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C. S. ROOT

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TWEEZER TOOL

Filed Sept. 19, 1929

Fig. 1.

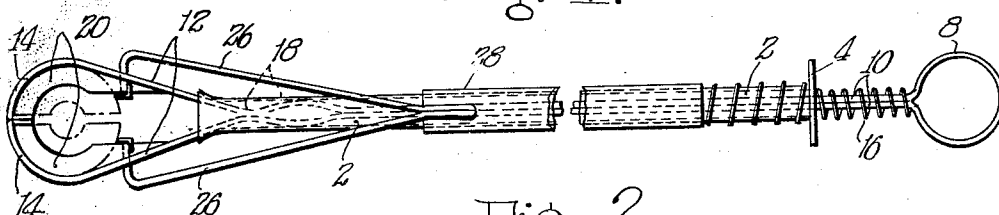


Fig. 2.

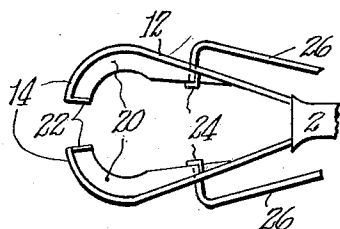
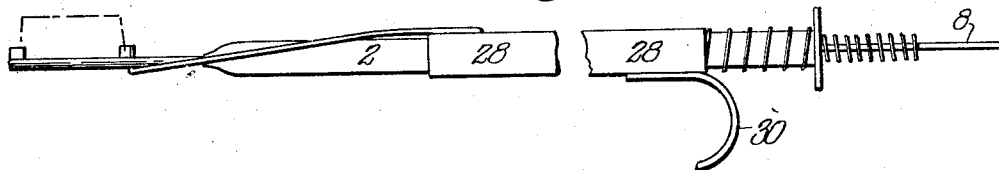


Fig. 3.



Fig. 4.

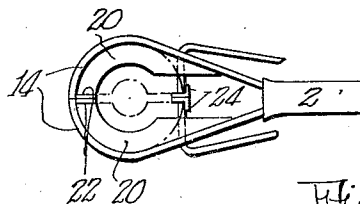


Fig. 5.

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TWEEZER TOOL

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This invention relates to improvements in tweezer tools and is directed particularly to tools for gripping small objects of all kinds and shapes.

One object of the invention is the provision of a tool of the class described which is simple in construction and efficient in operation.

Another object of the invention is the provision of a tool which is adapted to easily and quickly engage and hold objects and to release them.

Other objects and advantages of the invention will be observed from the following description thereof which for purposes of disclosure is directed to a tool for use for replacing the parts of split-washers, valve rod pins and the like such as are used with an internal combustion engine. It will be apparent that the novel features of the invention are adapted for use in connection with tools which may be designed for handling various objects.

In the drawings—

Fig. 1 is a plan view of a tool embodying the novel features of the invention.

Fig. 2 is a side elevational view of the same.

Fig. 3 is a fragmentary plan view showing certain of the parts in an open position.

Fig. 4 is an end elevational view showing the end of the support of the tool, and

Fig. 5 is a view similar to that of Fig. 4 showing the parts in a different position.

Referring to the drawings in detail the invention will now be described.

A holder or support is provided which is preferably in the form of a tube the rear end of which carries a finger grip 4, while the forward end is partly closed or compressed to provide separate passageways or guideways 6, as shown in Fig. 4.

A member preferably of springlike wire is doubled upon itself to provide a finger ring 8 and shank portions 10, the latter of which pass through and are slidable in the holder and have their forward ends guided in the guideways 6. The extremities 12 of the shank portions extend in a diverging relation and are curved as shown to provide co-operating article gripping fingers 14.

A compression spring 16 is disposed be-

tween the end of the holder 2 and ring 10 to urge the shanks and fingers rearwardly of the support so that the fingers are normally held in their closed position shown in Fig. 1. By placing the first and second finger of the hand behind the grip 4 and inserting the thumb in the ring 10 the tool may be supported by the hand and then by moving the thumb towards the fingers the tube and shanks are moved relative to one another whereby the fingers are opened to the position shown in Fig. 3. The shanks are offset or formed as at 18 so that the fingers 14 may open as the shanks are moved forwardly of the tube. They may be given any shape desired in order to obtain the action desired.

Shelf members 20 are secured in some convenient manner to the fingers for co-operating therewith and act as supports for articles embraced or gripped by or between the fingers.

Where the tool is to be used in connection with the split washers for valve stems, each half part of the washer may be placed on a shelf. These half-parts, as shown in dot-dash lines, are semi-circular in shape and may rest on the shelves while at the same time they are embraced by the fingers.

Upstanding ledges 22 fixed to and associated with the fingers and shelves are provided for engaging one end of the inner faces of the half parts of the washer and function to hold the parts against displacement.

Means for engaging the inner faces of the half parts at their opposite sides will now be described.

Upstanding angular shaped lock members 24 are fixed to the ends of arms 26 which are fixed to a tubular member 28 slidable on the support 2. These are arranged so as to normally spring outwardly whereby the members 24 are carried to abut the inner sides of the shelves. A compression spring disposed between the end of the member 28 and grip 4 resists a rearward movement of member 28 relative to the support. A trigger member 30 fixed to the under side of member 28 is provided to facilitate a sliding movement thereof with respect to the holder or support.

In the operation of the tool the half parts

of a split washer are placed on the shelves as in Fig. 5, so as to be supported thereby and are embraced by the fingers 14. The locks 24 are inserted between the half parts so that they are held on the shelves by the ledges 22 and locks 24 so that the fingers may now be opened.

With the first and second fingers at either side of the support and behind the grip 4 and the thumb inserted in the ring, the fingers 14 are opened by pressing the fingers and thumb together. With the fingers open the tool may be manipulated so that the washer half-parts may be passed by the opposite sides of a valve stem. This is of course necessary in order to place the washer parts on the stem.

When the washer halves are in place with respect to the stem, the spring 16 is allowed to move the shanks and support relative to another so that the fingers may close and cause the half-parts to embrace the valve stem as is desired. Then to release the washer half-parts the trigger is engaged and pulled rearwardly to slide the tube 28 rearwardly of the support and move the locks 24 from between the half-parts. As they are released the half-parts fit within the seats provided therefor on the valve stem and may be entirely released by the tool. This may be done by moving the shanks and support against the action of the spring 16 so that the fingers 14 will separate or open.

The form of the fingers, shelves, ledges and locks may be varied to adapt the tool for use with objects other than the split washers described. Obviously the ends of the fingers may be used for embracing the pins to be inserted in valve stems or the like. In fact various changes may be made to adapt the tool to many and various uses without departing from the spirit and scope of the invention.

What I desire to claim and secure by Letters Patent of the United States is:

1. A tool of the class described comprising in combination, a support in the form of a tube having its forward end partly closed to provide spaced guideways, a member bent upon itself to provide shanks which extend through said tube and guideways and a ring at the rear end of said tube, the shanks as they extend through said guideways being disposed in a diverging relation and then extended towards one another to form co-operating gripping fingers, shelves carried by said fingers for supporting an article gripped by said fingers, upstanding ledges associated with said fingers for co-operating with said fingers for gripping one side of an object, and spring pressed members for co-operating with said ledges and fingers for gripping another side of an object.

2. A tool of the class described comprising in combination, a tubular support having its forward end partly closed to provide sepa-

rate guideways, a member slidable therein having diverging members extending through said support and guideways and a ring at the rear end of said support, the said diverging members being curved towards one another to form co-operating fingers, a compression spring between the rear end of said support and said ring, a tube slidable on said support, spring arms carried thereby, lock members on said arms disposed so as to co-operate with said fingers for holding an object, and a spring between said tube and tubular support tending to urge the former forwardly of the latter whereby the lock members may co-operate with the fingers for holding an object.

3. A tool of the class described comprising in combination, a hollow support having one end formed to provide separate guideways, a member bent upon itself to form shanks slidable in said support, the extremities of said shanks outside the guideways being curved outwardly and inwardly to form gripping fingers, shelves on adjacent sides of said fingers for supporting articles, ledges at the ends of said fingers, and other members movable on said support having locks for co-operating with said ledges for holding articles on said shelves.

4. A tool of the class described comprising in combination, a hollow support having guideways at its forward end, a wire member bent upon itself to provide shanks extending through said member and guideways and having a finger ring portion at the rear end thereof and finger members curving away from said guideways and then towards one another, shelves extending inwardly from adjacent inner sides of said fingers, ledges on the extremities of said finger members, a member slidable on said support having forwardly extending arms and locks on the extremities of said arms disposed between said fingers for co-operating with said ledges for holding articles on said shelves.

5. A tool of the class described comprising in combination, a hollow support having guideways at its forward end, a wire member bent upon itself to provide shanks extending through said member and guideways and having a finger ring portion at the rear end thereof and finger members curving away from said guideways and then towards one another, shelves extending inwardly from adjacent inner sides of said fingers, ledges on the extremities of said finger members, a member slidable on said support, inwardly yieldable arms extending forwardly of said member, the ends of which are disposed at a side of said shelves, and locks on said ends extending transversely of said shelves.

6. A tool of the class described comprising in combination, a hollow support having guideways at its forward end, a wire mem-

ber bent upon itself to provide shanks extending through said member and guideways and having a finger ring portion at the rear end thereof and finger members curving
5 away from said guideways and then towards one another, shelves extending inwardly from adjacent inner sides of said fingers, ledges on the extremities of said finger members, a member slidable on said support, a
10 part at the rear end of said support, springs between said part and finger ring and between said member and said part to urge the shanks and slidable member rearwardly and forwardly respectively of said support, a
15 pair of diverging inwardly yieldable arms extending forwardly of said slidable member and having locks at the ends thereof disposed between said shelves.

In testimony whereof I affix my signature.

20 CHARLES S. ROOT.

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