Dec. 5, 1961 L. M. APPLE ET AL 3,011,249

HAND TOOL

Filed Dec. 19, 1958

FIG. 1.

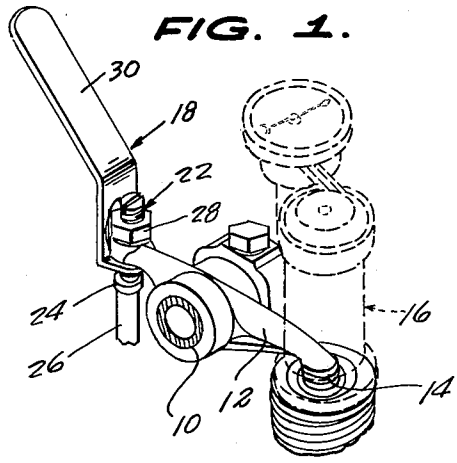



FIG. 4.

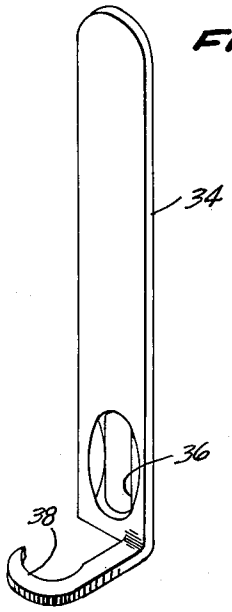



FIG. 2.

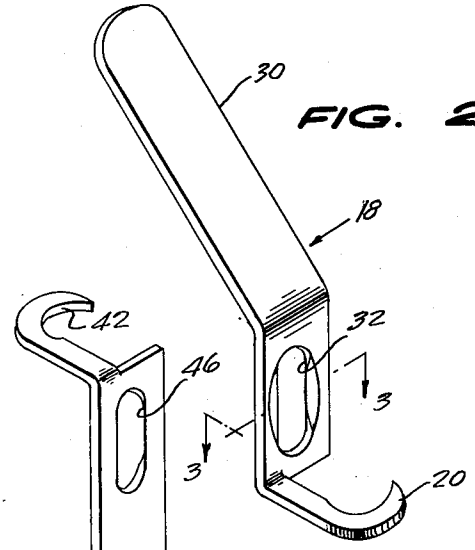
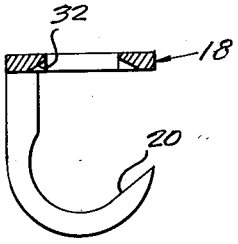



FIG. 3.



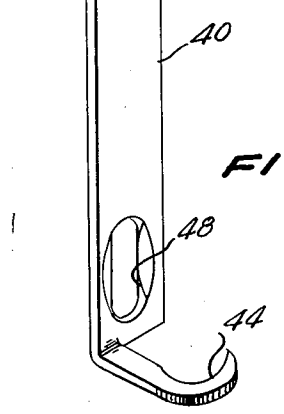




FIG. 5.

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# HAND TOOL

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The present invention relates to a hand tool for use while adjusting the valves of an overhead valve type internal combustion engine.

Presently in use are valve gapping tools of the utmost efficiency with many of them employing indicator dials enabling the user thereof to accurately and with ease and facility set the gap between the valve stem and the adjacent valve lifter. When the valves of an overhead valve type internal combustion engine are to be gapped, the rocker arm associated with each valve at one time must be manually held so that there is zero clearance between the valve stem and the adjacent part of the rocker arm.

An object of the present invention is to provide a hand tool which enables the user thereof to hold a rocker arm in a zero clearance position with respect to the associated valve stem.

Another object of the present invention is to provide a hand tool for use with a valve gapping device which is readily attached to and detached from a rocker arm of the valve internal combustion engine.

A further object of the present invention is to provide a hand tool for holding the rocker arm of an internal combustion engine in a zero clearance position which is adaptable for use with all overhead valve assemblies and rocker arms of various shapes and sizes.

A still further object of the present invention is to provide a hand tool for holding the rocker arm of an internal combustion engine in a zero clearance position which is simple in structure, one sturdily constructed, one economical to manufacture, and one which is highly effective in action.

These and other objects and advantages of the present invention will be fully apparent from the following description when taken in conjunction with the annexed drawing, in which:

FIGURE 1 is an isometric view of a portion of a rocker arm support shaft with a rocker arm supported thereon and with the tool of the present invention engaging one end of the rocker arm, the dotted line showing indicating portions of a valve gapping device with which the tool of the present invention is employed;

FIGURE 2 is an isometric view of the tool of the present invention;

FIGURE 3 is a view on an enlarged scale, taken on the line 3—3 of FIGURE 2;

FIGURE 4 is an isometric view of a modified form of the tool of the present invention; and

FIGURE 5 is an isometric view of a further modification of the tool of the present invention.

Referring in greater detail to the drawing in which like numerals indicate like parts throughout the several views, in FIGURE 1 the reference numeral **10** designates a horizontally disposed rocker arm support shaft and the numeral **12** a rocker arm connected intermediate its ends to the shaft **10** for rocking movement about the shaft as an axis. One end of the rocker arm **12** engages the upper end of a vertically disposed spring-biased valve stem **14**.

In dotted lines in FIGURE 1 is shown the outline of a valve gapping device operatively connected to the valve stem **14**, the valve gapping device being designated generally by the numeral **16** and not being described further as not being a part of the present invention.

The tool of the present invention is designated generally by the reference numeral **18** and comprises an elongated flat rigid straight bar element and a hook **20** projecting perpendicularly from one end thereof.



The end of the rocker arm **12** remote from the valve stem **14** carries, in a threaded bore, a threaded bolt constituting a seating member adjustably mounted in the rocker arm end and having a portion adjacent the lower end projecting below the rocker arm end, such bolt or seating member being designated generally by the reference numeral **22**. The lower end portion of the seating member **22** is conventionally formed to a ball received in a ball socket **24** provided in the upper end of a push rod **26**, the lower end of which is drivingly connected to the cam shaft of the engine. A lock nut on the bolt or seating member **22** secures the bolt or member **22** in any position of its upward or downward adjusted position, such lock nut being designated by the reference numeral **28**.

In use, the tool **18** of the present invention is disposed in an upright direction with the hook **20** thereof embracing the projecting portion of the bolt or seating member **22** below the adjacent part of the rocker arm **12** and also engaging the adjacent portion of the rocker arm **12**.

The portion of the tool **18** inwardly of the end remote from the hook **20** is bent outwardly at an angle away from the hook **20** to form a handle **30**.

Positioning means embodying a closed slot **32** is provided on the part of the tool **18** adjacent the hook **20**. With the hook **20** embracing the projecting lower portion of the bolt or member **22**, the free end of the rocker arm **12** adjacent the bolt or member **22** is received in and engaged by the closed slot **32**, preventing slippage of the tool sidewardly when an upwardly directed force is applied to the portion of the tool remote from the hook **20** in order that the rocker arm **12** be shifted so that its one end adjacent the valve stem **14** is shifted into tight engagement with the valve stem **14**.

In FIGURE 4, a modification of the tool is shown in which the tool handle is designated by the reference numeral **34** and is coplanar with a portion of the tool adjacent the closed slot **36**. The hook **38** projects perpendicularly from the end of the tool adjacent the slot **36**.

In FIGURE 5, a further modification of the tool is shown in which the handle or element **40** has a hook **42** at one end and a hook **44** on the other end and closed slots **46** and **48** inwardly of and adjacent such ends. The tool of FIGURE 5 enables the user thereof to have a choice of left hand opening or right hand opening hooks on the same tool.

What is claimed is:

1. For use with an overhead valve motor including a rocker arm support shaft, a rocker arm connected intermediate its ends to said shaft for rocking movement about said shaft as an axis, a spring-biased valve stem engaging one end of said arm, a seating member adjustably mounted on the other end of said rocker arm and having a portion adjacent one end projecting below said other rocker arm end, and a push rod engaging said seating member, a hand tool comprising an elongated flat rigid straight bar element, a hook projecting perpendicularly from one end thereof, and positioning means embodying a closed slot on the part of said element adjacent said hook, said tool being adapted to be disposed in an upright direction so that the hook embraces the projecting portion of said seating member and engages the adjacent portion of said rocker arm with said slot receivably engaging said other end of said rocker arm and being operable when so positioned upon application of an upwardly directed force to a portion of said element remote from said hook to shift said one end of

said rocker arm into tight contacting engagement with said valve stem.

2. For use with an overhead valve motor including a rocker arm support shaft, a rocker arm connected intermediate its ends to said shaft for rocking movement about said shaft as an axis, a spring-biased valve stem engaging one end of said arm, a seating member adjustably mounted on the other end of said rocker arm and having a portion adjacent one end projecting below said other rocker arm end, and a push rod engaging said seating member, a hand tool comprising an elongated flat rigid element, a hook projecting perpendicularly from one end thereof, and positioning means embodying a closed slot on the part of said element adjacent said hook, the portion of said element inwardly of the other end being bent outwardly at an angle in the direction away from said hook, said tool being adapted to be disposed in an upright direction so that the hook embraces the projecting portion of said seating member and engages the adjacent portion of said rocker arm with said slot receivably engaging the other end of said rocker arm and being operable when so positioned upon application of an upwardly directed force to said outwardly bent portion to shift said one end of said rocker arm into tight contacting engagement with said valve stem.



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