Feb. 7, 1956 I. V. HOWELL 2,733,456

VALVE CAP REMOVING AND REPLACING TOOL

Filed Dec. 5, 1952

Fig. 1.

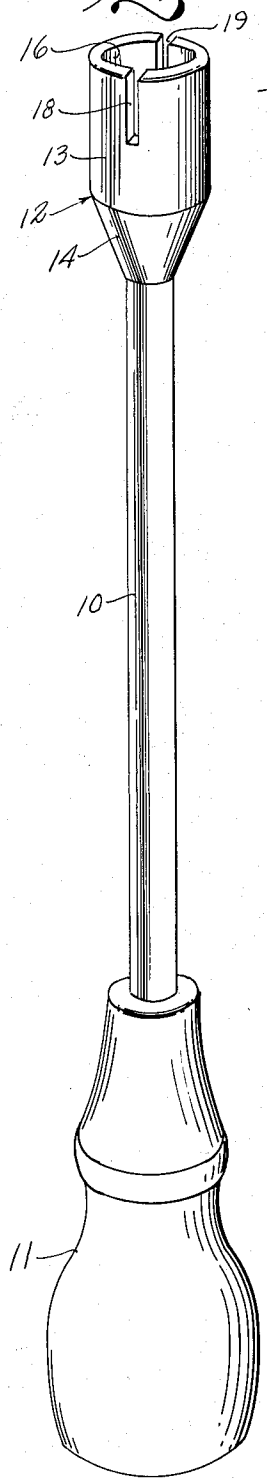


Fig. 3.

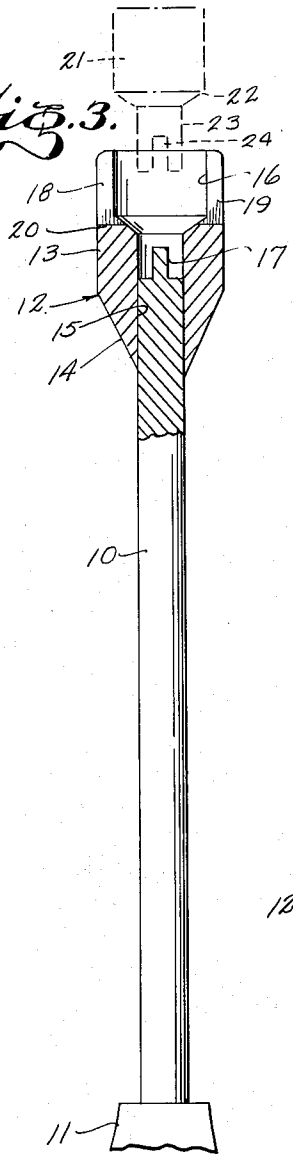


Fig. 4.

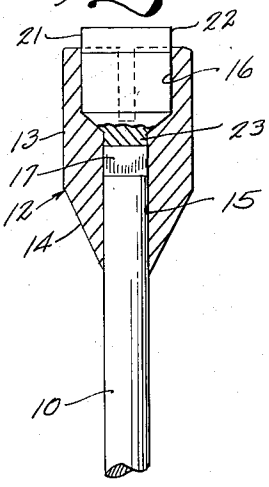
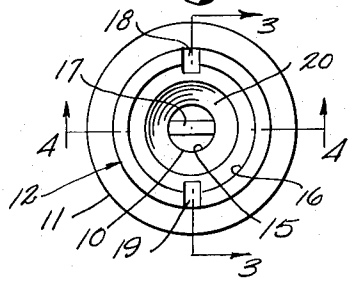


Fig. 2.



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VALVE CAP REMOVING AND REPLACING TOOL

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1 Claim. (Cl. 7—14.1)

This invention relates to a hand tool for removing and replacing caps on the outer ends of the valve stems of pneumatic tires, and more particularly to a tool for removing and replacing valve stem caps which are difficult of access, such as the caps of the valve stems of the inner tires of dual wheel vehicles.

It is among the objects of the invention to provide a valve cap tool having on one end a handle for manually rotating the tool and on its other end a socket for receiving a valve stem cap and having an elongated shank between the handle and socket thereof; which can be used to remove and replace valve stem caps in positions difficult of access, as on the valve stems of the inner tires of dual wheel vehicles; which has within its socket a bit engageable in the tool slot provided in the outer end of a conventional valve stem cap for turning the cap and has longitudinally extending slots in the socket to facilitate removal of a stuck cap from the socket and facilitate the removal of ice or frozen mud from a cap to be removed from the associated valve stem; and which is simple and durable in construction, economical to manufacture, convenient to use, and positive and effective in use.

Other objects and advantages will become apparent from a consideration of the following description and the appended claim in conjunction with the accompanying drawing wherein:

Figure 1 is a perspective view of a valve cap tool illustrative of the invention;

Figure 2 is an end elevational view of the tool looking at the top end of the tool, as illustrated in Figure 1;

Figure 3 is a fragmentary longitudinal cross sectional view on the line 3—3 of Figure 2; and

Figure 4 is a fragmentary longitudinal cross sectional view on the line 4—4 of Figure 2.

With continued reference to the drawing, the tool comprises an elongated shank 10 which is preferably straight and of circular cross sectional shape, a handle 11 in the form of a screwdriver handle mounted on the shank at one end thereof to provide a hand grip for rotating the shank and a socket, generally indicated at 12, mounted on the shank at the end of the shank remote from the handle 11.

The socket 12 comprises a cylindrical portion 13 and a conical portion 14 extending coaxially from one end of the cylindrical portion and has a bore 15 extending coaxially therethrough, and a counterbore 16 in one end of the bore 15 of larger diameter than the bore 15 and disposed coaxially thereof and opening to the end of the cylindrical portion 13 of the socket remote from the conical end portion 14 thereof.

The shank 10 extends partly through the bore 15 from the conical end of the socket and has on its inner end a diametrically extending bit formation 17 spaced along the bore 15 from the inner end of the counterbore 16. The socket is also provided with slots, as indicated at 18 and 19 at angularly spaced apart locations thereabout and extending longitudinally of the cylindrical portion 13 of the socket from the end of the socket to

which the counterbore 16 opens to the inner end of the counterbore. At its inner end, the counterbore 16 is preferably provided with a conically beveled portion 20 extending from the inner end of the counterbore to the adjacent end of the bore 15.

The counterbore 16 is dimensioned to closely receive the cylindrical body 21 of a valve cap 22 and the bore 15 is dimensioned to receive the outer end portion 23 of the cap which outer end portion extends coaxially from one end of the body portion 21 and has a diameter materially less than the diameter of the body portion, the outer end portion 23 of the cap being provided in its end remote from the body portion 21 with a diametrically extending tool slot 24 in which the bit 17 on the end of the shank 11 disposed within the socket 12 is engaged when the cap 22 is received in the socket.

The socket 12 can be placed over a valve stem cap in a position difficult of access, as the cap on the valve stem of an inner tire of a dual wheel vehicle for removing the cap from the valve stem and can also be used for replacing the cap in such a relatively inaccessible position. The slots 18 and 19 will receive a pointed tool, such as a pocketknife blade or a small screwdriver, for forcing a stuck cap out of the socket and also provide sharp edges and corners defining cutters which facilitate removing ice and frozen mud from a cap mounted on an associated valve stem, so that the socket can be placed over the cap for removal of the cap from the valve stem on which it is mounted.

As is well known, the caps are threaded onto and off of the associated valve stems and the valve cap tool is effective to thread the caps onto and off of the valve stems with a minimum amount of trouble and manual effort.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are, therefore, intended to be embraced therein.

What is claimed is:

A tool for removing and replacing caps on pneumatic tire valve stems comprising a shank having a driving bit at one end thereof, and a socket having a bore extending coaxially therethrough and a counterbore of larger diameter coaxial with said bore and in communication with said bore at one end, said one end of said shank received in said bore to secure said socket to said shank and the driving bit contained entirely within said bore and extending transversely thereof, said counterbore having its other end opening to one end of said socket remote from said shank and dimensioned to receive a valve cap stem therein, said bore being dimensioned to receive the reduced outer end portion of the valve cap received in said counterbore with said driving bit engaging a driving slot in the reduced end of the valve stem cap, said socket having slots angularly disposed therearound and extending longitudinally of said socket from the open end thereof to define cutters to remove mud and ice from the valve cap to facilitate removal of the cap.

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