June 16, 1959 P. N. McPHERSON 2,890,611

SPARK PLUG GAP SETTER

Filed March 18, 1958

Fig. 1.

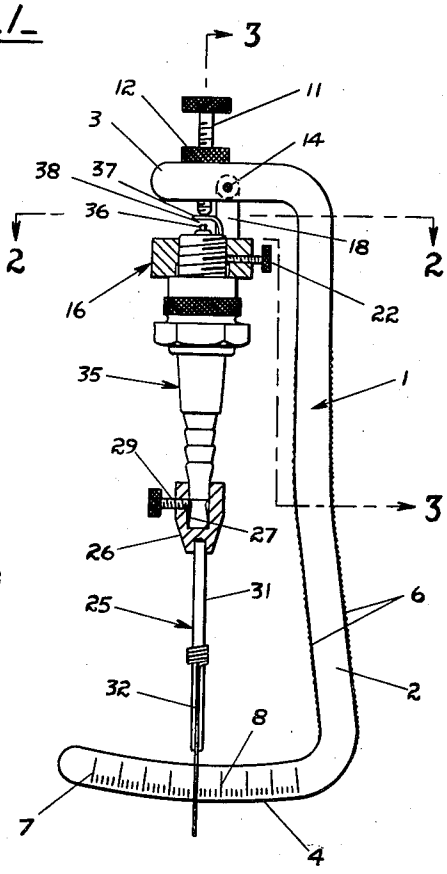


Fig. 3.

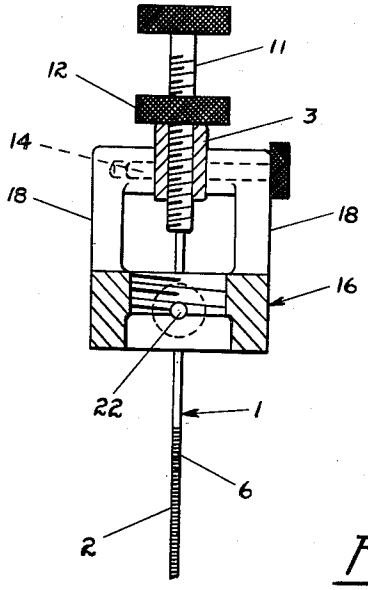
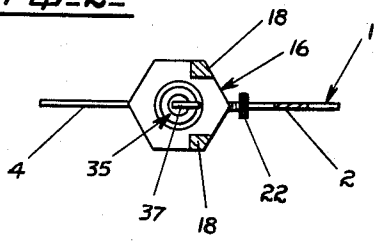


Fig. 2.



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SPARK PLUG GAP SETTER

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5 Claims. (Cl. 81—15)

My invention relates to improvements in spark plug gap setter.

The objects of the present invention are to provide a device which will enable the gap of a spark plug to be set without having to rely on the user's sense of touch as is the case when the conventional feeler gauge alone is employed and to provide means whereby the appropriate electrode may be bent as required in only two stages as opposed to the repeated trial and error method of adjusting the gap.

It has been found that due to the natural resilience of the metal the side electrode of a spark plug tends to open up the gap slightly after the bending pressure is removed and a further and important object of the invention is to provide means whereby the user can tell at a glance the exact extent of this opening movement and can compensate for it accurately.

Referring to the accompanying drawings:

Figure 1 is an elevational view, with parts in section of the assembly.

Figure 2 is a section taken on the line 2—2 of Figure 1.

Figure 3 is an enlarged section taken on the line 3—3 of Figure 1.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates generally a frame consisting of a slightly cranked side member 2, a horizontally extending upper arm 3, and an arcuate lower arm 4. A relatively thin strip of material is preferably used for the side member 2 and arm 4 with said side member being knurled as at 6 to enable it to be conveniently gripped in the user's hand. The lower arm 4 is marked with a scale 7 of equally spaced divisions 8. It will be noticed that the divisions are not numbered in any way although they are representative of the degrees of a circle and the reason for this will be apparent later.

Extending vertically through the upper arm 3 is a threaded bolt 11 which is fitted at its upper end with a lock nut 12. A transverse pivot pin 14 is carried by the arm 3 adjacent to the bolt 11 and rockingly supported upon said pin is a depending threaded collar 16. The collar 16 is vertically aligned with the bolt 11 and is provided on its upper surface with spaced lugs 18 which are journalled upon the free ends of the pin 14. The collar 16 is preferably hexagonal to facilitate gripping and a thumb screw 22 extends transversely through said collar.

The device is provided with a pointer 25 having a head 26 in which a recess 27 is formed. A clamping screw 29 extends through the side of the head 26 into the recess 27. A stem 31 depends from the head 26 and slidably mounted upon said stem is a thin wire extension 32.

The numeral 35 indicates a spark plug about to be adjusted, which plug is provided with a center electrode 36 and a side electrode 37 which are set to define the necessary gap 38. In order to adjust the gap with the present invention said gap is opened up beyond the required setting and the plug is screwed upside down into the collar 16 and is positioned so that the electrode 37 is disposed to the right as shown in Figure 1, whereupon the thumb screw 22 is tightened to prevent rotational movement of the plug in the collar. The pointer 25 is secured to the end of the plug by inserting the terminal end of the plug into the recess 27 in the head 26 and tightening the clamping screw 29. The extension 32 is positioned on the stem 31 so that its free end projects across the lower

arm 4 and is clearly readable upon the scale 7. With the side member 2 gripped in the user's hand the frame 1 is supported so that the plug will swing freely about the pin 14 and assume a substantially vertical position and the bolt 11 is adjusted so that it bears lightly upon the side electrode 37. A suitable feeler gauge is inserted into the gap 38 and the thumb and forefinger of the right hand are used to exert pressure upon the plug and swing the collar 16 about the pin 14 in a clockwise direction as viewed in Figure 1. Since the pin 14 is offset to one side of a line drawn axially through the bolt 11 this movement causes the lower end of said bolt to bend the side electrode 37 down into contact with the feeler gauge. The user maintains this pressure upon the plug until the gauge can just be withdrawn from the gap 38, then makes a mental note of the graduation beneath the extension 32 before he withdraws the feeler gauge completely and releases the pressure on the plug. As previously stated, the side electrode has a certain amount of resilience which will cause it to move away from the center electrode and increase the gap sometimes by as much as several thousandths of an inch. This opening movement can be checked by moving the frame 1 relative to the lower end of the plug so that the side electrode again bears against the end of the bolt 11. Reference to the scale 7 will show that the extension 32 has moved away from the original point on the scale by say two of the divisions 8. The plug may then be forced away from the side 2 to cause the bolt 11 to close the gap 38 until the extension has been returned to its original position on the scale or in other words, has moved the width of two divisions and has closed the gap to the exact setting required.

What I claim as my invention is:

1. A spark plug gap setter comprising a frame having a vertical hand grip member, an arm extending transversely from said member adjacent its upper end, a collar swingingly suspended from said arm, an adjustable bolt extending downwardly through said arm adapted to bear upon the side electrode of a spark plug supported in said collar, said collar being journalled on a pin extending transversely of the arm and being offset from a line extending axially through the adjustable bolt and the collar.

2. A spark plug gap setter as claimed in claim 1, wherein a pointer is provided for attachment to the spark plug to be tested and a graduated scale is carried by the frame for indicating movement of a spark plug electrode relative to the adjustable bolt.

3. A spark plug gap setter as claimed in claim 1, wherein said collar is adapted to support the spark plug with the adjustable bolt in contact with the free end of its side electrode whereby the swinging of the plug relative to the frame will increase the angle of the bend of the side electrode.

4. A spark plug gap setter as claimed in claim 1, wherein a pointer is provided for attachment to the spark plug to be tested and a graduated scale is carried by the frame for indicating movement of a spark plug electrode relative to the adjustable bolt, said pointer having a recessed head adapted to receive the lower terminal end of the spark plug, the free end of the pointer being set to traverse the scale carried by the frame.

5. A spark plug gap setter as claimed in claim 1, wherein said collar is adapted to support the spark plug with the adjustable bolt in contact with the free end of its side electrode whereby the swinging of the plug relative to the frame will increase the angle of the bend of the side electrode and a spring wire extension is slidably mounted upon the pointer.

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