

Oct. 19, 1926.

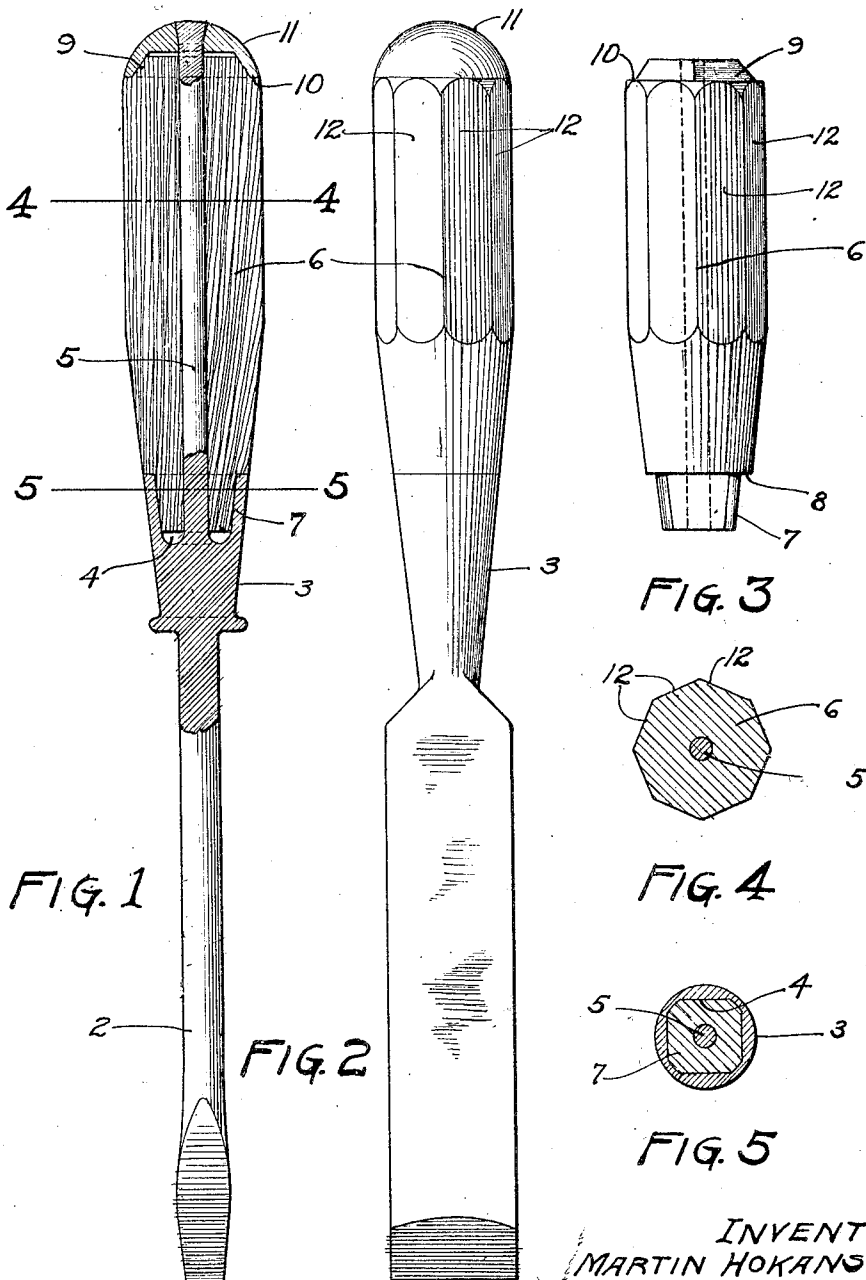
1,603,771

M. HOKANSON

TOOL HANDLE.

Filed Sept. 5, 1922

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

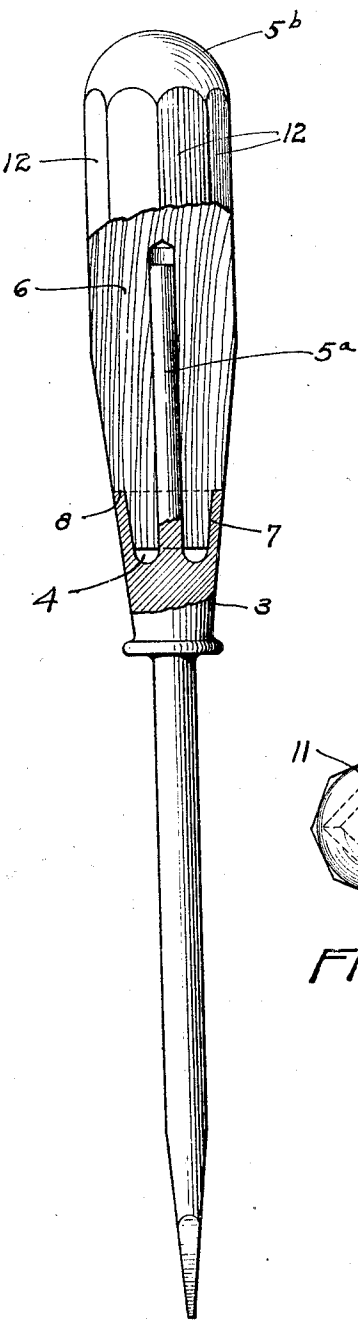


FIG. 7

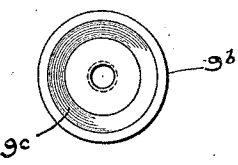


FIG. 10

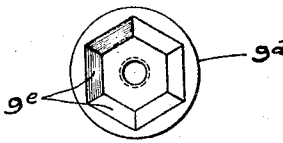


FIG. 9

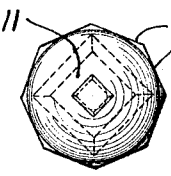


FIG. 6

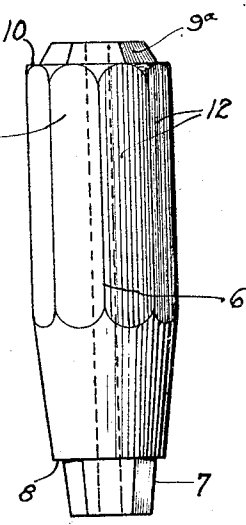


FIG. 8

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TOOL HANDLE.

Application filed September 5, 1922. Serial No. 586,210.

The object of my invention is to provide an improved screw-driver shank and ferrule with provision for transmitting a twisting strain on the handle directly and positively to the shank of the tool.

A further object is to provide a tool handle having such a connection with the shank of the tool that the end of the handle is adapted to receive the impact resulting from a blow of a hammer, as when the tool is used as a chisel, or for prying purposes, without any damage resulting to the handle or the tool, or the handle becoming loosened on the shank, or the tool becoming unfitted by such use for the purpose for which it was normally intended.

A further object is to provide a tool handle in which provision is made for the direct transmission of the blow or impact of a hammer through the handle and shank to the end or edge of the tool.

A further object is to provide improved means for protecting the ends of the handle and preventing injury thereto when the outer end is struck by a hammer or other tool.

And a still further object is to provide a handle having an improved gripping surface to the end that it will not slip in the hand of the user, but may be easily and securely held in any position and for any use to which the tool is subjected.

Other objects of the invention will appear from the following detailed description.

In the accompanying drawings forming part of this specification,

Figure 1 is a longitudinal sectional view through the handle of a screw-driver illustrating my invention applied thereto.

Figure 2 illustrates the invention applied to a carpenter's chisel.

Figure 3 is a detail view of the handle removed from the shank of the tool.

Figure 4 is a sectional view on the line 4-4 of Figure 1.

Figure 5 is a sectional view on the line 5-5 of Figure 1.

Figure 6 is an end view of Figure 1 showing the polygonal socket in the cap.

Figure 7 is a view partially in section illustrating the invention applied to a

screw-driver adapted for the use of electricians.

Figure 8 shows a form of handle corresponding to Figure 3 but with its outer end hexagonal in cross-section.

Figure 9 is a view of a cap hexagonal in cross-section to fit the handle shown in Figure 8.

Figure 10 illustrates a frusto-conical form of cap to fit the conical end of a handle.

In the drawing, 2 represents the shank of a screw-driver terminating at one end, in the usual wedge-shaped portion, for entering the slot in the head of a screw. The shank of the screw-driver will have a spring temper so that it can be used for prying purposes as in opening boxes and the like; and when the ends of the handle are strengthened and protected as herein proposed, the tool may be struck severe blows without injury to any part of the tool and subjected to rough usage such as would utterly ruin a screw-driver as ordinarily made. The user may easily put a chisel edge on the tool to adapt it for metal or wood-cutting purposes.

3 is a ferrule that is formed integrally with the shank in any way, preferably by forging. This ferrule has a socket 4 therein that is tapered gradually, decreasing in area from its outer towards its inner end, and polygonal in cross-section, having three or more side walls against which the end of the tool handle is seated.

The ferrule forged on the shank by an improved process becomes integral therewith and the walls of its socket not only serve to protect the inner end of the handle, preventing it from splitting or chipping, but also absorb the shocks or impacts resulting from blows on the outer end of the handle, and transmit such shocks directly to the shank of the tool. This integral ferrule with its inside polygonal cross-section socket serves also as a means to prevent the handle from twisting or turning on the shank and eliminates the necessity of puncturing and weakening the shank for the insertion of a ferrule-locking pin. That portion of the shank supporting the ferrule is therefore fully as strong as any other part, and the ferrule not only transmits the twisting strain of the handle directly to the screw-

engaging end of the screw-driver, but in addition forms a substantial bearing for the inner end of the handle on the shank.

A spindle 5 projects outwardly from the recess in the ferrule concentric with the shank 2, forming a continuation thereof and preferably of smaller diameter.

A handle 6 of suitable material, preferably wood, has a tapered portion 7 formed on one end to fit into the socket 4 in the ferrule, a square shoulder 8 being provided at the point of intersection of the main portion of the handle with the part 7 to contact with the end of the ferrule and be seated firmly thereon, transmitting downward pressure from the handle to the ferrule, and from thence to the shank of the tool.

It is desirable to provide as much bearing surface as possible between the handle and the ferrule, and this is accomplished by the form of the socket in the ferrule, and the provision of the shoulder on the end of the handle contacting with the end walls of the ferrule, and the abutting ends of the ferrule and handle will be drawn snugly together by the upsetting of the outer end of the spindle.

The upper end of the wooden handle is preferably provided with a reduced end portion 9 and a shoulder 10, adapted to receive a hollow terminal cap or button 11, apertured to receive the end of the spindle 5. This cap may be of any suitable material, but I prefer to make it out of tool steel and harden it so that it cannot be defaced by ordinary service. The function of this cap is to provide a protection for the wooden handle when subjected to hammer blows or other rough usage, to which tools of this kind are frequently subjected.

It will be noted that this cap has a broad bearing surface on the outer end of the handle to distribute the impact of a blow evenly thereon, and the outer surface of the cap is rounded and smoothed so that it will fit the palm of the hand—having no projections or sharp edges to injure the user.

I also prefer to form the wooden handle 6 with a plurality of flat surfaces 12, as indicated in Figure 4, thus, providing a handle which may be conveniently gripped by the hand, and, also one formed to provide sufficient resistance to the palm of the hand to prevent it from slipping thereon, when the handle is held with a reasonably firm grip.

To assemble this novel tool handle the spindle 5 is inserted into the longitudinal aperture provided in the wooden handle 6 until the upper edge of the ferrule 3 engages the shoulder 8 of the handle. The cap 11 is then placed upon the reduced portion 9 of the handle with its lower edge engaging the shoulder 10, the terminal end of the spindle passing through the aperture provided in the cap. The end of the spindle, being fair-

ly soft, is then upset or headed and finished off, as shown in Figure 1, thus, presenting a smooth rounded end, which will fit the hand and may be struck a severe blow by a hammer without injury to the tool.

The aperture in the cap 11, I prefer to make rectangular in cross-section, preferably square as indicated in Figure 6, so that when the end of the spindle is thrust through this aperture and headed, the metal in the spindle, assuming that it is round in cross-section, will spread out and fill the square opening, and bearing on the walls thereof will resist a twisting strain on the cap. Of course, the end of the spindle may be formed to fit the cap in the first instance, but a round spindle is a little more convenient to make, and when the end is upset or headed, the metal will spread out and fill the aperture and bear firmly on the walls thereof.

I have shown the aperture as square, but of course, it may be made in any other convenient form against the wall of which the spindle may be seated, and as indicated in Figure 1, the aperture in the cap will be tapered so that the cap will be locked on the spindle when the end thereof is headed.

It will be noted with reference to Figure 3, that the inner face of the cap 11 engages the square or frusto-pyramidal end portion 9 of the handle, and transmits the twisting strain there to the cap, of course, being fashioned to fit the flattened end surfaces shown in this instance as square in cross-section. The flanges of the cap bearing on the outer face of the handle end, tend to contract the wood and prevent it from expanding or splitting when struck by a hammer.

In Figure 7, I have shown a modified construction to adapt the tool for the use of an electrician where an insulating medium between the hand and the metal part of the tool is desirable. This modification consists in providing a shorter spindle 5^a, extending only partially through the handle of the tool. The outer surface of the handle is provided with a series of flattened gripping surfaces as described, and the outer end is rounded to fit the palm of the hand as indicated at 5^b. With this form of tool the twisting strain will be transmitted through the wooden part of the handle to the end that is seated in the integral ferrule on the shank; the hand of the user being thoroughly insulated while the screw-driver is in use.

In Figure 8, the outer end of the handle is shown provided with a series of tapered surfaces 9^a, and this portion of the handle may be frusto-pyramidal or polygonal in cross-section. In this illustration, I have shown the part hexagonal in form.

In Figure 9, a cap 9^d having an hexagonal inner surface 9^e, is shown adapted to fit the end of the handle shown in Figure 8. When

this type of cap is used, the twisting strain will be transmitted from the handle to the cap, and from thence to the spindle and the shank. It will be understood of course, 5 that this cap and the end of the handle may be square in cross-section, as shown in Figures 1 and 3 or provided with any suitable number of faces. The function of the frusto-pyramidal, or polygonal form being 10 to present flattened surfaces to the twisting strain imparted to the handle by the user, and to positively transmit such strain to the shank of the tool without any waste of effort or lost motion in the handle.

15 Figure 10 illustrates a cap 9^b having a frusto-conical surface 9^c in which the resistance to the turning of the cap would be dependant upon the frictional contact of the inner surface thereof with the handle. Both 20 of these caps may have polygonal apertures if preferred.

I have shown this invention applied to different types of screw-drivers and one type of edged tool, but it will be understood 25 that the same idea may be embodied in handles for a great variety of tools. I do not, therefore, wish to be confined to the specific applications of the invention as herein shown and described.

30 I claim as my invention:

1. A tool comprising a shank, an integral ferrule thereon having a socket therein, a spindle projecting from one end of said

ferrule through said socket, a handle having one end seated in said ferrule socket, 35 and provided with a central orifice to receive said spindle, a cap fitting the outer end of said handle and having an orifice extending therethrough through which said spindle projects, said orifice being polygonal in 40 cross-section and the end of said spindle being upset or headed therein to conform to and fit snugly against the walls of said orifice.

2. A tool comprising a ferrule having a 45 tapered socket therein, a spindle projecting through said socket from one end of said ferrule, a tool shank integral with said ferrule and projecting from the other end thereof, a handle having an end tapered to 50 fit the socket in said ferrule, and also having a bore to receive said spindle, a cap having a rounded outer surface, and a tapered socket in its under surface to receive the correspondingly-shaped outer end of said 55 handle, said cap having a flared orifice therethrough through which the outer end of said spindle projects and wherein said spindle is endwise upset and made to conform to the shape of said orifice, and the 60 handle is forcibly compressed between the said ferrule and through said cap.

In witness whereof, I have hereunto set my hand this 22nd day of August, 1922.

MARTIN HOKANSON.