United States Patent

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[54] SPARK PLUG WRENCH

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[52] **U.S. Cl.**.....**7/1 E,** 81/121 B, 15/104.01 R

[51] **Int. Cl.**.....**B25f 1/00**

[58] **Field of Search**.....7/1 G, 15, 16, 1 R, 1 E; 81/90 B, 121 B, 125, 177 E, 177 R; 33/168 R; 15/105, 104.01 R

[56] **References Cited**

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[57] **ABSTRACT**

A spark plug wrench including a tubular member having a pair of spark plug sockets disposed on opposite ends thereof for receiving the spark plug to be removed. A U-shaped wire handle is pivotally mounted to the mid-section of the tubular member for providing a handle thereto and includes a spark plug gapping tool secured thereon. A spark plug cleaning brush may be pivotally mounted on the handle.

5 Claims, 4 Drawing Figures

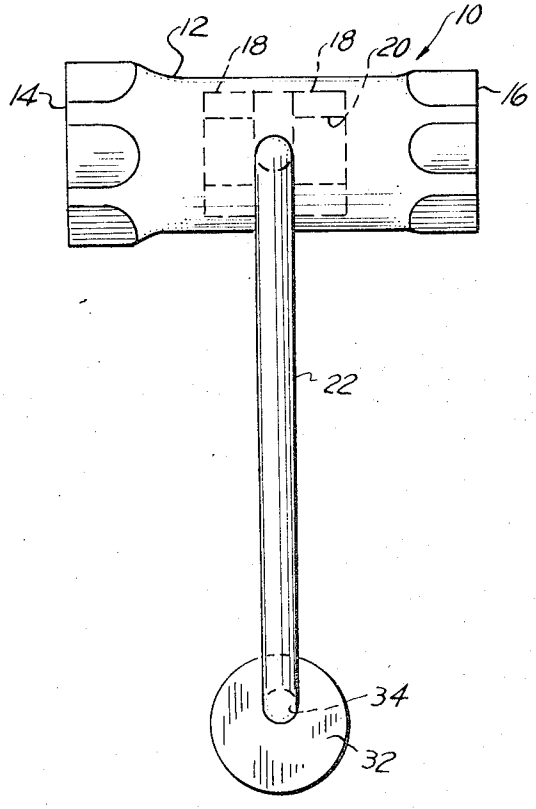


FIG. 1

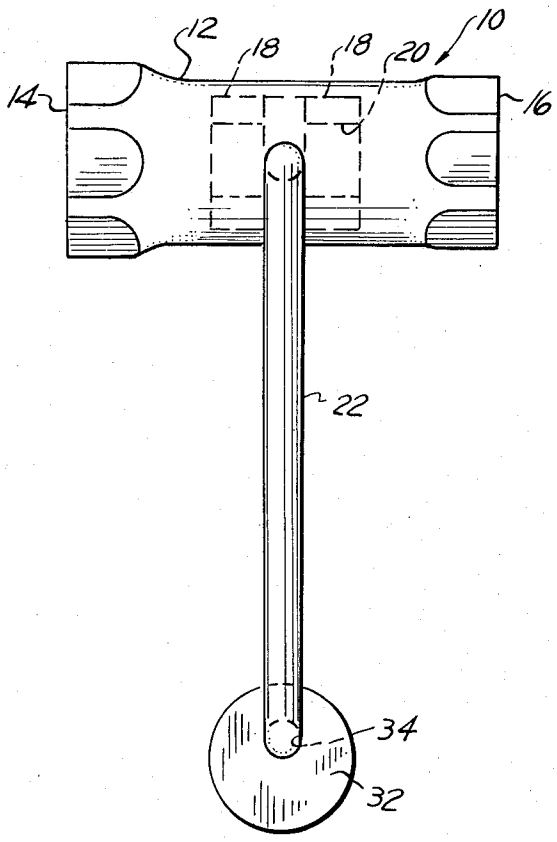
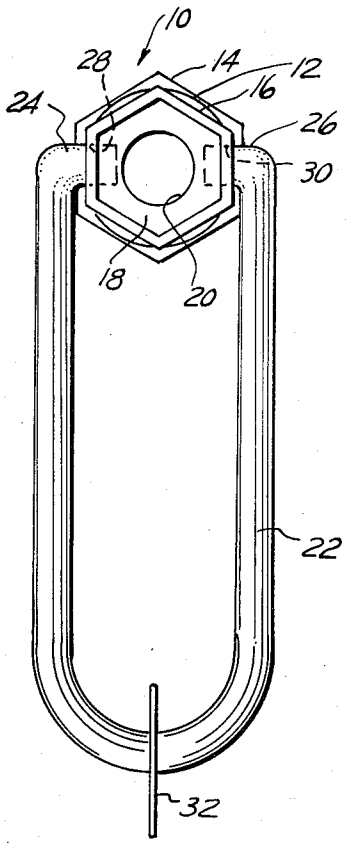


FIG. 2



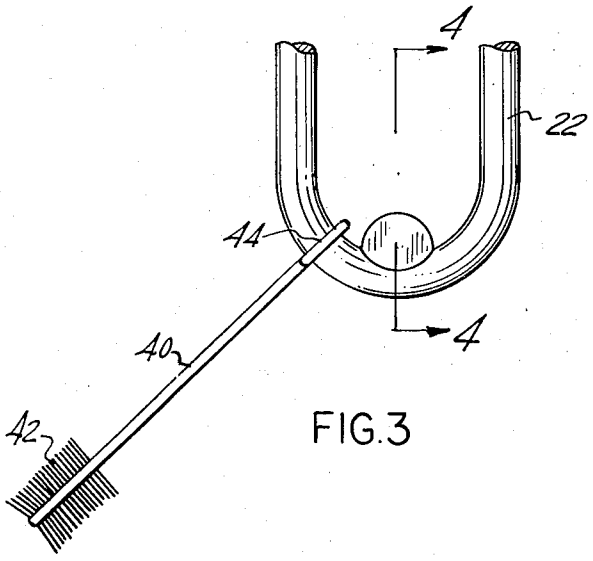


FIG. 3

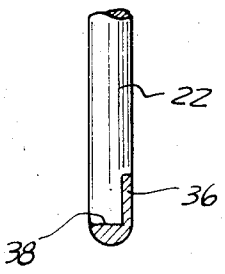


FIG. 4

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SPARK PLUG WRENCH

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates broadly to wrenches and tools and more particularly to a wrench for removing spark plugs and having combined therewith a spark plug gapping tool and a spark plug cleaning brush.

2. Description of the Prior Art

Heretofore, spark plug wrenches have included a tubular member having a spark plug socket formed at one end and a handle fixed to the other end to extend perpendicularly outwardly therefrom. Spark plug gapping tools and cleaning brushes have normally been provided as separate tools.

The disadvantages of these types of wrenches include the provision of only a single socket on each wrench, necessitating a different wrench for different size spark plugs. Furthermore, since the handle is fixed to the tubular member, it is difficult to remove spark plugs that are surrounded by other parts of the engine or motor vehicle. Finally, by having a separate spark plug tool, gapping tool and cleaning brush, it is more likely that one of the tools will be lost. Furthermore, if it is desired to carry the tools on a motorcycle, snowmobile or other vehicle that may require spark plug service, it is inconvenient to carry three separate tools.

SUMMARY OF THE INVENTION

The spark plug wrench of the present invention solves the problems of the prior art wrenches by providing a tubular member with a spark plug socket of different size formed on opposite ends thereof for removing two different sizes of spark plugs. Spaced rubber sleeves are disposed within the member midway between the two ends so that the upper porcelain portion of the spark plug is protected when the plug is being removed or installed in the engine. A U-shaped wire handle is pivotally mounted by its two ends at the mid-section of the tubular member so that the single handle can be used for both sockets and the handle can be cocked with respect to either socket to enable the user to more easily reach spark plugs surrounded by other engine parts.

A spark plug gapping disc may be slidably mounted on the handle for gapping the spark plug once it has been removed from the engine. Alternatively, a spark plug gapping tab may be formed on the handle. A cleaning brush may be provided with one end pivotally mounted on the handle for cleaning the spark plug once it has been removed from the engine.

DESCRIPTION OF THE DRAWINGS

The description refers to the accompanying drawings in which like reference characters refer to like parts throughout the several views and in which:

FIG. **1** is a side elevational view of the spark plug wrench of the present invention;

FIG. **2** is a front elevational view of the spark plug wrench of the present invention as seen from the right hand side of FIG. **1**;

FIG. **3** is a fragmentary view of the wrench handle showing a second embodiment of the spark plug gapping tool; and

FIG. **4** is a cross sectional view taken along line **4—4** of FIG. **3**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. **1**, a spark plug wrench, generally indicated at **10**, includes a tubular member **12** having a pair of spark plugs sockets **14** and **16** formed on opposite ends thereof and of a different size for removing various sized spark plugs from internal combustion engines. A pair of axially spaced tubular sleeves **18** having apertures **20** formed therethrough are formed from resilient material, such as rubber, and are secured within the tubular member **12** midway between the two sockets **14** and **16** for reasons to be described.

The spark plug wrench **10** includes a U-shaped wire handle **22** that has a pair of inwardly extending studs **24** and **26** formed on its two ends and pivotally mounted within a pair of apertures **28** and **30**, respectively, formed on opposite sides of the member **12** midway between the two sockets **14** and **16**. Thus, the handle **22** is pivotally mounted to the mid-portion of the tubular member **12** allowing either end of the member **12** to be used for removing spark plugs. Furthermore, the handle **22** may be pivoted to be perpendicular to or at other angles to the member **12** when removing a spark plug, aiding in reaching plugs surrounded by other engine parts.

When it is desired to remove a spark plug from an internal combustion engine, the appropriately sized socket **14** or **16** is inserted over the spark plug with the upper porcelain end of the spark plug extending through the apertures **20** formed in the sleeves **18**. The wrench **10** is then rotated by means of the handle **22** to unthread the spark plug from the engine. The sleeves **18** insure that the porcelain provided on the upper portion of the spark plug is not broken while the plug is being removed.

A disc **32** having an aperture **34** formed therein is slidably mounted on the handle **22** and is used as a spark plug gapping tool. The disc **32** is of the thickness required to properly gap the spark plugs. Thus, a gapping tool is secured to the spark plug wrench **10** and cannot be separated from the wrench, reducing the chance of losing the gapping tool.

Referring to FIGS. **3** and **4**, the disc **32** may be replaced by a tab **36** that is pressed from the material of the handle **22** on the inside radius thereof, as best seen at **38** in FIG. **4**. The tab **36** is of the appropriate thickness such that it may be used to gap the spark plugs in place of the disc **32**. It will be noted that by forming the tab **36** on the inside radius of the handle **22**, it will be protected by the handle **22** from damage. Furthermore, the handle **22** may also be used as a handle for manipulating the gapping tab **36**.

A spark plug cleaning brush **40** having bristles **42** provided on its outer end and a loop **44** formed on its other end is pivotally mounted around the handle **22** and can be used to clean the spark plug once it is removed from the engine. It will be noted that by securing the brush **40** to the handle **22**, it is insured that the brush will be available once the spark plug is removed.

Although I have described but two preferred embodiments of my invention, it is to be understood that various changes and revisions can be made therein without departing from the spirit of the invention of the scope of the appended claims.

I claim:

1. A wrench for removing spark plugs comprising:

a tubular member having a pair of sockets of different sizes formed on opposite ends thereof;

a pair of axially spaced resilient tubular inserts secured within said tubular member between said sockets to prevent damage to the upper end portions of said spark plugs when same are inserted within said sockets, said tubular member having at its mid-section a pair of diametrically opposed bores extending radially through said tubular member and opening into the space between the opposing inner faces of said axially spaced resilient tubular inserts;

a U-shaped handle having legs with inwardly bent ends pivotably carried by said tubular member radial bores and extending into said space between the opposing inner faces of said resilient inserts;

a spark plug gapping tool secured to said handle; said U-shaped handle having a curved base section opposite said tubular member and said spark plug gapping tool being formed on the inside radius of said curved base section by deforming said inside radius of said base section such that said gapping tool is formed integral with said base section and extends outwardly from said curved base section toward said tubular member in a plane defined by the legs of said U-shaped member, whereby said legs provide protection against damage of said gapping tool.

2. The wrench as defined in claim **1**, and including a brush secured to said handle.

3. The wrench as defined in claim **2**, wherein said brush has one end pivotally secured to said handle.

4. A wrench for removing spark plugs comprising:

a tubular member having a pair of sockets of different sizes formed on the opposite ends thereof, said tubular member having at its mid-section a pair of diametrically opposed bores extending radially into the interior of said tubular member;

a U-shaped handle having legs with inwardly bent ends pivotably carried by said tubular member radial bores and extending into the interior of said tubular member; and

a spark plug gapping tool comprising a flat disc having an aperture formed therethrough and receiving a leg of said U-shaped handle such that said spark plug gapping tool is slidably mounted on said handle.

5. A wrench for removing spark plugs comprising:

a tubular member having a pair of sockets of different sizes formed on the opposite ends thereof, said tubular member having at its mid-section a pair of diametrically opposed bores extending radially into the interior of said tubular member;

a U-shaped handle having legs with inwardly bent ends pivotably carried by said tubular member radial bores with said bent ends extending into the interior of said tubular member, said U-shaped member having a curved base section opposite from said tubular member; and

a spark plug gapping tool being formed on the inside radius of said curved base section by deforming said inside radius of said base section such that said gapping tool is formed integral with said base section and extends upwardly from the curved base section toward the said tubular member in a plane defined by the legs of said U-shaped member, whereby said legs provide protection against damage of said gapping tool.

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