April 28, 1953 G. A. KRAMER 2,636,370

METHOD OF DECORATING CANDLES AND THE PRODUCT THEREOF

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FIG. 1

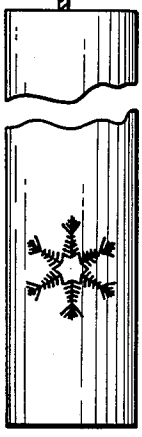


FIG. 3

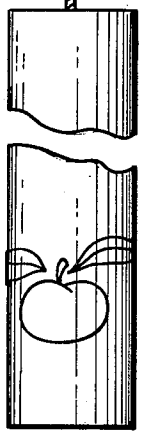
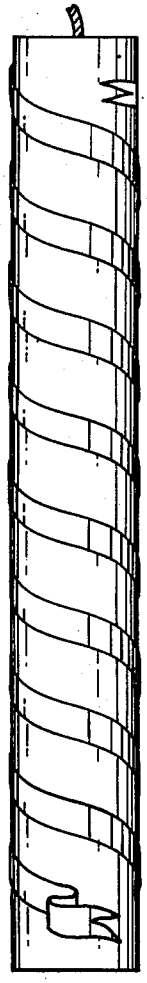


FIG. 5



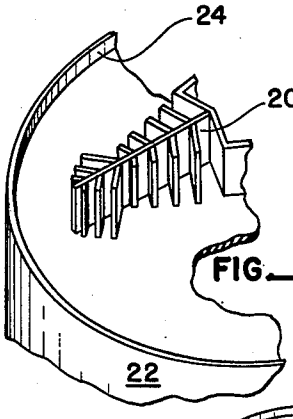


FIG. 2

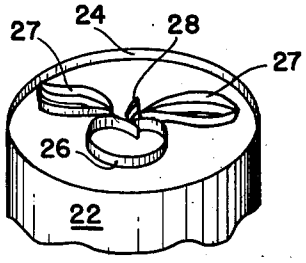


FIG. 4

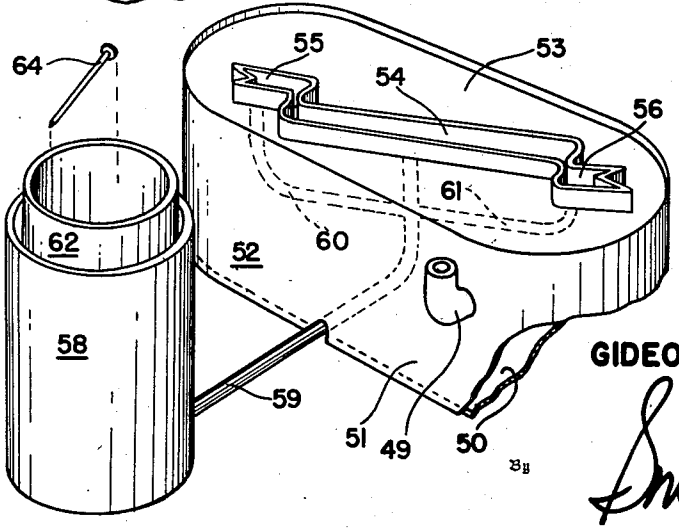


FIG. 6

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METHOD OF DECORATING CANDLES AND THE PRODUCT THEREOF

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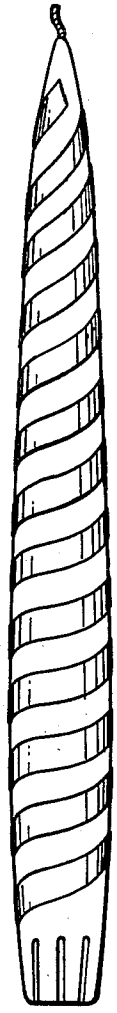


FIG. 7

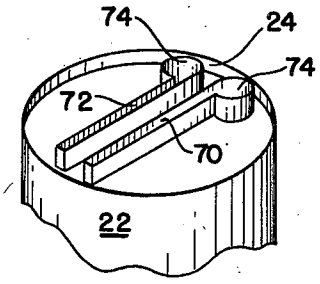


FIG. 8

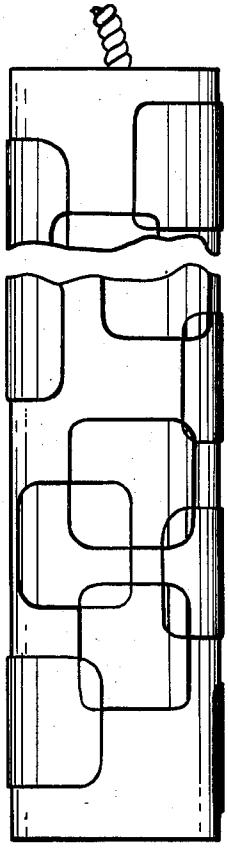
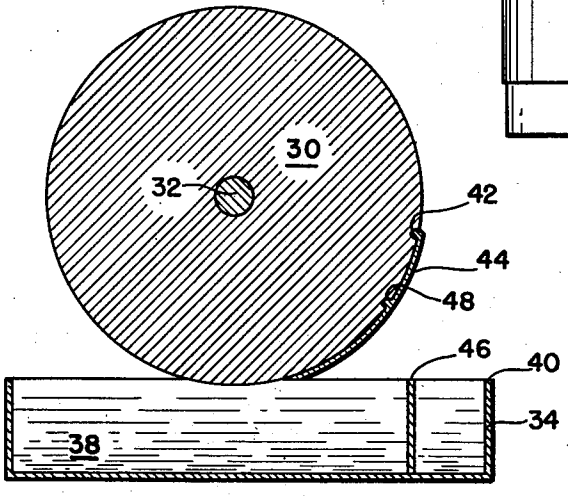


FIG. 9

FIG. 11



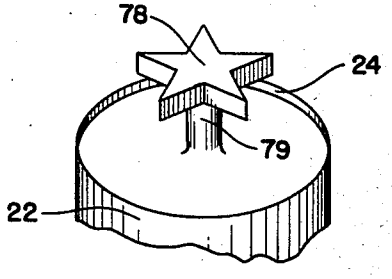


FIG. 10

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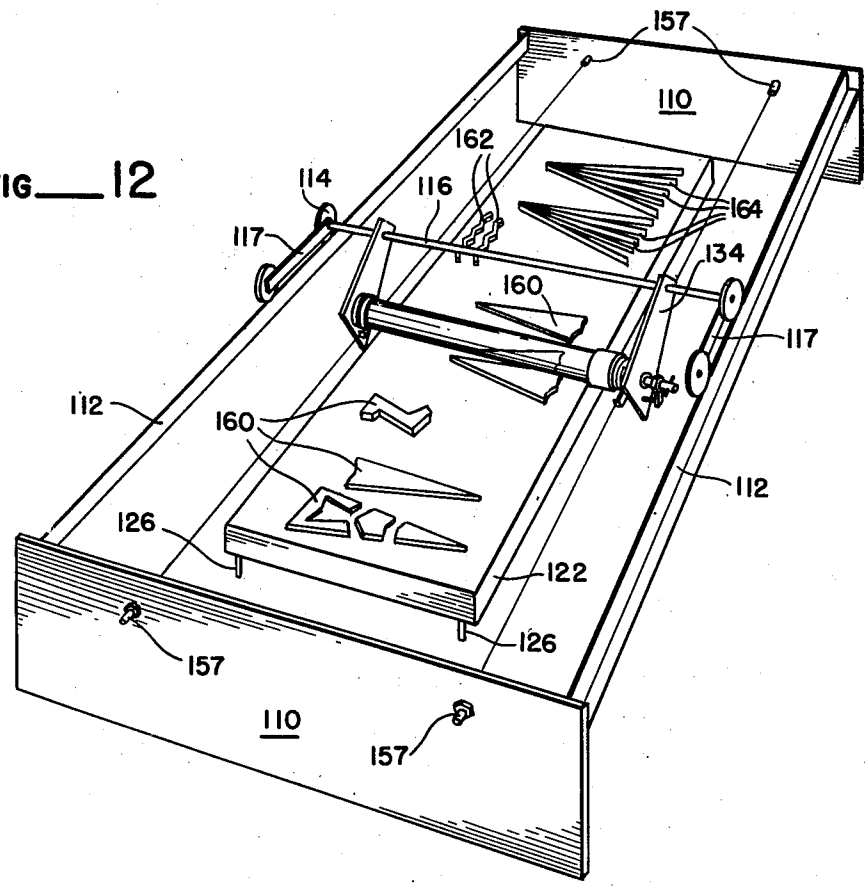
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METHOD OF DECORATING CANDLES AND THE PRODUCT THEREOF

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FIG. 12



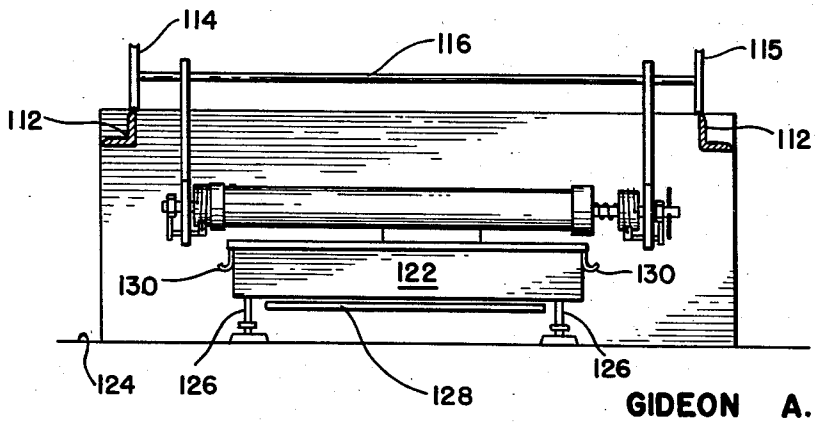


FIG. 13

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METHOD OF DECORATING CANDLES AND THE PRODUCT THEREOF

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FIG. 15

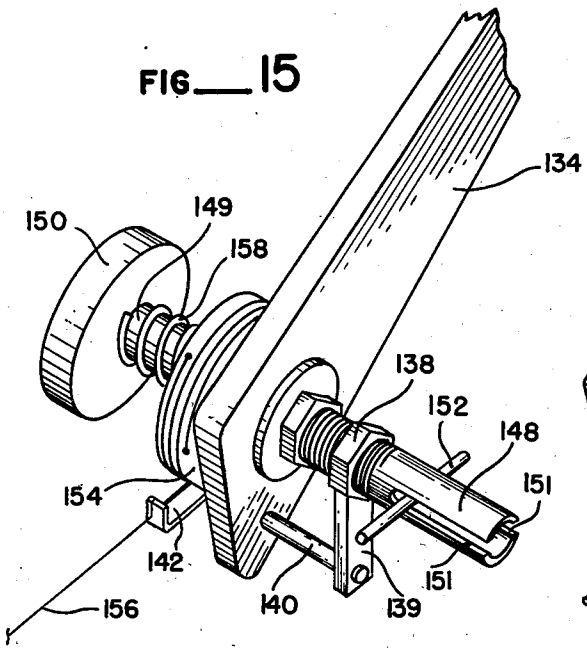


FIG. 16

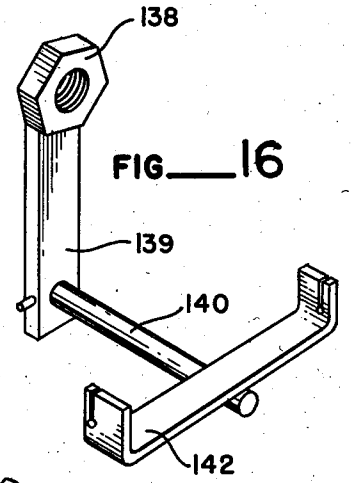
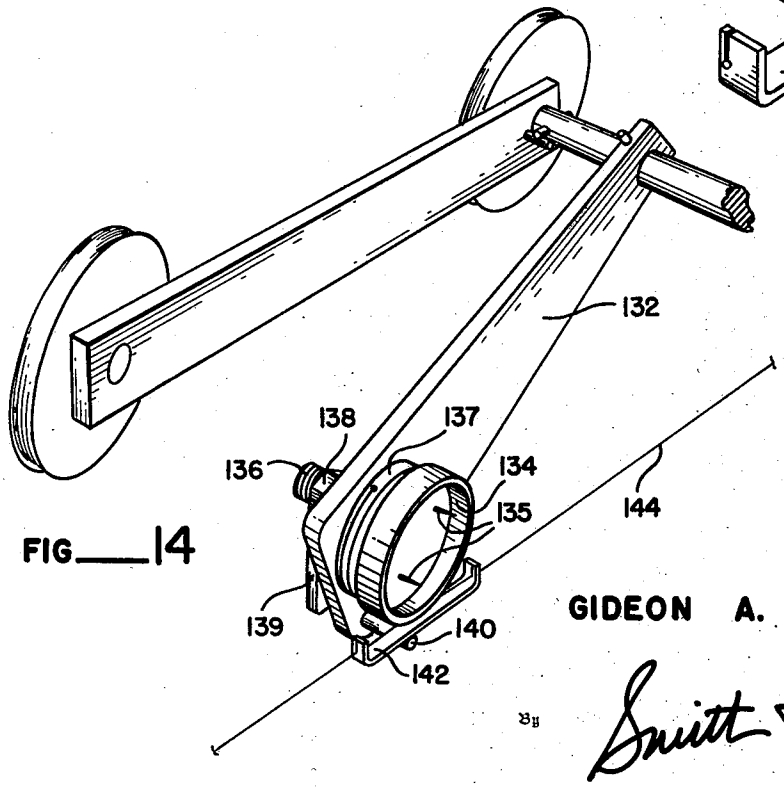


FIG. 14



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Patented Apr. 28, 1953

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UNITED STATES PATENT OFFICE

2,636,370

METHOD OF DECORATING CANDLES AND THE PRODUCT THEREOF

Gideon A. Kramer, Seattle, Wash.

Application December 11, 1948, Serial No. 67,021

5 Claims. (Cl. 67—22.5)

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This invention relates to a method of decorating candles and the product thereof and, more specifically, to the treatment and ornamentation of candle surfaces by etching and by the surface deposition of waxy material relative such etched areas. This invention also contemplates the production of novel candles as a result of my method.

Candles have been treated in a variety of ways to produce ornamental effects and various surface configurations. In the prior art, candles have been variously dipped in contrasting colored wax or paint materials; they have been hand painted, stained or dyed; they have been hand or machine engraved or otherwise tooled; and pre-formed objects have been adhesively applied to the surface. The results have been adhesively applied to the surface. The results have been varied but primarily are marked either by extreme conventionality where mass production has been attempted, or by non-uniform and usually most heterogeneous service treatment where the labor and time factors have been considered material. Both methods are objectionable for obvious reasons. Attempts have been made to mechanically print or paint candles but little success has been attained because of the disaffinity of the printing inks or paints with the waxy base materials of the candles and because of the great amount of manual labor involved.

Having in mind the foregoing, it is an important object of this invention to provide: a method of ornamenting and decorating candles with attractive and multi-colored designs; a method which can be practiced simply and efficiently without materially adding to cost of the product; a method that does not require undue amounts of labor and can be performed by relatively unskilled persons; a method that can be rapidly performed with relatively simple equipment; and a method that can be varied so that with a few simple aids a worker can produce a myriad of designs in ornamented candles.

A further object of the invention has been to combine, in such an ornamenting process, an etching, and, at the same time, surface deposition of the candle to produce striking and highly ornamental effects without undue expense or without requiring highly skilled labor.

Another object of the invention has been the provision of means that are simple to construct and use for the simultaneous surface etching and deposition of candles to produce ornamental effects, and which means is durable and easily operated by persons of slight skill and training and

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permits multi-color applications with a high degree of register between components of a design.

One other object of the invention has been the provision of a candle that has its surface ornamented with surface-deposited color elements composing a design subject that has all the characteristics of multi-color printing operations on other media.

The foregoing objects and others ancillary thereto I prefer to accomplish as follows:

According to a preferred embodiment of my method I employ a candle of either molded or dipped form, and engrave or etch the same with a heated pattern-holder. I can also simultaneously overlay the candle about the etched area with a surface deposited color-contracting waxy material that has an affinity for the base material from which the candle is formed. Specifically, a design pattern-holder is formed of thin-edged heat conducting material and disposed so that the upper edges of the pattern-holder lie in a substantially horizontal plane. Heat is supplied to the pattern-holder and when the candle is rolled thereover it will melt into the surface of the candle causing the same to be etched where contact is had. The melted wax flows away from the face edges of the design pattern-holder and down the walls thereof. In this way a line design of a snow flake may be produced, since the design is merely etched into the surface of the candle. In such case, it is preferable to use a candle that has a thin outer skin of a color that contrasts with the body color of the candle so that the latter is exposed when the pattern-holder etches through the skin covering. By employing a pattern-holder that is continuous and outlines the design, a pool of colored melted wax can be contained within the design. Then, when the candle is rolled over the pattern-holder, not only is the candle heat-engraved or etched, but a thin deposit of the wax from the pool is obtained upon the surface of the candle within the confines of the outlined and etched design. By this arrangement, a design motif, such as a leaf, an apple, a star, or the like, may be formed. The melted wax from the pool, which will usually be opaque or contrasting to the surface of the candle, films the area within the etching as determined by the design of the pattern-holder, and also fills the etched grooves so that in the final product the wax in the grooves is deeper in color than that forming the film. Thus, I obtain both a peripheral outline and veins simulated within the design, as in the case of a leaf. The mechanism for the practice of my method is quite simple

and preferably comprises a metallic base element to which heat can be supplied and on which a securely mounted pattern-holder can be mounted. I usually form the pattern-holder of metallic strips of the nature of printers' rules, and I have found it quite satisfactory to solder them in place upon the base element. Such a pattern-holder, of course, can be cast or otherwise produced. Heat is conducted from the base element upward through the pattern-holder so that it is delivered to the upwardly directed, thin, etching edges of the pattern-holder. When a candle contacts the heated pattern-holder and is allowed to sink slightly, the candle will have a portion etched out. If the pattern-holder is closed, or the design is such that there are no gaps in its periphery and wax is supplied within the pattern-holder, both etching and surface deposition take place. The variety of patterns that can be formed and applied by this method is unlimited, and I have found that high quality work can be produced with relatively unskilled workmen having only a slight degree of previous training.

The novel features that I consider characteristic of my invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which

Figure 1 is a view of a candle in elevation, showing a simple design etched thereon;

Figure 2 is a perspective view of the pattern-holder employed in etching the candle of Figure 1;

Figure 3 is an elevational view of a candle having an etched and surface-deposited design applied thereto;

Figure 4 is a perspective view of the pattern-holder for applying the design shown in Figure 3;

Figure 5 is a view in elevation of a candle having a spiral pattern applied thereto by etching and surface deposition with opaque material;

Figure 6 is a perspective view of the pattern-holder employed in applying the pattern shown in Figure 5;

Figure 7 is a view in elevation showing a candle having a two color spiral ornamentation applied thereto;

Figure 8 is a perspective view of the pattern-holder for decorating the candle in Figure 7;

Figure 9 is an enlarged diagrammatic cross-sectional view through a pattern-holder and candle illustrating the manner of etching and surface deposition I employ in ornamenting the candles;

Figure 10 is an enlarged, fragmentary, sectional view showing in detail the etching of a candle with a heated pattern-holder element;

Figure 11 is a perspective view of another form of candle as ornamented according to my invention;

Figure 12 is a perspective view of the machine useful in the practice of my process of ornamenting candles;

Figure 13 is a vertical, elevational view across the machine of Figure 12 with portions shown in section for convenience of illustration;

Figure 14 is an enlarged, perspective view of a candle-rotating cup of the machine of Figure 12;

Figure 15 is an enlarged, perspective view of a second candle-rotating cup of the machine of Figure 12;

Figure 16 is a perspective view of a level-winding mechanism employed in the machine of Figure 12.

In Figures 1 and 2 I illustrate a simple form of candle ornamentation and means for producing the same. On the candle of Figure 1 I have applied a snowflake design element by means of the simple snow crystal pattern-holder **20** of Figure 2. To the base **22**, which is here shown to be cylindrical and preferably is of thin-wall construction from sheet metal, I mount the pattern-holder **20**, which has been formed of small pieces of metal joined together with stems and branches that will impress the crystalline form upon a candle. The base **22** is placed upon a heater such, for example, as a hot-plate and conducts heat upward to the pattern-holder **20**. A candle is brought into contact with the upper edges of the pattern-holder and rolled thereover, whereupon the heated metal will melt the candle covering and cause it to be etched out. When a white core candle is used and the surface, let us say, is blue, a white snowflake will appear on the candle surface as shown in Figure 1. Normally, the candles used have a melting point of about 125° F. up to 190° F., and I have found that etching can best be carried on when the pattern-holder has a temperature slightly above the melting point of the wax. Since the amount of heat applied to the pattern-holder is low relative the wax melting point and is transmitted to the candle in a localized condition, there is no appreciable softening of the core of the candle, and since the proportion of mass to heated pattern-holder is slight, such heat is readily absorbed and the etched or deposited area can be immediately handled without obliteration of detail.

As etching takes place and wax is being removed from the surface of the candle, it flows readily down and away from the contact face of the pattern-holder **20** onto the upper face of base **22**. I, therefore, employ a rim **24** around the top of the base which will contain the wax as it accumulates, or the same may be piped away, as will be more fully described hereafter.

In Figures 3 and 4 I have shown a more complex design element, and these views, taken with the showing of Figure 9, will further reveal details of my method and apparatus used in producing ornamentation on candles. The pattern-holder of Figure 4 includes three design elements, such as the body of an apple **26**, the leaves **27**, and the stem **28**, all of which are arranged on base **22** in a natural grouping. The elements **26**, **27** and **28** are formed of thin metallic strips that are formed and shaped as desired, and each encloses an area of the design without peripheral gap of any nature. They are soldered in a fluid-tight manner to the base and each can contain a pool of fluid wax which is separated from the others. If no pool of wax is maintained in the design elements, an etching of a candle in outline is obtained but, by filling the apple-shaped element **26** with red wax, the stem element **29** with brown wax, and the leaf elements **27** with green wax, it is possible to produce multi-colored ornamentation upon a candle as shown in Figure 3. The wax in each of the design elements is sufficient to lie in the plane of the upper etching edges of the elements and may even rise in a meniscus to slightly thereabove. When a candle is rolled over the pattern-holder (elements **26**, **27** and **28**) it will be etched as previously described and, simultaneously, a surface deposition of wax will be had

upon the candle, producing in this case the appearance of a red apple having a brown stem and green leaves. The use of the words "etch" and "etching" is based upon the fact that, according to the process herein, there is an in-let design or pattern element engraved or produced upon the surface of the candle in which the lines of the design are incised into the body material of the candle by means of an action obtained to remove body material through the use of a heated blade-like member which thermally accomplishes the etching or wax removal.

Each part of this design will have at least two densities of color for the reason that the etched groove will contain colored wax to a depth greater than that of the space within the design part. The reason for this is shown in Figure 11, wherein a candle 30, having a wick 32, is shown being rolled over a design element. A pool 38 of wax is enclosed by the wall 34. When the candle contacts the heated edge 40, a groove 42 is etched into the body of candle 30 and is immediately filled by wax from pool 38 which, at the same time, is congealing in a film 44 on the candle within the boundary defined by the groove 42. Since the wax in the groove is deeper than the wax film 44, a greater depth of color is obtained about the periphery of the design and, in effect, the latter is outlined. A similar situation arises when a secondary wall 46 is enclosed within the pattern-holder wall 34, and an intermediate groove 48 is formed and filled with wax from pool 38. In this way, it is possible to not only provide the outline of a leaf but, also, to include the veins of a leaf by arranging vein-like etching blades in the pattern-holder. A person skilled in the art has no difficulty in realizing that this arrangement will permit wide varieties of designs to be produced with substantial amounts of detail in the ornament produced.

Such wax as flows away from the candle when it is etched mingles with the wax of the pool or flows away down the outer sides of the pattern-holder and may be disposed of as described. Again, since the mass of the candle 30 to the amount of film that is deposited is great, the film rapidly hardens and is not obliterated even though it may be immediately handled by the operator.

The candle of Figure 5 is shown decorated with a riband design element that is particularly attractive and quite effective when strong contrast between the color of the riband to the color of the candle body is obtained. This design is produced by the mechanism of Figure 6, including the base 52 formed of bottom wall 50, side walls 51 and top 53, which support the pattern-holder comprising the mid-portion 54 and the ends 55 and 56. The design illustrated in Figure 5 extends from end-to-end of the candle and begins with a waved ribbon-end joined to the elongated, spirally wrapped, intermediate portion and terminates in a second waved ribbon-end. This design results from first impressing the heated design of element 55, by rolling the candle thereover and onto the heated mid-portion 54, then slowly rotating without materially advancing the candle over the latter at an acute angle thereto to etch the spiral riband from one end of the candle to the other and then terminating the operation by rolling the candle over the heated element 56 and off the pattern-holder. During this operation the candle is etched and has a surface deposition of wax applied thereto in the manner previously described. By using strong dyes to color the wax within the elements and by insuring that the color of the candle being ornamented is not of strong color, such wax as flows down into the pools is not materially diluted, and uniform color characteristics can be maintained from end-to-end of the candle ornament. Further, such etching as is carried on at the edges of the design produces a down-flow of wax from the candle body more on the outside of the pattern-holder than interiorly, the reason for this being not particularly clear, but the action is particularly noticeable during the operation.

In the device of Figure 6, I show a means of supplying melted wax to the pools of the pattern-holder from a reservoir 58 through conduits 59, 60 and 61, the latter two branching from the main pipe 59 and running to the wavy-ended elements of the riband design element. I place melted wax in the reservoir 58 and apply a float 62 to the pool in the reservoir. As wax is withdrawn from the pools in the design element, the level in the reservoir must be lowered to compensate for that needed to raise the level in the design elements. This compensation is accomplished by increasing the weight of the float as by adding thereto weight pieces 64, to the end that the weight sinks in the reservoir and forces wax through the conduits and to the pattern-holder. Alternately, it will be readily recognized, the size of the wax pool in the reservoir may be substantially larger than the wax volume of the pattern elements so that there is relatively constant feed of wax from the former to the latter as surface deposition is taking place. The base 52 is a tank for containing liquid to receive and store heat from a suitable source. A vent is indicated at 49.

There are several ways in which wax may be supplied to the pattern-holders. Probably the simplest is to merely sift in particles of wax of a desired color and low melting point so that it will rapidly melt under the influence of heat supplied to the pattern-holder. I have found, also, that it is often convenient to have containers of melted wax properly colored and located near the scene of operation and to transfer such to the pattern-holder by means of an eye dropper or the like.

An example is shown in Figure 8, which is the pattern-holder that I employ in producing a multicolored, spirally wrapped design of the nature shown in Figure 7. In this case, two spaced apart ribbons are formed on the candle by means of the thin pattern elements 70 and 72 that are mounted on base 22, each of which merges with an enlarged reservoir portion 74 in which wax is maintained in substantial quantity in melted condition. As the operator starts the operation with the device of Figure 8, he positions the candle at an acute angle to the median between elements 70 and 72 and rotates the candle, laying on a spiral design from end-to-end. If the candle is cylindrical, the angle maintained is constant. If the candle is tapered as in Figure 7, the candle is shifted as ornamentation progresses and becomes more abrupt as the end of the candle approaches. All that need be done with an elongated decoration, as in Figure 7, is to let the candle lightly touch the pattern-holder edges and to continuously turn the candle about its own axis. Relatively little skill is required to obtain neat results and an attractive appearance.

Another phase of the operation arises when

etching is applied to a previously produced overlay film forming a part of a design. Let it be assumed that the candle body is white and in a scene a blue sky is shown in which is desired to suggest stars. In such an instance, I form a star-shaped pattern-holder 78 of Figure 10, and mount the same on a stem 79 that rises above the base 22. When the latter is properly heated, such a blue area may be etched with stars merely by contacting the pattern-holder 78 and causing a portion of the blue overlay to flow away. Sharp edged detail is easily obtainable and, with a strong contrast in colors, very desirable effects can be had.

In other types of operations, it occasionally is the desire of an operator to produce designs that tend to be more modern and arbitrary. An example is shown in Figure 9 in which I have overlayed round-cornered rectangular shapes so that variations in depth of deposit are obtained as where the elements overlap with two layers of film being applied at the overlap. The film hardens so rapidly that such an operation as this, which is carried on with but a single pattern-holder, can be performed without interruption and without obliteration of the design by the operator's handling of the candle as he turns and moves it.

Referring now to Figure 12 et seq., there will be seen upright supports 110 spaced apart from each other and which support and position the rails 112 upon which roll the carriages 114 and 115. These carriages are connected by cross-bar 116 and move forward and backward on the rails 112 to move a candle carried thereby over the pattern-holder, comprising base 122 that is supported above the table or like surface 124 by screw-type leveling legs 126. Variations of adjustment of the legs 126 permit the base and pattern forming elements carried thereby to be altered as to elevation and relative the horizontal.

The pattern-holder base 122 has heat supplied to it, preferably from underneath, by electric heating elements 128, or by comparable means such as gas burners or steam coils, all in the conventional manner. Design elements of the nature previously described are mounted upon the upper surface base 122. Wax gutters 130 along the edges are used.

The carriages 114 and 115 each include a pair of spaced apart tandem arranged wheels joined by a tie-bar 117 which is rigid with shaft 116 and tends to prevent the latter from turning about its axis as it moves. Bracket arms 132 are rigidly secured to shaft 116 in spaced apart relation, each being located along one side of the base 122 and support for rotation the candle carrying cups and other means employed in causing the candle to rotate as the carriages are moved from end-to-end of the mechanism.

In Figure 14 I have shown in enlarged detail the candle-carrying cup 134 that receives an end of the candle—in this instance, the lower end—and impales the same by means of pins 135. A shaft 136 is journaled in arm 132 for rotation and is rigidly coupled to the cup 134. Shaft 136 is threaded and receives the nut 138 or arm 139 which are secured to guide shaft 140 that passes through arm 132 and carries inboard of that arm and below the cup 134 a notched level winder head 142, the details of which are illustrated in Figure 16. As cup 134 rotates during longitudinal movement, shaft 136 rotates within nut 138 and causes it to move toward or away from arm 132, the rotation of arm 139 being restrained by pin 140 which passes through a suitable hole in arm 132. Such action causes the head 142 to also move toward and away from arm 132, depending upon the direction of movement of the carriage 114. A wire 144, anchored at its ends to supports 110, passes around a drum 137 two turns and is intermediately anchored to the latter. Wire 144 passes through and is lead by the notches of head 142, and is caused to be wound in a helical manner on the drum as the latter rotates. It will be recognized that this mechanism comprises a timed drive for the cup 134 and, consequently, for a candle that may be positioned therein.

The opposite end of such a candle is attached to the mechanism of Figure 15 that similarly comprises arm 134 that journals threaded shaft 148 and supports the level winding mechanism comprising nut 138, arm 139 shaft 140 and head 142, as has been described.

Shaft 148 is hollow and slidingly receives on its inboard end the shaft 149 that carries cup 150. Shaft 149 extends to a point in shaft 148 near its outboard end where it has slots 151, through which extend the arms of cross-pin 152 that permit manual longitudinal movement of the shaft 149 relative shaft 148. These shafts rotate together. A drum 154, carried by shaft 148, is wrapped by wire 156 in the manner and for the purpose previously described. A spring 158 between cup 150 and drum 154 urge them apart. By insuring that the cups 150 and 134 are similarly wrapped by wires 156 and 144 respectively, these two cups and a candle mounted therein will rotate synchronously as the carriages are moved forward or backward on the rails 112.

The attachment of wires 144 and 156 to the supports is accomplished by screws 157 which permit their adjustment in timing rotation of the two cups.

In the pattern-holder of Figure 12, I have shown etching and printing elements 160, over-printing elements 162, and simple etching elements 164 which will etch a previously printed area as a candle is rotated thereover. It will be understood that the various printing areas 160, and over-printing areas 162, will be of the type described more simply in connection with Figure 4, and that as a candle is rolled over the pattern-holder with slight surface contact with the upper edges of the design elements it will be etched and printed as set forth above. One additional operation upon the candle is illustrated in Figure 12 in that the design elements 164, which are simple etching members, will remove portions of a previously printed design area for highlighting or similar purposes.

As before, the wax that is etched from the candle surface runs down the outer edges of the design elements and, in the case of Figure 12, gravitates to the edges and into the gutters for disposal.

It will be obvious to those skilled in the art that, while I have described the use of equipment and processes in connection with cylindrical and tapered candles, it is obvious that such is readily usable to ornament conical and oval shaped candles and the like.

Having thus described the invention, I claim:

1. The process of decorating candles formed of thermoplastic wax material with a surface layer of thermoplastic overlay material, comprising: thermally forming on the surface of a can-

dle an endless groove outlining a design element, and simultaneously applying within said grooved outline and said groove a different colored thermoplastic wax overlay material.

2. A decorative candle formed of thermoplastic combustible wax body having an ornamental pattern element partially overlying its surface, said pattern element being of thermoplastic wax material fused to the face of the candle, said candle body being grooved along the periphery of the pattern element, said groove having a portion of the overlying pattern element material reposing therein.

3. A candle according to claim 2 in which there is a groove in the surface of the candle within the pattern element and said groove is substantially filled with the overlay material.

4. A candle according to claim 2 in which the pattern element has a groove within its periphery, said groove being deeper than the overlay material and exposing the body of the candle.

5. A candle according to claim 2 in which the pattern element is a riband which extends in

spiral form between the ends of the candle and there are peripheral grooves partially filled with the overlay material along the edges of the riband pattern element.

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Number	Country	Date
151	Great Britain	Feb. 11, 1893