Oct. 29, 1935. H. RABEZZANA 2,018,741

SPARK PLUG CLEANER

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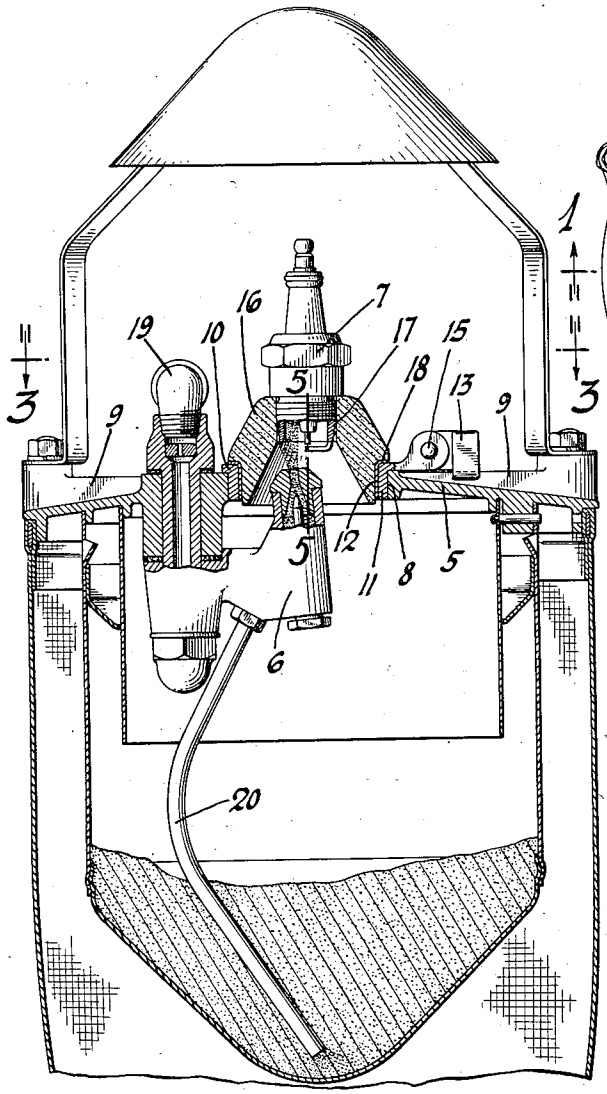


Fig. 1

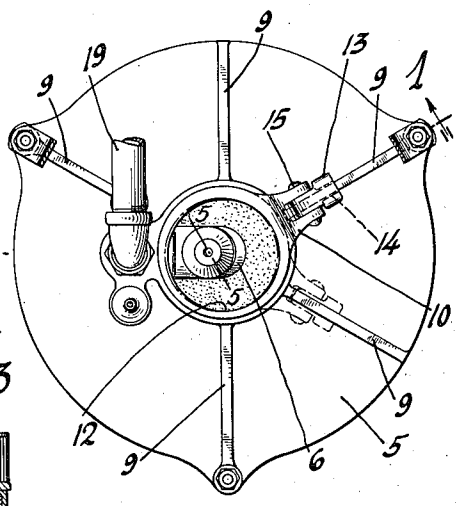


Fig. 3

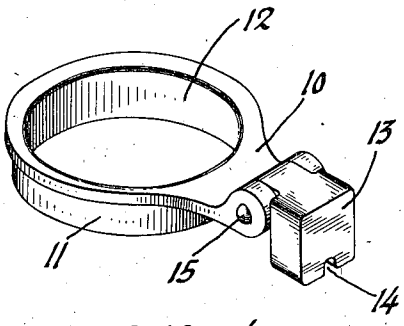


Fig. 4

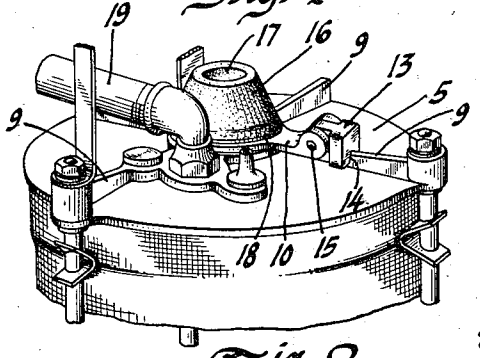


Fig. 2

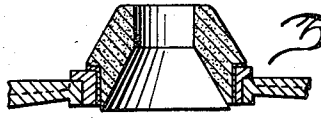


Fig. 5

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SPARK PLUG CLEANER

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4 Claims. (Cl. 51—8)

My invention relates to spark plug cleaning devices of the type wherein a stream of air under pressure is employed to entrain sand or equivalent abrasive, and wherein a nozzle is arranged to project a jet of mixed air and abrasive against the inner end of a spark plug to be cleaned; whereby the soot, hard encrusted carbon, and other contaminating substances tending to short circuit or otherwise interfere with the proper operation of the plug is removed therefrom, and the plug restored to a clean condition and made capable of further use.

In cleaning devices of the type above mentioned (and as an example thereof, I refer to the heretofore filed application of Alexander J. Battey and myself, for a spark plug cleaning device, Serial Number 634,878, filed September 26, 1932), it is important that the jet of mixed air and abrasive material which is discharged against the end of a spark plug to be cleaned shall be so directed as not to impinge directly against the end of the insulator of the plug, as the insulator will be injured to a considerable extent by the abrasive action of the jet if it is discharged directly against the end thereof. The nozzle employed is therefore commonly arranged at an angle to the axis of the plug being cleaned so that the jet of air and abrasive material will for the most part miss the extremity of the insulating member, and will flow along the side of the tapered end thereof and against the interior of the shell of the plug; the abrasive effect of the jet being concentrated, to as great a degree as possible, upon the interior of the steel shell of the plug and upon the extremity of the shell. Such part of the abrasive stream as flows along the tapering end of the insulator will not injure it to any material degree, although its action will be sufficiently vigorous to remove carbon deposit therefrom; while at the same time the more direct engagement of the larger part of the jet with the interior of the steel shell will subject it to a vigorous scouring action and will clean the same more effectively and completely than would be the case if the axis of the stream of air and abrasive material discharged from the nozzle was parallel to the axis of the plug being cleaned.

The object of my invention is to provide an adjustable support for the plug to be cleaned so that its position relative to the nozzle, and to the jet or stream of air and abrasive discharged therefrom, may be varied, to thereby secure a maximum cleaning effect of the jet and a minimum of injury to the insulating member of the plug, particularly the exposed inner extremity thereof. Such adjustment is desirable even if plugs all of one size and type are to be cleaned; and it is particularly advantageous if plugs of different sizes, or plugs varying as regards the shape of the inner end of the insulating member or otherwise, are to be cleaned.

The drawing submitted herewith illustrates the preferred form of my invention although it may be embodied in other specific forms, so long as such varied and modified forms come within the scope of the concluding claims, wherein the features wherein my invention consists are particularly pointed out.

In the drawing:

Figure 1 is a partial sectional view of the sand blasting device taken upon a vertical plane.

Figure 2 is a fragmentary perspective view showing the cover of such a spark plug cleaning device as is illustrated in Figure 1.

Figure 3 is a view showing the cover as seen looking down from a plane indicated by the line 3—3, Figure 1, the spark plug being cleaned and the support therefor being omitted.

Figure 4 is a perspective view showing an angularly movable support of my device, and a latch for securing it in various positions.

Fig. 5 is a fragmentary section of the cover taken at right angles to the section shown in Fig. 1 and shows the plug holder and parts of its supports in section demonstrating the eccentric mounting of the supporting ring.

Referring now to the drawing, the numeral 5 designates the cover of a spark plug cleaning device of the type herein referred to, and 6 is a nozzle located beneath the cover and adapted to discharge a stream of air and abrasive material against the inner end of a spark plug 7 to clean it. As stated, the arrangement of the nozzle is preferably such that the jet discharged therefrom is at an angle to the axis of the plug being cleaned, and it is illustrated in Figure 1 as arranged in that way.

The cover 5 has a circular opening 8, preferably located centrally thereof; and a plurality of radially extending ribs 9 are commonly present upon the upper side and which, while provided primarily for strengthening the head, serve an additional holding or locking purpose in my invention. My invention, however, in its broader aspect is not limited to any particular form or construction of cleaning device head.

The numeral 10 designates an angularly movable or angularly adjustable support which has a circular part 11 arranged so as to rotate within the opening 8, and a circular opening 12 which is

eccentric with the opening 8 in the head. This support has an arm which carries a pivotally supported latch 13 having a notch 14 adapted to fit over a rib 9, as illustrated; whereby the latch may be swung up about the pivotal connection 15 to release the support from the interlocking action of the notch 14 and a rib 9, the support may be moved angularly, and the same locked in another position by engaging the notch with another rib, all as indicated in Figure 3.

The opening 12 is eccentric with the circular part 11 and eccentric to the cover opening 8; and the numeral 16 designates a spark plug supporting member made commonly of rubber, and which member is freely rotatable within the opening 12 and has an opening 17 for receiving the threaded part of the spark plug 7. The lower part of the supporting member 16 is provided with a metallic bushing 18 so that the same will rotate freely and without appreciable friction within the opening 12 of the angularly adjustable support 10.

In view of the premises it will be appreciated that a jet of air and abrasive material (the air being supplied to the nozzle through a pipe 19 and the abrasive material through a pipe 20) will be projected against the inner end of the spark plug 7 to be cleaned; and that by rotating the plug support 16 by the hand every part of the end of the plug may be brought into position to be acted upon by the jet. Also and by moving the angularly movable support 10 into various angular positions the position in which the best cleaning action is secured may be determined, and the cleaner used with the support in that particular position. As necessarily follows, the capability of angular adjustment of the support 10 permits the cleaner to be adjusted for most effective cleaning of various sizes and types of plugs, and the head may obviously be provided with marks or equivalent indicating data to inform the user as to the angular position which the support 10 should be in for the best cleaning of various sizes, types, or other characteristics of spark plugs to be cleaned.

Having thus described and explained my invention I claim and desire to secure by Letters Patent:

1. In a spark plug cleaning device, a cover having a plurality of radially extending ribs and a central circular opening; a nozzle located beneath said cover and arranged to discharge a stream of air and abrasive material against the end of a spark plug to be cleaned; an angularly movable support fitting within said central opening and which support has a circular opening arranged eccentric to the opening in said cover; a plug supporting member rotatable in the opening in said support and having an opening adapted to receive a spark plug to be cleaned; and a pivoted latch carried by said angularly movable support and adapted to interlock with said ribs.

2. In a spark plug cleaning device, a cover having a central circular opening; a nozzle located beneath said cover and arranged to discharge a stream of air and abrasive material against the end of a spark plug to be cleaned; an angularly movable support fitting within said opening and which support has a circular opening arranged eccentric to the opening in said cover; a plug supporting member rotatable in the opening in said angularly movable support and having an opening adapted to receive a spark plug to be cleaned; and means carried by said angularly movable support and adapted to engage said cover to thereby prevent movement of said angularly movable support.

3. In a spark plug cleaning device, a cover having a circular opening; a nozzle located beneath said cover and arranged to discharge a stream of air and abrasive material against the end of a spark plug to be cleaned and at an angle to the axis of the plug; an angularly movable support fitting within said opening and which support has a circular opening arranged eccentric to the opening in said cover; a plug supporting member rotatable in the opening in said angularly movable support and having an opening adapted to receive a spark plug to be cleaned; and means for preventing angular movement of said angularly movable support.

4. In a spark plug cleaning device, a cover having a circular opening; a nozzle located beneath said cover and arranged to discharge a stream of air and abrasive material against the end of a spark plug to be cleaned; an angularly movable support fitting within said opening and which support has a circular opening arranged eccentric to the opening in said cover; and a plug supporting member rotatable in the opening in said angularly movable support and having an opening adapted to receive a spark plug to be cleaned.

HECTOR RABEZZANA.