United States Patent

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[54] **IMPACT TOOL**
9 Claims, 3 Drawing Figs.

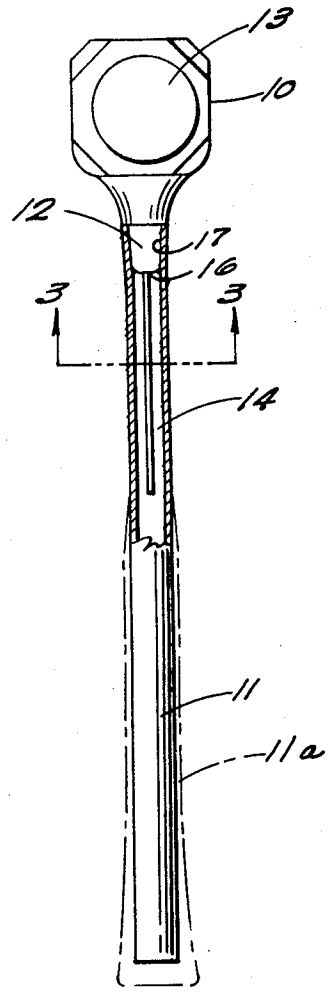
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[51] **Int. Cl.** **B25d 1/00,** B25g 3/34
[50] **Field of Search** ..... 145/2 R, 29 R, 36, 61 R, 61 H, 61 J; 306/32, 33

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ABSTRACT: The tool has a head with a tang to which is brazed a tubular steel handle. The handle is generally elliptical in cross section, and a reinforcing rib is located adjacent the head and lies in the plane of the major axis of the handle ellipse. The reinforcing rib is secured both to the tang and to the inside of the tubular steel handle.



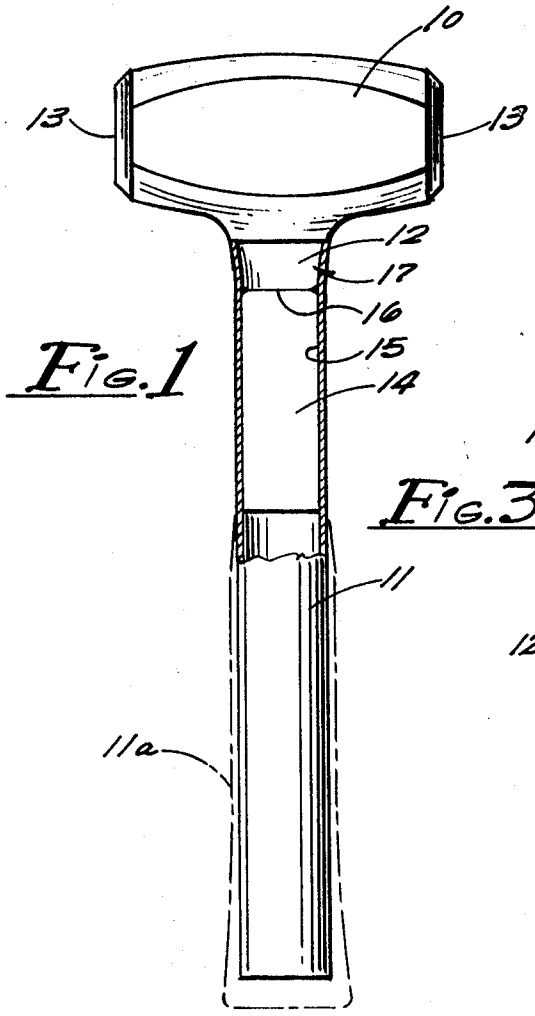


FIG. 1

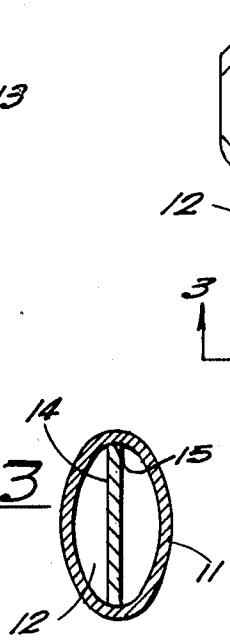


FIG. 3

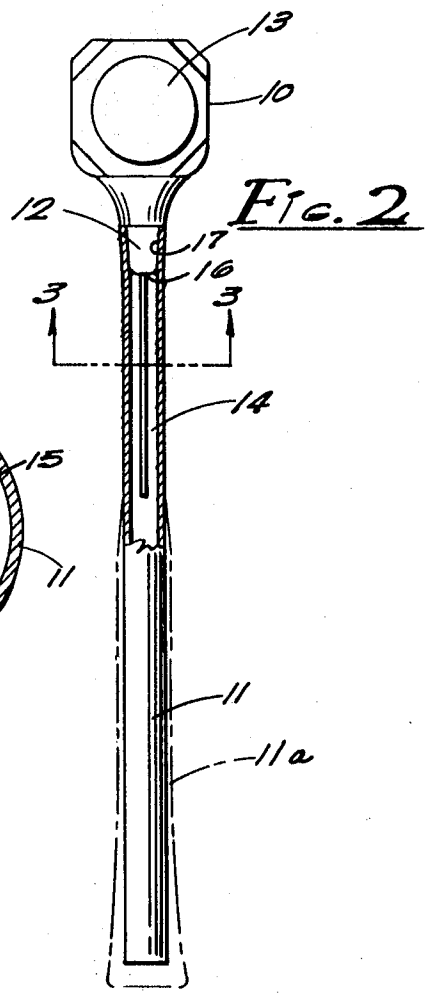


FIG. 2

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IMPACT TOOL

BACKGROUND

The invention pertains generally to hand tools, and more particularly to an improved hand tool of the impact or striking type, such as hatchets, hammers, etc.

A wooden-handled impact tool tends to break at the intersection of the handle and head. This is due to misblows on the handle and/or concentration of stresses at the juncture of the handle and head. In the past, tools having a solid shank adjacent the head have been developed to correct the abovementioned deficiency. Solid shank handles, however, add to the weight of the tool and may move the center of percussion off the head, thereby causing a stinging sensation in use. Tubular handles do not have the disadvantage of the solid shank, however, the tubular handle tends to be dented by overstrikes or misblows on the handle. Such a dent will throw the tool head out of its normal position and thereby destroy its usefulness.

SUMMARY

Is is a general object of the present invention to provide an impact tool which overcomes the objectionable features of prior tools and is substantially indestructible in ordinary use.

It is another object of the present invention to provide an impact tool which has a comparatively lightweight handle.

It is a further object of the invention to provide an impact tool with a tubular steel handle which ordinarily will not be dented by misblows or overstrikes.

Still another object is to provide an impact tool with a tubular handle and having a reinforcing rib adjacent the head.

These, and other objects and advantages of the present invention, will become apparent as the same becomes better understood from the following detailed description when taken in conjunction with the accompanying drawings.

DRAWINGS

FIG. 1 is a front elevational view of a preferred embodiment of the present invention and having a portion broken away for better illustration;

FIG. 2 is a side elevational view as seen from the right of FIG. 1 and also having a portion broken away for better illustration; and

FIG. 3 is a cross-sectional view taken along line 3—3 of FIG. 2 and on an enlarged scale.

DESCRIPTION

Reference is now made more particularly to the drawings which illustrate the best presently known mode of carrying out the invention and wherein similar reference characters indicate the same parts throughout the several views.

The impact tool, or striking tool, of the present invention is, in the embodiment shown, in the form of a mallet or hammer. The tool includes a head **10** and a tubular handle **11**. The handle **11** may be provided with a hand grip **11***a* as shown in phantom lines on the drawing. The head is formed with an integral peg or tang **12** which is preferably tapered and extends into the end of the tubular handle **11**. In the embodiment illustrated, the head has oppositely facing striking faces **13**. It is to be understood, however, that other types of impact tools may be utilized in which the head extends crosswise of the handle and, with the handle, defines a central plane in which the tool is ordinarily used.

The tubular handle **11** has an oblong or elliptical cross section. These terms are not to be limited to an exact ellipse. However, when the handle has an oblong cross section, it is intended that it have a major axis extending in the aforementioned plane of ordinary use of the tool. In its preferred form, the handle **11** has a relatively thin steel wall and extends from the head **10** and surrounds the tang **12** of the head.

In order to reinforce the tubular handle **11** without markedly increasing the overall weight of the tool, a relatively thin

reinforcing rib **14** is disposed in the handle. Preferably, the reinforcing plate or rib **14** lies in the plane of ordinary usage of the tool. It is contemplated that the rib **14** have a press or drive fit within the tubular handle **11** and that it be sufficiently tight to brace the tubular handle to prevent buckling or denting in the event of misblows or other exceptional strains on the handle. Preferably, means is provided for securing the longitudinal edges of the rib **14** to the inside of the tubular handle **11**. Such means may be a very tight press fit, or the longitudinal edges may be brazed to the handle as at **15**. Preferably, the rib **14** has one end secured to the tang **12**, as by brazing designated **16**. The tubular handle **11** is also preferably brazed to the tang **12** as at **17**.

In the embodiment shown in FIGS. **1–3**, the reinforcing rib **14** is a flat plate having a width approximating the major axis of the internal ellipse of the tubular handle **11**. The rib can be of any suitable thickness and length depending upon the weight of the tool; however, the rib **14** is preferably a relatively thin plate having a thickness which is a small fraction of the overall width of the tubular handle. In the embodiment illustrated, the rib **14** has a length sufficient to reinforce the portion of the handle which is subject to misblows and denting; and thus terminates prior to the portion of the handle ordinarily gripped by the hand of a user. In this manner, the rib reinforces the handle in the plane of ordinary use and protects against misblows and the like without adding undue weight to the tool.

While a preferred embodiment of the invention has herein been illustrated and described, this has been done by way of illustration and not limitation, and the invention should not be limited except as required by the scope of the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In an impact tool having a head portion set crosswise of an elongated tubular handle and both lying in a plane in which the tool is ordinarily used, a tang integral with the head and extending laterally therefrom, and means for securing the tubular handle to the tang; the improvement comprising: a reinforcing rib in the tubular handle; the rib being relatively thin in thickness and lying in the plane of use; the rib having longitudinal edges with a press fit in the tubular handle and one end engaged with the tang; and means for securing the one end of the rib to the tang; whereby the handle is reinforced in the plane of use.

2. An impact tool as set forth in claim **1** wherein the tubular handle is elliptical in cross section, and the reinforcing rib lies in the plane of the major axis of the handle ellipse.

3. An impact tool as set forth in claim **2** wherein the reinforcing rib is a flat plate having a width approximating the major axis of the internal ellipse of the tubular handle

4. An impact tool as set forth in claim **2** wherein the tang has an elliptical cross section, and the tubular handle is shaped to encompass the tang.

5. A hand striking tool having a head and a handle, characterized in that the handle comprises a hollow, thin-walled, metal tubular member extending from the head; a thin, metal, reinforcing rib in the tubular handle and extending in the direction of the head portion of the tool; said reinforcing rib having longitudinal edges tightly engaged with the inside of the tubular handle and one end engaged with the head; and means for securing the longitudinal edges and the one end to the handle and head respectively.

6. A hand striking tool as set forth in claim **5** wherein the head includes a short tang disposed in the end of the handle and brazed thereto, the one end of the reinforcing rib is engaged with the tang, and the last-mentioned means is a brazing.

7. A hand striking tool as set forth in claim **6** wherein the tang has an elliptical cross section, the tubular handle is elliptical in cross section and shaped to encompass the tang, and the reinforcing rib lies in the plane of the major axis of the handle ellipse.

8. A hand striking tool as set forth in claim 7 wherein the reinforcing rib is a solid flat plate of rectangular cross section and having a width approximating the major axis of the internal ellipse of the handle.

9. A hand striking tool as set forth in claim 5 wherein the tubular handle is elliptical in cross section; and the reinforcing rib is a solid flat plate of rectangular cross section and having a width equal to the major axis of the internal ellipse of the handle and having a press fit therewith.