May 4, 1937. H. E. WARREN 2,079,056

METHOD OF MAKING CAP SCREWS

Original Filed March 25, 1935

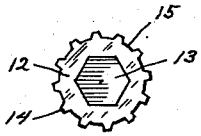

Fig 1

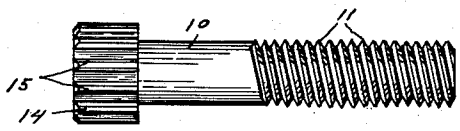

Fig 2

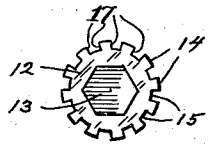

Fig 3

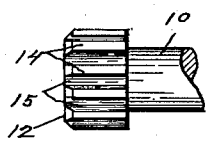

Fig 4

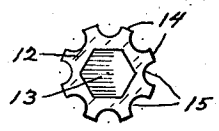

Fig 5

Fig 6

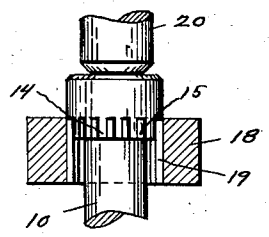

Fig. 7.

Inventor

Henry E. Warren -

By John Thompson

Attorney

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2,079,056

METHOD OF MAKING CAP-SCREWS

Henry E. Warren, Lancaster, Pa., assignor to Mac-it-Parts Company, Lancaster, Pa., a corporation of Pennsylvania

Original application March 25, 1935, Serial No. 12,800. Divided and this application June 6, 1935, Serial No. 25,196

3 Claims. (Cl. 10—10)

My present invention relates to a method of making what is known as a socket-head cap-screw, having a serrated, grooved, ribbed or toothed head by which it may be rotated by the fingers in entering or removing the same from a tapped hole, before tightening and after being loosened by a wrench.

This application has been divided from my application for patent on a Socket-head cap screw and method of making the same, which was filed on March 25, 1935, under Serial No. 12,800 and relates to a method of making the screw.

In the assembling of machine parts and the like, it is often necessary to insert and tighten a cap-screw in a depression or in close proximity to a wall or the like, where it would be impossible to rotate the screw by a wrench as the desired swing could not be given to the wrench without its coming into contact with the wall or other object, thus requiring that the wrench be inserted and removed many times from the screw in order to impart the required number of turns to the screw to insert the same into the tapped hole before the final turns are given for tightening the same.

To overcome this objection to cap-screws having round heads which do not provide any finger grip but depend upon the socket-head wrench only for turning, I have provided a method whereby socket-head cap-screws can be made with a round head which is formed with an ample finger grip by which they may be readily rotated.

In carrying out my invention, I preferably employ in the manufacture of the screws, a bar of the desired material, which is round in cross-section.

Such a bar is fed through the usual automatic screw-machine where it is brought into engagement with the proper tools for reducing a portion adjacent to the end in diameter to form the body of the screw, which if desired may then be threaded. This screw-blank is then parted from the bar stock at the proper distance from the reduced body portion to form the head. The blank is then formed with the socket in the head and the head is then serrated or grooved.

It has been found very important that the serrations, or the like be very heavy or coarse, similar to spur gear teeth and that they extend the entire length of the head to provide a sure grip for either the fingers or a spanner wrench.

The object of the present invention is to provide a method whereby a socket-head cap-screw can be made having a finger-grip head, which provides a sure and easy grip for the fingers by which it may be rotated within a threaded hole.

Another object of the invention is to provide a method whereby a socket-head cap-screw may be provided with a series of longitudinal grooves, serrations or ridges of a coarse nature to provide a grip for a wrench or other tool.

Another object of the invention is to provide a method of manufacturing whereby a socket-head cap-screw may be formed with a series of serrations or the like extending over the entire length of the head.

Another object of the invention is to provide a method of manufacture whereby a socket-head cap-screw is provided with a series of coarse ridges or the like upon its head without altering the original diameter of the head and which will withstand the action of a crushing or gripping tool, such as pliers.

Another object of the invention is to provide a method of manufacture whereby a socket-head cap-screw having a serrated head may be formed after the screw-blank has been severed from the bar-stock.

With these and other objects in view, my invention consists in certain new and novel construction and methods of manufacture as will hereinafter be fully described and claimed, and further illustrated in the accompanying drawing which forms a part hereof and in which like figures of reference refer to corresponding parts in all of the views, and it is understood that slight changes may be made without departing from the spirit of the invention.

In the drawing; I have illustrated the finished socket-head cap-screw and have indicated some of the steps in its manufacture, but I do not think it necessary to show either the machines or tools employed, as they are all of standard design and practice, and reference to them by name will be all that is required.

Figure 1 shows an end view of a socket-head cap-screw manufactured by the method herein described.

Figure 2 shows a side view of the same screw.

Figure 3 is an end view of a head, showing a modified form of serration.

Figure 4 shows a side view of the same head.

Figure 5 shows another modified form of serration.

Figure 6 shows a side view of the same head.

Figure 7 indicates the manner for forming the serrations after the screw-blank has been formed from the usual round bar-stock.

Referring to the drawing:

The finished product comprises a socket-head

cap-screw comprising a body-portion 10, having the threads 11, and the head 12, which is provided with the socket 13 for the usual bar-wrench or other tool, by which the screw is tightened.

As shown in Figures 1 and 2, the serrations 14 are formed by the grooves 15, and are in the form of gear teeth, of appreciable width, but shallow to provide a rugged and sure grip for the fingers, and these serrations extend for the entire length of the head 12.

As shown in Figures 5 and 6, the serrations 14 conform to the periphery of the head 12 and the sides 16 are radial from the center or axis of the cap-screw, and this form is the most desirable where a spanner wrench is to be used, or where the screw is to be tightened with a hammer and blunt tool.

As shown in Figures 5 and 6, the serrations 14 also conform to the periphery of the head 12, but the grooves 15 are circular providing an easy grip for the fingers.

In the fabrication of the socket-head cap-screw, I use a bar-stock, and this bar-stock is fed through a screw-machine in the usual manner, a cut being taken adjacent the end thereof to reduce a portion to form the screw-body, which may then be threaded, or severed from the bar; in which case the threads, serrations, and socket are formed later.

When the socket-head cap-screw is fabricated from the usual round bar-stock, the screw blank is formed from the bar-stock, and either threaded or not before the serrations are formed upon the head, which may be done by forcing the head 12 through a die 18 which is provided with the cutting teeth 19 for cutting the corresponding grooves in the head 12 as it is forced through the die 18 by the punch or plunger 20, or some other suitable means may be employed for this purpose.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. The method of making a grooved head cap-screw from round bar-stock, consisting in forming the shank of the screw by removing metal from the stock, threading the same, severing the blank from the bar leaving the head the same diameter as the original bar stock, and forming grooves in the head parallel to the axis and extending the entire length of the head without increasing its original diameter.

2. A method of making cap-screws from bar stock comprising the steps of first forming the shank by removing metal from the stock, then threading said shank, then parting the blank from the bar to form the head of the same diameter as the original bar-stock, and then forming longitudinal grooves in the head for its entire length leaving portions of the original periphery of appreciable width between said grooves and without increasing the original diameter of said head.

3. The method of making a cap-screw from bar-stock comprising the steps of first forming the shank by reducing the bar-stock to the desired diameter, then threading a portion of said shank, then parting the unreduced portion of the stock to form a head of the same diameter as the bar-stock, and then forming longitudinal grooves in the head for its entire length leaving portions of the original periphery of appreciable width between said grooves and without changing the original diameter of the bar-stock.

HENRY E. WARREN.