July 14, 1953 O. SCHWENZFEIER 2,645,142

SPARK PLUG ADJUSTING PLIERS

Filed Jan. 22, 1951

Fig. 1

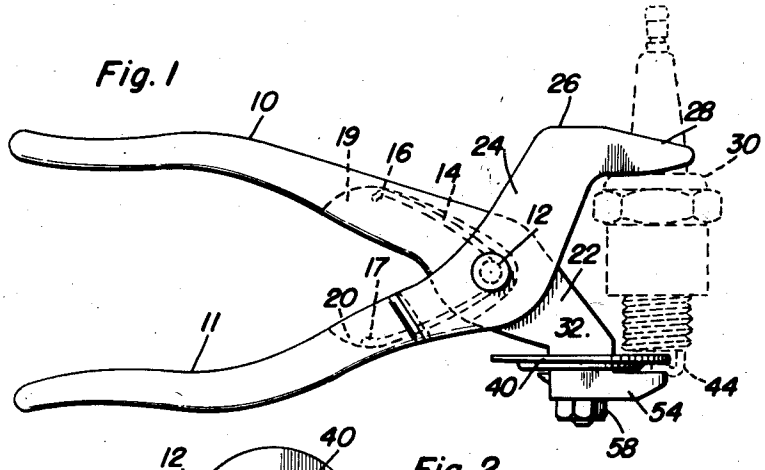


Fig. 2

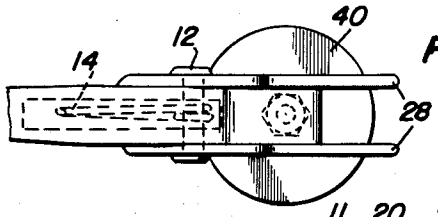
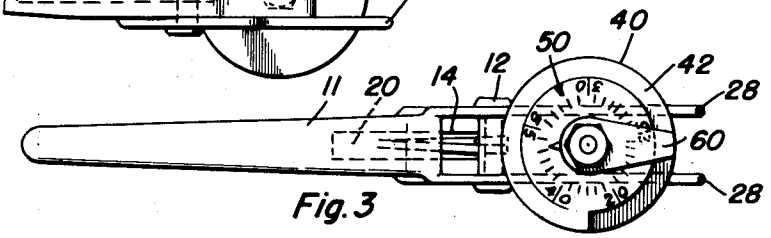


Fig. 3



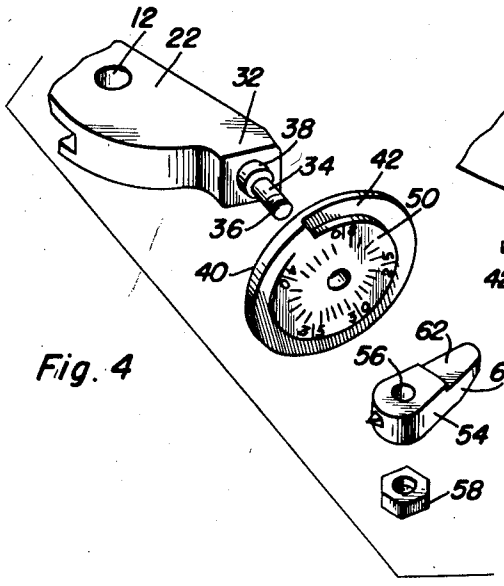


Fig. 4

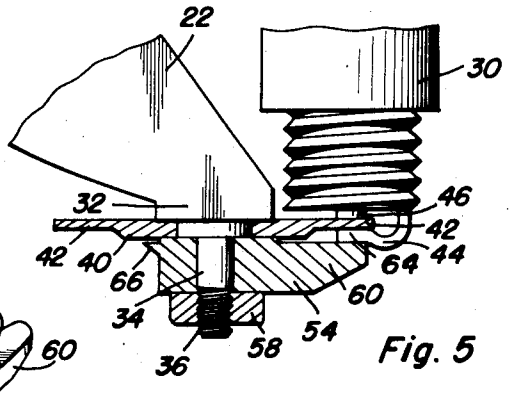


Fig. 5

Otto Schwenzfeier

INVENTOR.

BY Thomas A. O'Brien and Harvey B. Jacobson

Attorneys

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SPARK PLUG ADJUSTING PLIERS

Otto Schwenzfeier, McCook, Nebr., assignor, by direct and mesne assignments, to James T. Clark, Fort Morgan, Colo.

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3 Claims. (Cl. 81—15)

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The present invention relates to a tool of plier forms for adjusting spark plugs and more particularly to a device for gauging and adjusting the spark plug gap between the electrode terminals.

It is an object of the invention to provide a tool for gauging and adjusting the distance or gap between the electrode terminals of a spark plug in a single operation.

Another object of the invention is to provide a device by which a spark plug may be properly adjusted to set the gap between the electrode terminals a predetermined distance and according to the requirements of the particular internal combustion engine in which the spark plug is used.

Still another object is to provide a tool for quickly and accurately adjusting the electrode points of a spark plug to the exact thousandth of an inch clearance desired and with a minimum of effort.

Still another object of the invention is to provide a tool for adjusting spark plugs which eliminates the need for using several tools in adjusting spark plugs and wherein a single tool combines the gauging and terminal adjusting means whereby but a single operation is required to shape and re-set the electrode terminals.

Heretofore, in adjusting the spark plugs for internal combustion engines, with any degree of accuracy, it has generally required the use of a special gauge device along with a hammer, or the like tool, for moving and adjusting the electrode terminals of the plugs so as to produce a gap therebetween of the desired thousandth of an inch. The present invention combines in a single tool both a gauge and means for manipulating the electrode terminals as required to set them at the proper distance apart. Furthermore, the mechanic needs only one tool, constructed in accordance with this invention, to perform both the gauging and resetting of one or more spark plugs. The invention thus not only provides an efficient tool for adjusting the spark plugs but is a great time saver which is an important factor commercially with the present high labor costs.

The invention also consists of certain new and original features of construction and combination of parts hereinafter set forth and claimed. Further, various other objects and advantages besides those enumerated will be apparent as the invention is described in more detail.

Although the novel features which are believed to be characteristic of this invention will be pointed out more particularly in the claims appended hereto, the invention itself, as to its objects and advantages, and manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings in which a specific embodiment thereof has been set forth for purposes of illustration.

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In the drawings:

Figure 1 is an elevational view of a preferred embodiment of the invention and illustrates a tool designed in accordance with this invention and shown applied to a spark plug for adjusting the same, the latter being shown in dotted lines;

Figure 2 is a plan view of the device shown in Figure 1 and illustrating the forked construction of one of the jaw members for engaging a spark plug, the handle parts of the device being shown broken away;

Figure 3 is a plan view of the tool as viewed from the graduated disc gauge side;

Figure 4 is an exploded view of the jaw and associated disc gauge and cooperating electrode-contacting jaw member, the jaw being shown partly broken away; and

Figure 5 is a fragmentary detail view taken on an enlarged scale and partly in section showing the tool head in engagement with the electrode terminals of a spark plug and in position for adjusting the gap between the terminals.

Referring to the drawings more in detail and wherein like reference characters refer to like parts throughout the several figures, the tool illustrated in Figures 1 and 3, embodying the invention, is preferably constructed in the form of pliers and having handles 10 and 11 which are pivoted about a pin 12, the handles being suitably urged apart by a leaf spring 14, the spring engaging about the pin 12 with the opposite end portions 16 and 17 being slidably engaged in recesses formed in the handles 10 and 11 as shown in 19 and 20, respectively.

The handles 10 and 11 comprise integral jaws, generally indicated at 22 and 24, respectively. The jaw 24 is bent outwardly, as at 26, and bifurcated forming forks 28 which function as a saddle for engaging about the body of a spark plug, such as illustrated in dotted lines at 30 in Figure 1, and serve as means to clampingly retain the same against the jaw 22.

The jaw 22 comprises a boss or head 32 which carries a bolt 34 having a threaded portion on its outer end, as at 36, the bolt being welded or

otherwise fixedly mounted on the head **32**. This bolt which may, if desired, be in the form of a stud bolt, comprises an integral collar or base part **38**. Fitted over the bolt **34** and snugly about the base portion **38** is a disc gauge **40** which is provided with an integral peripheral lip **42** of uniformly varied thickness to provide a gauge for limiting the gap or distance between the electrode terminals of the spark plug, as is shown at **44** and **46** of Figure 5. The thickness gauge disc **40** is provided with graduated scale readings **50** which indicate the varying gauge thickness along the lip **42** in thousandths of an inch. Thus, by rotating the disc **40** any desired gauge thickness may be presented for insertion between the spark plug terminals, as illustrated in Figure **4**, to fix the gap therebetween.

Positioned on the bolt **34** and adapted to frictionally engage the disc **40**, is a claw member **54** which is suitably apertured, as at **56**, to receive the bolt **34**, the parts being clamped together by a nut **58** threaded onto the end of the bolt. The claw member **54** comprises an integral shoulder extension **60** having a planar undercut surface portion **62**, and which flat straight edge portion is adapted to be brought into clamping engagement with the end of a spark plug electrode, such as shown at **64**, and pinch the same against the gauge portion **42**. An integral nib or pointer **66** is suitably formed on the opposite end of the claw **54** which cooperates with the graduated readings **50** on the disc gauge **40** so as to indicate the relative position of the disc gauge **42** with respect to the claw.

In use of the spark plug adjuster tool of the invention, the spark plug will be positioned in the saddle or fork **28** which engages any suitable portion of the spark plug and the gauge disc arranged between the electrode terminals, and adjusted to the desired gauge thickness by rotating the disc **40**, and thereafter the operator squeezes the handles of the plier members sufficiently to adjustably clamp the electrode terminals of the spark plug so as to accurately position the electrodes and provide a measured gap therebetween. As will be observed from Figure 5 of the drawings, the outer electrode terminal of the spark plug **44** is reshaped during use of the tool so that the outer point thereon is given a straight-away length, as illustrated at **64** in Figure 5, so that a wider contacting portion is provided. In this manner, the outer electrode terminal is provided with a straight-across planar surface portion immediately adjacent the end of the opposite electrode. Thus, through the use of the tool of the invention by one operation, two operations are performed simultaneously; namely, adjustment of the gap between the electrodes to a definite predetermined distance and shaping of the outer electrode terminal portion so as to provide a planar surface portion directly opposed to the opposite terminal. By thus flattening the outer terminal contact member and adjusting the gap between the terminals to a predetermined distance as desired, a wider sparking area is provided across the electrodes which presents a longer wearing electrode than when the outer electrode portion terminates in the form of a slant or arcuate section.

It will be apparent that the present invention

provides a tool which is adapted to be used for adjusting various types and sizes of spark plugs such as used in internal combustion engines and the like. The various uses to which the tool may be put is, of course, contemplated as constituting a part of this invention.

While certain novel features of the invention have been disclosed and are pointed out in the annexed claims, it will be understood that various omissions, substitutions of mechanical equivalents and changes may be made by those skilled in the art without departing from the spirit and scope of this invention as defined in the claims.

Having described the invention, what is claimed as new is:

1. For use in adjusting the gaps of spark plugs, a tool comprising a pair of substantially L-shaped jaws sufficiently wide apart to be bridged longitudinally by a spark plug body, said jaws having working surfaces that face each other; one of said jaws having a bifurcated end portion, means interconnecting said jaws for moving them towards and from each other and so designed that said working surfaces are substantially parallel when positioned to receive a spark plug body lengthwise between them, rotatable gauge means fitted entirely to one of said jaws in definitely spaced relation to and in parallelism with the working surface of that jaw; said gauge means having radially outward portions that can be positioned selectively adjacent the last mentioned working surface to form therewith a space for reception of a spark plug terminal.

2. In claim 1, said radially outward portions comprising a peripheral flange having a working surface parallel to and faced toward the other jaw; said flange being grooved helically on its other surface so that the said space is of uniformly variable thickness, as the gauge means is rotated.

3. In sub-combination: one jaw structure of a pair of jaws of tools such as pliers, wrenches and the like, said jaw structure comprising an arm carrying an outwardly extending pin, a jaw element stationarily mounted on said pin and having a work-engaging surface substantially perpendicular to the pin; and a gauging element rotatably mounted on the pin, and having perimetral portions of varying thickness in a plane parallel to and spaced from said work-engaging surface, being disposed between said arm and said jaw element and provided with indicia on the surface facing the jaw element.

OTTO SCHWENZFEIER.

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