Jan. 14, 1964 J. A. STEIN 3,117,476

TOOL FOR REMOVING OIL FILTER CARTRIDGES

Filed July 2, 1962

FIG. 1

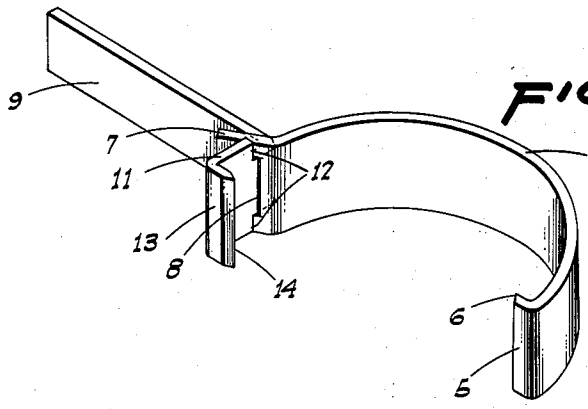
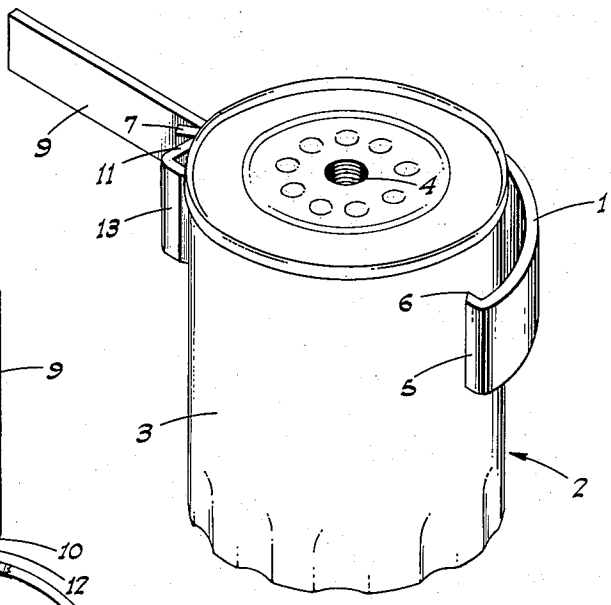


FIG. 2



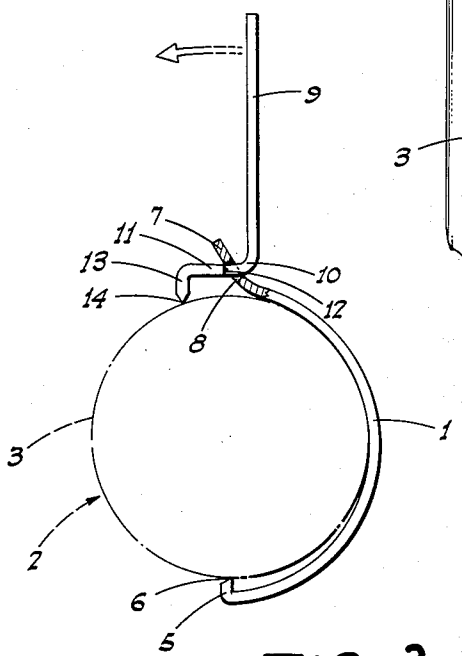


FIG. 3

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TOOL FOR REMOVING OIL FILTER CARTRIDGES

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This invention relates in general to a hand tool for use by mechanics in the automotive trade.

In particular the invention is directed to, and it is the major object to provide, a novel mechanic's hand tool especially designed for use to aid in the manual removal, by unscrewing, of automotive oil filter cartridges of threaded-on but throw-away type; such cartridges frequently becoming "frozen" on, and thus difficult to remove from, the receiving fitting.

Another important object of the invention is to provide a mechanic's hand tool, for the purpose described, which—upon engagement with an oil filter cartridge, and then hand manipulated—is operative to effectively clampingly engage or grip such cartridge and to then impart a substantial turning force to the cartridge in an unscrewing direction.

A further object of the invention is to provide a tool for removing oil filter cartridges which is designed for ease and economy of manufacture, and convenience of use.

An additional object of the invention is to provide a practical, reliable, and durable tool for removing oil filter cartridges, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

FIG. 1 is a perspective view of the tool, with the parts as assembled and the tool ready for use.

FIG. 2 is a similar view, but shows the tool as engaged with the cylindrical shell of an oil filter cartridge preparatory to unscrewing the latter.

FIG. 3 is a top plan view of the tool as so engaged; the view being partly broken away, and the cartridge being shown merely in end outline.

Referring now more particularly to the drawings, and to the characters of reference marked thereon, the novel tool, for removing oil filter cartridges, comprises a substantially semi-circular or C-shaped spanner bar 1, which is flat-faced and of substantial width between its upper and lower edges.

The oil filter cartridge, of the type to be removed by unthreading, is indicated generally at 2, and includes a cylindrical shell 3, and at one end is centrally tapped, as at 4. When the oil filter cartridge 2 is in place in automotive use a receiving fitting (not shown) is threadingly engaged in the tapped bore 4.

The substantially semi-circular spanner bar 1 is formed on a radius slightly greater than that of the cylindrical shell 3, and at one end said spanner bar is formed with an inturned, full-width jaw 5; such jaw having a bevel sharpened edge 6, with the bevel facing generally away from said spanner bar.

An integral ear 7 is out-turned from the other end of the spanner bar 1 at an incline or angle less than 90 degrees; such out-turned ear 7 being flat-faced and the same width as said spanner bar.

Intermediate its ends the out-turned ear 7 is provided with a vertical elongated slot therethrough; such slot being indicated at 8 and for the purpose as will hereinafter appear.

A handle forming lever arm 9 projects outwardly from the ear 7 in the plane of the spanner bar 1, and such lever

arm merges at its inner end, and at an elbow 10, with a flat-faced tongue 11 projecting laterally from said lever arm 9 at approximately a right angle and in a direction away from the adjacent end of the spanner bar 1.

The lever arm 9 and the rear portion of the tongue 11 are of reduced width relative to that of the spanner bar 1, and which width is such that the lever arm 9 can be inserted through the slot 8 from the inner side of ear 7, and until the correspondingly reduced-width rear portion of the tongue 11 occupies a position extending in rockable relation through such slot 8. See particularly FIG. 3.

Immediately beyond the ear 7 the tongue 11 includes rearwardly facing shoulders 12 which lie in abutment with the inner face of said ear 7 when the tool is assembled.

With the lever arm 9 and the integral tongue 11 so mounted in connection with ear 7, such lever arm 9 is swingable in the plane of the spanner bar 1.

At the outer end thereof the tongue 11 is formed with an inturned, full-width jaw 13 having a sharpened edge 14, double beveled as shown.

In use of the above described tool to unthread an oil filter cartridge 2 from the fitting (not shown) which is threaded into the central tapped bore 4, the substantially semi-circular spanner bar 1 is engaged about the cylindrical shell 3 of the cartridge from one side thereof; the lever arm 9 remaining free at such time. Thereafter, said lever arm 9 is hand-engaged and swung in the direction indicated by the arrow in FIG. 3. This causes the tongue 11 to rock in the slot 8, with resultant movement of the jaw 13 into engagement with the cylindrical shell 3, which also pulls—through the medium of the spanner bar 1—the jaw 5 into engagement with said shell 3. As will be observed, the points of engagement of the jaws 5 and 13 with the cylindrical shell 3 are spaced apart more than 180 degrees in the span of the tool.

With further and more forceful manual swinging of the lever arm 9 in the direction indicated by the arrow in FIG. 3, the sharpened edges 6 and 14 of the jaws 5 and 13, respectively, bite into and effectively grip the cylindrical shell 3.

The tool is thus locked to said cylindrical shell 3, and with a continuance of the manual force on the lever arm 9 said cylindrical shell 3 is subjected to a relatively great turning leverage, and whereby the cartridge 2 is thus caused to unthread from the fitting.

Further, with the design of the present tool, the greater the force applied to the lever arm 9 by the mechanic the tighter the tool will grip the cylindrical shell 3.

Thus, the described tool, while easy to apply to an oil filter cartridge, is—when manually operated—effective to positively grip the carriage and impart substantial turning leverage thereto.

Also, by the simple expedient of "ratcheting" the tool about the oil filter cartridge 2, such tool can be disposed in a position best suited for convenient manipulation by the mechanic.

While the tool has hereinbefore been described as used to unthread a cartridge from its fitting, it is apparent that by merely reversing the position of the tool it can also be used effectively to apply or thread a new cartridge onto the fitting.

From the foregoing description it will be readily seen that there has been produced such a device as will substantially fulfill the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations therefrom may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is

claimed as new and useful, and upon which Letters Patent are desired:

1. A hand tool, for gripping and turning a cylindrical object about its axis, comprising a substantially semi-circular spanner bar adapted to engage the cylindrical object from one side and to extend approximately half way thereabout, the spanner bar being formed on a radius greater than that of the cylindrical object, an inturned jaw on one end of the spanner bar for gripping the cylindrical object at a first point, a lever arm extending outwardly from adjacent the other end and in the plane of the spanner bar, an integral lateral tongue on the inner end of the lever arm, said tongue projecting in such plane in a direction away from said other end of the spanner bar, means connecting the lever arm adjacent its inner end with said other end of the spanner bar for manual swinging in such direction, and an inturned jaw on the free end of the tongue, for gripping the cylindrical object at a second point; the jaws being formed with sharp edges disposed in facing relation to each other and lie in planes parallel to the axis of the spanner bar.

2. A hand tool, for gripping and turning a cylindrical object about its axis, comprising a substantially semi-circular spanner bar adapted to engage the cylindrical object from one side and to extend approximately half way thereabout, the spanner bar being formed on a radius greater than that of the cylindrical object, an inturned jaw on one end of the spanner bar for gripping the cylindrical object at a first point, the spanner bar and jaw being flat-faced and relatively wide transversely an integral full width ear on the other end of the spanner bar, said ear being out-turned at an angle of less than 90 degrees, there being a transverse slot through the ear intermediate its ends, a flat-faced tongue extending beyond said other end of the spanner bar, the forward portion of the tongue corresponding in width to the spanner bar, the rear portion of said tongue being of reduced width and passing through the slot in the ear in rockable relation, said reduction in width of said rear portion providing shoulders at the rear of said front portion, such shoulders engaging the adjacent face of the ear, an outwardly projecting lever arm integral with the rear end of the tongue, and a full width inturned jaw on the outer end of the tongue for gripping the cylindrical object at a second point.

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