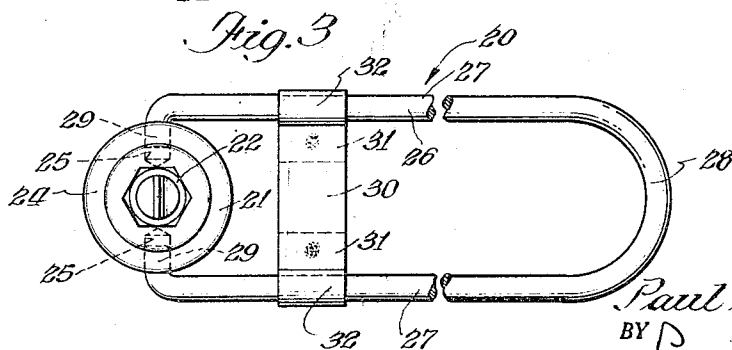
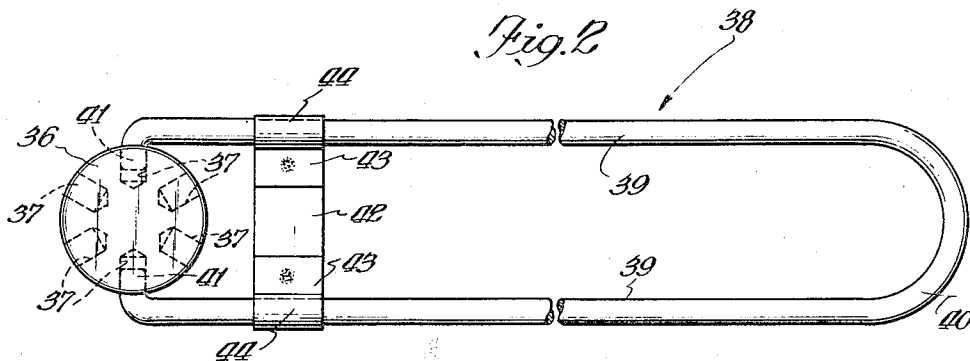
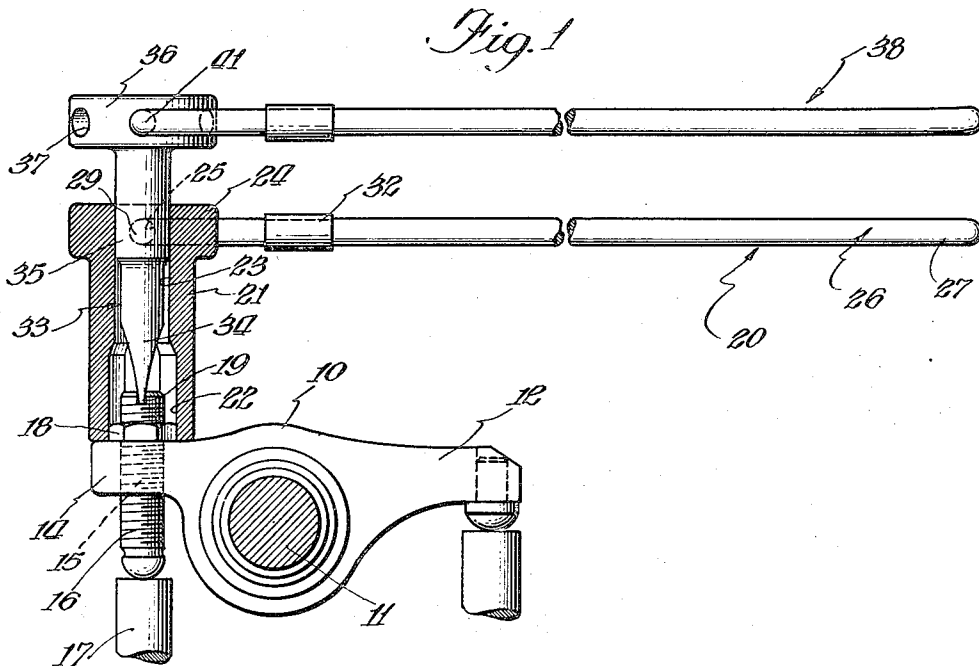


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VALVE ADJUSTING TOOL

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VALVE ADJUSTING TOOL

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This invention relates to a valve adjusting tool and more particularly to a tool for adjusting the valves of overhead valve engines.

In conventional overhead valve engines a longitudinally extending shaft is provided with a plurality of rocker arms. The shaft pivotally supports the rocker arms and each rocker arm has provided at one end a portion which engages a valve stem. The other ends of the rocker arms are provided with adjustable studs that are in turn in engagement with push rods providing the force for rocking the rocker arms. The studs are threaded with respect to the rocker arms and adjustment of the gap between the rocker arms and the valve stems may be had by turning the studs relative to the rocker arms. In order to lock the studs in position lock nuts are provided, these lock nuts being rigidly tightened in engagement with the rocker arms.

In order to adjust the valves correctly it is necessary to adjust the rocker arms while the engine is operating. Adjustment is generally accomplished by loosening the lock nut and then turning the threaded stud while the lock nut is held in a loosened position. When the stud has been moved to the proper position relative to the rocker arm the lock nut is again tightened and adjustment is effected.

It can be seen that it is necessarily quite difficult to adjust the rocker arms, while the engine is running, with the ordinary types of tools available. The Shaw Patent 1,681,881, patented August 21, 1928, shows a tool which can be used for taking up tappets and for adjusting rocker arms. This patent shows a tool wherein a nut engaging socket may be used for engaging the lock nut of a rocker arm. The socket in turn is held by means of a handle which is relatively rockable with respect to the socket. The socket includes a stem which has a screw blade adapted to engage the threaded stud of a rocker arm. With this type of tool the tool may be held by an operator while the engine is running by virtue of a handle which is rockably connected to the tool. However, the turning movement of the screw blade is effected by means of a handle which is rigidly connected to the blade. This construction of the screw blade makes it difficult for the operator to turn the blade while the engine is running. It is the applicant's prime object therefore to provide an improved construction wherein both the nut engaging part and the screw engaging part are rockably connected to handles so that the operator may adjust the parts with relative ease despite the operating condition of the engine.

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It is another object to provide a valve adjusting tool, the tool including a socket having a nut engaging portion, the socket serving to rotatably support a stem having a screw-slot engaging portion, the stem and the socket being relatively movable with respect to each other, the socket and the stem further having connected thereto a pair of laterally extending handles, the handles being pivotally connected in such a manner that they may be rocked in a substantially arcuate path with respect to the stem and to the socket member.

Still another object is to provide a valve adjusting tool having a nut engaging socket member and a screw-slot blade member relatively movable with respect to the socket member, the socket member and the screw-slot blade having laterally extending U-shaped handle members, one of the handle members being pivotally connected to the socket member and the other handle member being pivotally connected to the screw-slot blade member.

These and further objects will become more readily apparent from a reading of the specification when taken in connection with the accompanying sheet of drawing.

In the drawing:

Figure 1 is a side elevational view partially in section of a valve adjusting tool in operating engagement with respect to a rocker arm and its associated parts.

Figure 2 is a plan view of the valve adjusting tool shown in Figure 1.

Figure 3 is a bottom view of the valve adjusting tool shown in Figures 1 and 2.

Referring now particularly to Figure 1 a rocker arm is generally designated by the reference character 10. The rocker arm 10 is generally of a conventional type such as is used in an overhead valve engine. The rocker arm 10 is mounted on a shaft 11, said rocker arm having an end portion 12 which is in engagement with a valve stem 13. An opposite end portion 14 is provided with a threaded bore 15 in which a screw stud 16 is positioned. The screw stud 16 is in engagement with a push rod 17 which provides for rocking motion of the rocker arm 10. A lock nut 18 is connected to the screw stud 16 for securing the stud in tight locking engagement with respect to the rocker arm 10. The screw stud 16 is provided at its upper end with a screw driver slot 19.

A valve adjusting tool is generally designated by the reference character 20. The valve adjusting tool comprises a tubular or hollow member 21 having at its lower end a hexagonal socket

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or nut engaging portion 22. The hollow member 12 is provided with an axially extending bore 23 and has at its upper end a handle engaging head 24. The handle engaging head 24 is provided with oppositely disposed bores 25 extending partially in an axial direction into the handle engaging head 24 as best shown in Figure 3.

A handle for turning the hollow member 21 is generally designated by the reference character 26. The handle 26 is of U-shaped configuration and includes a pair of substantially parallel legs 27 which are integrally connected as indicated in Figure 3 by a bail 28. The ends of the legs 27 are provided with laterally extending swivel portions 29 which extend inwardly into the bores 25 of the handle engaging head 24. As indicated in Figures 1 and 2 the swivel portions 29 are held against relative lateral displacement with respect to the handle engaging head 24 by means of a strap 30. The strap 30 is provided with inwardly bent portions 31 which are suitably connected to provide sliding sleeves 32, the sleeves 32 engaging the leg members 27 in relative longitudinal sliding relation.

A stem 33 is positioned within the tubular or hollow member 21. The stem 33 is provided at its lower end with a screw-slot blade 34 adapted to engage the screw-slot of the screw stud 16 in conventional fashion. The upper end of the stem 33 is provided with a bearing shank 35 which has a portion projecting outwardly of the tubular member 21 and is provided with a handle connecting head 36. The handle connecting head 36 is provided with a plurality of radially extending bores 37, the bores being so disposed that each bore is positioned in directly opposed relation with respect to another bore.

A handle for turning the stem 33 is generally designated by the reference character 38. The handle 38 includes a pair of substantially parallel leg members 39 which are integrally connected by means of a bail 40. The leg members 39 are provided at their free ends with a pair of swivel portions 41 which extend laterally toward one another. The swivel portions 41 are disposed in relative telescoping relation within oppositely disposed bores 37 provided in the handle connecting head 36.

The swivel portions 41 are held against lateral displacement within the bores 37 by means of a strap 42. The strap 42 includes a pair of oppositely disposed inwardly bent portions 43 which are suitably connected to the strap to provide a pair of sliding sleeves 44. The sleeves 44 engage the leg members 39 in relative sliding relation.

In order to properly adjust the rocker arms 10 the engine must be operating. As the engine is operating the push rod 17 causes rocking motion of the rocker arm 10 relative to the shaft 11. In order to properly adjust the rocker arm the screw stud 16 must be adjusted with respect to the portion 14 of the rocker arm 10. While the engine is running, the operator places the valve adjusting tool 20 in position with respect to the rocker arm 10 as indicated in Figure 1.

With the engine running it can be seen that the hollow member 21 and the stem 33 are moved in an upward and downward direction. The operator is holding the handles 26 and 38 which rock and compensate for the reciprocation of the stem 33 and hollow member 21 and thus he is not materially effected by the rapid reciprocation of the valve adjusting parts. The operator first turns the handle 26 to effect loosening of the hexagonal lock nut 18 and the screw stud

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16 can now be turned to the proper position by means of rotation of the stem 33 with respect to the tubular member 21. Rotation of the stem 33 is effected by turning the handle 38. After the screw stud 16 has been adjusted to the proper position the operator simply tightens the lock nut 18 by effecting movement of the handle 26.

As shown in Figure 1 the stem 33 is also freely slidable in an axial direction with respect to the tubular member 21. Thus quick engagement of the screw-slot blade 34 may be made with the slot 19 of the threaded stud 16 despite the relative position of the stud 16 with respect to rocker arm 10.

It can now be seen that despite the rapid reciprocation of the hollow member 21 and the stem 33, the threaded stud 16 and the nut 18 can be easily and quickly adjusted. The rapid reciprocation of the stud 16 does not effect the ease with which the operator can effect adjustment. The handles 26 and 38 rock in an arcuate path relative to the reciprocation of the hollow member 21 and the stem 33.

It can be appreciated that by the novel connection of the handles 26 and 38 with respect to the tubular member 21 and the stem 33, that the handles can move in a substantially large arcuate path relative to the tubular member 21 and the stem 33. Under certain conditions the rocker arms may be difficult to reach and thus the operator can work considerably above or below the level of the rocker arms since the handles 26 and 38 are rockable in a substantially large arcuate path in which they still function to properly adjust the valve adjusting parts.

The bail members 28 and 40 generally are of spring-like nature and urge the leg members 27 and 39 outwardly with respect to each other. Movement of the straps 30 and 42 to the positions shown in Figures 2 and 3, however, causes the straps 30 and 42 to securely hold the leg members 27 and 39 in the position shown so that proper engagement of the swivel portions 29 and 41 is effected relative to the bores 25 and 37. Disengagement of the handles 26 and 38 from their relative bores is effected by merely sliding the strap members 30 and 42 toward the bail members 28 and 40 whereupon the leg members 27 and 39 can be spread apart.

In view of the plurality of bores 37 the hollow member 21 may be readily changed for different size hexagonal nuts. Furthermore, the plurality of bores 37 and the construction of the handle is such that it can readily be changed during use to a more favorable position so that interference between the operator's hand and adjacent motor parts is prevented.

It can now be seen that a novel valve adjusting tool has been provided which will fully accomplish the objects stated. It must be understood that changes and modifications may be made without departing from the spirit of the invention as disclosed nor the from the scope thereof as defined in the appended claims.

What is claimed is:

1. A valve adjusting tool comprising a hollow member having a nut engaging socket at one end and a pair of oppositely disposed bores extending inwardly toward the axis of the member at its opposite end, means for turning said hollow member about its axis including a handle extending laterally with respect to said hollow member, said handle being of generally U-shaped configuration and having oppositely disposed swivel portions positioned in the bores whereby

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the handle may be rocked relative to said tubular member, a stem rotatably positioned within said tubular member, said stem being axially movable with respect to said tubular member, a screw-slot blade provided at one end of said stem, said stem having a shank portion projecting outwardly from the tubular member, said shank portion including oppositely disposed bores extending inwardly toward the axis of the stem, and a handle connected to said stem for turning the same, said handle being of generally U-shaped configuration and having oppositely disposed swivel portions positioned in the bores of the handle connecting portion whereby the handle may be rocked relative to said stem.

2. A valve adjusting tool in accordance with claim 1, said handles including substantially parallel leg members to which the swivel portions are connected, and straps connected to the leg members for retaining the swivel portions in engagement with the bores, said straps being relatively movable in a longitudinal direction with respect to said leg members.

3. A valve adjusting tool comprising a hollow member having a nut engaging socket at one end, means for turning said hollow member about its axis including a handle extending laterally with respect to said hollow member, said handle being pivotally connected to said hollow member whereby the handle may be rocked in a substantial arcuate path relative to said hollow member, a stem positioned within said hollow member for relative rotational and axial movement, said stem having a screw-slot engaging blade at one end, and a handle connecting portion at its opposite end, a handle connected to said handle connecting portion, said handle extending laterally with respect to said stem and means pivotally connecting said handle to said handle connecting portion whereby said handle may be rocked in a substantial arcuate path relative to said stem.

4. A valve adjusting tool comprising a hollow member having a nut engaging socket at one end, means for turning said hollow member about its axis including a handle extending laterally with respect to said hollow member, said handle being pivotally connected to said hollow member, whereby the handle may be rocked in a substantial arcuate path relative to said hollow member, a stem positioned within said hollow member for relative rotational movement, said stem having a screw engaging blade and a handle connecting portion, a handle connected to said handle connecting portion, said handle extending laterally with respect to said stem, and means pivotally connecting said handle to said handle connecting portion whereby said handle may be rocked in a substantial arcuate path relative to said stem.

5. A valve adjusting tool comprising a hollow

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member having a nut engaging socket, a stem positioned within said hollow member for relative rotational and axial sliding movement with respect to said hollow member, a screw engaging blade on said stem, means for turning the stem and said tubular member relative to each other comprising a pair of handles extending laterally with respect to said stem and said tubular member, one of said handles being pivotally connected to said stem, the other handle being pivotally connected to said hollow member whereby said handles may be rocked in a substantial arcuate path relative to said stem and tubular member.

6. A valve adjusting tool comprising a hollow member having a nut engaging socket, a stem positioned within said hollow member for relative rotation with respect to said hollow member, a screw engaging blade on said stem, means for turning the stem and said tubular member relative to each other comprising a pair of handles extending laterally with respect to said stem and said tubular member, one of said handles being pivotally connected to said stem, the other handle being pivotally connected to said hollow member whereby said handles may be rocked in a substantial arcuate path relative to said stem and tubular member.

7. A valve adjusting tool comprising a hollow member having a nut engaging socket at one end and a pair of oppositely disposed bores extending inwardly toward the axis of the member at its opposite end, means for turning said hollow member about its axis including a handle extending laterally with respect to said hollow member, said handle being of generally U-shaped configuration and having oppositely disposed swivel portions positioned in the bores whereby the handle may be rocked relative to said tubular member, a stem rotatably positioned within said tubular member, a screw blade provided at one end of said stem, said stem having a handle connecting portion, said handle connection portion including a plurality of oppositely disposed bores extending inwardly toward the axis of the stem, and a handle connected to said stem for turning the same, said handle being of generally U-shaped configuration and having oppositely disposed swivel portions positioned in the bores of the handle connecting portion whereby the handle may be rocked relative to said stem.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,544,520	Putrow	June 30, 1925
1,607,929	Waters	Nov. 23, 1926