L. L. KEYS.

TIRE TOOL.

APPLICATION FILED AUG. 20, 1919.

1,338,576. Patented Apr. 27, 1920.

Fig. 1.

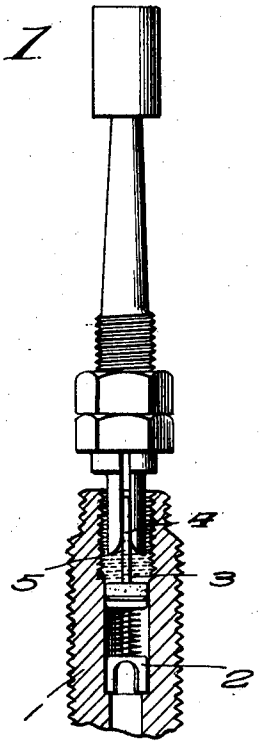


Fig. 2.

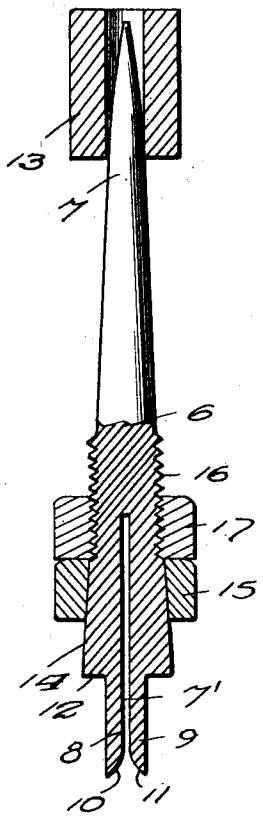
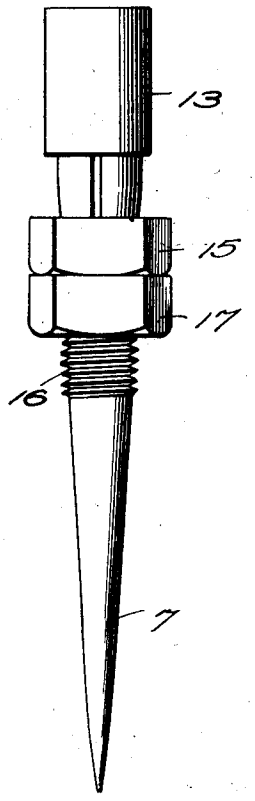


Fig. 3.



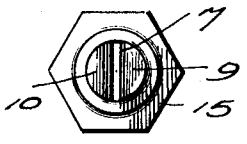


Fig. 4.

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UNITED STATES PATENT OFFICE.

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TIRE-TOOL.

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Application filed August 20, 1919. Serial No. 318,676.

To all whom it may concern:

Be it known that I, LEE L. KEYS, a citizen of the United States, residing at Yakima, in the county of Yakima and State of Washington, have invented certain new and useful Improvements in Tire-Tools; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to improvements in tire tools, and more specifically relates to a tool for use in connection with the valve stems of inner tubes which often become injured and broken, causing a great deal of annoyance in dislodging the "valve insides."

The invention aims to provide a small, simple and cheap tool for carrying out all of the necessary operations to dislodge the valve insides from the valve stem whenever the former becomes so broken as to be incapable of removal in the ordinary way.

In the accompanying drawings forming a part of this application, and in which similar reference symbols indicate corresponding parts in the several views:

Figure 1 is a vertical sectional fragmentary view of a valve stem showing an improved tool constructed in accordance with the present invention and applied thereto;

Fig. 2 shows an enlarged longitudinal section through the tool in one condition of use.

Fig. 3 is a side elevational view of the tool in another position of use; and

Fig. 4 is an end elevational view of the improved tool.

Referring more particularly to the drawings, 1 designates the usual valve stems carried by inner tubes, and 2 designates generally the valve insides which include the threaded ring 3 screwed into the interior of the stem 1 and the valve stem 4 slidably carried by the threaded ring 3.

In actual use the stem 4 often becomes broken off above the ring 3 and is not capable of removal with the ring 3; and in some cases the ring 3 itself becomes broken or the lugs 5 become stripped off so that it is very difficult to remove the same from the interior of the stem 1.

The present tool is intended to overcome the difficulties hitherto experienced in removing the valve insides when broken, and it consists of a shank 6 having a pointed or tapered end 7 of a size adapted to fit within the bore of the valve stem 1. The other end of the shank 6 is divided by a slot 7′ into a pair of jaws or prongs 8 and 9 having beveled inner opposing faces 10 and 11, and the slot 7′ is adapted to allow the jaws 8 and 9 to be pressed together about the valve stem 4 as indicated in Fig. 1.

Adjacent the jaws 8 and 9, which are reduced, is a shoulder 12 against which the end of a cylindrical collar 13 is adapted to abut when the collar is fitted over the jaws as shown in Fig. 3. The collar 13 forms a protector for the jaws 8 and 9 when the tool is not in use, and it also provides for receiving blows from a hammer or other tool used to drive the tapered end 7 into the valve stem 1. Blows from a hammer on the cylindrical collar 13 are transmitted directly to the shoulder 12, and are not imposed in anywise on the more fragile jaws 8 and 9, so that the collar forms a protector, avoiding the likelihood of breakage of the movable jaws.

Inward of the shoulder 12 a portion of the shank 6 is constructed of a conical shape, as indicated at 14, and this conical portion is adapted to be engaged by a nut 15 having a correspondingly formed conical bore. A threaded portion 16 of the shank 6 adjacent the conical portion 14, is provided to receive a nut 17 having a threaded bore adapted to advance the first named nut 15 over the conical portion 14; and this arrangement is intended to collapse the jaws or prongs 8 and 9 about the valve stem 4 when the tool is put in the position shown in Fig. 1, and the nut 17 is rotated in a right hand direction, causing the companion nut 15 to travel downward over the conical portion 14.

When the valve stem 4 or the broken end thereof has been tightly grasped in the jaws or prongs 8 and 9, the instrument may be drawn upwardly whereby the valve stem and the other insides connected thereto will be pulled from the valve stem 1. These jaws 8 and 9 may, of course, be useful to catch other parts than a broken valve stem, but the tool is found exceedingly useful for the specific purpose above outlined, which is a source of much difficulty in practice.

When the tool is to be used for the purpose just described, the collar 13 is, of course, removed from the spring jaws 8 and

9 by simply pulling the collar therefrom, as the same only fits frictionally thereover and is held by the tendency of the jaws 8 and 9 to expand inside the same, and after removal from the jaws the collar is inserted over the tapered end 7 in the position indicated in Fig. 2, whereby it acts as a protector for such end and is in a position to receive blows from a hammer or other tool which may be necessary to drive the spring jaws 8 and 9 down within the valve stem 1.

The sharpened or tapered end 7 of the tool is for the purpose of getting out the valve when it becomes broken off, and is driven in and then screwed out, removing the broken piece.

Of course the tool will be found susceptible for other uses than those mentioned herein, as the above described uses have been recited merely as illustrations.

It will be appreciated from the foregoing that I have provided an exceedingly simple and effective tool for the purpose stated, which is small and economical in manufacture.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of my invention, and therefore I do not wish to be limited to such features except as may be required by the claim.

I claim:

A tire tool of the character described including a shank having a handle at one end, said shank being provided at its other end with a cut made transversely through the same and dividing such end into a pair of collapsible spring jaws having extremities formed to grip a valve stem and to guide the jaws onto the stem, such extremities being reduced exteriorly to admit the same within the valve stem, said shank having a shoulder formed adjacent the cut away portion of said extremities and having the exterior wall thereof adjacent the shoulder conical and the portion adjacent such conical portion screw threaded, a nut having a conical bore fitting over such conical portion of the shank, and a threaded nut run on the threaded portion of said shank and adapted to advance said first named nut over the conical portion whereby to compress said spring jaws, substantially as described.

LEE L. KEYS.