Nov. 28, 1961 H. W. KULP 3,010,346

PETCOCK DRAIN TOOL, NON-FLEXIBLE SHAFT

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FIG. 1.

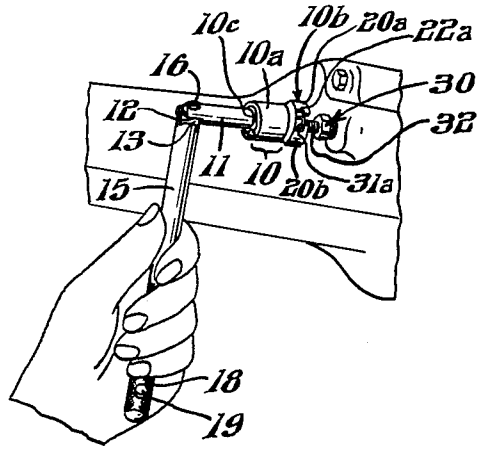


FIG. 2.

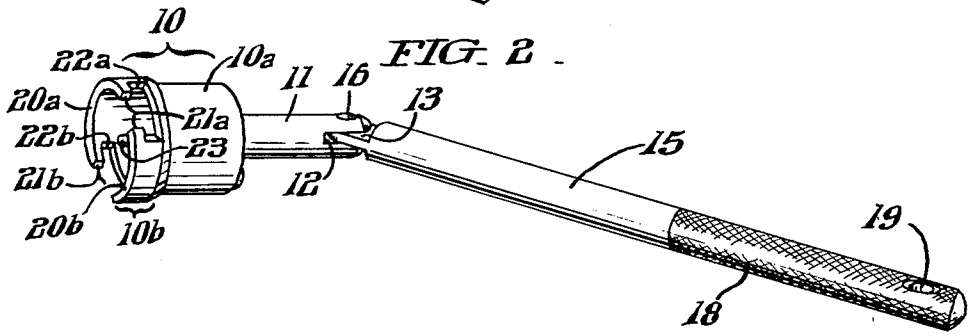
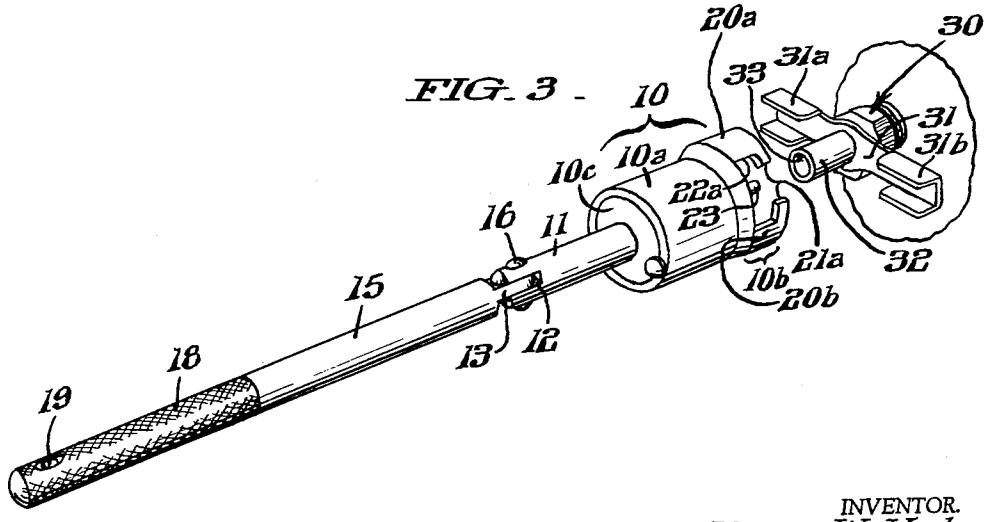


FIG. 3.



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PETCOCK DRAIN TOOL, NON-FLEXIBLE SHAFT

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This invention relates to mechanics' hand tools. More particularly, this invention relates to hand tools for opening and closing the petcocks of cooling systems and the like.

The opening and closing of petcocks of cooling systems in motor vehicles and similar systems involving circulation of hot fluids, such as water or steam, is a difficult and sometimes hazardous operation owing to the fact that after the petcock has been initially started, hot water or steam gushes out of the petcock and is likely to burn the hands of the operator while attempting to loosen the petcock further to full open. Ordinarily, petcock drain tools have shafts of sufficient length to permit the operator to loosen the petcock to full open while his hands are removed from the vicinity of the hot gushing water, steam, or the like, and sometimes are sufficiently flexible to reach the difficultly accessible positions of the petcock it is desired to open, but they do not have sufficient strength to communicate the torque necessary to start the petcock initially from its closed position.

Accordingly, it is an object of this invention to provide a hand tool for starting and opening cooling system petcocks which is adapted for the convenient application of sufficient torque to start the petcock from its initial position; which permits the user to loosen the petcock to full open while keeping the hands removed from the vicinity thereof and which has a shaft of sufficient adaptability to reach difficultly accessible positions of the petcock, yet which is capable of supplying the torque necessary for the opening of said petcock after starting.

It is another object of this invention to provide a petcock drain tool having a shaft handle whereby a cooling system petcock may be loosened to full open without the necessity of rotating said handle through 360°.

Other objects and attendant advantages will become apparent from the following description of a specific embodiment of the invention and in the drawings wherein:

FIG. 1 is a view in perspective of the petcock drain tool as constructed in accordance with this invention illustrating one manner of use of said tool.

FIG. 2 is a view in perspective of the complete drain tool as constructed in accordance with this invention.

FIG. 3 is a view in perspective of the socket and shaft of the petcock drain tool as constructed in accordance with this invention, together with a view of a typical petcock with which said tool is designed for use.

The following description is directed to the specific form of the apparatus and method as shown in the drawings and is not intended to be addressed to the scope of the invention as exemplified thereby. It will be appreciated that the drawings represent preferred embodiments of the invention which is capable of being practiced in a wide variety of forms and arrangements.

Adverting herewith to the specific form of the invention illustrated in the drawings, a cup-shaped socket **10** of the hand tool comprises a cylindrical portion **10***a*, a peripheral flange portion **10***b* and a base portion **10***c* firmly clinched within the cylindrical portion **10***a*. Formed integrally with the base portion **10***c* is a diametrically reduced shaft portion **11** extending rearwardly of the socket **10**. At the distal end of the shaft portion **11** there is formed a slot **12** for the reception of a

flat portion **13** of a shaft **15**. As may best be seen in FIGS. 2 and 3, the shaft **15** is joined to the shaft portion **11** by means of a rivet **16** which extends through the slotted portion **12** of the shaft portion **11** and through the flat portion **13** of the shaft **15**. It will be clear that the rivet **16** forms a pivot for the shaft **11** which may be placed at any convenient angle to the shaft portion **11** in the plane of the slot **12** and the flattened portion **13** of the shaft **15**. A knurled portion **18** at the end of the shaft provides a handle or grip for the tool. In addition, an opening **19** is provided in the distal end of the shaft **15** and extending therethrough whereby the hand tool may be hung upon a hook or the like.

As may best be seen in FIG. 2, the flange portion **10***b* is divided into flange sections **20***a* and **21***b*. Formed between the flange sections **20***a* and **20***b* are openings **21***a* and **21***b* and rectangular slots **22***a* and **22***b*. Positioned centrally within the cup-shaped socket **10** and extending upwardly from the base **10***c* is a centering pin **23** for centering the socket **10** upon a petcock in a manner to be more fully described hereinafter.

FIG. 3 illustrates a typical petcock drain **30** comprising a petcock handle **31** having wings **31***a* and **31***b* and a cylindrical drain tube section **32** having an opening **33** providing means for draining the fluid of the cooling system when the petcock is opened.

Ordinarily in the practice of this invention, when it is desired to open the petcock **30** for drainage of the cooling system with which it is associated, the socket **10** is held so that it may be fitted over the petcock handle **31** by passage of the winged elements **31***a* and **31***b* thereof through the openings **21***a* and **21***b* respectively in the flange of the head portion **10***b* of the socket **10**. The socket **10** is fitted on the petcock handle **31** of the petcock **30** by the passage of the wings **31***a* and **31***b* of the petcock handle **31** through the openings **21***a* and **21***b* of the flange of the socket head **10***b* so that the wings **31***a* and **31***b* rest respectively in the slots **22***a* and **22***b*. It will be evident that in order to fit the socket **10** on the petcock handle **31** in the manner aforedescribed, it is necessary to align the centering pin **23** with the opening **33** so that the aforesaid pin enters the tube **32** to a depth roughly equal to the width of the flange **10***b*.

When the socket **10** has been fitted upon the petcock handle **31** in the manner aforedescribed, the shaft **15** is preferably pivoted around the pivot pin **16** so that the shaft **15** is approximately perpendicular to the shaft portion **11**, generally in the manner illustrated in FIG. 1. It will be evident that when the shaft **15** is pivoted perpendicularly to the shaft portion **11**, a relatively powerful torque may be manually applied to the socket **10** in order to start the petcock handle **31**. Accordingly, sufficient torque is applied to the handle **19** of the shaft **15** to cause the socket **10**, together with the petcock handle **31** to rotate in a counterclockwise direction until the petcock **30** has been loosened sufficiently that the handle **31** thereof may be turned with relative ease. Thereafter, the shaft **15** may alternatively be straightened so that the shafts **15** and **11** are axially aligned and then the handle **19** rapidly rotated in the hand to open the petcock fully, or, when desired, the operator may, in order to keep his hand removed from the vicinity of any hot cooling fluid which may be gushing from the opening **33** of the tube **32**, open the petcock fully by keeping the shaft **15** aligned perpendicularly to the shaft portion **11** and rotate the tool in a counterclockwise direction through 180° at a time, above the level of the opening **33**. After each rotation of 180° in a counterclockwise direction, the shaft **15** is pivoted from its position at the left side of the petcock to the right side thereof after which the tool is again rotated through 180° in a counterclockwise direction. By using the tool in

the manner aforedescribed, it will be evident that at no time need the user bring his hand below the level of the tube 32 so that any danger of contact of the hot cooling fluid with the hands of the user are thereby reduced to a minimum.

It will be apparent that it is a significant advantage of the invention that the hand tool as provided in accordance with this invention is adapted for use as a tool having a straight handle or shaft, or one in which the pivotable portion of the shaft may be placed at any suitable angle to the axis of rotation of the socket for application of the tool in a wide variety of circumstances.

It will be evident that the versatility of the petcock drain tool as provided in accordance with this invention is such that it may be used to open easily petcocks which are otherwise difficultly accessible.

Although this invention has been disclosed with reference to specific forms and embodiments thereof, it will be evident that a number of variations may be made without departing from the spirit and scope of the invention. For example, parts may be reversed, equivalent elements may be substituted for those specifically disclosed and certain features of the invention may be used independently of other features, all without departing from the spirit and scope of this invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A petcock drain tool comprising a cup-shaped metal socket adapted to engage a petcock, said socket having a flange extending around the perimeter of the open end thereof, said flange having slots formed therein for the reception and retention of the handle of said petcock, said socket having a centering pin extending from the center of the base thereof to the open end thereof, said pin being adapted for insertion into the drain of said petcock, and a hinged metal shaft secured to said socket adjacent the closed end thereof, the hinged portion of said shaft being swingable through at least 180° of an arc intersecting the axis of rotation of said socket.

2. A petcock drain tool comprising a cup-shaped metal socket adapted to engage a petcock, said socket having a flange extending around the perimeter of the open end thereof, said flange having slots formed therein for the reception and retention of the handle of said petcock, said socket having a centering pin extending from the center of the base thereof to the open end thereof, said pin being adapted for insertion into the drain of said petcock, said socket having a rearwardly extending axial shaft portion formed integrally with the closed end thereof, and a metal shaft handle pivotally connected to said shaft portion and arranged to pivot through at least 180° of an arc intersecting the axis of rotation of said socket and said shaft portion.

3. A hand tool for draining a petcock comprising a cup-shaped metal socket adapted to engage a petcock, said socket having a base portion and a head portion, said head portion having a widened flange formed at the outer periphery thereof, said flange having slots formed therein for the reception and retention of the handle of said petcock, said base portion having an axial centering pin affixed thereto, said centering pin extending from said base portion to said head portion and being adapted to enter the vent of said petcock, said base portion having an axial shaft portion formed integrally therewith and extending rearwardly thereof, and a metal shaft handle pivotally connected to said axial shaft portion and arranged to pivot about the end thereof through an angle of at least 180°.

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