United States Patent [19]

Rose

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[54] **OIL FILTER TOOL**

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[52] **U.S. Cl.** ..... **81/90 B;** 81/66 A

[51] **Int. Cl.²** **B25B 13/50**

[58] **Field of Search** ..... 81/3.42, 66 A, 90 B, 111

[56] **References Cited**

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Assistant Examiner—James G. Smith

[57] **ABSTRACT**

Two semi-circular gripping members are connected by a linkage type mechanism which may be actuated by applying torque to a center socket designed to accommodate a conventional socket type wrench handle. When turned in either direction a toggle action is effected which brings the gripping members closer together, thus gripping the end of a cylindrical shaped object to which it is applied with force sufficient that it may be turned.

4 Claims, 7 Drawing Figures

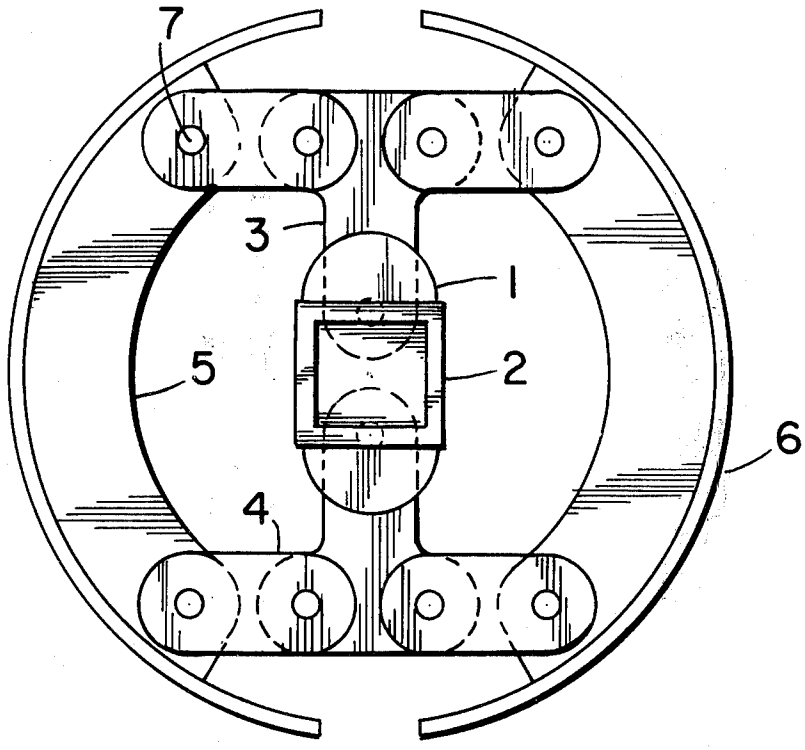


FIG. 1

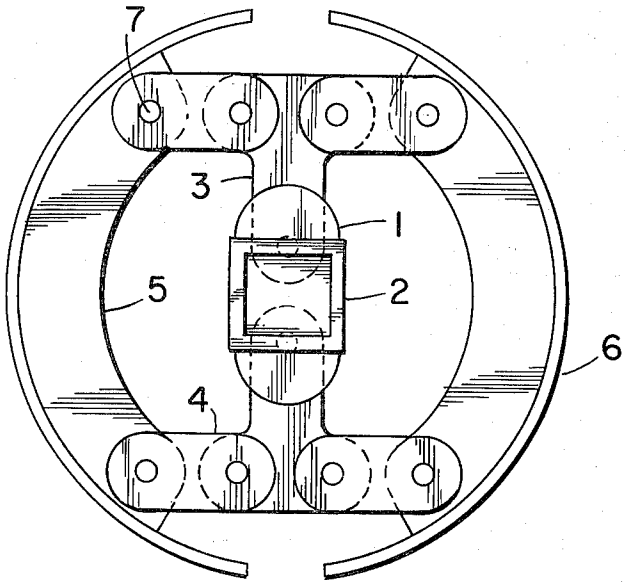
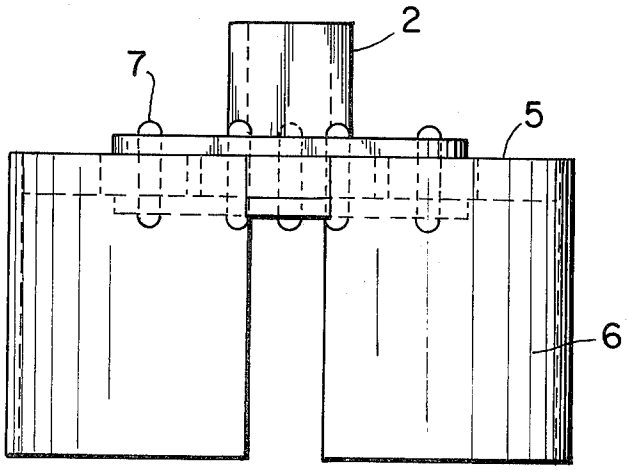


FIG. 2



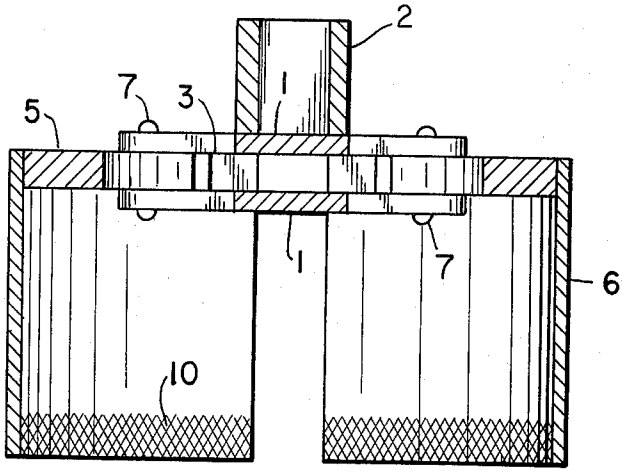


FIG. 3

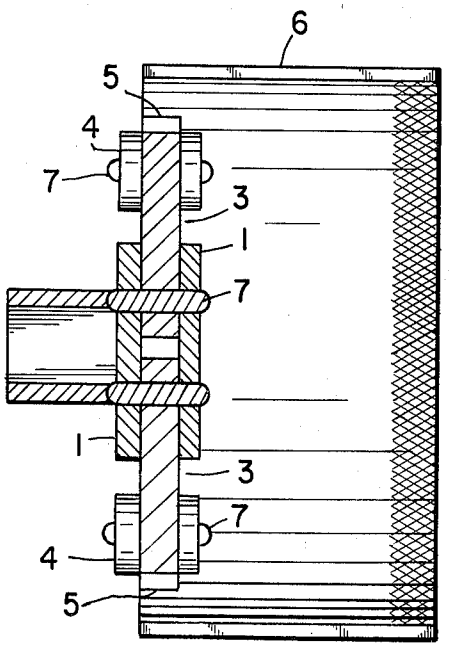


FIG. 4

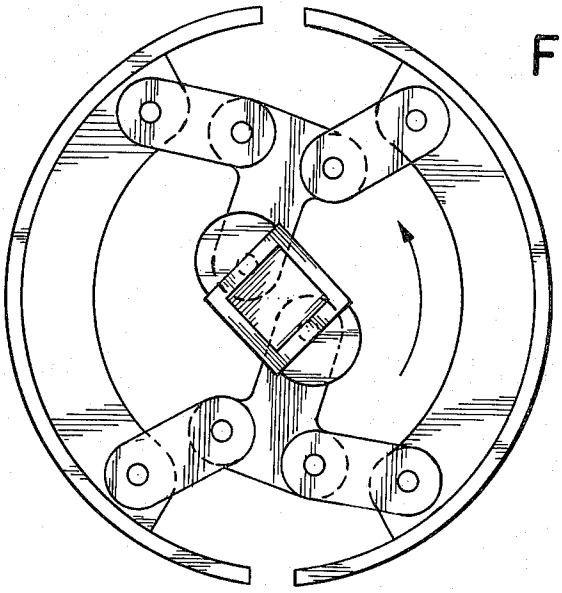
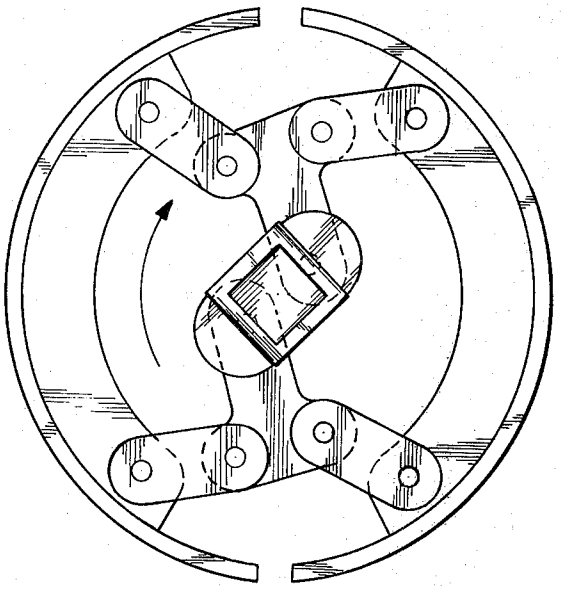


FIG. 5-L

FIG. 5-R



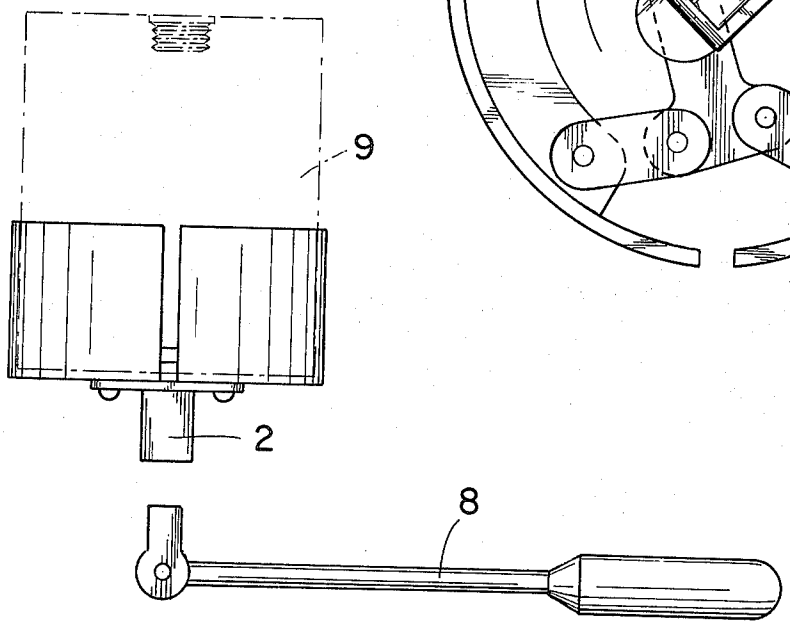


FIG. 6

OIL FILTER TOOL

SUMMARY;

This invention relates to a tool for the removal and/or replacement of the screw-on type oil filter and/or to apply torque to similar devices. The screw-on type oil filter is used on modern automobile and other internal combustion engines. It must be frequently replaced. Although, designed to be hand tightened when installed, they are sometimes difficult if not impossible to get loose by hand. Also, they have been known to leak because of not being tightened sufficiently when installed or because of filter being damaged by certain types of wrenches or methods used in filter installation. In many instances, especially on automobiles, the oil filter is located in very close quarters. This can make oil filter changing very difficult without special tools.

The tool to which this invention relates has certain advantages all combined in one tool as follows:

ASSESSABILITY;

Design of tool is such that it does not need more than ⅛ inch clearance around outside of filter.

SAFETY;

Operators hands are protected by being far enough away from engine or any obstruction that might cause injury to hands in event tool should suddenly slip under pressure. (It was seeing a mechanic get a severely and painfully cut hand that motivated my development of this tool.)

VERSATILITY;

Either way tool is turned gripping action takes place. Thus, filter can be either removed or replaced. It applies a firm even grip on filter and does not damage new replacement filter. It is less prone to slippage than other tools. With this tool, filter does not have to have grooves or indentations. It will work on a smooth cylindrical object. It can be used with either a power tool or a hand wrench (breakover or speed wrench).

FIG. **1** is a plan view of oil filter tool.

FIG. **2** is side view. This view is taken from the side indicated by it's relative position with FIG. **1** in the drawing.

FIG. **3** is cross section of FIG. **1** as if cut by horizontal centerline. **10** is knurled surface extending all the way around inside edge of gripping member at point of contact, purpose of which is to lend greater gripping potential.

FIG. **4** is cross section of FIG. **1** as if cut by vertical centerline.

FIG. **5-L** shows changing position of linkage with torque applied to left as indicated by arrow.

FIG. **5-R** shows changing position of linkage with torque applied to right as indicated by arrow.

FIG. **6,** dotted line represents filter with tool slipped over end (opposite threaded end of filter - threads facilitate attaching filter to engine) in position to turn filter with wrench **8** which fits into socket **2.**

STRUCTURAL COMPOSITION;

Tool made of metal, is represented in drawings, FIGS. **1, 2, 3, 4, 5-L, 5-R** and **6.** Mechanism is symetrical as viewed from two different directions **90°** apart. In FIG. **1,** if drawing is divided by vertical centerline, (vertical in this instance meaning from top of page to bottom of page) both halves would be considered identical. If drawing is divided by horizontal centerline, (horizontal in this instance meaning from left side of page to right side of page) both halves would be considered identical.

There are two semi-circular gripping members **6.** To each **6** there is welded an arc shaped member **5.** This makes two identical assemblies, either of which we may refer to as assembly **5** and **6. 5** is used to facilitate attaching inner mechanism of seven links. The word "link" is used to describe those parts numbered **1, 3** and **4,** each of which may be composed of one, two or more parts sandwiched together as may be found necessary for a specific purpose. See cross section FIGS. **3** and **4.** Entire mechanism is held together with **10** pins **7,** all of which allow pivotal action.

Tool is actuated from center link **1,** in the center of which is a socket **2,** welded to **1.** Socket **2** accommodates a conventional socket wrench type handle. At each end of link **1** is link **3** pivotally attached to link **1.** (Socket **2** is welded to link **1** over pivot pins **7** attaching links **3** to link **1.**) Design of link **3** of which there are two is symetrical as if divided by vertical line explained above. To each of **3** there are pivotally attached two outer links **4** of which there are a total of four, the outer ends of which are pivotally attached to members **5** of assemblies **5** and **6.**

OPERATION:

When tool is open as in FIG. **1** so that it can be slipped over filter **9,** in FIG. **6,** links **3** are in a straight line with line **1.** When torque is applied through socket **2** to link **1** as indicated by arrows in FIGS. **5-L** and **5-R,** links **3** are caused to lag back from direction of torque and exert pull on links **4.** This, in turn, brings assemblies **5** and **6** closer together to effect gripping action on filter or other cylindrical object to which tool is applied. Gripping action occurs regardless from which direction torque is applied.

I claim:

1. A tool for turning cylindrical objects, comprising a first semi-circular member having an upper and lower surface, a second semi-circular member having an upper and lower surface, first and second arc-shape members secured to said first and second semi-circular members, respectively, at the upper surface thereof, a grpping surface formed by said lower surface of each of said semi-circular members for grasping an object to be turned, linkage means pivotally connecting said first and second semi-circular members, said linkage means being pivotally secured to operate ends of each of said first and second arc shape members, and a socket means pivotally secured to said linkage means for receiving a torqueing tool whereby torque applied to said socket means will operate the linkage means to bring the gripping surface of each of said semi-circular members into engagement with the object to be turned.

2. A tool according to claim **1** wherein said linkage means comprises a first pair of links pivotally secured to one end of said first arc-shaped member, a second pair of links pivotally secured to the other end of said first arc-shaped member, a third pair of links pivotally secured to one end of said second arc-shaped member, a fourth pair of links pivotally secured to the other end of said second arc-shaped member, a fifth link pivotally secured to said first and third pair of links, and a sixth

link pivotally secured to said second and fourth pair of links.

3. A tool according to claim **2** wherein said socket means has a body with a polygonal exterior and a polygonal aperture therein and a base that is pivotally attached to said fifth and sixth links.

4. A tool according to claim **1** wherein said gripping surface of each of said semi-circular members is knurled to obtain a greater gripping force.

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