Near the end of the insulator from which the sparking point extends there is provided a flange 21, which forms means of connection between the insulator and the shell. In the present instance there are shown packing disks 22 at each side of this flange, one of which will rest upon the shoulder 7, the other of which will be engaged by the bushing.

It will be readily seen that in my improved ignition device the insulator is supported near the inner end and that most of the porcelain is outside of the ignition chamber, and it will also be seen that the relative expansion and contraction between the insulator and the conducting stem will have no power for disrupting or breaking the parts, since the stem can move freely, as indicated by the dotted lines 24, 25, indicating the expanded position of the stem relative to the insulator.

The stem or conductor 11 is securely held

from rotation by means of its connection with the insulator projections 13 and sockets 14. The binding nut being screw threaded on to the stem would have a tendency to turn the stem and thereby shift the sparking point 12 in an axial direction, but the stem is held against such tendency to movement.

Having described my invention I claim:

1. An ignition device comprising a one piece tubular porcelain insulator, a conducting stem having a free fit within said tubular insulator and having its ends projecting beyond the ends of the insulator, one of said projecting ends constituting a sparking point and the other of said projecting ends constituting a binding post, and a metal cap rigid with said stem at the binding post end and secured to said insulator, and means carried by the stem and engaging the insulator for preventing angular movement of one of these relative to the other.

2. An ignition device comprising a porcelain tube having a recess in one end and notches in the recess, a conducting stem

within said tubular porcelain and having a free fit therein, said stem extending at both ends beyond the ends of the porcelain and constituting at one of said extending ends a sparking point and the other extending end having a screw threaded portion, said stem being provided near the screw threaded portion with projections seated in said notches, cement within said recess for securing said projections in said notches, a cap screwed on the screw threaded portion of the stem, the stem extending beyond said cap and constituting a binding post, said tubular porcelain having a circumferential groove and said cap being turned into said groove, and a binding nut upon said binding post portion for the stem.

Signed at Nos. 9-15 Murray street, New York, N. Y., this 10th day of January, 1908.

EDWARD M. BENFORD.

Witnesses:

CHAS. LYON RUSSELL,
FRED. J. DOLE.