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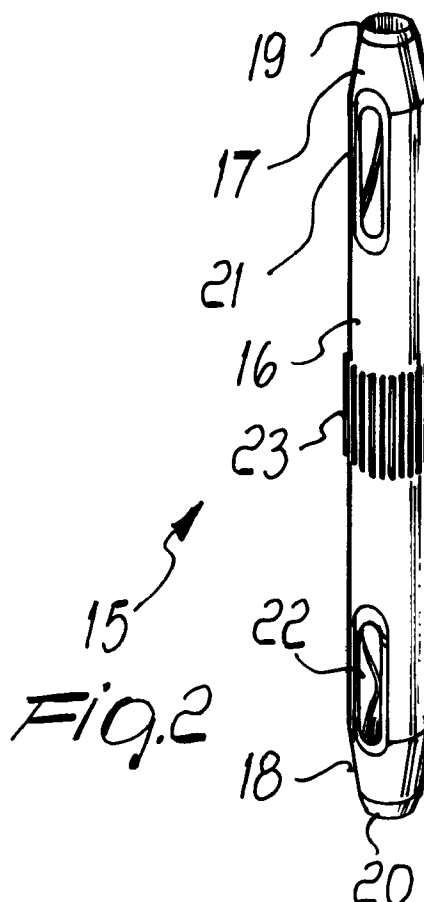
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(54) **Anchoring means for punching tools**

(57) An improved accessory/fixture for punching tools, of the type comprising an elongated metallic body (16) with at least one end (17, 18) that tapers and forms a sharp cutting edge or a perforating point (19, 20), the body having a knurled annular portion (23) on its outer surface.



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Description

The present invention relates to an improved accessory/fixture for punching tools.

Tools for punching material in sheet form, such as leather, hide, imitation leather, cardboard, etcetera to produce leather goods, shoes, covers for cases and agendas, or other items, are conventionally often combined with elements adapted to obtain one or more holes arranged in various manners on the surface of the shape produced by the cut.

A typical case is that of so-called "English-style" shoes, wherein the surface of the upper is provided with perforations forming ornamental patterns.

Said elements are commonly known as perforators and needles in the field, and their association with the punching tools occurs by push-fit insertion in through holes formed on the stiffening cross-members of said punching tools or on laminar elements that are coupled inside the structures in a cantilevered fashion.

Each one of these shaped and non-shaped perforators, needles, and the like, is substantially constituted by an elongated cylindrical metal body wherein at least one end tapers and forms a sharp cutting edge or a point.

An opening for discharging the cutting scrap can be provided on the body, close to the respective tapered end, and connected to the inside thereof.

The perforators and the needles are provided in various size series as regards the diameter of the cutting hole and with one or two sharp or pointed ends.

The insertion and the coupling of the perforator or of the needle relative to the respective supporting element occurs by interference fit, by providing on said support a hole the diameter whereof is slightly smaller than the diameter of the body that must be inserted therein.

The degree of interference is a function of the locking force to be applied; said force must be simply sufficient to maintain correct positioning during the handling of the punching tool.

Insertion is performed with the aid of a press, and currently there are considerable assembly difficulties, despite the insertion guide constituted by the end taper, leading ultimately to incorrect insertions as regards exact positioning.

This, of course, is a significant drawback, since in most cases each perforator is part of a set adapted to produce an ornamental pattern by perforation, so that the exact position of the various perforators is extremely important.

An equivalent drawback affects the needles, the function whereof is to indicate a precise reference in joining a plurality of parts, for example by tracing the path of a plurality of stitches by perforation.

Attempts to solve the problem by providing a flared annular guiding region between the tapered region and the remaining part have turned out to be unadapted,

particularly for perforators provided with a discharge opening, owing to the fact that the presence of said opening does not allow to produce said flared portion.

A principal aim of the present invention is therefore to provide an improved accessory/fixture that can be mounted on punching tools in a particularly simple and precise manner.

Within the scope of this aim, a consequent primary object is to provide an accessory/fixture the assembly whereof does not require particular provisions.

Another important object is to provide an improved accessory/fixture that can be manufactured with simple mechanical machining processes.

Another object is to provide an improved accessory/fixture that maintains a low cost and can be mass-produced.

This aim, these objects, and others which will become apparent hereinafter are achieved by an improved accessory/fixture for punching tools, of the type comprising an elongated metallic body with at least one end that tapers and forms a sharp cutting edge or a point, said accessory/fixture being characterized in that said body has a knurled annular portion on its outer surface.

Further characteristics and advantages of the invention will become apparent from the following detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of a punching tool provided with improved perforators according to the invention;

figure 2 is an enlarged-scale perspective view of an improved perforator according to the invention;

figure 3 is an enlarged-scale sectional view of the punching tool of figure 1, showing one of the perforators;

figure 4 is a perspective view of a needle.

With reference to the above mentioned figures 1 to 3, a punching tool is generally designated by the reference numeral 10 and is constituted by a shaped metallic band 11 the profile whereof forms a figure that is closed but can, in some instances, be open as well.

The band 11 is arranged edgewise and therefore has, in this case, two sharp cutting edges, designated by the reference numerals 12 and 13 respectively.

A single sharp edge may be provided in alternative embodiments.

A cantilevered laminar element 14 is welded internally to said band 11 in a central region and forms the support for a plurality of perforators 15 or, as an alternative, for needles, which will be described better hereinafter and are adapted to obtain a corresponding plurality of holes around the cutting edge.

Each perforator 15 is constituted, in the case being considered, by a cylindrical elongated metallic body 16

with two tapered ends, respectively 17 and 18, that are hollow so as to form a sharp cutting edge, designated by the reference numerals 19 and 20 respectively.

Of course, the length of each perforator 15 is equal to the distance between the two edges 12 and 13 of the punching tool 10 which, in the case being considered, are both sharp, as mentioned earlier.

An opening for discharging the cutting scrap, designated by the reference numerals 21 and 22 respectively, is present close to each end 17 and 18, and is connected to its interior.

Said openings 21 and 22 are conveniently shaped so as to guide the discharge of the scrap.

According to the invention, the body 16 has, in a central region on the outer surface, a knurled annular portion 23 constituted in practice by a plurality of longitudinal parallel raised portions that increase its diametrical bulk by approximately one tenth with respect to the nominal value.

As shown in figure 3, the knurled portion 23 entirely affects the coupling region, by insertion in an adapted hole 24 the diameter whereof is equal to the nominal diameter of the perforator 15 that is present on the laminar element 14.

The insertion of the perforator 15 in the hole 24 occurs first manually, by positioning one of the tapered ends 17 and 18 in said hole 24, and then by means of a press, until the knurled portion 23 assumes the correct position.

The longitudinal raised portions of the knurling 23 act as guides for the exact mutual positioning of the coupled parts, and their larger diametrical bulk with respect to that of the hole 24 produces a pressure between the parts that is sufficient to achieve a considerable locking force.

The knurling operation is conveniently performed after the machining of the perforator on the machine tool and before said perforator is tempered and optionally electroplated with nickel or chromium.

With reference now to figure 4, each needle 115 is constituted by a cylindrical elongated metal body 116 with two tapered and pointed ends, respectively 117 and 118.

The body 116 has, in a central region, on the outer surface, a knurled annular portion 123 constituted in practice by a plurality of longitudinal parallel raised portions that increase its diametrical bulk by approximately one tenth with respect to the nominal value.

The execution of the knurling and the insertion in the holes of the punching tool are equivalent to what has been already mentioned for the perforators 15.

In practice it has been observed that the intended aim and objects of the present invention have been achieved.

The execution of the knurling on the outer surface of the perforator 15 or of the needle 115 in fact allows to provide punching tools that are qualitatively better than current ones as regards the exact positioning of the per-

forators and therefore cutting combined with perforation and as regards the exact positioning of the references formed with the needles.

Another important advantage is constituted by easy insertion in the holes of the supports of the punching tool.

The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

All the details may furthermore be replaced with other technically equivalent elements.

In practice, the materials employed, so long as they are compatible with the contingent use, as well as the dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An improved accessory/fixture for punching tools, of the type comprising an elongated metallic body with at least one end that tapers and forms a sharp cutting edge or a point, said accessory/fixture being characterized in that said body has a knurled annular portion on its outer surface.
2. An improved accessory/fixture for punching tools according to claim 1, characterized in that it comprises an elongated metal body with at least one hollow and tapered end that forms a sharp cutting edge, an opening for the discharge of the cutting scrap being provided on said body proximate to said end and being connected to its inside, a knurled annular portion being provided on the outer surface.
3. An accessory/fixture according to claim 1, characterized in that said knurled annular portion is constituted by a plurality of longitudinal raised portions.
4. An accessory/fixture according to claim 1, characterized in that said knurled portion completely affects the region for coupling, by insertion in an adapted hole, to a laminar support that is coupled to a punching tool.
5. An accessory/fixture according to claim 1, characterized in that said knurled portion is preferably in a median region of said body where both of its ends are sharp.
6. An accessory/fixture according to claim 1, characterized in that said body has a circular cross-section.

tion.

7. An accessory/fixture according to claim 4, characterized in that its nominal diameter is equal to the diameter of said hole wherein it is inserted. 5
8. An accessory/fixture according to claim 1, characterized in that said knurled portion has a diametrical bulk that is approximately one tenth of a millimeter greater than its nominal diameter. 10

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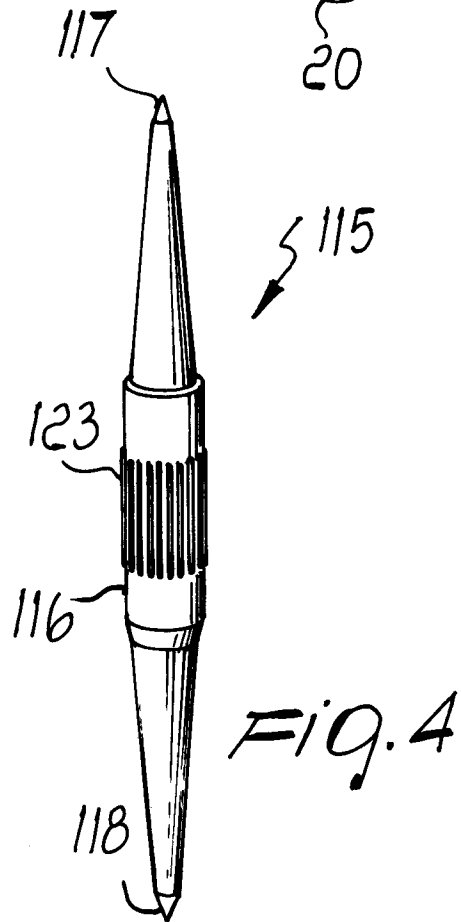
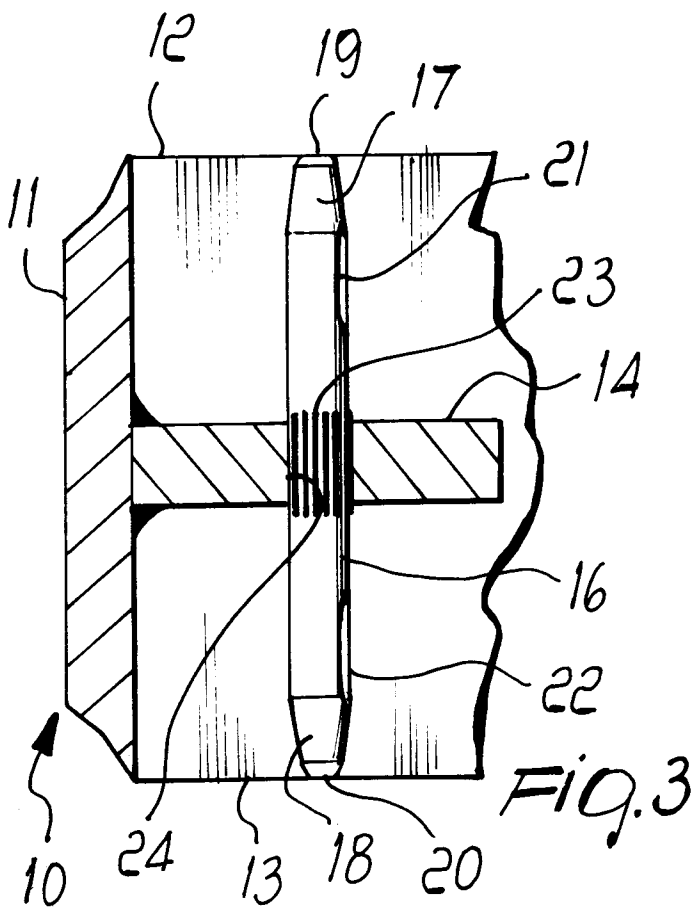
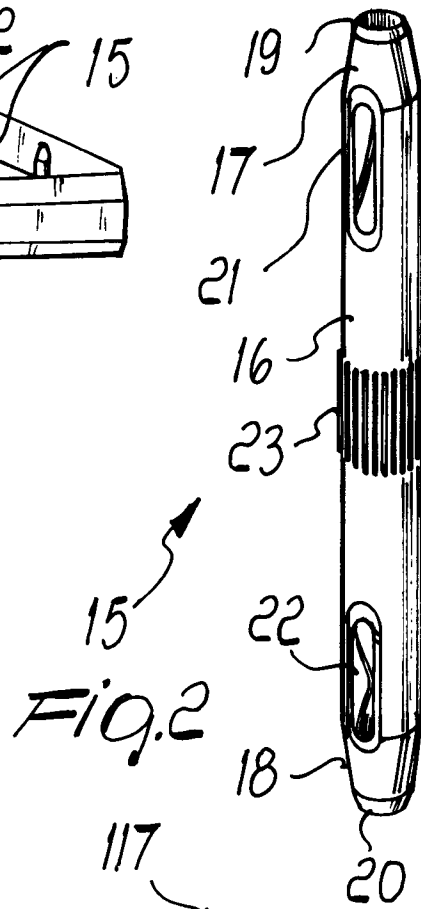
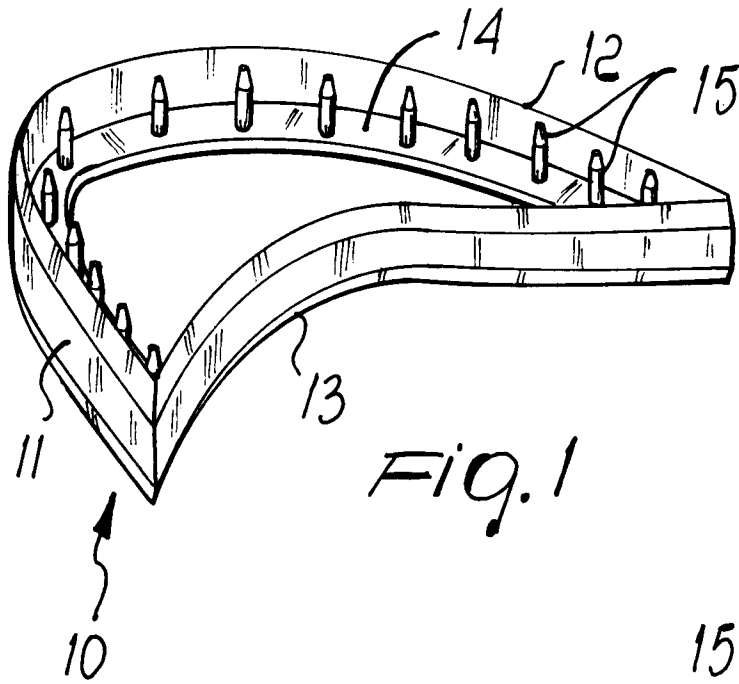
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EUROPEAN SEARCH REPORT

Application Number
EP 97 11 2122

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	GB 2 115 735 A (PA MANAGEMENT COSULTANT LTD)	1,3-7	B26F1/46 C14B5/02
Y	* page 3, line 25 - line 30; figure 3 *	2,8	
Y	US 4 002 092 A (SMITH ET AL.) * figures 3,7,8 *	2	
Y	US 2 556 148 A (SCHAEFER) * column 3, line 10 - line 15 *	8	
A	CH 396 695 A (CHROBOK-HOFFMANN KG)		
A	DE 42 995 C (LAPP & KINK)		
A	FR 1 327 708 A (BROUSSAUD)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B26F C14B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 November 1997	Examiner Vaglianti, G
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