

Article

Research on the Design of Innovative Acrylic Fashion Accessories Using Aluminum Wire Technology Combined with Glue Dispensing Technology

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Received: May 5, 2023; **Revised:** Jun 5, 2023; **Accepted:** Jun 16, 2023; **Published:** Jun 30, 2023

Abstract: We integrated the design of acrylic fashion accessorized by combining aluminum wire technology with the application of glue technology to introduce iron window grille elements for the integration of culture and fashion. First, the relevant theories were discussed through a literature review, and then experimental sample pattern-making and fabric production were created. The results were integrated with theory. The research results showed that it was feasible to combine aluminum wire techniques with ultraviolet (UV) glue to create acrylic designs for fashion accessories that displayed avant-garde fashion, fashion-style aesthetic designs, and unique visual symbol designs. Each design was transformed into the shape of iron window grilles to deliver the meaning of reunion, peace, and promotion. The more local the design was, the more fashionable and international it became. With material characteristics, epoxy and acrylic materials were used to reveal the texture of stained glass which enhanced the visual beauty of fashion accessories through light and shadow exposure and color rendering.

Keywords: Aluminum wire, UV glue, Acrylic, Fashion accessories, Design

1. Introduction

“Beauty is spreading. When beauty is no longer just luxury goods and decorations, it becomes a fashion, a kind of marketing, and even drives the overall economy. Aesthetics is not limited to the beauty of appearance and form (Yan and Chen, 2004).” The aesthetics of truth-telling has been integrated into life and has become a prominent science, creating endless creativity and economic power. Compared with fashion design, we focused on fashion design in a broad sense so-called fashion design. In the narrow sense, fashion design includes various types of clothing, shoes, handbags, jewelry, and accessories (Kaiser, 2018). However, “design” in fashion is not simple because it refers to knowledge and skills acquired through observation, creation, management, and application. Creativity is generated through the designer’s emotions and intuition, and then applied to daily life, creating items ranging from small accessories to large complete clothing or accessories. In this way, creativity becomes popular things and shows innovation, improvement, beauty, and value that were different from those before.

As times change, people’s taste in design, similar to taste in food, has undergone tremendous changes with different choices. Design visualizes concepts and expresses them in processes. By transforming abstract elements into concrete objects, the spirit or shape is transformed into a new form with emotional meaning. For example, such as the postmodern design movement from the 1960s to the present, in design, the development of creative sensibility has been focused. Perceptual product design, emotional product design, and cultural product design rely on the habit and intuition of expressing emotions to increase creativity and story power as they are related to a narrative, communication, and consumer-identity-oriented design concept (Norman, 2004; Lin, 2005).

In recent years, internationalization has become a term for the modernization of various industries. How to transform the assets into unique international elements and shape their “unique” value is a topic worthy of reflection (Chen, 2016). In today’s global trend of thinking that emphasizes “localization”, interpreting local design through Taiwanese culture and developing a variety of presentations are important. Many scholars have mentioned that the cultural diffusion of globalization has caused people to reflect on and identify with their own culture. Encouraged designers have developed product designs with identifiable and cultural characteristics through the differences between their own culture and others. The design application of local culture and constructed unique identification and differentiation of products are emphasized to create a perceptual consumer cultural experience (Van Raaij, 2005; Lin and Lin, 2009; Chen and Chen, 2014).

However, on the streets of Tainan, there are old houses with unique elements everywhere, such as iron window grilles, cement checkered tiles, mosaic tiles, colored porcelain tiles, magic stones, and patterned glass to hide the residents of Tainan. People's lives and customs. Today, iron window grilles are hidden in old houses in various streets and alleys in Taiwan. They are a product of the Japanese colonial period and a symbol of the daily evolution of Taiwanese life. Tainan has rich and diverse iron window grilles, whose shape and image have special meanings and artistic styles. Local traditional culture needs to be taken seriously and Taiwan's characteristic culture should be preserved.

Lin (2023) mentioned that the decorated expressions of mosaic tiles, cement tiles, and magic stones in traditional architecture were relatively simple. Colored porcelain tiles were mostly decorated with independent, continuous, and combined patterns. In addition to the former decorative technique, the changes of iron window grilles were customized according to the needs of craftsmen or the public, and there was little research on the decorative techniques integrated among them. In the literature, window grilles were also referred to as decorations on windows for being beautiful, preventing interference, or preventing theft. Ancient window grilles were also called paper-cuts, and patterns were cut out by hand. During the Japanese colonial period, iron window grilles made of iron were used to prevent theft, and their patterns were mostly based on auspicious patterns of blessings or daily scenes (Zhang, 2021). These elements were often used in the current cultural and creative industry policies promoted by the government. However, the public often recognized the decorative design of products by their appearance but ignored connotation. This was one of the motivations for this study. Secondly, in recent years, many designs have been closely related to the issue of window grilles. Each old house has a unique story of grilles on windows, hoping to awaken people's definition and emphasis on the aesthetics of life. Transforming Taiwan's traditional local cultural crafts into a symbol of cultural reproduction, allowing the iron window grille to transform from the frame of a house into a cultural symbol that represented the deep memories of our childhood, was the second motivation of this study. Finally, fashion accessories emphasize fashion and style aesthetic design to break away from the unchanging fashion accessories framework and bag styles. We introduced the architectural elements of local old houses in Tainan - iron window grilles and used aluminum wire techniques combined with UV glue technology to create fashion accessories. This was the third motivation for the research.

Based on the literature review, we integrated local cultural symbols into the design of fashion accessories. Based on an on-site visit to the alleys of Tainan for field investigation, photography, and records, and the discussion of experimental methods and literature, we used aluminum wire and UV glue to experiment with acrylic materials. Initially, we adhered the aluminum wire shape to the acrylic using a three-second glue (also known as instant glue). However, due to the characteristics of the material, acrylic immediately produced an atomization effect when it encountered the three-second glue. This caused the surface of the creation to become dirty. To overcome this problem, we conducted several additional glue tests. Finally, the UV glue was used on atomized acrylic materials to create a sense of transparency and solve the problem of material atomization caused by three-second glue to aluminum wire shapes. In this way, we avoided problems in the combination and application of experiments and materials and created unique styles of fashion accessories. Finally, we designed bags, hats, and accessories using the characteristics of aluminum wire technology combined with UV glue to create fashion accessories. The result of this research provides a reference for designers. Through the outcome of this research, the public can understand the cultural connotation of the iron window grilles of the local old houses in Tainan and the decorative aesthetics of traditional iron window grilles with fashionable designs that highlight the local, fashionable, and international fashion accessories.

In summary, through this research, we discussed the reasons for the development, production technology, and pattern evolution style of iron flower windows and explored the types and application methods of UV glue dispensing techniques. We analyzed the design elements of the iron grille window and combined the aluminum wire technology and glue dripping technology to design and create the work. The use of aluminum wire combined with the UV glue dispensing technique compiled its design features and production suggestions.

2. Literature Review

2.1. History and Image of Iron Window Grilles

2.1.1. Historical Evolution of Iron Window Grilles

Iron window grilles were widely used in the 1970s, and people expressed their preference and demand for the complicated workmanship of iron window grilles. Iron window grilles are installed on windowsills, railings, iron doors, and signboards (Lin, 2023). In the 1980s, iron window grilles were seen everywhere in the streets and alleys of Taiwan for visibility and usage (Xin and Yang, 2020). Later, in the late 1980s, stainless steel iron windows were introduced, which gradually replaced the traditional black iron window grilles because they did not require regular maintenance and were manufactured easily. By 1988, due to the urban renewal legislation, the renovation projects of building appearances in counties and cities across Taiwan were accelerated,

and new types of anti-theft devices gradually replaced the original physical anti-theft mode (Xin and Yang, 2020; Lin, 2023).

At that time, people began to generally have negative opinions about iron windows, including the problem of safe escape in emergencies (Wu, 2012). Therefore, in architecture, iron window grilles gradually disappeared from streets and alleys. It remains the architectural feature of a few old houses today. The recession took less than a quarter of a century. The totem expression was the finely crafted in window grilles. Today, iron windows have simple lines, lack decorative style, and gradually lose the humanistic customs and traditional iron craftsmanship. Many capable people used farmland to build houses, but in terms of similar building appearances, people always hoped to “seek differences within similarities” (Xin and Yang, 2020). The special patterns designed on the iron window grilles showed the attitude and taste of people at a certain level and were representative of architectural style and characteristics. In the traditional iron window grilles, flat iron bars of 0.3 cm, 1 inch thick, and 1.8 cm wide were used as they were easier to twist, rivet, bend, and weld. Using iron pipes or circles, vortex shapes were created. The coiling mold was fixed with Wanli clamps, and the resistance point of the mold was forced to be curled as shown in Fig. 1 (Xin and Yang, 2020). In addition to flat iron bars, round and flat pipe bars were also used whose thickness was about 0.9 to 1.2 cm. Although both were shaped linearly for visual differences (Hou, 2022).

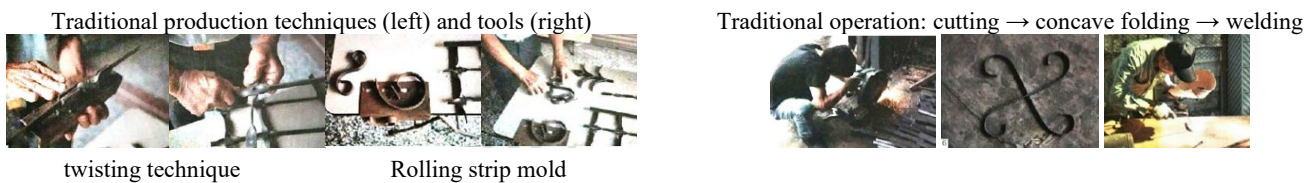

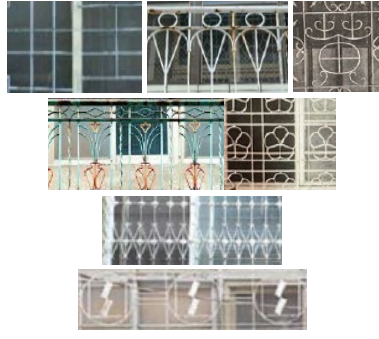
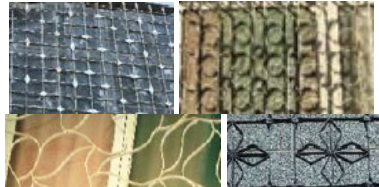


Fig. 1. Use and production of iron window grille tools (Xin and Yang, 2020).

2.1.2. Evolution of Iron Window Grilles

Lin (2023) mentioned that iron window grilles were introduced to Taiwan along with Western modern architecture in 1920. Using black iron (low carbon steel) as the material, welding, forging, and bending methods were used to make iron window grilles, which were commonly seen in Western-style buildings and street houses. After Taiwan’s economy grew in 1970, people paid more attention to the aesthetics of life and used complex techniques to make unique iron window grilles. In addition to the anti-theft function, the unique artistic vision of each craftsman and homeowner was revealed (Yan, 2015). Later in the 1990s, they were almost replaced by white iron windows. The iron window grilles were no longer showing flowers but only retained the function of iron windows. The differences in local iron window grille styles reflected the habits and environmental factors of ironworkers in different locations. According to the field investigation and statistics of Yan (2015), the iron window grilles in the northern region were composed of simple geometric lines, while in the central and southern regions, there were mostly organic and natural patterns, such as mountains, clouds, plants and other shapes (Xin and Yang, 2015, 2020; Chen and Wei, 2019). In particular, in Tainan, a prefecture-level city, the grilles were installed on the iron windows of old houses. Its decorative shapes varied such as natural, animal, and plant forms with auspicious semantics. The window grilles were seen all over Taiwan with “lines” as symbols to represent signs, occupations, hobbies, or spatial fields. In these types, grilles were bent as they were made of materials of high plasticity and variability. It was possible to develop customized styles within the scope according to the needs of the homeowner (Lin, 2023). Given the aesthetic principles of the iron window grille pattern, Zhang (2021) analyzed the formal principles of beauty with the iron window grille pattern and then the basic composition methods of repetition, symmetry, repetition, and rhythm as summarized in Table 1. The decorative patterns of iron window grilles were mostly composed of symmetrical repeating patterns. One element or pattern was combined with symmetry to form a picture. The four basic symmetry types included rotation, translation, mirroring, and sliding mirroring, and were repeatedly reproduced (Du, 2020). In addition, the pattern combination was presented in a simple translation, rotation, or displacement mirror arrangement.

Table 1. Use and production of iron window grille tools. (Data source: Xin & Yang, 2017, 2020; Zhang, 2021, and the compilation of this research data).

Item	Composition Principle	Pattern Form	Pictures of Iron Window Grilles
Point composition	Size pattern	Circles and other geometric figures	
	Intersection	Circles and other geometric figures	
	The rhythm of the point	Japanese pattern rhombus	
Line composition	Vertical lines	Three reinforced stand	
	Crossed rhombus	rhombus	
	Cross lines	lattice	
	Rhythmic straight lines curve	Mountain road pattern	
	Arc, curve	Geometry, water lines	
	Swirl free curve	Auspicious cloud brocade elements	
	Irregular ice crack curve	Tao Yunguaizi	
	Turn to the vortex free line	Geometric changes in the water bamboo pattern	
Surface composition	Rhombus		
	Round		
	Triangle		
	Quadrilateral		
	Polygon		
	Irregular ice cracks		

2.1.3. Iron Window Grille Decoration Graphic Image Style and Design Application

In the iron window grille pattern, the common composition patterns were animals, plants, and geometric figures. The shape of Mount Fuji, words, spatial impressions, music and dance, animals and insects, pictures, and utensils were also adopted (Lin, 2023). Each graphic has its unique meaning. To explore the graphic image style of iron window grilles, we summarized information from the literature as shown in Fig. 2. Among the simple repetitive patterns of iron window grilles, flowers were most commonly used. Flowers have the meaning of wealth, endless life, and icing on the cake. Vase also has the meaning of peace. Taiwan was under the impact of colonial culture in its early days. Xin & Yang (2020) discovered that the grilles had a Japanese flavor of Mount Fuji, which showed a profound impact on Taiwanese life during the Japanese occupation as the Mount Fuji window grilles were the most special and beautiful scenery of the old house on the iron windows.

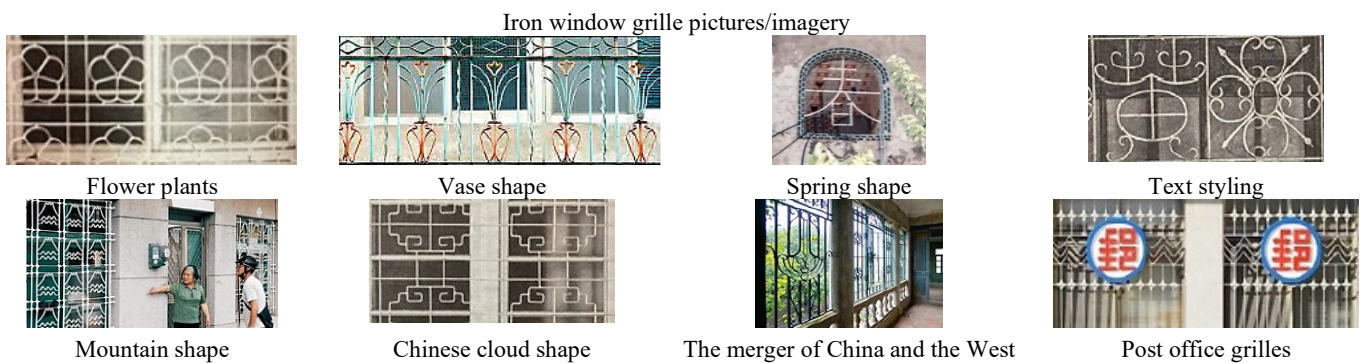


Fig. 2. Iron window grille image style (Xin & Yang, 2017, 2020).

Today, due to the promotion of cultural and creative industry policies, cultural and creative products are designed and developed for iron window grilles. Iron window grilles have been introduced for architectural decoration. Iron window grilles

were installed as space devices to add a layer of protection and privacy with elegance and retro architectural decoration aesthetics. In addition, various patterns, three-dimensional or modular designs were used which can be further developed in furniture design or lighting design. In this research, fashion accessories different from the styles of products on the market were reviewed to provide innovative, creative, and unique design styles. The iron window grille element was introduced as a totemic fashion accessory showing the spirit of Tainan's local old-house culture. As shown in "2023 Taipei Fashion Week AW23" opening theme show "Jingyi: Traditional Performing Arts and Traditional Crafts Cross-Border Fashion", innovative designs were proposed using Taiwan's traditional performing arts and cross-border modern fashion, making fashion accessories also highlight the combination of traditional craftsmanship and fashion design.

2.1.4. UV Glue

For UV glue, plastic and rubber are used. Plastics are divided into two types, thermosetting and thermoplastics. Termal solids are also called thermosetting plastics and include phenol-formaldehyde (Phenol Formaldehyde) and epoxy resin (Epoxy) (Chen, 2014). In the classification, UV glue belongs to thermosetting plastics. The molecules of liquid UV glue form long chains and dry when being irradiated by UV. The molecular chains are intertwined, and the cured UV glue does change its shape after heating as a thermosetting plastic (Liu, 1995). In using UV glue, epoxy resin A and epoxy resin curing agent B are mixed. Crystal clear glues show high transparency, low viscosity, good yellowing resistance, and good folding resistance. Crystal glue is a type of epoxy resin glue. When using crystal glue, the weight ratio and drying time of the mixture are important (Kimura, 2021). The AB glue has the longest drying time at a mixture ratio of 4:1, that is 4g of A glue and 1g of B glue. The AB glue is generally used for large-scale works, such as large-scale decoration or larger specimen production. As for the drying time, it usually requires 24 hours for the surface to dry up, and 2 to 3 days for complete drying so it is called "slow-drying glue". The dried glue is transparent (Maoyu Takes Notes, 2021). The AB glue sold in stores has a weight ratio of 3:1 of the mixture. It is appropriate for making generally thick jewelry such as ornaments or pendants. The drying time is approximately 9 to 12 hours. At a weight ratio of 2:1, the drying time becomes shorter, about 6 to 9 hours. However, because the time required for mixing A and B glues was slightly shorter, bubbles remain so a hot air gun is usually used for jewelry and decoration crafts.

With UV glue dispensing technology, there is no need for molding. To use the aluminum wire for the iron window grille, the AB glue can be filled into the hollow aluminum frame (Fig. 3). In this study, three-second glue (also known as instant glue) was used to quickly and firmly adhere aluminum wire shapes to the acryl. However, acryl has atomization problems with three-second glue, causing the surface of the creation to become dirty. To overcome this problem, UV glue was used on atomized acrylic materials to create a sense of transparency and solve the problem of material atomization. It also allowed for a special style including the texture of stained glass, emphasizing the light transmittance of the jewelry, which was the unique feature of this creation.



Fig. 3. Creation and production of jewelry glue.

3. Research Methods

3.1. Research Methods, Procedures, and Tools

This research was carried out in three stages (Fig. 4). In the first stage, we used the literature analysis method of qualitative research method to compile and classify basic literature theories, including data analysis and discussion on the current situation in the development of iron window grilles, iron window grilles decorative graphic image style, design application, and UV glue. In the second stage, aluminum wire techniques were used in the experiment of using UV glue to explore how to apply them to the design and production of fashion accessories. In the third stage, we designed suitcases, bags, backpacks, hats, and accessories

based on the inspiration of the “Golden Classic” series. The designed items were evaluated and reviewed, and the characteristics and suggestions were summarized. The design context and constituent factors can be used as a reference for designers or fashion design fields. The relevant steps, methods, and tools of this study are summarized in Table 2.

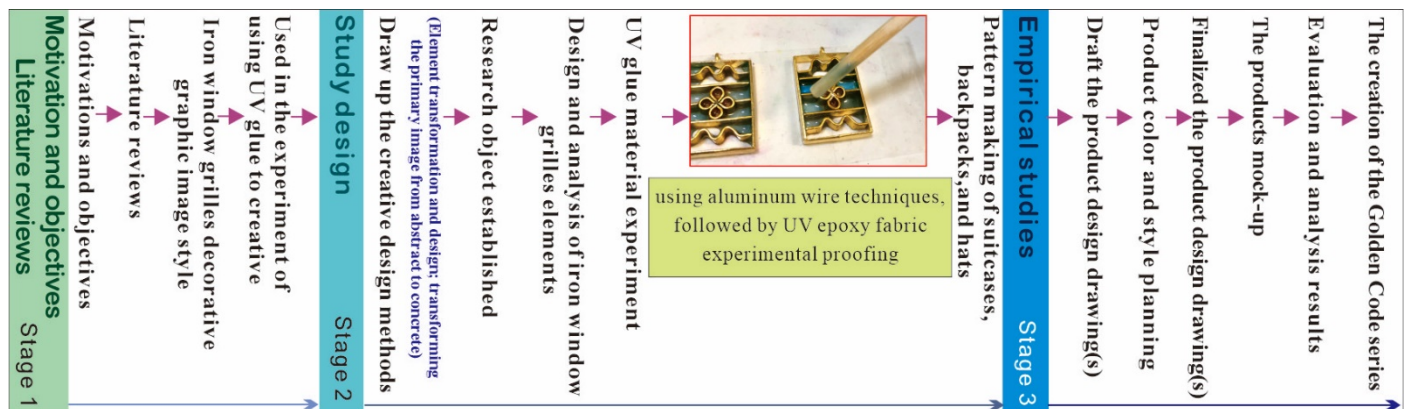


Fig. 4. Research process.

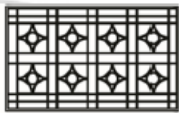

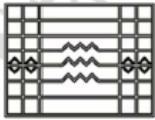
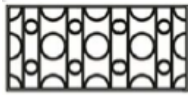
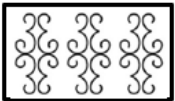










Table 2. Research procedures, methods, and tools.

Stage	Object	Methods/Tools	Step
1	The current status and development of iron window grilles, iron window grilles decorative graphic image style and design application, and UV adhesive-related literature	Document analysis method/relevant literature collection	The research topic was established, and literature materials were extensively collected to gain an in-depth understanding of the theoretical implications and analysis of the literature.
2	Transformation of iron window grille symbol elements, aluminum wire technique combined with UV glue test, luggage, and hat pattern samples	Experimental methods/creative design ideas	The elements of the iron window grille were summarized through literature analysis and then produced using aluminum wire techniques, followed by UV epoxy fabric experimental proofing. Through creative design, the shapes of bags, hats, and accessories were conceived, and then pattern-proofing was carried out.
3	The creation of the Golden Code series	Design implementation/techniques for making bags, hats, and accessories	After testing fabrics and patterns, the techniques were applied to the production of bags, hats, and accessories, and finally, the results, benefits, and process records were discussed.

3.2. Research Objects and Symbol Design

We used the aluminum wire technique combined with UV glue dispensing technology for the iron window grilles of old houses in Tainan were mainly used. We took photos and recorded them through on-site fieldwork, and then transformed and extracted elements for design. For research on the transformation system of symbolic elements of the iron window grille, we referred to the result of Zhang (2021). The drawing pattern was repeated to analyze the linearity, basic units, and semantic expression of the iron window grilles (Table 3), To create the symbols for suitcases, hats, and backpacks, the symbols and meanings of the grille were extracted as shown in Table 3.

Table 3. Linearity, basic units, and semantic expression of the iron window grille symbol (data source: Zhang (2021) and compiled by this study).

Number	1	2	3	4	5
Drawing of iron window grille pattern					
Line properties	Intersection points, straight lines, curves	Straight line, curve	Intersection, straight line	Straight line, curve	Curve
Geometry					
Basic element	single 				
Semantic representation	Circle - reunion	The stem of a persimmon - everything goes well	Japanese pattern - mountain road pattern	Circles of regular size - meaning many children	Like a vase style - safe and sound

4. Results

4.1. Design Planning Theme—"Golden Code"

The theme of this creation was "Recreate a golden classic with a classic." The unique architectural elements of the iron window grille of old houses in Tainan were used as a source of inspiration. In addition, the texture of stained glass was used as a material expression. Because of the classic feel displayed by the unique style of iron window grilles, a new "gold classic" was recreated through innovative techniques and material combinations. For Jindian, golden aluminum wire was used to make its shape. In the design concept, the creation theme was set for three pieces: "Jin Dian—Suitcase Bag", "Jin Dian—Hat" and "Jin Dian—Small Side Backpack".

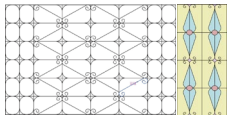

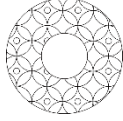

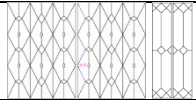

4.2. Consumer Groups and Product Positioning

The consumer group of the designed products in this research was young women aged 20–30 years old. The ethnic images were used to depict elegance, retro, and innovative independent personality. The product positioning was based on practical value and fashion sense, as young women prefer retro and modern styles. A variety of different materials were used to make the accessories appear crystal clear and transparent. Acryl was combined with UV glue to show the texture of the retro-stained glass.

4.3. Color Plan and Design Drawing of the Work

In design drawings, each design had its meaning. In Work 1 "Golden Code - Suitcase Bag", the symbolic elements used in the iron window grilles were circles, curves, and symmetrical diamond patterns, representing reunion, peace, and promotion. The second work, "Golden Code-Hat", was based on the European top hat style combined with Chinese and Western cultures. The symbolic elements used in the iron window grilles were repeated or continuous circles, which meant reunion, everything going well, and many children. In the third work, "Golden Code-Small Side Backpack," the symbolic elements of the iron window grille such as circles, symmetry, and repeating rhombuses were used to present reunion and promotion. The main color was transparent blue as the background color, inspired by stained glass. In the church, using a large amount of blue on the stained glass reduced the lighting in the indoor space, making this semi-darkness with different colors of light and shadow. The alternation of light and dark allowed for a profound and transcendent feeling. As for auxiliary colors, matching embellishments were used with purple, yellow, and orange combinations. The beauty of stained lies in the beautiful graphics and the perfect combination of the colorful colors. Thus, contrasting color matching and fashion sense were considered in the color plan. Above, the design drawings and color plan information of the three works are summarized as shown in Table 4.

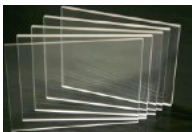








Table 4. Design drawing and color plan.

Number	Design Diagram	Illustrate	Color Pictures	Color Ticket Number
Work 1		Work 1, Size: (W:26 cm × D:8 cm ×H:16 cm)		PANTONE 17-4435 Malibu Blue PANTONE 19-3536 Amaranth Purple
Work 2		Work 2, Size: (diameter 44 cm), height 12 cm		PANTONE 15-1262 Carrot Curl PANTONE 13-0761 Spaghetti Squash
Work 3		Work 3, Size: (W:10 cm × D:5.6 cm ×H:14 cm)		PANTONE 19-3864 Mazarine Blue

4.4. Design, Execution, and Production–Materials

The main material was acryl, combined with aluminum wire, AB glue, and metals of different materials to create a brand-new fashion accessory. The top of the hat was made of leather. The suitcases and small side bags were decorated with copper buckles and hardware. The accessories were used in each work. The detailed summary of material property analysis is shown in Table 5.

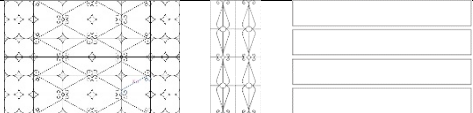
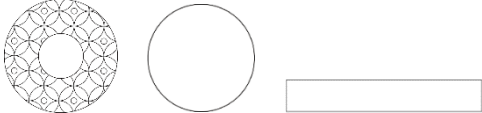
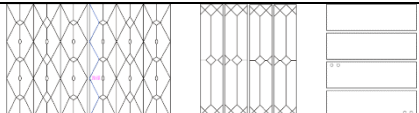
Table 5. Material property analysis.

Material	Acrylic	Picture	Material	UV Glue (AB)	Picture	Material	Imitation Metal Lock	Picture
Character istic	1. Hard and translucent 2.2 mm		Character istic	1. Quick drying 2. Tough and not easily brittle		Characte ristic	1. Golden copper 2. 36 mm × 25 mm	
Material	Aluminum wire	Picture	Material	Metal handle	Picture	Material	Hinge	Picture
Character istic	1. Hard 2. High plasticity		Character istic	1. Bronze 2. Hard and stable		Characte ristic	1. Transparent and bendable 2. 34 mm × 30 mm	
Material	Off-white synthetic leather	Picture	Material	Strap chain	Picture	Material	D ring	Picture
Character istic	1. Soft 2. Good styling 3. Wear resistance		Character istic	1. Copper color 2. Hard 3.1200mm		Characte ristic	1. Iron 2. Copper color 3.10mm	

4.5. Pattern Design of Suitcases, Backpacks, and Hats

The layout design was drawn using computer art software. All body parts were cut out using a laser and then assembled. As for the suitcases and side backpacks, the body structure was the main focus. The hat style was designed concerning the European top hat. The main layout design of the work is summarized in Table 6.

Table 6. Pattern making of suitcases, backpacks, and hats.

Work 1, Jindian—Suitcase (body structure) pattern, front, and rear body panel pattern, side panel pattern, bottom panel, handle.	
	
Work 2, Jindian—Hat pattern, brim, hat body.	
	
Work3, Jindian—Small side backpack (body structure) version, front and rear body part version, side part plate shape, bottom piece.	
	

4.6. Production Process and Finished Product Analysis of Suitcases, Backpacks, and Hats

The production process of three works (suitcase, top hat, side backpack) is summarized in Tables 7–10 which show the relevant finished product illustrations, design concepts, colors, and material analysis.

Table 7. Production process of suitcases, hats, and side backpacks.









Work 1: Jindian—The making process of suitcases and bags		
Step 1	Step 2	Step 3
 The design drawing is completed electronically and the shape is made with aluminum wire.	 Carefully glue the aluminum wires one by one to the acrylic surface with three-second glue.	 For color filling, first prepare the amount of glue in a ratio of 1:3.
Step 4	Steps 5 and 6	
 Start color mixing and add different colors to the glue.	 The step of setting the color takes several days. Each color must be painted separately, and the color must be dried before a new color can be applied. One color takes about 12 hours.	
Step 7	Step 8	Step 9
 For assembly, use “chloroform”, a special adhesive for acrylic.	 After assembly, lock the handle and your suitcase is ready.	 Complete the first piece of work.

Table 7. Cont.













Work 2 Golden Code—Top Hat-Making Process					
Step 1		Step 2		Step 3	
	Laser engraving graphics directly on the acrylic surface of the cap body save time.		After bending the aluminum wire on the laser-engraved lines, stick it directly to the brim.		After adjusting the proportion and color of the glue, you can start painting.
Step 4		Step 5		Step 6	
	Wait for the drying time to make the hat body, cut out the leather, and sew it.		After the hat body and brim are combined, a lace ribbon can be added for fixation.		Complete the second piece.
Work 3 Golden Code—Backpack making process					
Step 1		Step 2		Step 3	
	Laser engraving graphics directly on the acrylic surface of the bag saves time.		After adjusting the proportion and color of the glue, you can start the coloring work.		After the glue is applied and colored, the bottom hinge can be assembled to open and close.
Step 4		Step 5		Step 6	
	After everything is assembled, assemble the chain and lock onto the bag.		Complete all assembly and check its firmness. Pay attention to the detailed assembly of each body part.		Complete the third piece.

Table 8. Finished product design analysis—Work (1) Golden Code—Suitcase Finished product design analysis.


Front view	45-degree angle perspective view		Design Features: The symbolic elements used in the iron window grilles are circles, curves, and symmetrical diamond patterns, which have the meaning of reunion, peace, and promotion, allowing fashion accessories to highlight the combination of traditional craftsmanship and fashion design.
Size (W: 26 cm × D: 8 cm ×H: 16 cm).			
Source of inspiration/spirit	Use classics to recreate golden classics. Introducing the iron rose window symbols of old houses in Tainan and combining them with aluminum wire techniques and glue dispensing techniques to create them.		
Shape	Suitcase bags.		
Color	Blue, purple, yellow, and orange.		
Material	Acrylic, AB glue, aluminum wire, and hardware.		
Accessories	Hinges, metal handles, and imitation metal locks.		

Table 9. Finished product design analysis—Work (2) Golden Code—Top Hat.



Front view	45-degree angle perspective view	Design Features: The European top hat is combined with Chinese and Western cultures to create the idea, and the symbolic elements used in the iron window grille are repeated or continuous circles, which have the meaning of reunion, everything going well, and having many children.
		
Size (diameter 44 cm), height 12 cm.		
Source of inspiration/spirit		Use classics to recreate golden classics. Introducing the iron rose window symbols of old houses in Tainan and combining them with aluminum wire techniques and glue dispensing techniques to create them.
Shape		European-style top hat.
Color		Blue, purple, yellow, and orange.
Material		Acrylic, AB glue, aluminum wire, and synthetic leather.
Accessories		Ribbon, bust mannequin.

Table 10. Finished product design analysis—Work (3) Jindian—Small-size backpack.

Front view	45-degree angle perspective view	Design Features: The symbolic elements used in the iron window grilles are circular, symmetrical, and repeating rhombuses, which have the meaning of reunion and promotion, allowing fashion accessories to highlight the combination of traditional craftsmanship and fashionable design.
		
Size (W: 10 cm × D: 5.6 cm ×H: 14 cm).		
Source of inspiration/spirit		Use classics to recreate golden classics. Introducing the iron rose window symbols of old houses in Tainan and combining them with aluminum wire techniques and glue dispensing techniques to create them.
Shape		Small side backpack.
Color		Blue Purple.
Material		Acrylic, AB glue, aluminum wire, and hardware.
Accessories		Hinges, metal handles, imitation metal locks, and metal straps.

We also designed posters and detailed presentations for the promotional materials of the work as shown in Figs. 5–7.



Fig. 5. Golden Classic Series Posters (1).



Fig. 6. Golden Classic Series Posters (2).



Fig. 7. Golden Classic Series Posters (3).

5. Discussion

After the completion of the design and fabrication of the works, we investigated the benefits based on the purpose of creation and analysis of techniques. The application of aluminum wire and AB glue in acrylic production and the visual effect design characteristics of creative materials were explored as follows.

5.1. Aluminum Wire Technique Is Applied to Acrylic Panels

In the production process of the suitcase, the aluminum wire was used with software to draw the pattern, and then the output was created. Three-second glue was used to adhere it to the transparent acrylic panel. For the top hat, the electrographic pattern was produced using laser cutting of the acrylic panel. In shallow carving, the shapes were bent as they were made of aluminum wires. The practice adjustment saved a lot of creative time. The desired shape of the aluminum wire was engraved on the acrylic panel by laser cutting, which greatly saved processing time and shortened the creation time.

5.2. Use of UV Glue (AB Glue)

We had the problem of surface fogging, stains, and glue overflow caused by three-second glue at the beginning of the creation. However, the aluminum wire was not fixed on the acrylic fabric without using three-second glue. Different glue materials were used to find how to flow UV glue on the acrylic surface. A solution to the problem was successfully found using a ratio of AB glue as 3:1. It showed good transparency after hardening for making thick jewelry or accessories. The drying time was approximately 9 to 12 hours.

5.3. Visual Effect Design of Creative Materials

In addition to using the symbolic elements of the iron window grilles of old houses in Tainan as accessories, the texture of “stained glass” of traditional Western culture was employed. The change of sunshine in seasons and hours and cloudy and sunny weather was reflected in different thicknesses of glass. The sunlight with different intensities of light and dark gave vitality to the colorful windows of the church, making them appear ever-changing and unpredictable. “Light” played a central role in the expression of sculptural beauty and connected rich religious content and thoughts. Therefore, we incorporated the pattern and color of stained glass. “Light” was regarded as the source of life for all things, capable of illuminating and revealing (dispersing darkness and obscurity), and was full of sacred and mysterious qualities. Therefore, using stained glass patterns, fashion accessories had unique shapes. Through the display of material characteristics, its beauty and fashion sense were enhanced. The design works were created to have the texture and color light and shadow of stained glass when exposed to sunlight.

6. Conclusions and Suggestions

In the creative analysis and production of the design works, we combined the aluminum wire technique with UV glue to create acrylic designs and unique fashion accessories with avant-garde aesthetic designs. The series of works was based on unique visual symbol design. Each work contained the shape of a grille to represent reunion, peace, and promotion. The local, fashionable, and international impressions were revealed by combining epoxy and acryl and using the texture of stained glass and enhance the visual beauty of fashion accessories through light and shadow exposure and color rendering. The UV glue was used for the creation. As the glue material has a certain thickness, glue overflow. To solve the problem, the creation process was adjusted as the side body parts were assembled first, and then the glue and coloring process was carried out. Since acrylic is a hard material, every detail must be considered in terms of size. In design, material properties and processing methods need to be considered seriously to shorten the processing time.

Author Contributions: Conceptualization, C.-B. Chen and C. Liu; methodology, C.-B. Chen; validation, C. Liu; C.-B. Chen and C. Liu analyzed design elements and studied the results; writing—original draft preparation, C. Liu; writing—review and editing, C.-B. Chen; supervision, C.-B. Chen; C. Liu produces acrylic fashion accessories. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflicts of interest.

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