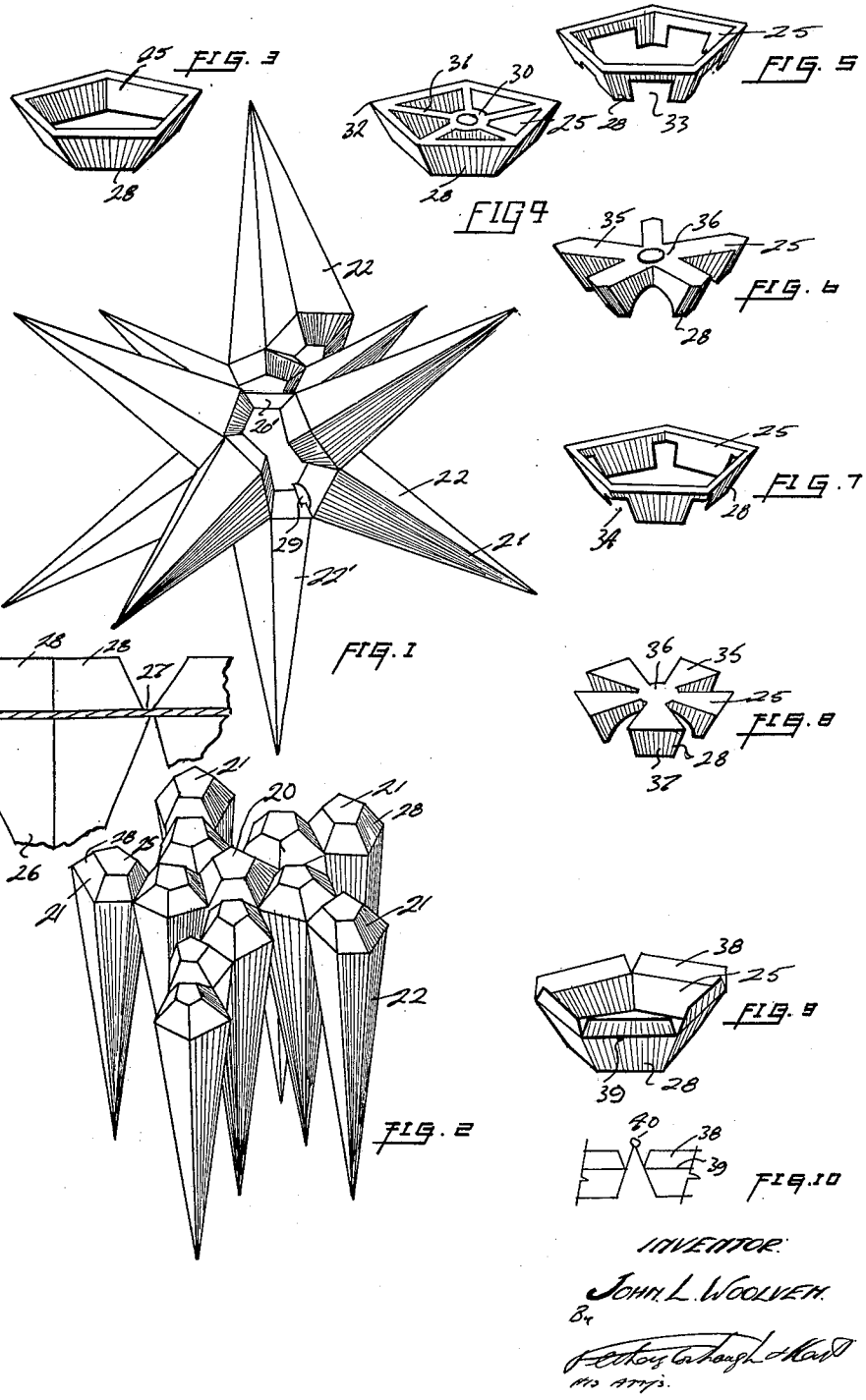
June 11, 1963 J. L. WOOLVEN 3,093,461

FOLDING DECORATION

Filed June 13, 1960 2 Sheets-Sheet 1



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June 11, 1963 J. L. WOOLVEN 3,093,461

FOLDING DECORATION

Filed June 13, 1960 2 Sheets-Sheet 2

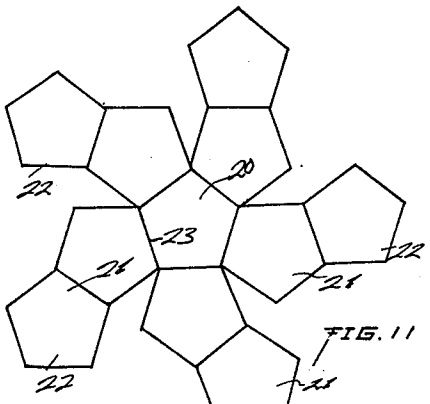


FIG. 11

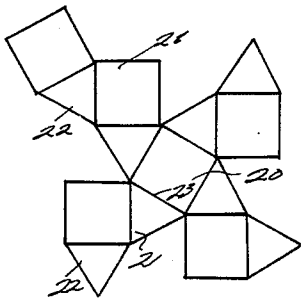


FIG. 12

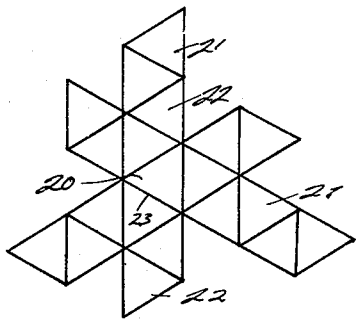


FIG. 13

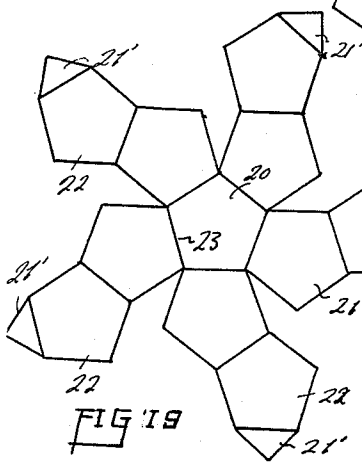


FIG. 19

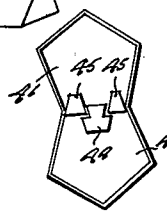


FIG. 14

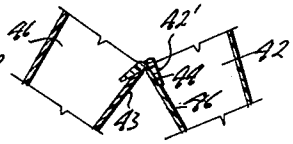


FIG. 15

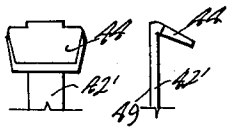


FIG. 17 FIG 18

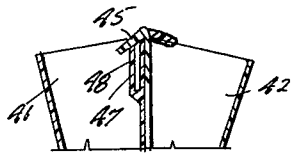


FIG. 16

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United States Patent Office 3,093,461 Patented June 11, 1963

3,093,461

FOLDING DECORATION

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Filed June 13, 1960, Ser. No. 35,555
8 Claims. (Cl. 41—11)

My invention relates to new and useful improvements in folding decorations.

The majority of folding decorations comprise a plurality of radially extending decorative portions which normally are required to fold when not in use to facilitate storing and shipping thereof, and attempts have been made to provide means whereby this folding and erecting can be obtained without manufacturing difficulties arising. Also the majority of such decorations include threaded cords which tend to damage the decoration when same is folded or collapsed.

However, these decorations suffer from the principal disadvantage of difficulty in assembling when manufacturing, and more importantly, difficulty in manipulating the cords in order to erect the decoration without damaging same.

I have overcome these disadvantages by providing a plurality of decorative elements hingedly secured together and including means whereby, when said decoration is suspended from a central point, the individual elements fold downwardly by gravity to form a completed enclosed decoration, each element engaging another and being limited as to the amount it can hinge with respect to the adjacent element to which it is connected.

In one embodiment I accomplish this result by having a multi-faceted base on each element, the angularity of the facets limiting the folding engagement of one element with the others.

In another embodiment, I provide a novel hinge device which in itself incorporates means to limit the hinging action of adjacent elements thereby assuring that when the device is erected, the elements lie in the correct angular relationship one with the others to form the completed decoration.

The principal object and essence of my invention is therefore to provide a decorative element of the character herewithin described which can be erected by suspending the decoration by the principal element thereof, with said principal element uppermost whereupon the remaining elements fold downwardly to form the enclosed symmetrical decoration.

A further object of my invention is to provide a device of the character herewithin described which can readily be folded for storage purposes merely by reversing the decoration and suspending same with the principal element downwardly whereupon the remaining elements fold back upon themselves and upon the central element, also by gravity.

Another object of my invention is to provide a device of the character herewithin described which, in conjunction with the novel hinge, facilitates manufacture and assembly of my device.

Yet another object of my invention is to provide a device of the character herewithin described which is particularly suitable for use with an enclosed source of illumination.

Still another object of my invention is to provide a device of the character herewithin described which is particularly adapted to the manufacture thereof by the simple stamping of plastic.

A further object of my invention is to provide a device of the character herewithin described in which the decorative portions of the elements of my device can be varied considerably without departing from the principal method of manufacture and operation.

Yet another object of my invention is to provide a device of the character herewithin described which is simple in construction, economical in manufacture, and otherwise well suited to the purpose for which it is designed.

With the foregoing objects in view, and such other objects and advantages as will become apparent to those skilled in the art to which this invention relates as this specification proceeds, my invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawings in which:

FIGURE 1 is a front elevation of my device showing same partially erected.

FIGURE 2 is a perspective view of my device shown in the partially folded position.

FIGURE 3 is a perspective view of one embodiment of the base of one of the elements.

FIGURE 4 is a perspective view of an alternative embodiment to FIGURE 3.

FIGURE 5 is a perspective view of an alternative embodiment to FIGURE 3.

FIGURE 6 is a perspective view of an alternative embodiment to FIGURE 3.

FIGURE 7 is a perspective view of an alternative embodiment to FIGURE 3.

FIGURE 8 is a perspective view of an alternative embodiment to FIGURE 3.

FIGURE 9 is a perspective view of an alternative embodiment to FIGURE 3.

FIGURE 10 is a fragmentary schematic side elevation of part of FIGURE 9.

FIGURE 11 is a schematic plan view showing one arrangement of connecting adjacent elements together.

FIGURE 12 is an alternative embodiment to FIGURE 11.

FIGURE 13 is an alternative embodiment to FIGURE 11.

FIGURE 14 is a base plan view of my novel hinge connecting two adjacent elements together.

FIGURE 15 is a fragmentary sectional view of the hinge shown in the erected position.

FIGURE 16 is a view similar to FIGURE 15 but with the hinge shown in the folded or stored position.

FIGURE 17 is a front elevation enlarged with respect to the other drawings, of one of the hinge elements.

FIGURE 18 is a view at right angles to FIGURE 17.

FIGURE 19 is an alternative embodiment to FIGURE 11.

FIGURE 20 is an enlarged fragmentary section showing one method of hinging.

In the drawings like characters of reference indicate corresponding parts in the different figures.

Proceeding therefore to describe my invention in detail, reference should first be made to FIGURES 1, 2, 11, 12, 13 and 19.

The device consists of a principal decorative element 20 having a plurality of groups 21 of secondary decorative elements hingedly secured therearound. Each of the secondary groups 21 comprises a plurality of decorative elements 22 hingedly secured together and the number of elements in each secondary group depends upon the number of decorative components required in the completed decoration.

For example, to form the decoration shown in FIGURES 1 and 2, twelve elements shown in FIGURE 11 are required. However, if fourteen decorative components are required, then a layout similar to that shown in FIGURE 12 is necessary and if twenty decorative elements are required to form a complete decoration then a layout similar to that shown in FIGURE 13 should be utilized.

Dealing first with the embodiments shown in FIGURES 1, 2 and 11, it is necessary that the bases of each of the elements be five sided so that five groups of secondary elements are required, each one of which is hingedly secured to one of the sides 23 of the principal element 20.

In this particular embodiment the hinged connection between adjacent elements is formed during manufacture by the insertion of a strip of flexible material 24 secured between the base portion 25 and the decorative portion 26 by means of adhesive or the like, thus forming a hinge line 27 between adjacent elements.

Each of said elements 20 and 22 comprises the aforementioned five sided or polygonal base when viewed in plan and identified by the reference character 25 with the aforementioned decorative portion 26 extending from one side thereof. This decorative portion may take any desired form and can be manufactured from plastic or any other suitable material.

Formed upon the other side of the base 25 is a plurality of facets 28, the number of facets depending upon the shape of the base when viewed in plan.

For example, in the embodiment shown in FIGURE 11, there will be five such facets, each facet extending inwardly towards the common center from one edge 23 of the sides.

If however the embodiment shown in FIGURE 12 is utilized, then some of the elements will have four facets and the other elements will have three facets and in the embodiment in FIGURE 13, all of the elements will have three such facets.

The number of facets, of course, depends upon the number of elements required to complete the decoration when erected and it will be appreciated that the inclination and shape of the facets are such that when the decoration is erected, all of the adjacent facets engage one with the other to form a completed enclosed symmetrical decoration.

The facets hereinbefore described limit the angular engagement of one element with another when erected thus causing the decoration to be completely symmetrical and enclosed when operated as will now be described.

FIGURE 2 shows the decoration in the partially folded or stored position with the principal element 20 extending downwardly with respect to the drawing.

When the principal element is held in this position, gravity causes the remainder of the elements to fold back upon themselves and the proper principal element as shown in this particular view.

However, when it is desired to erect the decoration, the decoration is grasped by the decorative portion of the principal element 20 and its position is inverted with respect to FIGURE 2 so that the principal element 20 is uppermost.

This causes the secondary elements to fold by gravity to take up the position shown in FIGURE 1, the angular relationship of one element to the others being controlled by the angle of the aforementioned facets 28.

It will be appreciated that as well as adjacent facets 28 engaging one another, when the decoration is fully erected, all of the facets of any one particular element are engaged by facets of the further elements which fall into place due to gravity when in this position. If desired a simple clip 29 may be provided adjacent the lowermost element specifically designated 22' but if the device is supported by the element 22' then this clip is not necessary.

Reference character 20, in FIGURE 1, indicates a portion of one of the facets of the principal element 20 (which is not otherwise visible in FIGURE 1) about to be engaged by the facets of adjacent elements folding downwardly thereupon.

While FIGURES 1 and 2 define the preferred method of construction, FIGURES 3 to 10 inclusive show alternative forms of the base portions 25 which can be manufactured and it should be appreciated that in all of these instances, the decorative portions 26 (which are not shown in these figures) would extend upwardly from the upper surfaces of these bases with respect to the drawings.

FIGURE 3 shows a base 25 in which the facets 28 are formed during manufacture and it will be observed that this base is hollow.

FIGURE 4 shows a base similar to FIGURE 3 with the exception that it is strengthened by the provision of a central boss 30 and radially extending fins or webs 31, extending between the boss 30 and the junction 32 between adjacent facets 28.

FIGURE 5 is similar to FIGURE 3 but it will be observed that the facets 28 are cut away in the centers as at 33 and in FIGURE 7, the facets are cut away at the corners as at 34.

FIGURE 6 shows an embodiment in which I have provided a plurality of webs 35 extending outwardly from a common central portion 36, these webs having a part of each facet 28 formed on the distal ends thereof and FIGURE 8 is a similar construction to FIGURE 6 with the exception that the central portions 37 of the facets 28 are formed on the distal ends of the webs 35.

FIGURE 9 shows a base portion 25 similar to FIGURE 3 with the exception that it is made of plastic and is provided with rigid tabs 38 upon the upper edges 39 of each of the facets 28 and the element will then be secured on the inner faces of these tabs. The upper edges of adjacent tabs may be hingedly connected together as shown schematically in FIGURE 10 at 40.

With reference to FIGURE 19, this is an alternative to FIGURE 11, only in this case the bottom point or facet is eliminated and a portion 21' of this facet is formed on each of the outer bases so that when erected they merge together to form the bottom facet.

In the embodiments hereinbefore described, the angular relationship between adjacent elements is controlled by the inwardly inclined facets 28 formed on the bases of the individual elements.

However, FIGURES 14 to 18 inclusive show a preferred method of obtaining this angular relationship which is combined with a novel hinge connecting adjacent elements together.

For the purposes of clarity, reference characters 41 and 42 identity adjacent elements hingedly connected together.

Element 41 is provided with a tongue 42' secured by one end thereof to the side 43 of the element 41 and extending outwardly therefrom at an acute angle so that, with respect to the drawings, the extending portion 44 thereof inclines outwardly and downwardly.

The element 42 is provided with a pair of tongues 45 also secured to the side 46 of the element 42 and extending outwardly at an acute angle and adapted to pass one upon each side of the aforementioned tongue 44 when the two elements are connected together. It will be appreciated that these tongues can either be secured by adhesive or formed integrally with the elements 41 and 42.

Due to the acute angular relationship of the tongues, it will be seen that when the elements hinge outwardly as shown in FIGURE 15, the extending portions of the tongues engage the sides of the elements thus preventing the two elements from being angulated further apart than illustrated.

By adjusting the angle of the tongues 44 and 45, during manufacture the desired angular relationship of the elements is provided when the decoration is in the erected position.

FIGURE 16 shows a method of construction which enables the two elements to be hingedly connected together. In this view, the tongues 45 are moulded integrally with the element 42 and element 41 is provided with an offstanding portion 47 thus forming a slot 48.

The tongue 42' shown in FIGURES 17 and 18 is first engaged between the tongues 45 on the element 42 and the attaching portion 49 of this tongue is then slipped

into the slot 48 and cemented in position thus securely holding the two elements in their hinged relationship one with the other.

The hinged connection just described is particularly suitable for use with the decoration in which it is desired to place a source of illumination as, due to the open bases of the elements with this construction, the maximum amount of space is provided in the center of the element when erected in order to hold said source of illumination.

This particular method of construction also facilitates manufacture particularly as it is desired that the elements be moulded from plastic as this particular hinge arrangement makes the assembly of adjacent points relatively simple.

Referring back to the bases shown in FIGURES 3, 5 and 7 for example, it will be appreciated that a sheet of relatively thin flexible plastic could be cut and moulded in one operation in the design for example, shown in FIGURE 11 with cup-like depressions formed therein to form the bases 25 whereupon the decorative portions can be secured and flexibility of the plastic permits the adjacent elements to hinge one with the other when erecting or storing the decoration.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claims without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

What I claim as my invention is:

1. A folding decoration comprising in combination a principal decorative element and a plurality of groups of secondary decorative elements, each of said groups comprising a plurality of decorative elements hingedly secured together in adjacent relationship, each of said groups being in turn, hingedly secured by the edge of one of said elements in said group, to the edge of said principal decorative element, whereby when said decoration is suspended by said principal element with said principal element uppermost, said secondary elements fold downwardly by gravity to complete an erected, enclosed, symmetrical decoration, and when supported with said principal element lowermost, said secondary elements fold back upon one another and said principal element in an open, stored position, and means associated with said elements to limit the angular engagement of one element with the other.

2. A self-folding and unfolding decoration, comprising a principal decorative element and a plurality of groups of secondary decorative elements, each of said elements being elongated and including a polygonal base, the base of each element having a polygonal perimetric edge and a plurality of facets extending in mutually convergent relation from the sides of said perimetric edge, the secondary elements in each group being hingedly connected together at sides of the perimetric edges of their bases, one secondary element in each group being hingedly connected to the principal element at sides of the perimetric edges of their bases, whereby the facets of said bases may abut one another and gravitationally sustain the elements in radiating positions from the center of the abutting bases when the decoration is suspended by said principal element, and whereby said secondary elements may fall by gravity to a folded position adjacent the principal element when the decoration is inverted to place the principal element at the bottom thereof.

3. The device according to claim 2 in which said base is hollow.

4. The device according to claim 3 in which said base includes a central supporting boss and a plurality of webs extending radially outwardly from said boss to the corners of said base.

5. The device according to claim 3 in which each of said facets is cutaway at the center thereof.

6. The device according to claim 3 in which each of said facets is cutaway at the end thereof.

7. The device according to claim 1 in which each of said elements comprises a polygonal base when viewed in plan, a decorative portion extending outwardly from one side thereof, said base comprising a plurality of webs extending radially outwardly from a common center, and a planar inwardly inclined facet formed on the ends of each of said webs, and on the other side thereof to that which said decorative portion is secured.

8. A folding decoration comprising in combination a principal decorative element and a plurality of groups of secondary decorative elements, each of said groups comprising a plurality of decorative elements hingedly secured together in adjacent relationship, each of said groups being in turn hingedly secured by the edge of one of said elements in said group to the edge of said principal decorative element, whereby when said decoration is suspended by said principal element with said principal element uppermost, said secondary elements fold downwardly by gravity to complete an erected, enclosed, symmetrical decoration, and when supported with said principal element lowermost, said secondary elements fold back upon one another and said principal element in an open stored position, and means associated with said elements to limit the angular engagement of one element with the other, each of said elements including an open, polygonal, basal perimeter, and hinge means for said hinged securement, said hinge means also including said means associated with said elements to limit the angular engagement of one element with the other, said last mentioned means comprising a central tongue secured to one element and extending outwardly and being acute angulated with respect to the side of said element to which it is secured and engaging over the edge of the other element to which said first element is hingedly secured, and a pair of tongues secured to said other element and extending outwardly and being acute angulated with respect to the side of said other element to which they are secured, and engaging over the edge of said first element and upon each side of said first mentioned tongue.

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