April 15, 1930. T. F. CONNORS 1,754,415

LOAD BEARING TOOL

Filed July 1, 1927

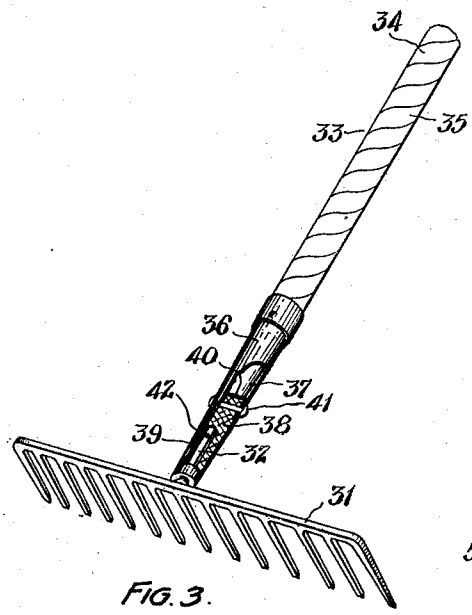


FIG. 3.

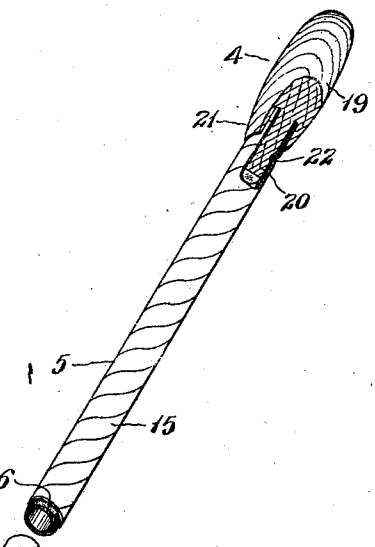


FIG. 1.

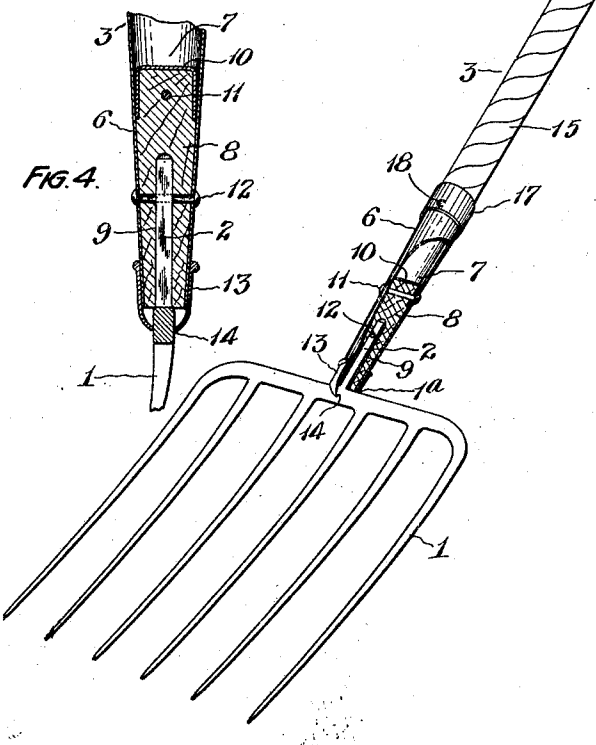


FIG. 4.

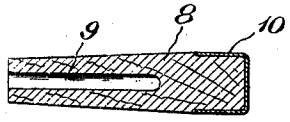


FIG. 2.

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Patented Apr. 15, 1930 1,754,415

UNITED STATES PATENT OFFICE

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LOAD-BEARING TOOL

Application filed July 1, 1927. Serial No. 202,839.

This invention relates to tools and more particularly to such load bearing tools as forks, rakes and the like, such tools being characterized by elongated shaft-like handles which are secured to attaching shanks carried by the tools proper.

The chief objects of this invention are comprised in the provision of a tool of the class referred to having an improved form of handle and an improved means for securing the handle to the tool proper.

Other objects more or less incidental or ancillary to the foregoing will be apparent to those skilled in the art from an examination of the following description in connection with the accompanying drawings.

In the drawings:

Fig. 1 is a perspective view showing one form of my improved tool, some parts being broken away and others in section.

Fig. 2 is an enlarged detail sectional view showing the wooden attaching plug removed from the tool.

Fig. 3 is a fragmentary perspective view showing a modified form of my improvement.

Fig. 4 is an enlarged fragmentary sectional view illustrating the manner of attaching the tool proper to the handle.

Referring first to the construction illustrated in Figs. 1 and 2, my improved load bearing tool comprises a tool proper which in this instance is in the form of a fork 1, an elongated shank 2 formed integral with the fork, a tubular metallic handle 3 secured to the free end of the shank, and a grip member 4 secured within the outer end of the tubular handle.

The tubular handle 3 comprises an elongated body portion or shaft section 5 of uniform circular cross section, and a tapered reduced extension or socket member 6 formed integral with the body portion. The shank 2 fits within and is firmly secured to the tapered extension 6 of the handle. The interior walls of the reduced tubular extension are tapered towards the outer open end thereof to form a tapered bore or socket 7 which receives a correspondingly tapered hardwood plug 8 with a snug fit. The small end of the plug 8 is provided with an elongated axially arranged recess 9 which receives the free end of the shank 2. The larger end of the plug 8 is provided with a tightly fitting metallic cap 10. The plug fits tightly within the reduced tapered extension and is secured in place by a rivet 11 which extends through the reduced extension 6, the metallic cap 10 and the wooden plug 8. The shank 2 is firmly secured within the recess 9 by means of a second rivet 12 which extends through the extension 6, the wooden plug 8, and shank 2. The rivets are arranged in planes at right angles to each other so as to prevent splitting of the plug.

In heading the rivet 11 the side walls of the metal cap are pressed into the wooden plug thus very firmly securing the plug within the reduced extension. The metal cap serves as an additional means to prevent the plug 8 from splitting during both manufacture and subsequent use of the tool. As the tool shank 2 is preferably, as shown, square or rectangular in cross section, when it is driven with a snug fit into the round hole 9 in the plug 8 there is a tendency to split the plug over the rivet 11, but this is prevented by the cap 10.

A tapered round ended cap 13 with a slot 14 in its closed end fits over the lower end of the reduced extension 6 and embraces the body portion of the fork 1 at the front and rear sides thereof thus providing a neat finish for the lower end of the handle. The cap 13 is applied to the reduced extension previous to the attachment of the fork. When the shank is in position within the reduced extension the upper edge 1^a of the fork engages the lower end of the cap and serves to hold it firmly in position.

Due to the heat absorbing quality and high thermal conductivity of metal, it is necessary in order that a comfortable gripping surface may be had for the hands of the user in cases where the tool handle is exposed to the hot sun, to cover the exterior surfaces thereof with some suitable heat-insulating material. Accordingly, the cylindrical body portion 5 is covered with a layer of composition cork which is in the form of a ribbon-like strip 15 wound spirally thereupon with the adjacent

edges of neighboring convolutions arranged in abutting relation. The composition cork strip is secured to the exterior surface of the body portion 5 by means of a suitable waterproof cement indicated at 16 which is applied to the strip as it is being wound upon the body portion. The cement is applied in slight excess so that it will flow into and fill the spaces between the abutting edges of the cork and thus firmly secure and integrate the whole after it has dried. The wrapped surface is then treated with sandpaper, or some like material so as to remove any excess cement, thus producing a heat-insulated gripping surface which is smooth and otherwise suitable for the intended use.

A metal ferrule 17 is placed over the lower end of the composition cork wrapping to protect the same and is secured to the handle at the juncture of the cylindrical body portion and reduced extension by any suitable means such as prick punching, indicated at 18.

I provide the handle with a grip member 4 which comprises an elongated gripping portion 19 which is of sufficient length to accommodate the hand of the user, an extension 20 which tightly fits within the open upper end of the cylindrical body portion 5 and an overlapping portion 21 which fits over the outer end of the composition cork wrapping and protects the same as in the case of the metal ferrule 17. The extension 20 is secured within the open end of the body portion 5 by means of prick punching 22 and provides in addition to a means for securing the grip member to the handle a reinforcing means for the outer end of the cylindrical body portion.

My improved tool is manufactured and assembled in the following manner. I first provide an elongated open-ended tube of uniform circular cross section and swage one end thereof to provide the reduced extension having the tapered bore. The wooden plug with its tightly fitting metal cap 10 is then dropped through the open upper end of the cylindrical body portion and forced in place with a snug fit within the tapered bore of the reduced extension 6. The plug is secured in place by the rivet 11 which passes through the reduced extension, metal cap, and wooden plug. The handle thus formed is then placed in the wrapping machine and the composition cork spirally wound upon and cemented to the exterior surface of the cylindrical body portion. The ferrule 17 is then placed over the lower end of the cork wrapping and secured in place by prick punching. The handle is then placed in a suitable supporting rack to dry, after which it is treated with sandpaper or the like to remove the excess cement. The grip member 4 is then driven in the upper open end of the cylindrical body portion and is also secured in place by prick punching. Next, the cap 13 is placed over the lower end of the reduced extension and the shank of the tool proper is driven into the axially arranged recess formed in the outer end of the wooden plug and firmly secured in place by the rivet 12.

In Fig. 3 I have shown my invention as applied to a different type of tool proper which in this instance is in the form of a rake 31. A shank 32 is formed integral with the rake and extends rearwardly therefrom. As in the former construction, I provide a tubular metallic handle 33 having an elongated body portion 34 of uniform circular cross section which is covered with a layer of composition cork in the form of a ribbon-like strip 35 wound spirally upon and cemented to the exterior surface thereof, and a reduced extension 36 formed integral with the body portion and having an outwardly tapering bore or socket 37, within which the shank 32 is firmly secured. I provide a correspondingly tapered wooden plug 38 having an elongated axially arranged recess 39 formed in its outer end and a metal cap 40 on its inner end. The plug 38 fits snugly within the tapered bore 37 of the reduced extension and is firmly secured in place by a rivet 41 extending through the reduced extension 36, cap 40 and plug 38. The free end of the shank 32 is firmly secured within the recess 39 by a second rivet 42 extending through the reduced extension 36, plug 38 and shank 32. As in the prior construction the securing rivets are arranged in planes extending transversely to the axis of the handle and at right angles to each other so as to prevent them from splitting the plug.

The tubular metallic handle and the very strong and rigid connection between the handle and the tool proper give my improved tool as an entirety great strength and durability. At the same time the slightly yielding, smooth surface of the heat-insulating covering provides a hand gripping surface that is very satisfactory in the use of the tool. Also the handle and the connection between the handle and the tool proper presents a very neat appearance. The elongated tubular handle with cork covering which has been shown and described is not claimed herein as it constitutes the subject matter of my copending application Serial No. 202,840.

While I have presented the preferred form of construction and have illustrated how this construction may be applied to different types of tools, it is to be understood that there can be wide variations in both the construction and in the applications thereof without departing from the invention, the scope of the invention being indicated by the appended claims.

What I claim is:

1. In a load bearing tool, the combination of a tool proper; an elongated metallic shank extending from the said tool proper; a handle

comprising an open-ended tubular metallic socket member; and means for securing the free end of the said shank within the said socket member comprising a wooden plug tightly fitting within the tubular socket member and having an elongated axially arranged recess formed in the outer end thereof receiving the free end of the said shank, a metallic cap closely fitting over the inner end of said plug, a securing rivet extending through the socket member, cap and plug, and a second securing rivet extending through the socket member, plug and shank.

2. In a load bearing tool, the combination of a tool proper; an elongated metallic shank extending from the said tool proper; an open-ended tubular metallic socket member having a bore therethrough tapering towards the outer open end thereof; and means for securing the free end of the said shank within the said socket member comprising a correspondingly tapered wooden plug tightly fitting within the said bore and having an elongated axially arranged recess formed in the smaller end thereof receiving the free end of the said shank, a metallic cap closely fitting over the larger end of said plug, a securing rivet extending through the socket member, a cap and plug, and a second securing rivet extending through the socket member, plug and shank, the free end of said shank terminating in an intermediate portion of said plug longitudinally spaced from said cap.

In testimony whereof, I hereunto affix my signature.

THOMAS F. CONNORS.