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(54) **Metal hand tool and method for manufacturing the same**

(57) A metal hand tool is fabricated by a method to manufacture the metal hand tool, the metal hand tool has a body (10) with an outer surface and an preparing region, a printing layer (20) with a mark (21) and an electroplate layer (30). The method has a forming step, a printing step and an electroplating step. In the preparing step, the body (10) is made from metal. In the printing step, the printing layer (20) is printed on the preparing region in the outer surface of the body (10) and the mark (21) is enchased on the printing layer (20) with an external surface. In the electroplate step, the electroplate layer (30) is electroplated the external surface of the mark (21) and the outer surface of the body (10) except the preparing region with the printing layer (20) to complete the metal hand tool.

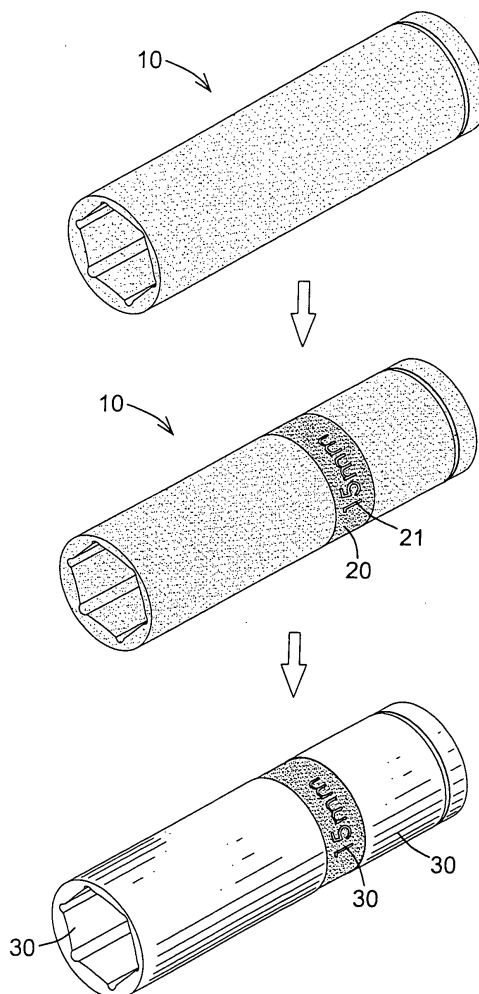


FIG. 1

Description

1. Field of the Invention

[0001] The present invention relates to a hand tool, and more particularly relates to a metal hand tool and a method to manufacture the metal hand tool.

2. Description of Related Art

[0002] Metal hand tools such as socket bits, wrenches, ratchet wrenches and screwdrivers, and are used frequently in our lives. A mark with drawings or words is manufactured with the metal hand tool to show the trademark and the standards of the metal hand tool.

[0003] In the past, there are two conventional methods for manufacturing the mark with the metal hand tool. The first method for manufacturing the mark with the metal hand tool is formed a salient or an indent to take as the mark when casting the metal hand tool, then electroplating the metal hand tool with an electroplate layer. However, the metal hand tool is electroplated with the same color, and this cannot let users see the mark obviously and clearly.

[0004] The second method for manufacturing the mark with the metal hand tool is electroplated the metal hand tool after casting the metal hand tool, and then printing a layer with multiple colors on the metal hand tool to take as the mark. This method can let users see the mark obviously and clearly. However, the printing layer cannot mount securely around the electroplate layer and this may make the printing layer falling off from the metal hand tool. In addition, the printing layer may fall off when rubbing against the metal hand tool.

[0005] Therefore, the present invention provides a metal hand tool and a method to manufacture the metal hand tool to mitigate or obviate the aforementioned problems.

[0006] The main objective of the present invention is to provide a metal hand tool and a method to manufacture the metal hand tool.

[0007] A metal hand tool in accordance with the present invention is fabricated by a method to manufacture said metal hand tool, and said metal hand tool has a body with an outer surface and an preparing region, a printing layer with a mark and an electroplate layer.

[0008] The method to manufacture the metal hand tool in accordance with the present invention comprises a forming step, a printing step and an electroplating step. In the preparing step, the body is made from metal. In the printing step, the printing layer is printed on the preparing region in the outer surface of the body and the mark is enched on the printing layer with an external surface. In the electroplate step, the electroplate layer is electroplated the external surface of the mark and the outer surface of the body except the preparing region with the printing layer to complete the metal hand tool.

[0009] Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

5 IN THE DRAWINGS:

[0010]

Fig. 1 is a perspective view of manufacturing a metal hand tool in accordance with the present invention; Fig. 2 is an enlarged cross section side view of the metal hand tool in Fig. 1; and Fig. 3 is a block diagram of manufacturing the metal hand tool in Fig. 1.

[0011] With reference to Figs. 1 to 3, a metal hand tool in accordance with the present invention is made by a method in accordance with the present invention for manufacturing the metal hand tool.

[0012] The metal hand tool is made of metal and comprises a body (10), a printing layer (20) and an electroplate layer (30).

[0013] The body (10) is made of casting or forging and has an outer surface and a preparing region. The preparing region is defined on the outer surface of the body (10).

[0014] The printing layer (20) is printed on the preparing region in the outer surface of the body (10) with a signal color or multiple colors and has a mark (21). The mark (21) is enched on the printing layer (20) by the signal color or the multiple colors and has an external surface.

[0015] The electroplate layer (30) is electroplated on the external surface of the mark (21) and the outer surface of the body (10) except the preparing region with the printing layer (20) to protect the metal hand tool. In addition, the electroplate layer (30) can be a signal layer or multiple layers. The mark (21) can be presented as a three-dimensional effect when the electroplate layer (30) is electroplated with multiple layers.

[0016] The method for manufacturing the metal hand tool comprises (a) a forming step, (b) a printing step and (c) an electroplating step.

[0017] The forming step comprises manufacturing the body (10) with an outer surface and a preparing region by casting or forging.

[0018] The printing step comprises printing signal color or multiple colors on the preparing region in the outer surface of the body (10) to form a printing layer (20) and enching a mark (21) with an external surface on the printing layer (20).

[0019] The electroplating step comprises electroplating an electroplate layer (30) on the external surface of the mark (21) and the outer surface of the body (10) except the preparing region with the printing layer (20) to complete the metal hand tool.

[0020] The metal hand tool and the method to manufacture the metal hand tool have the following advantages:

es.

1. The electroplate layer (30) is electroplated on the external surface of the mark (21) and the outer surface of the body (10) except the preparing region with the printing layer (20) to protect the metal hand tool. This can let users see the mark obviously and clearly.
2. The printing layer (20) is printed securely around the outer surface of the body (10) and this can prevent the printing layer (20) from falling off the metal hand tool.
3. The mark (21) can be presented as a three-dimensional effect when the electroplate layer (30) is electroplated with multiple layers.

[0021] Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and features of the invention, the disclosure is illustrative only. Changes may be made in the details, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

Claims

1. A metal hand tool being made of metal and having a body (10) with an outer surface and a preparing region being defined on the outer surface of the body (10), and the metal hand tool being **characterized in that:**
 - a printing layer (20) being printed on the preparing region in the outer surface of the body (10) and having a mark (21) being enched on the printing layer (20) with an external surface; and an electroplate layer (30) being electroplated on the external surface of the mark (21) and the outer surface of the body (10) except the preparing region with the printing layer (20).
2. A method for manufacturing a metal hand tool that has a body (10) with an outer surface and a preparing region, a printing layer (20) with a mark (21) and an electroplate layer (30), and the method for manufacturing a metal hand tool being **characterized in that:**
 - (a) a forming step comprising forming the body (10) with the outer surface and the preparing region;
 - (b) a printing step comprising printing the printing layer (20) on the preparing region in the outer surface of the body (10); and enching the mark (21) with an external surface on the printing layer (20); and

(c) an electroplating step comprising electroplating the electroplate layer (30) on the external surface of the mark (21) and the outer surface of the body (10) except the preparing region with the printing layer (20) to complete the metal hand tool.

3. The method for manufacturing a metal hand tool as claimed in claim 2, wherein printing the printing layer (20) with a signal color.
4. The method for manufacturing a metal hand tool as claimed in claim 2, wherein printing the printing layer (20) with multiple colors.
5. The method for manufacturing a metal hand tool as claimed in claim 2, wherein electroplating the electroplate layer (30) with multiple layers.
6. The method for manufacturing a metal hand tool as claimed in claim 3, wherein electroplating the electroplate layer (30) with multiple layers.
7. The method for manufacturing a metal hand tool as claimed in claim 4, wherein electroplating the electroplate layer (30) with multiple layers.

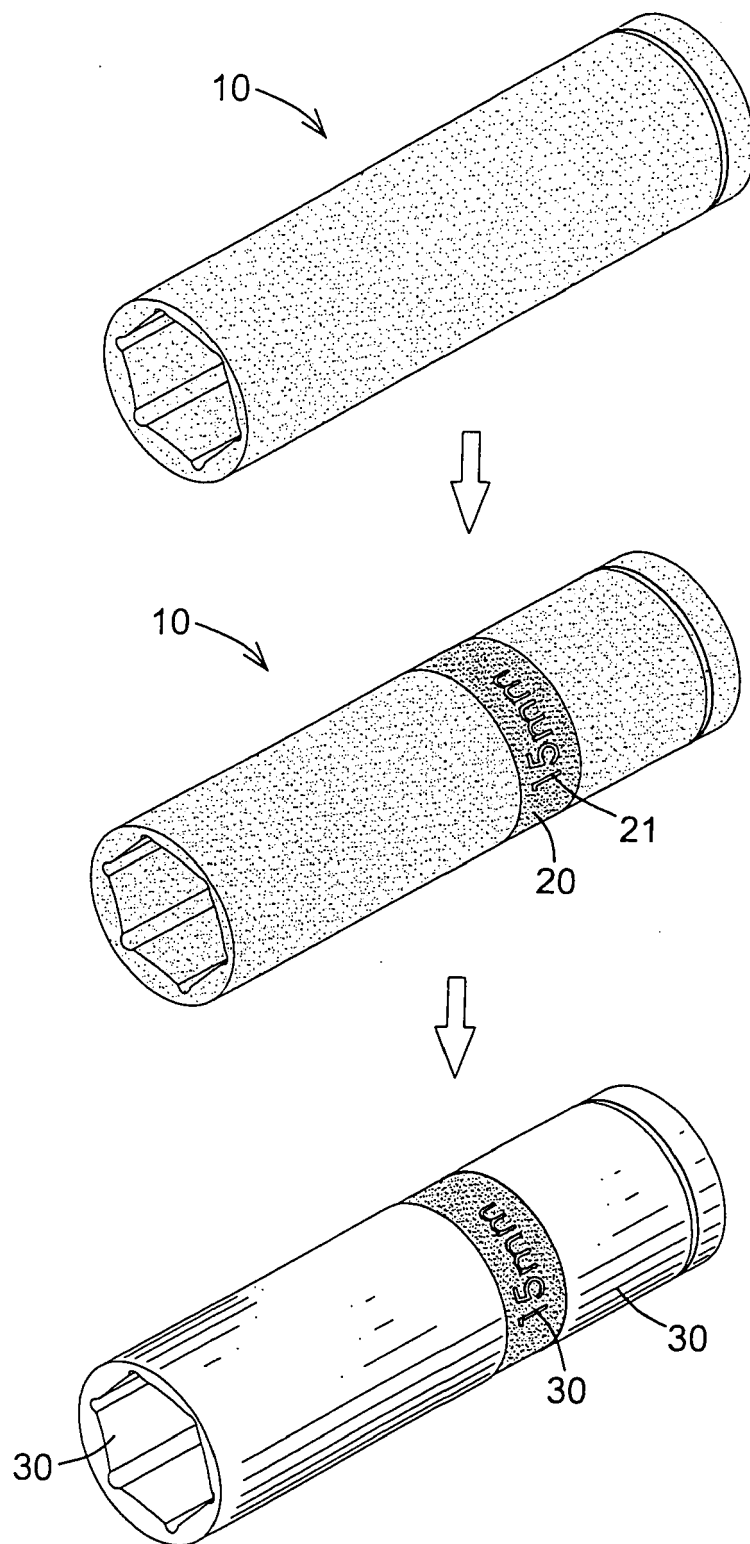


FIG. 1

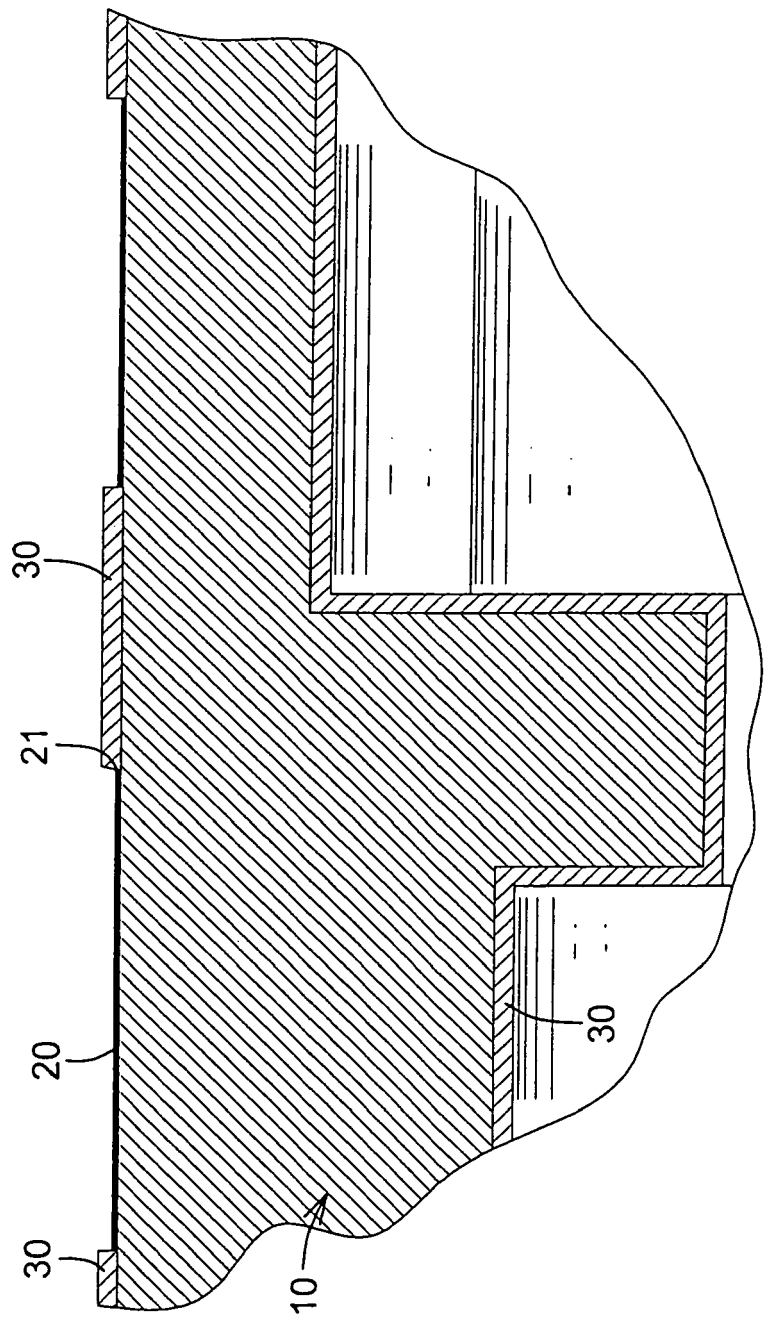


FIG. 2

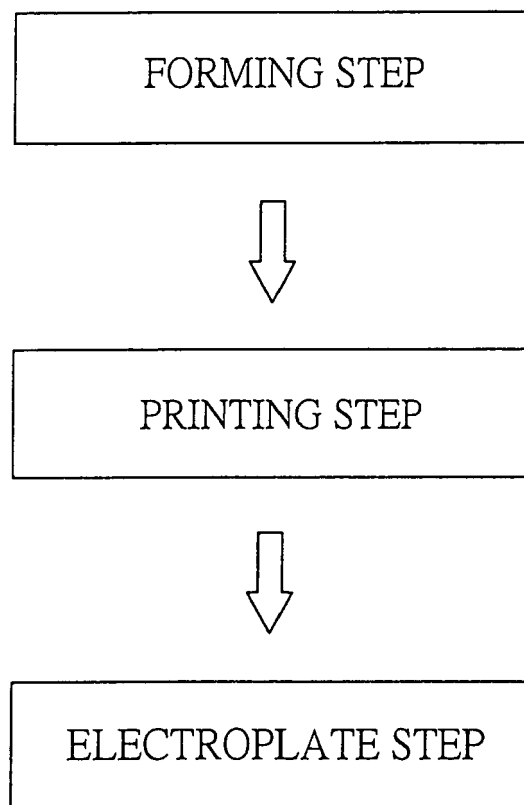


FIG. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 25 0001

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Y	US 2005/241950 A1 (CHEN KUO-BIN [TW]) 3 November 2005 (2005-11-03) * figure 8 * * paragraphs [0026], [0027], [0032], [0033] *	1-7	
Y	EP 1 672 100 A (SHUHO CO LTD [JP]) 21 June 2006 (2006-06-21) * abstract * * paragraphs [0058], [0059] * * claims 1-9,12 *	1-7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) C25D B25F B25B
Place of search Munich		Date of completion of the search 8 May 2008	Examiner Haering, Christian
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 08 25 0001

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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