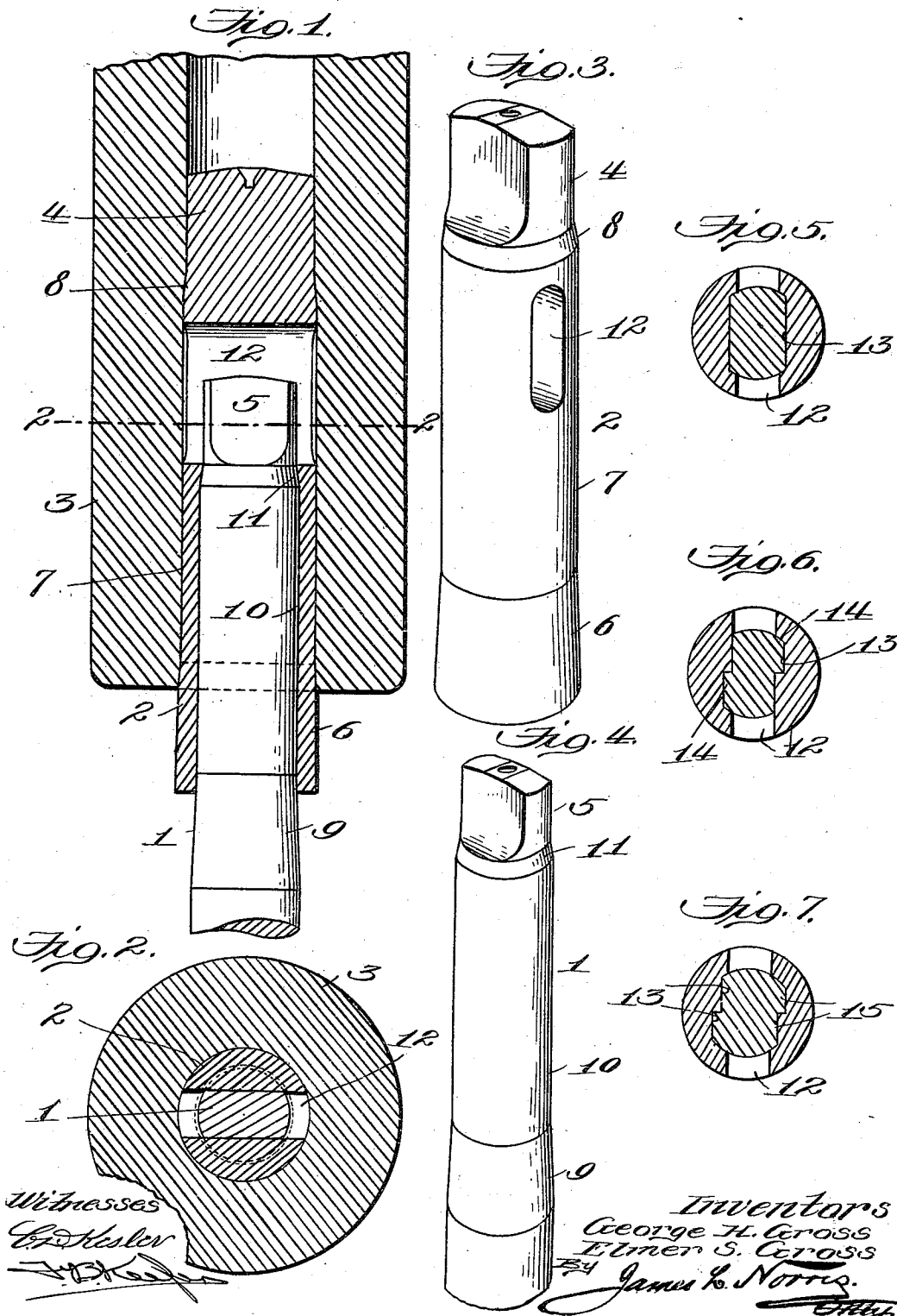


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 SHANK FOR TANG DRIVEN TOOLS OR TOOL SOCKETS.
 APPLICATION FILED JULY 7, 1909. RENEWED JULY 7, 1910.

990,545.

Patented Apr. 25, 1911.



UNITED STATES PATENT OFFICE.

GEORGE H. GROSS AND ELMER S. GROSS, OF HARRISBURG, PENNSYLVANIA.

SHANK FOR TANG-DRIVEN TOOLS OR TOOL-SOCKETS.

990,545.

Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed July 7, 1909, Serial No. 506,338. Renewed July 7, 1910. Serial No. 570,904.

To all whom it may concern:

Be it known that we, GEORGE H. GROSS and ELMER S. GROSS, citizens of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented new and useful Improvements in Shanks for Tang-Driven Tools or Tool-Sockets, of which the following is a specification.

10 This invention relates to new and useful improvements in the formation of shanks for tang driven tools and their sockets. As examples of such tools and in connection with which the present invention is of especial advantage, twist drills and reamers may be particularly mentioned.

15 It is an everyday occurrence for the end tangs to become distorted or twisted from their shanks, by reason of torsional over-stress. This is particularly the case in the use of twist drills. It is a desideratum that the inconveniences incident to this distortion and twisting off should be overcome and various means for accomplishing this have been proposed. The problem of overcoming these inconveniences may be treated from different viewpoints and the viewpoint of the present invention is the formation of a shank of peculiar character providing for an end tang of such increased strength that it will not be liable to distortion or twisting off, as an incident of the ordinary power and work for which the tool is especially designed.

20 The present invention provides an end tang of sufficient strength to resist any torsional overstress likely to be encountered in the particular kind of work for which the tool is designed. This strengthened tang is afforded by reason of the peculiar construction of the shank, which, however, in the main, embodies no departure from the established standards or principles and sacrifices none of the advantages of the ordinary tapered shank.

25 A preferred and advantageous embodiment of the invention is illustrated in the accompanying drawings, wherein—

30 Figure 1 is a longitudinal sectional view showing the invention carried out in connection with a tang driven tool and also in connection with its socket. Fig. 2 is a cross section on the line 2—2 of Fig. 1. Fig. 3 is a detail perspective view of the socket shown in Fig. 1. Fig. 4 is a detail perspective view of the tool shank shown in

Fig. 1, and Figs. 5, 6 and 7 are cross sections illustrating different forms of reinforced tangs.

Similar characters of reference designate 60 corresponding parts throughout the several views.

The tool shank is indicated generally by the numeral 1, the socket by the numeral 2, and the driving spindle by the numeral 3. 65 The socket is provided with an end tang 4 and the drill shank is provided with an end tang 5. The tangs 4 and 5 are of increased size and consequently of increased strength. Their increased size is not provided for, however, by the addition of metal, but rather by taking less metal from the upper end of the shank of the tool or of the socket.

The socket has at its lower end an exterior taper, as 6, of standard degree which merges with a cylindrical exterior surface, as 7, the latter at its upper end merging with a comparatively short exterior taper, as 8, from which the tang 4 projects. By virtue 80 of the fact that the socket has its major portion of cylindrical and not of tapered form, as in the ordinary constructions, the tang 4 is of increased size and strength, although it does not differ in form from an ordinary tang. The bore of the spindle 3 is of course shaped conformably to the exterior surface of the socket and contacts therewith throughout its extent.

The tool shank has at its lower end a 90 taper, as 9, of standard degree which merges with a cylindrical surface, as 10, the latter, at its upper end merging with a comparatively short taper, as 11, from which the tang 5 projects. The tang 5 also has the characteristics of increased size and strength by virtue of the shank construction described. The bore of the socket 2 is shaped to conformably receive the tool shank and to contact therewith throughout its extent, 100 in order that the necessary frictional binding of the shank and the socket may be had.

The socket is provided with the usual transverse slot, as 12, the side walls of which have recesses, as 13, to receive the side portions of the tang 5, as shown in Fig. 5. The tang may, however, be of special form, as shown in Fig. 6, in which its projecting side portions, as 14, extend only for a portion of its width, or, as shown in Fig. 7, in 110 which its projecting side portions, as 15, are stepped. It will be understood that in

the ordinary tang constructions, the transverse thickness of the tang is slightly less than the width of the slotted opening, whereas in the present invention, it is
5 greater than the ordinary width of the opening, so that the recesses 13 (also shown in Figs. 6 and 7) are necessary. It will also be understood that a socket embodying the invention may have an ordinary tapered
10 bore to receive a tool shank of ordinary form and that a tool shank embodying the invention may be fitted in a socket having an ordinary tapered exterior surface.

Having fully described our invention, we
15 claim:

1. A shank for tang driven tools or tool sockets, having its exterior surface formed first as a taper, then cylindrical, and again as a taper extending in the same direction
20 as the first taper, and having a tang projecting from the end at which the last taper

is formed, the tapered and cylindrical surfaces merging directly into one another in the order recited.

2. A shank for tang driven tools or tool sockets, having its exterior surface partially tapered and partially cylindrical, the cylindrical surface extending directly from the diametrically smaller end of the tapered surface, the shank having a tang projecting
30 from the end toward which the cylindrical surface extends from the tapered surface, in combination with a socket in which the shank is conformably fitted.

In testimony whereof we have hereunto
35 set our hands in presence of two subscribing witnesses.

GEORGE H. GROSS.
ELMER S. GROSS.

Witnesses:

GEORGE ROST,
Mrs. GEORGE ROST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
