

[54] METHOD OF FABRICATING A KNIFE HANDLE HANDLE

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FOREIGN PATENTS OR APPLICATIONS

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[51] Int. Cl..... B21d 39/00, B23p 11/00

[58] Field of Search 29/509, 522; 30/340, 30/342, 344, 155; 264/249

[57] ABSTRACT

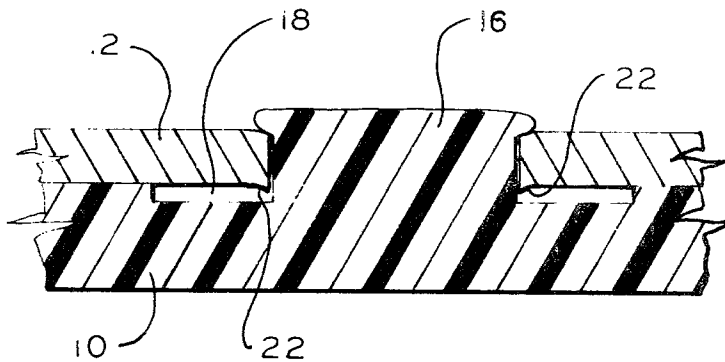
In the fabrication of knife handles having a plastic cover attached to a metal liner, the covers are molded with at least two studs projecting from the side of the cover which faces the metal liner. Holes are provided in the liner through which the studs are inserted with opposing faces of the cover and liner flush. An annular depression is formed in the cover around each stud to accommodate any burrs or protrusions of the metal liner formed while making the holes for the studs.

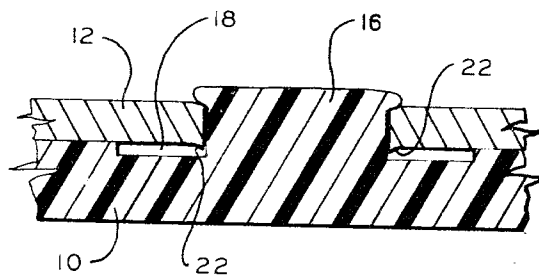
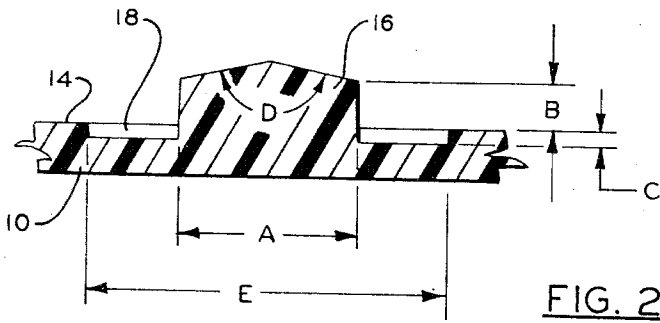
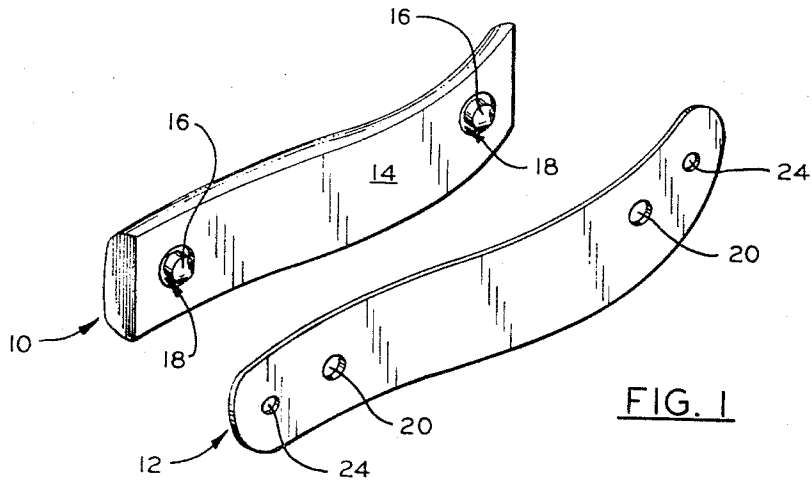
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5 Claims, 3 Drawing Figures





METHOD OF FABRICATING A KNIFE HANDLE

The present invention relates to the fabrication of knife handles and to improved construction and methods which involve attaching a plastic knife handle cover to a metal liner.

For many years it has been the practice to make knife handles with an outer covering of a suitable plastic attached to an underlying liner of metal. A handle which is attractive, durable and economical, as well as easily produced in any desired color and design, is thereby provided. It is necessary, of course, to fabricate the handle in a manner which insures a secure and lasting connection between the plastic and metal.

Probably the most common method of attaching covers and liners, particularly in the case of folding blade pocket knives, and the like, is with a number of rivets initially separate from both the cover and liner. While a satisfactory attachment may be provided thereby, the head of the rivet on the cover side must be polished or covered to present a satisfactory appearance. Thus, the cost of this means of attachment is higher than a satisfactory attachment means which does not employ separate rivets. Other methods have been proposed to attach the cover and liner without the use of separate rivets, such as providing lugs on the plastic cover which resiliently snap into notches or cut-outs in the liner, but all suffer from some disadvantages.

It is a principal object of the present invention to provide an attractive and economical knife handle construction, as well as a method of effecting a secure, permanent connection of a plastic knife handle cover to a metal liner which is superior to former methods of performing the same function.

A further object is to provide a method of attaching a plastic knife handle cover to a metal liner which involves no separate parts and insures a flush fit between opposing surfaces of the handle and liner.

The above and other novel features of the invention will appear more fully hereinafter from the following detailed description when taken in conjunction with the accompanying drawings. It is expressly understood that the drawings are employed for purposes of illustration only and are not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings, wherein like reference characters indicate like parts:

FIG. 1 is a perspective view showing the inner sides of a knife cover and liner, ready for assembly according to the present invention;

FIG. 2 is an enlarged side elevational view of a portion of the knife cover in section on the line 2—2 of FIG. 1;

FIG. 3 is a side sectional view of the portion of the cover shown in FIG. 2 after attachment to the liner according to the invention.

Referring now to the drawings, knife handle cover 10 is formed in a desired shape, normally corresponding over at least a major portion of its periphery to knife handle liner 12. Cover 10 is commonly made by molding a suitable plastic, a preferred example for employment in the present invention being that sold by Dupont under the trademark Delrin, or other such acetal resin homopolymer. Liner 12 is usually a metal stamping, e.g., brass, flat on both sides. Surface 14 of cover

10 is also flat, and lies flush with the opposing surface of liner 12 when the handle is assembled.

Studs 16 are formed integrally with cover 10 and extend outwardly from surface 14 with annular depression 18 around the base of each stud. The studs are preferable at least two in number and located adjacent opposite ends of the cover. As best seen in FIG. 2, the ends of studs 16 are slightly convex, coming to a shallow point at the center. Examples of suitable values of the dimensions indicated by letter in FIG. 2 for a knife handle of several inches in length are:

A = 0.125 inches

B = 0.045 inches

C = 0.025 inches

D = 152°

E = 7/32 inches

Holes 20 are punched in metal liner 12, of about the same or very slightly larger diameter than studs 16, and with the same center-to-center distance. The height of studs 16 above surface 14 (i.e. dimension B) is substantially equal to or slightly greater than the thickness of liner 12. Thus, when surface 14 of the cover and the opposing surface of the liner are placed in contact, with studs 16 extending through holes 20, a small amount of the material of the stud extends past the opposite surface of the liner. It is common for a burr, or small amount of protruding material such as that indicated by reference numeral 22 in FIG. 3, to extend from liner 12 around holes 20. Annular depressions 18 insure that the cover and liner will still lie flush since the burr may extend into the depression, which has a depth great enough to accommodate at least the average burrs or projections which may be expected. The end portion of the stud is then upset so that the cover and liner are joined, as seen in FIG. 3.

Additional holes 24 are provided in liner 12 for mounting knife blade pivot pins, and the like.

The upsetting is preferably performed by mechanical means such as a vibrating hammer. A better and more lasting connection has been achieved in this manner than, for example, by heat smearing the plastic on the opposite side of the liner, although it is sometimes more convenient, as in replacing broken handle covers, to use the heat smear method.

While several forms of the invention have been illustrated and described, it is to be understood that the invention is not limited thereto. As various changes in the construction and arrangement may be made without departing from the spirit of the invention, as will be apparent to those skilled in the art, reference will be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. A method of fabricating a knife handle having a plastic outer cover and a metal liner, said method comprising:

a. molding the outer cover from a suitable plastic material with at least one major surface substantially flat, at least two studs molded integrally with said cover and extending from said flat major surface, and an annular depression around each of said studs;

b. forming the liner of a flat piece of metal having a desired peripheral shape, and punched holes extending therethrough of substantially the same diameter and spacing as the studs on the cover, one

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surface of said liner having projections or burrs around the holes formed by punching;

c. placing said flat major surface of the cover in engagement with said one surface of the liner with the studs extending through the holes; and

d. upsetting the ends of the studs on the opposite side of the liner from the cover, thereby forming head portions retaining said cover and liner in contacting engagement.

2. The invention according to claim 1 wherein said ends of the studs are mechanically upset to form said head portions.

3. The invention according to claim 2 wherein said ends of the studs are mechanically upset with a vibrating hammer.

4. The invention according to claim 3 wherein said plastic is an acetal resin homopolymer.

5. The invention according to claim 1 wherein the depth of said annular depressions is great enough to accommodate average projections or burrs on said metal liner around the holes therein, whereby said cover and liner will fit in contacting engagement in spite of such projections or burrs.

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