

June 16, 1925.

1,541,952

H. HELLER ET AL

METHOD FOR PRODUCING ORNAMENTS

Filed Feb. 17, 1923

3 Sheets-Sheet 1

Fig. 1

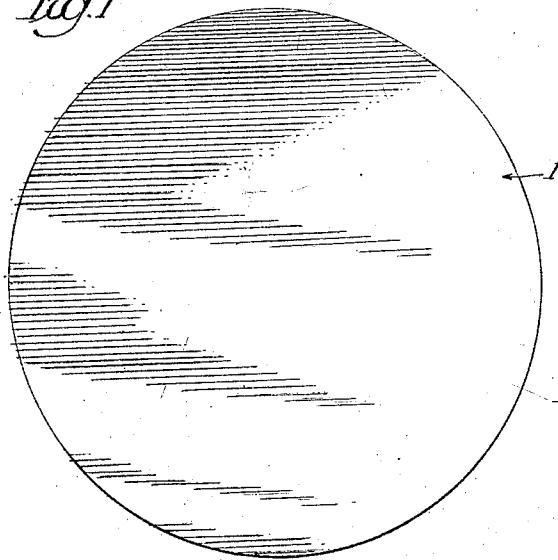


Fig. 3

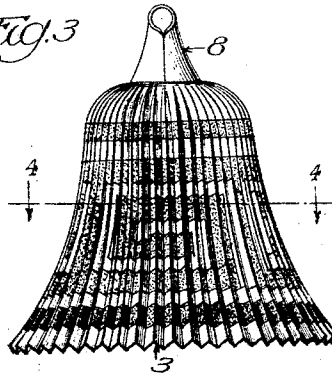


Fig. 4

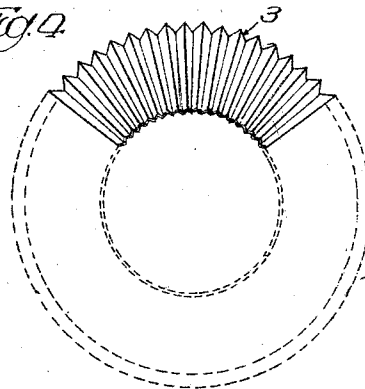


Fig. 2

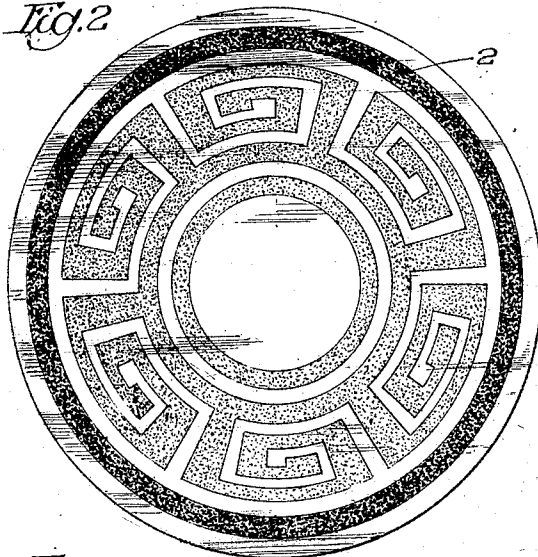


Fig. 5

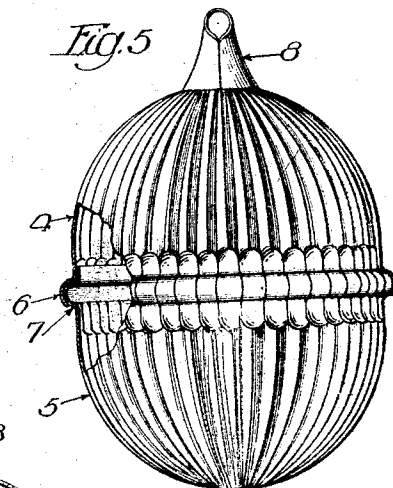


Fig. 6

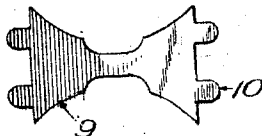
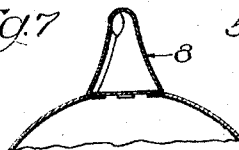


Fig. 7



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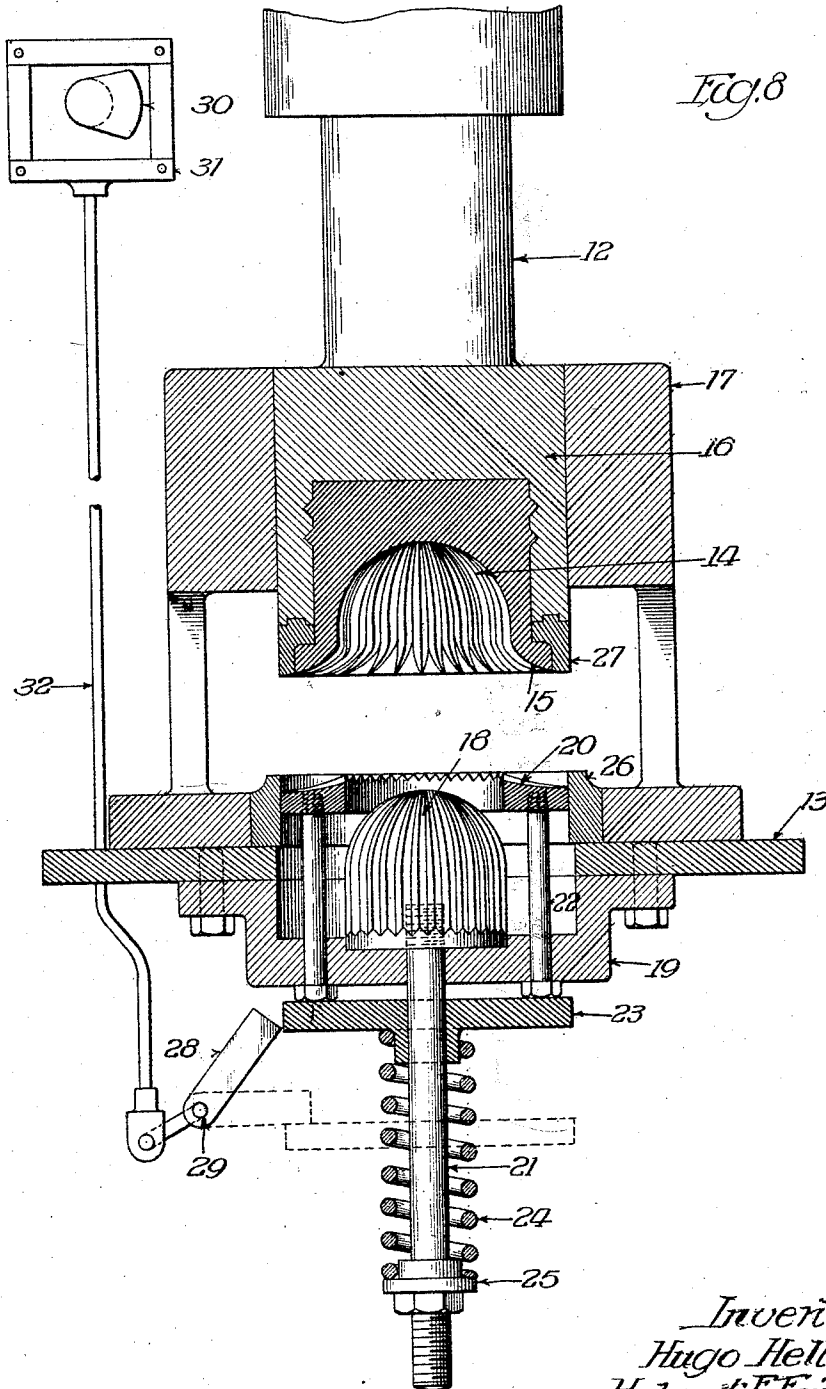
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 10

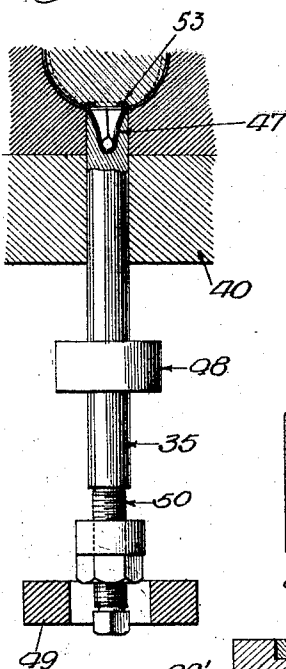


Fig. 9

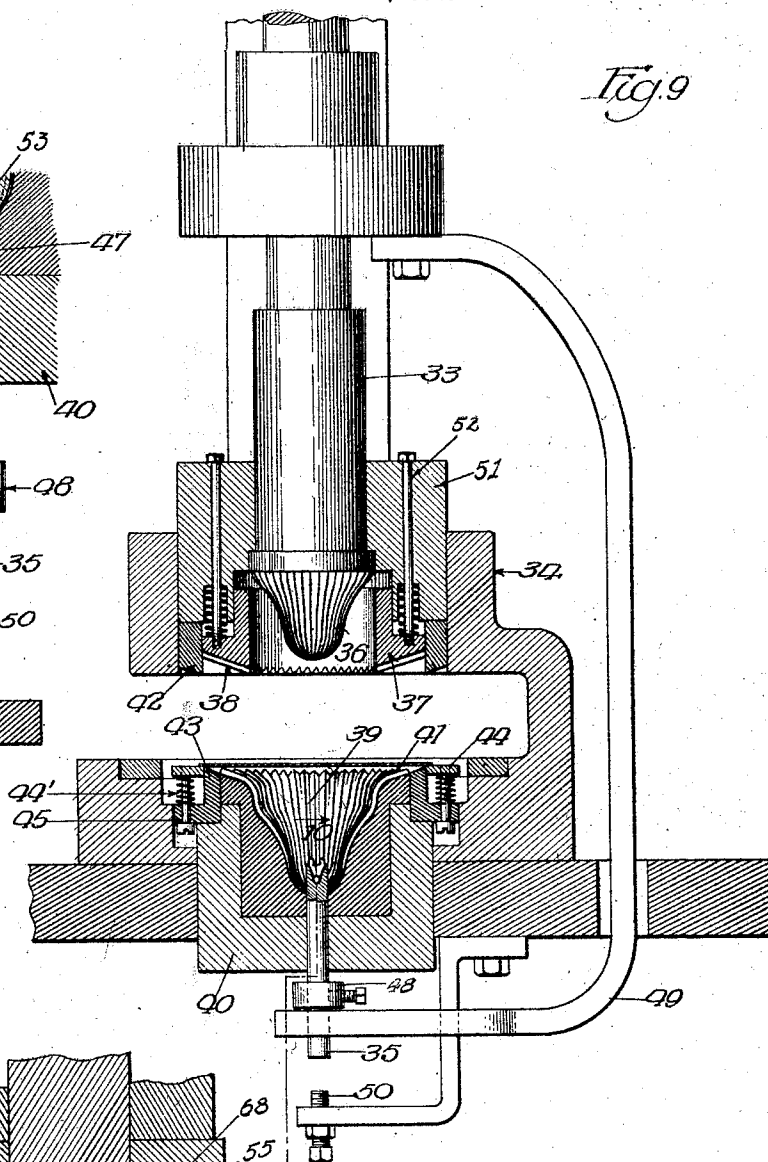
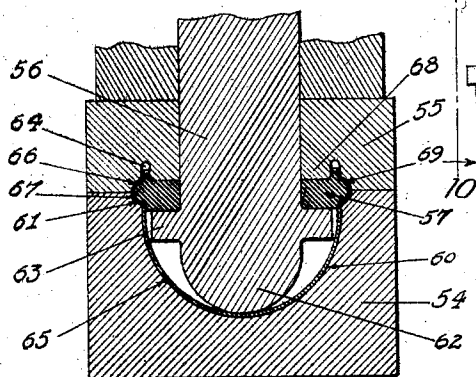


Fig. 11



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UNITED STATES PATENT OFFICE.

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METHOD FOR PRODUCING ORNAMENTS.

Application filed February 17, 1923. Serial No. 619,665.

To all whom it may concern:

Be it known that we, HUGO HELLER and HOBART F. FRIMMEL, citizens of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Methods for Producing Ornaments, of which the following is a specification.

This invention relates primarily to a method for producing ornaments.

Ornaments ordinarily used for decorating Christmas trees are hollow and made of thin glass which is brittle. Hence they are fragile and easily broken.

The object of this invention is to provide a process for readily and economically manufacturing lustrous metallic ornaments.

Another object is to provide a process for decorating the ornaments in colors.

Another object is to provide a process for producing a lustrous metallic ornament which is strong and rigid.

Another object is to provide a process for producing a lustrous ornament of increased brilliancy.

Other objects and advantages will hereinafter appear.

The ornament which it is contemplated producing by this process is made from thin sheet metal or foil having a lustrous surface.

Its walls have narrow corrugations, flutes or pleats which increase the brilliancy of the ornament, strengthen the same and give rigidity thereto.

The lustrous surface is ordinarily decorated with a thin film of translucent or transparent coloring material through which light readily passes to and from the metallic surface enabling the ornament to retain its lustre.

The ornament is produced by pressing the blank of sheet metal or foil into the required shape and in this operation the corrugations, flutes or pleats are formed.

The colored decoration is ordinarily placed upon the blank before it is pressed into shape as that enables various colored designs to be produced upon the ornament.

There is no drawing or redistribution of the metal in the formation of the ornament and hence the design is not distorted.

The colored decoration is usually printed upon the blank but it may be applied in other ways.

The ornament being made of metal will

withstand ordinary shocks, jars or blows without being broken like glass and other brittle and fragile ornaments.

While this process is particularly appropriate for producing Christmas tree ornaments or the like it has phases which are susceptible of being applied to the production of other ornaments and articles and which are within the purview thereof.

In order to particularly set forth the invention and a way in which it may be practiced, the ornaments and apparatus illustrated in the accompanying drawings will be described.

Fig. 1 is a plan of a blank from which an ornament is produced.

Fig. 2 is a plan of the blank with decoration applied thereto.

Fig. 3 is an elevation of a bell-shaped ornament.

Fig. 4 is a section on the line 4—4 of Fig. 3.

Fig. 5 is an elevation of a detachable two-piece ornament.

Fig. 6 is a plan of a blank from which a hanger for the ornament is formed.

Fig. 7 is a section of a hanger attached to an ornament.

Fig. 8 is a vertical section of a machine for forming a hollow ornament.

Fig. 9 is a vertical section of a modified form of machine.

Fig. 10 is a section on the line 10—10 of Fig. 9.

Fig. 11 is a vertical section of the dies for forming a connection for a two-piece ornament.

The ornament shown in Fig. 3 is in the shape of a bell and is made from a blank 1 of thin sheet metal or foil which may be aluminum or other suitable metal.

The blank is decorated with a variegated transparent or translucent film 2 in the form of a design through which light is readily reflected.

The design shown in Fig. 2 does not entirely cover the blank but alternates with the metallic surface thereof. If desired, however, the blank may be covered entirely with a variegated design or with a single color.

The colored film is applied while the blank is in the flat form, thus enabling various colored designs to be readily produced on the ornament.

The blank is pressed between suitable dies, as will hereinafter more fully appear, to bring the ornament into the required shape and in this process narrow corrugations, 5 flutes or pleats 3 are produced in the walls of the ornament.

These corrugations, flutes or pleats give rigidity to the ornament and provide a large number of reflecting surfaces or facets 10 arranged at various angles to reflect the light cast thereon, and thereby enhance the brilliancy of the ornament.

If desired these corrugations or pleats may be folded down flat producing a comparatively smooth surface. 15

Instead of forming the blank into the shape of a bell it may be made in any other concave form and a pair of such concave bodies may be united either permanently or 20 detachably along their open ends.

Fig. 5 shows an ornament comprising a pair of concave shells 4 and 5 having beads 6 and 7 formed around the open ends thereof by partially flattening out and folding the 25 corrugations entirely over adjacent the open ends.

The corrugations or pleats allow the open ends of the shells to be readily expanded and contracted and permit the bead 6 of the 30 shell 4 to be snapped over the bead 7 of the shell 5. The resiliency of the metal firmly holds the two shells together.

If the ornament is to be used for decorating Christmas trees it may be provided with 35 a suitable hanger formed integrally therewith or attached thereto.

The hanger 8 shown in the drawing is stamped from a blank 9 of thin metal and has a plurality of attaching tongues 10 40 which are inserted through the wall of the ornament and clinched over on the inner side thereof.

This hanger may be attached simultaneously with the formation of the ornament as will more fully appear. 45

The machine shown in Fig. 8 has an upper die carried by the press ram 12 and a lower die supported by the bolster 13 of the machine.

50 The upper die formed of Babbitt metal, has a semi-spherical central depression 14 and an outwardly flaring portion 15. This die is cast in an inverted cup shaped member 16 carried by the press ram.

Reciprocation of the upper die is guided 55 by the casting 17.

The lower die has a corrugated central portion 18 supported on the bracket 19 carried by the bolster 13 of the machine and an 60 annular corrugated ring 20.

A stud 21 is secured to the central portion 18 of this die.

The annular ring 20 has a plurality of rods 22 secured to the under side thereof. 65 These rods pass through the bracket 19 and

engage a disc 23 supported in elevated position by a spring 24 arranged between the disc and an adjustable collar 25 on the stud 21.

A cutting ring 26 surrounds the ring 20 70 and cooperates with a cutting ring 27 carried by the upper die to shear the sheet of metal into a circular blank.

The metal sheet is placed over the cutting ring 26 and the press ram lowered. The 75 blank is cut and the outer edge thereof engaged between the corrugated ring 20 and the outwardly flaring portion 15 of the upper die.

As the press ram continues to move down 80 the member 20 is forced downward against the spring 24 and the blank is drawn over the central die portion 18, withdrawn from between the outwardly flaring portion 15 of the upper die and ring 20 and compressed 85 between the upper and lower corrugated dies.

When the disc 23 is moved to its lower position it is engaged by the end of a bell crank 28, pivoted at 29 to any convenient part of 90 the machine. The bell crank 28 holds the disc 23 in lowered position, as shown in dotted lines in Fig. 8, until the upper die has been elevated at which time the end of the bell crank is rocked upwardly and the disc 95 released.

Upward movement of the dies under the action of spring 24 forces the corrugated ring 20 upward, which ring engages the 100 lower edge of the ornament and removes it from the central die 18.

The bell crank 28 is operated by a cam 30 carried by the crank shaft of the press.

The cam makes one revolution in the housing 31 for each complete operation of the 105 press and reciprocates the rod 32 secured to the housing and to the bell crank 28.

It will be noted that in stamping the ornament from the flat sheet the metal is not drawn. The margins of the blank are contracted by folding or crimping the metal into a succession of ridges or corrugations. This permits the blank to have the colored coating applied thereto before the ornament 110 is formed.

The machine shown in Fig. 9 has an upper die carried by the press ram 33 and guided by the yoke 34, a lower die supported on the yoke and a plunger 35 co-operating with the upper die to attach a hanger to the ornament 115 simultaneously with the formation of the ornament.

The upper die has an inner bell shaped member 36 and an outer annular member 37 having a corrugated lower face 38. 120

The lower die has a central depression 39 cast in a cup-shaped member 40 supported by the yoke 34 and an outwardly flaring portion 41.

Cutting rings 42 and 43 are provided 125

around the upper and lower dies respectively.

An annular ring 44 surrounding the cutting ring 43 is supported by springs 44' embracing guide rod 45 secured to the under side of the ring.

The plunger 35 passes through the lower end of the die 39 and has a recess 47 in its upper end to support a hanger in inverted position therein.

A collar 48 on the plunger supports the same on the forked end of the bracket 49 carried by the press ram.

The upper and lower dies are provided with complementary grooves or corrugations which engage when the dies are brought together.

Downward movement of the plunger 35 is arrested by the adjustable stop 50.

The operation of the press is as follows:

A hanger is placed in the end of a plunger 35, a sheet of metal 1 which has previously been decorated is placed on the ring 44 and the press ram lowered. The blank is cut and engaged between the annular member 37 and the flaring portion 41 of the lower die where it is held by the weight of the cylinder 51 from which the member 37 is supported by rods 52.

These members start the corrugations in the margin of the blank.

The plunger 35 drops until it rests on the stop 50 with its upper end flush with the bottom of the die.

The upper central die 36 engages the blank and forces it down into the lower die withdrawing the margins of the blank from between the member 37 and the outwardly flaring portion 41 of the lower die.

The tongues 10 of the hanger are punched through the blank, engaged by an annular groove 53 in the end of the upper die and clinched over against the inner surface of the ornament.

When the upper die has moved up nearly to the top of its stroke the bracket 49 engages the collar 48 of the plunger 35 and forces it sharply upward throwing the ornament out of the lower die.

The dies shown in Fig. 11 for forming the beads 6 and 7 on the adjoining ends of the shells 4 and 5 of the ornament shown in Fig. 5 comprise a lower die 54, an upper die 55 and a plunger 56 supporting a compressible ring 57.

The lower die 54 has a central depression 60 corresponding to the form of the lower section of the ornament.

The outer edge of the depression is cut away in the form of an annular scallop 61.

The plunger 56 has a rounded end portion 62 and an annular flange 63. Sufficient clearance is provided between the side of the plunger and the die 54 to prevent mutilation of the corrugations of the ornament

as the plunger is lowered into contact with the inner end thereof.

The soft rubber ring 57 is supported by the flange 63.

The movable die 55 has an annular groove 64 formed in its lower end for the reception of the open end of the shell 65 when the die is in lowered position.

The outer edge of the groove 64 terminates in a scallop 66 which with the cutaway portion 61 of the lower die forms an annular groove 67 in which the bead is formed.

When the die 55 moves downward the inner portion 68 thereof compresses the rubber ring 57 against the flange 63 and forces the rubber out radially, partially flattening out the corrugations from the end of the shell and forcing the metal into the groove 67 to form the bead 69.

Although the process has been described herein as applied to the production of ornaments it will be understood that it is also applicable to the production of other articles.

The invention claimed is:

1. The method of producing a hollow ornament from sheet metal, which comprises decorating the surface of the metal with a colored film, and crimping the metal to bring the article into the required form.

2. The method of producing a hollow ornament from sheet metal having a lustrous surface, which comprises decorating such surface with a colored film through which light is readily transmitted, and crimping the metal to bring it into the required form.

3. The method of producing a hollow ornament from sheet metal, which comprises decorating the surface of the metal with a variegated film, and crimping the metal to bring the article into the required form.

4. The method of producing a hollow ornament from sheet metal having a lustrous surface, which comprises decorating such surface with a variegated film through which light is readily transmitted, and crimping the metal to bring it into the required form.

5. The method of producing a decorated hollow ornament from a sheet metal blank, which comprises contracting the margin of the blank into a series of folds to bring it into the required form, and securing a suspending member thereto.

6. The method of producing a hollow ornament from sheet metal having a high reflecting surface, which comprises printing a variegated design on such surface through which light is readily transmitted, and crimping the metal to bring the article into the required form.

7. The method of producing an article, which comprises producing a pair of hollow bodies from sheet metal blanks by forming

crimps in the metal to bring the article into the required form, and uniting said bodies along their open ends.

8. The method of producing an ornament, which comprises decorating a pair of lustrous sheet metal blanks with a variegated design through which light is readily transmitted, forming the blanks into hollow bodies by crimping the metal to bring it into the required shape, and uniting said bodies along their open ends.

9. The method of producing a hollow article from a sheet metal blank, which comprises forming crimps in said blank to bring it into the required form, partially removing the crimp from the outer end of the body so produced, and forming a bead around said portion.

10. The method of forming an article, which comprises forming a pair of hollow bodies from sheet metal by crimping the metal to bring it into the required form, and forming a bead around an end of said bodies whereby the bodies may be detachably connected.

11. The method of forming an article,

which comprises forming a pair of hollow bodies from sheet metal by crimping the metal to bring it into the required form, and forming a bead around an end of said bodies whereby the bodies may be united.

12. The method of forming an ornament, which comprises coating a pair of sheet metal blanks having a light reflecting surface with a colored film through which light is readily transmitted, forming the blanks into hollow bodies by crimping the metal to bring it into the required shape, and forming a bead around the open end of said bodies whereby they may be detachably connected.

13. The method of forming an ornament, which comprises forming a hollow body from a sheet metal blank by crimping the metal to bring it into the required form, and simultaneously attaching a suspending member thereto.

In witness whereof, we have hereunto subscribed our names.

HUGO HELLER.
HOBART F. FRIMMEL.