

## RESEARCH ON PROCESSING OPERATIONS PARTS INDUSTRY LEATHER

M. Malcoci<sup>1</sup>, P. Cucu<sup>1</sup>

<sup>1</sup> Technical University of Moldavia, Republic of Moldavia

Corresponding author: Marina Malcoci, E-mail: [mmalcoci2005@yahoo.com](mailto:mmalcoci2005@yahoo.com)

**Abstract:** The leather manufacturing a product requires going through several stages in the manufacturing process by which materials are made. Stages of their characteristics involving any number of individual or associated technological changes and differentiates depending on the particular model used equipment, raw material characteristics. Processing component parts of a leather product, includes any number of different technological transformations. Their purpose is to prepare parts for assembly, finishing or getting them an aesthetic. The leather industry meet the following processing: smoothing parts, thin parts, paint the edges of parts. With the advent of advanced technology and new materials they have brought some operations such as peeling parts, marquetry, printing, plotting, weaving, embossing.

**Key words:** processing operations, leather goods, product diversification, examples, steps of implementation.

### 1. INTRODUCTION

Whatever type of leather product assortment obtaining required going through several stages in the manufacturing process by which materials are made. Stages of their characteristics involving any number of individual or associated technological changes and differentiates depending on the particular model, equipment used the characteristics of raw materials [11].

Technological transformation is defined as the action of objects work suffers one change can be in shape, appearance, size by using a specific working tools and a single technological regime. Choice of technological change and establish the sequence of their execution must take into account: such materials that are made landmarks, the position marker in combination, such as interior linings; class quality.

### 2. PROCESSING OPERATIONS PARTS

Processing component parts of a leather product, includes any number of different technological transformations. Their purpose is to prepare parts for assembly, finishing or getting a nice aesthetic. The leather industry meet the following processing: smoothing parts, thin parts, paint the edge parts, parts bent edges, cartooning parts, punching parts, pinking edge parts [4; 5 7; 8; 10].

With the advent of advanced technology and new materials they have brought some operations such as peeling parts, marquetry, printing, plotting, weaving, embossing [1; 2; 6; 9].

#### 2.1 Heat treatment

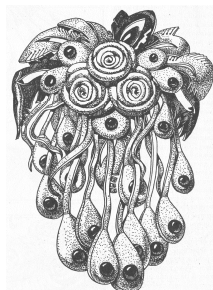
Operation is used when the mark is intended to provide a space form (fig. 1) [3]. Applies to any type of finished leather. The operation is done manually.

Stages of operation are:

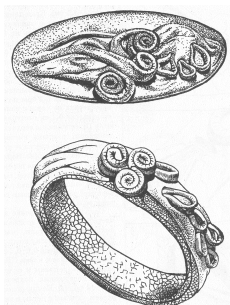
- Cut parts of desired shape.
- Place the fleshy part on a heated surface.

Sometimes skins require previous soaking to get a better result. The dimensions of the marks must be greater than the final reserve calculations because technology is very difficult to carry and

that is through experimentation. Edges that come into contact with hot surface darkens or burns and it is recommended that the edges of parts to be processed further as burnt edge.



**Figure 1.** Example of heat treatment



**Figure 2.** Example of corrugating

## 2.2 Parts corrugating

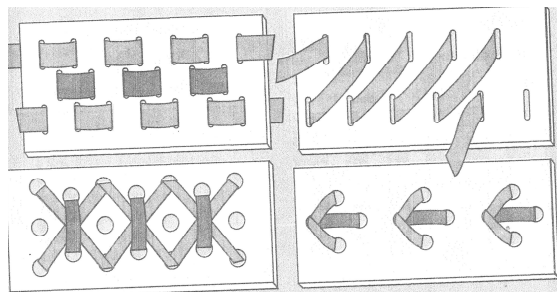
The goal of surgery is the beauty of the product. Embossing means to print rows of parallel folds and wavy fabric on a table on a paper (fig. 2). Putting on a design embossed material. It is used extensively to diversify products and leather goods namely handbags, belts, boxes, jewelry, paintings. Corrugating operation is achieved with very thin skin, destiny manufacture of gloves. Adhesive is used for final connections of resistance, which is deposited in two layers and to obtain better resistance. This operation is not recommended to use temporary adhesive joints, since there is strong and occurs during detachment of parts.

## 2.3 Drawing parts

The goal of surgery is the beauty of the product. The operation is performed manually, to make them used: strips of leather or artificial leather. Earlier, it made holes, then draw out the holes of bands (fig. 3) [9].

Strip of skin can provide a medium strength, because it has more than decorative. It is recommended that gaza should not be too tense, creating is an aesthetically more pleasing. The ends of the strip to be fixed with glue or stitching.

Tracking operation is performed on assembled parts. When drawing is all over the part to be fixed by stitching heads when assembling parts. After tracing operation put pressure land marks rest (several hours), before slightly moistened skin.



**Figure 3.** Example of tracing the parts

## 2.4 Intertwining parts

The goal of surgery is the beauty and product assembly. Blending operation is performed manually [9].

#### 2.4.1 Blending operation in beautifying parts

This operation achieved the following milestones: shoulder strap, handles, bracelets, belts etc. Width strips of leather needed is 3-5 mm. The ends of strips is recommended to be attached to a stick, then move to their weaving. Another solution is that the ends are attached by sewing a strip of leather. The work is intended that files may not twist, and assembled parts are not visible. After blending the product or blank hammer, moisten and spread to dry on a wooden fixing the deal. Blending operation can be achieved in various ways, from imagination can get a lot of options.

#### 2.4.2 Blending operation to assemble parts

Hand in making leather products by fusing assembly is the most common. To do this assembly must be punched as land marks. Perforation edge parts can be done manually (perforating punches, drilling devices, etc.) or mechanical (drilling machines, presses, etc.). The leather industry using several types of knitting, but most often used are simple weaving, braiding Venetian, blending letter V cross weaving, braiding knotted.

### 2.5 Printing parts

Print runs for beauty of leather goods. Print job is to produce drawings or inscriptions on the main benchmark of a leather product, printing methods are used in leather industry [8]:

- Xerographic.
- For hot or cold.
- The high frequency currents.

#### 2.5.1 Xerographic printing

It consists in transferring a certain drawing, mono or polychromatic through a special site on the main landmarks of leather products. Sita is a special fabric made of silk or synthetic fabrics based on polyamide fibers. Screens are stretched on frames made of wood or metal. Sieves made will keep for 2-3 months at a temperature of 18 to 30 ° C and a humidity of 80%.

The operation is done manually, as follows: landmark sits on the table face up, the marker is placed sieve, pour the solution into the filter necessary, pass the brush once and in one direction; dry for 5 min at room temperature. When the drawing has more color process is repeated.

#### 2.5.2 Printing hot or cold

Drawing on the principles of training apply compression with presses and die. When finished leather products, colorless drawings can be obtained by printing from a hot or cold drawing, executed in relief on molds, made of zinc. Temperature at which the print job is dependent on the tanning of leather. Thus:

- For vegetable skins: 60 - 70 ° C.
- For mineral skins: 90 ° C.

Printing by hot pressing or cold, after the manner of execution, may be continuous or discontinuous. Printing is implemented using metal rollers on lateral surface of which is now a design in relief and apply the straps, belts, watch straps.

Stability print material design is influenced by humidity, pressure, temperature and pressing time.

#### 2.5.3 Printing high-frequency currents

The artificial skin products, use special copper molds, rubber, silicone or bronze, using the plants dependent on high frequency currents. Printing the drawing to thermoplastics is possible due to warming up to streamline the top layer (temperature of 150-180 ° C), and fixation is due to reduction temperature up to 20 - 50 ° C. Quality of surgery is influenced by material properties, material heating time, cooling time, etc. Thus, heating time varies between 10-30 and the nature of materials, cooling time must be 20 - 40 s and higher thickness not exceeding 1/3 the depth of the mold design.

## 2.6 Operation "print"

The goal of surgery is the beauty of the product. The operation is performed manually and is painting materials, parts, finished product, and has found use in leather industry. Shall use the following products: boxes, book covers, albums, handbags etc. Made of vegetable tanned leather unpainted, rarely on vegetable tanned leather unpainted, and less on light colored leather.

Stages of operation are: the reference to draw desired design, parts that need not be colored cover with a thin layer of paraffin or cial (in liquid and hot). For wax to fall on items faster than necessary it is mixed with oil in a 2:1 ratio. Cial and if not at hand can use natural rubber. Cial when cool, the remaining areas not covered with wax stains, if the drawing is more colors start with the lightest color. Allow to dry, then cover with nancial those portions of the design, which must obtain a pleasant shade without removing cial layer of the unpainted areas. Followed by staining of the drawing.

The skin can get a design that mimics a bottle cracks. For the following stages:

- The skin is covered with nancial, wax dry cracks.
- The skin is placed in a pot of paint.
- Paint enters the cracks, which form an interesting design on the skin.

After the work, dry skin and remove wax or natural rubber (with a dull knife or ragsoaked in petrol). Product ready to polish with a soft cloth, sometimes covered with enamel.

## 2.7 Operation of marquetry

Marquetry is a technique used to decorate furniture, consisting of wood engraving of plates and strips of bone, ivory, pearl, etc, or another color wood which was taken in the leather industry [9]. For operation of marquetry is used in chrome leather of various colors. The goal of surgery is the beauty of the product. Applies to a few products such as: boxes, paintings, that during exploration are not subject to the following requests: each, bending, action of moisture, because the assembly parts are made by bonding.

To achieve operation following stages:

- basic marker to show a 1,5-2 mm thick, which are drawn the desired design;
- cut and remove certain portions of the drawing, which will be another color;
- the skin color cut necessary parts, they must submit an appropriate thickness and stick to areas already cut the benchmark base;
- marker is affixed to the cardboard base, you can press to get a better resistance of the joint.

## 2.8 Peeling operation

The goal of surgery is the beauty of the product. The best operation is obtained skins peeling varnish. Operation is made of small leather products because it is a very delicate operation but also simple. Peeling operation can be achieved in two peeling drawing or background [9].

Stages of operation are:

- Draw the desired design guide.
- Cutting the parts needed, at a depth of  $\frac{1}{4}$  the thickness of the part of the base.
- Landmarks in the flesh is wet, so water to reach the top layer.
- Wearing is better to start at one end and it is recommended that surgery be done simultaneously all over the landmark.

## 2.9 Knife engraving operation

Engraving is to dig an image, an ornament, or letters, etc, in material using instruments or special technical means to achieve a cliché prints or decorative purposes. Etching operation is more complex and gives a very good product. In the past this operation was highly praised and sought after. Operation using the following products: key chain, portochelari, book covers, boxes, various jewelry, etc.

It works only on high-quality vegetable tanned leather for manufacture of the base. It follows that skin not covered with a protective layer that prevents water penetration inside the skin. The coating can be removed with acetone.

The stages are:

- The marker to draw the desired design, with engraved knife.

• Cutting the benchmark can be dry and the wet mark. It is recommended to mark wet, moisten with warm water for several hours after the mark becomes easier to work.

• Excess water should be removed. If the pressing water marker can not appear to work, but if the skin under the knife is then the part is still damp curls or sharp knife is not good what is not allowed.

• Skins thick enough (1,5-2mm) may elongate to avoid skin stretching doubles with cardboard and afterwards proceed to the transactions. Cutting is drawing to a depth of 1/3 up to 2/3 of the skin thickness. Etching operation is a long process, when dried and mark cut line maintains its shape can be moved to processing the next line. If you stop the operation mark should be placed in a sealed package film to avoid drying. When they start working landmarks may dampen slightly.

### 2.10 Etching operation by firing

The goal of surgery is the beauty of the product. Operation is applied to vegetable tanned leather and chrome than those usually on colored skins. It beautifies the following products: jewelry, boxes, book covers, belts and purses.

Stages that go through:

- Draw the desired design.
- Perform the operation.

Thickness of the lines depends on body temperature and speed of work employed the worker. Not to get burned portions worker recommended that body not to retain the one place, and the temperature must be adjusted depending on skin type. Different lines can be obtained using various working bodies will change depending on the trim device. The operation begins with the baseline and then supporting lines.

## 3. EXAMPLES OF PRODUCTS

Figure 4 presents examples of products made by the authors, using the above processing operations.



Figure 4. Examples of products

## 4. CONCLUSIONS

Finally we find the following:

1. Identified processing operations allow diversification of leather, which will lead directly to an increase in sales and business development.
2. Stages of the processing operations presented in the paper does not require a great effort from management companies.
3. Most machining operations can be made from waste obtained from croiri parts.



4. Recovery of materials surface defects, applying processing operations, such as peeling, shaping etc.

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