

[54] **SPARK PLUG GAP ADJUSTER**

[75] Inventor: **Paul O. W. Hopkinson**, Gibsonia, Pa.

[73] Assignee: **St. Barnabas Free Home**, Gibsonia, Pa., part interest

[22] Filed: **Mar. 20, 1975**

[21] Appl. No.: **560,226**

[52] U.S. Cl. **81/3 R; 81/3 R**

[51] Int. Cl.² **B25B 1/10; B25B 1/20**

[58] Field of Search **81/3 R; 269/143, 249**

[56] **References Cited**

UNITED STATES PATENTS

1,985,410 12/1934 Isaacs 81/3 R

Primary Examiner—Al Lawrence Smith

Assistant Examiner—Roscoe V. Parker

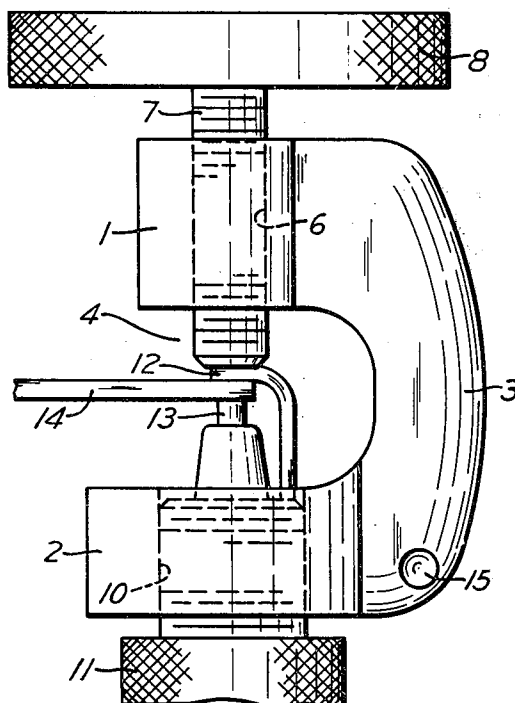
Attorney, Agent, or Firm—Brown, Murray, Flick & Peckham

[57]

ABSTRACT

A frame has upper and lower portions with a passage through each one. The passages are axially aligned and spaced apart by a recess in the frame extending laterally out to the outside of the frame. A screw projecting from the ends of the upper passage can be turned by its upper end to lower and raise it. The lower passage will receive and hold the threaded end of a spark plug with its spark electrodes disposed in the frame recess directly beneath the screw, so that when a spark gap gauge is inserted between the electrodes the screw can be turned down to bend the upper electrode down as far as permitted by the gauge to thereby provide the required spark gap between the electrodes.

6 Claims, 4 Drawing Figures



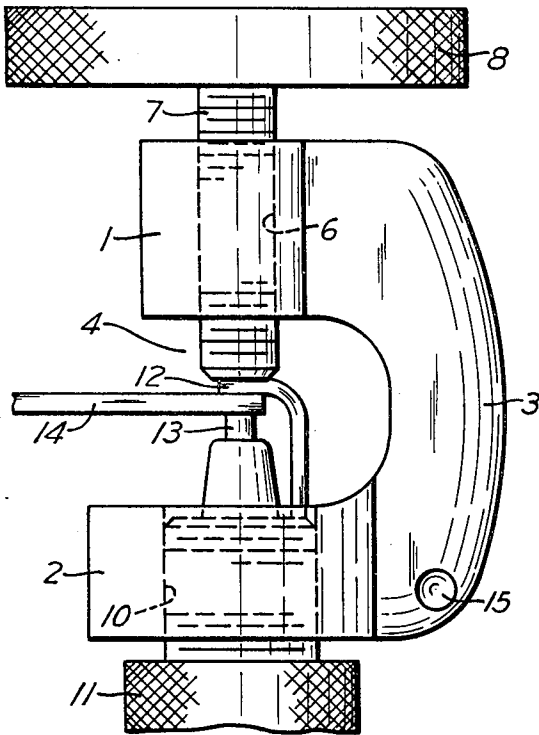


Fig. 1

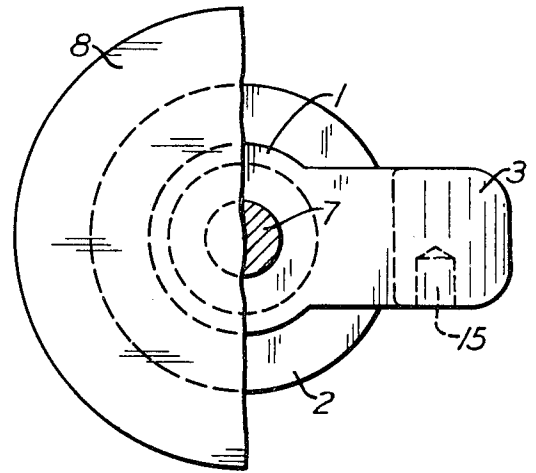


Fig. 2

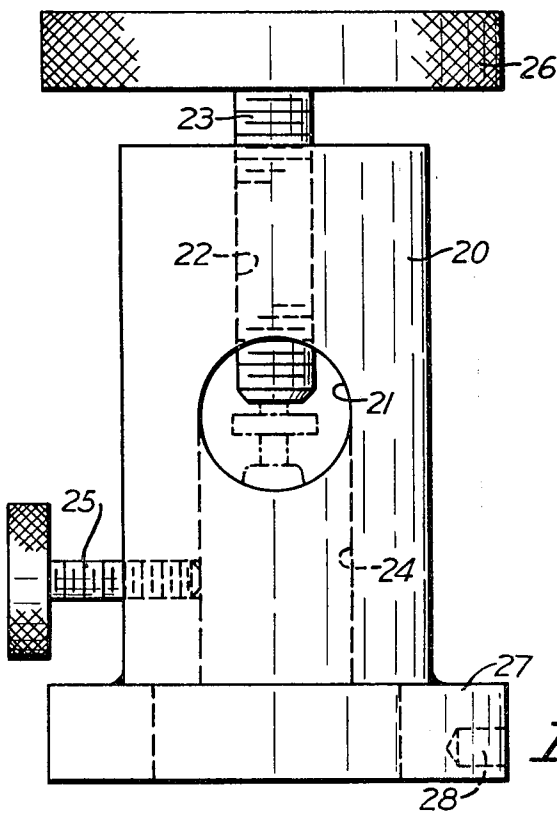


Fig. 4

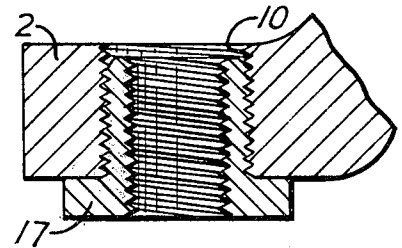


Fig. 3

SPARK PLUG GAP ADJUSTER

The spark gaps between the electrodes at the inner ends of spark plugs are adjusted by placing a gauge of the desired thickness between the electrodes and then bending the outer one toward the inner one as far as the gauge will permit. This bending of the electrode is often done in a makeshift trial and error manner, or with an instrument held in one hand while the spark plug and the gauge are held in the other hand. In U.S. Pat. No. 1,985,410 a spark plug gap adjuster device is shown that is provided with a leaf gauge spaced from an arm in which a screw is threaded. The gauge is inserted between the two spark electrodes and then the screw is turned to clamp the bendable electrode between it and the gauge. However, it will be seen that this operation will not in itself adjust the spark gap because it will not bend the electrode. To adjust the gap, it is necessary to move the device in a direction that will bend the electrode, onto which it is clamped. Merely turning the screw down against the electrode will not bend it. Also, since the gauge is a permanent part of the device, it requires a separate device for each gauge of a different thickness.

It is among the objects of this invention to provide a spark plug gap adjuster which will adjust the gap by merely turning a screw, which can be used with gauges of different thicknesses, which can be used with spark plugs of different sizes, and which is simple and inexpensive in construction and easy to use.

The invention is illustrated in the accompanying drawings, in which

FIG. 1 is a side view of my spark plug gap adjuster;

FIG. 2 is a plan view, shown partly in section;

FIG. 3 is a fragmentary vertical section through a modification; and

FIG. 4 is a side view of a further embodiment of the invention.

Referring to FIGS. 1 and 2 of the drawings, a frame that is shaped somewhat like the letter C has upper and lower portions 1 and 2 that are spaced apart by a vertical rib 3 to form a recess 4 that is open on three sides. The upper portion of the frame is provided with a threaded vertical passage 6, in which is mounted a screw 7 that projects from the upper and lower ends of the passage. A knob 8 or the like is rigidly mounted on the upper end of the screw for turning it to raise and lower the screw in the frame.

The lower portion of the frame is provided with a threaded vertical passage 10 axially aligned with the screw, but having a diameter large enough to receive the threaded end of a conventional spark plug 11. When a plug is screwed up into this passage from its lower end as shown, the plug is held by the frame rigidly with its spark electrodes 12 and 13 located in recess 4 directly below the screw. A conventional leaf gauge 14 that is the same thickness as is desired for the spark gap is inserted in the recess of the frame and between the two electrodes. The screw then is turned down to press it against the upper electrode and, since the spark plug cannot move down in the frame, the upper electrode can be forced down by the screw to clamp the gauge between it and the other electrode 13 below. This will bend the upper electrode down so that when the screw is backed off and the gauge is removed, the length of the spark gap will be the same as the thickness of the gauge. In case the gap is too narrow to start with, before the plug is screwed into the frame the

tip of electrode 12 can be inserted in a hole 15 in the side of the frame and the electrode then bent away from the other electrode to open up the gap more than it should be. Then the plug is screwed into the frame and the screw is turned to bend electrode 12 down again as far as the gauge will allow. It will be seen that gauges of various thicknesses can be used, because they are entirely independent of the gap adjusting device, only one of which therefore is required.

It is highly desirable to be able to use this same gap-adjusting device for different sized plugs, which are made for different engines. This can be done if the plug-receiving passage 10 in the lower portion of the frame is provided with one or more adapters for changing its diameter. Such an adapter is shown in place in FIG. 3. It is sleeve 17 that is provided with both external and internal threads. The outer threads permit the adapter to be screwed up into the lower passage in the frame, while the threaded inside of the sleeve will receive a smaller spark plug than would fit in the passage in the frame if the sleeve were not used. Another adapter with a smaller or a larger inside diameter will accommodate an even smaller plug or one that is in between the sizes that can be accommodated by the adapter shown and by the frame without the adapter.

The gap adjusting device shown in the modification illustrated in FIG. 4 operates in the same way as the one first described, but the frame is constructed differently. The frame 20 is of uniform size from top to bottom and may be cylindrical or polygonal. A bore or recess 21 extends transversely through the central portion of this frame. Above the recess there is a vertical threaded passage 22, in which a screw 23 is mounted. A larger passage 24 below the recess is for receiving the threaded end of a spark plug so that its spark electrodes can be located in the recess directly below the screw. Although this passage could be threaded like the comparable passage in FIG. 1, another means for holding the plug in the frame is shown and could be used in place of the screw thread in the lower passage of FIG. 1. The modified plug-holding means consists of a set screw 25 mounted in the lower portion of the frame, with the inner end of the screw at the wall of passage 24 to press against and hold a spark plug. A knob 26 is rigidly mounted on the upper end of vertical screw 23 for turning it, and a ring 27 may be secured in any suitable manner to the lower end of the frame for gripping in the hand while the screw is being turned down to adjust the spark gap. The device may be provided with an electrode-bending hole 28, such as in the ring.

According to the provisions of the patent statutes, I have explained the principle of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A spark plug gap adjuster comprising a frame provided with upper and lower portions and with a passage through its lower portion and a threaded passage through its upper portion, said passages being axially aligned and spaced apart by a recess in the frame extending laterally out to the outside of the frame, a screw rotatably mounted in the upper passage and projecting from its ends, and means at the upper end of the screw for turning it to lower and raise it in said upper

3

4

passage, said lower passage being of a size to receive the threaded end of a spark plug, the frame being provided with means for holding a spark plug in said lower passage rigidly with its spark electrodes disposed in said recess directly beneath said screw, whereby when a spark gap gauge is inserted in said recess and between said electrodes the screw can be turned down to bend the screw-engaging electrode down as far as permitted by the gauge to thereby provide the required gap between the electrodes.

2. A spark plug gap adjuster according to claim 1, in which said recess is open on three sides of the frame.

3. A spark plug gap adjuster according to claim 1, in which said recess is a bore extending into the frame substantially perpendicular to the axis of said passages.

4. A spark plug gap adjuster according to claim 3, in which said bore extends entirely through the frame.

5. A spark plug gap adjuster according to claim 1, in which said plug-holding means is a screw thread in said lower passage, said adjuster including an externally and internally threaded adapter sleeve for insertion in said lower passage, the external threads of the sleeve being adapted to register with the threads in said lower passage to hold the sleeve in place, and the inside of the sleeve being of a size to receive and hold the threaded end of a spark plug that is too small to fit in said lower passage in the absence of the sleeve.

6. A spark plug gap adjuster according to claim 1, including a hole in the adjuster for receiving the screw-engageable electrode of the spark plug for bending it away from the opposing electrode before the spark plug is inserted in said lower passage of the frame.

* * * * *

20

25

30

35

40

45

50

55

60

65