The invention includes a substance embedded within the faceted pavilion of a stone causing a dispersed pattern to appear in the faceted crown of the stone.
FACETED GEM WITH EMBEDDED MEANS FOR PRODUCING VARIABLE PATTERN

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to the art of lapidary, and more particularly to a cut stone imparting a design in its crown.

2. Description of the Prior Art

In the art of cutting gems it is well known for the lapidary to maximize the aesthetics of the light refractory of a gem. A variety of methods have been devised to increase the luster of the gem and to alter its coloration.

British Pat. No. 182,138, issued to Bohumil Kolar of Czechoslovakia, discloses a method for adding luster and sparkle to ornamental glass and stones. Kolar attributes the luster and sparkle of a cut gem to the re-emission of luminous rays due to the radio-activity of the material. Kolar teaches adding substances having radioactive power to the ornaments thus increasing their capability for producing sparkle and luster. The radioactive substance is impregnated into the fissures of the material by a variety of methods, one being the insertion of the radioactive substance into a hole drilled into the material and another being the combining of the radioactive substance with the ornament when the ornament is being produced. When combining his radioactive substance with an ornamental gem, he truncates the pavilion and attaches a mirror base to aid the reflection of the light through the gem.

U.S. Pat. No. 286,023 issued to Gedeon Lancon of France describes a method of making a garnet resemble an emerald, sapphire or other precious stone. It teaches hollowing the stone from below to create a cavity within the garnet for the introduction of a closed enamol according to the color of the gem it is desired to imitate. The aperture of the cavity is then closed. Another described method is enameling the cuvet of the pavilion to color the stone. Lancon, however, teaches the entire coloration of an artificial gem to imitate a precious stone.

Other patents show the insertion of one gem into another.

In Grain, U.S. Pat. No. 2,447,407, a smaller faceted gem is inserted into the cavity made in a larger faceted gem, and is permitted to revolve within the cavity to impart a greater brilliance to the larger gem. However, the pavilion of the larger gem is truncated with a mirror base or a fine mesh screen attached in achieving that goal.

U.S. Pat. Nos. 1,730,257 and 1,827,695 teach a composite gem where a plurality of fragmented gems are placed in a gem housing.


These prior art references disclose methods to add luster or to change the color of an artificial gem. They do not illustrate a means for producing a dispersed pattern in the crown of a stone by impinging light rays upon a substance embedded within the pavilion and reflecting those rays from the pavilion facets to the crown and crown facets. The prior art either concerns itself with the complete coloration or luster of the stone or with producing a preformed and distinct image in the crown.

In contrast the present invention provides a new and unique piece of jewelry not before duplicated.

SUMMARY OF THE INVENTION

In accordance with the invention, a colored substance is embedded within the pavilion of a faceted stone thereby producing a dispersed colored pattern in the crown.

Another object of the present invention is to highlight the luster and sparkle of a stone by coloration of a portion of the light passing through the crown.

Another object of the invention is to provide an improved method of producing an ornamental gem in the form of a unitary, homogeneous, moulded assembly.

Another advantage of the invention is the alteration of the coloration imparted by the sparkle and luster of the gem to coordinate with the attire of the wearer.

Other objects and advantages of the invention will appear from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

For a detailed description of a preferred embodiment of the invention, reference will now be made to the accompanying drawings wherein:

FIG. 1 is a plan view of a prior art American Brilliant;

FIG. 2 is a side view of the prior art American Brilliant;

FIG. 3 is a plan view of an American Brilliant showing the dispersed design appearing in the crown when a colored insert is embedded within the gem;

FIG. 4 is an axial section view of the American Brilliant shown in FIG. 3;

FIG. 5 is a plan view of a Briollete with the colored substance embedded within the gem;

FIG. 6 is a side view of the Briollette in FIG. 5;

FIG. 7 is a plan view of a Dandelion Cut with the embedded colored substance;

FIG. 8 is a side view of the Dandelion Cut of FIG. 7;

FIG. 9 is an oblique view of the top of a Square Step-Cut Stone with the embedded colored substance;

FIG. 10 is a side view of the Square Step-Cut Stone;

FIG. 11 is a plan view of the Spinning Wheel Cut with the embedded multi-colored substance;

FIG. 12 is a side view of the Spinning Wheel Cut of FIG. 11; and

FIG. 13 is an illustration of a light ray entering and leaving the American Brilliant Cut of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the present invention a rough gem, which may be of a precious material, semi-precious material, glass, plastic or the like, is made into a preform gem using a silicon carbide wheel for example. A faceting machine is then used to cut and polish the preform into a cut gem which may be of any variety of different shapes and cuts.

In the preferred embodiment of the present invention the American Brilliant Cut is featured although any one of a multitude of cuts could be described or shown as hereinafter discussed with reference to FIGS. 5-12.

Referring to FIGS. 1 and 2 there is shown a prior art stone or gem 10 having a crown 12, a girdle 14, and a pavilion 16. The crown 12 (or upper portion of gem...
3,835,665

10) has a table 18 and a plurality of crown facets 20. Facets 20 include the star facets 22, main facets 24, and the crown girdle facets 26. The pavilion 16 (or lower portion of gem 10) has a point or cuet 28 and a plurality of pavilion facets 30. Facets 30 include the pavilion girdle facets 32 and main facets 34.

Referring now to the embodiment of the invention shown in FIGS. 3 and 4 an interior hole or cavity 40 is formed within the pavilion 16 such as by drilling. In this embodiment the hole 40 is a bore drilled through the cuet 28 and extending toward the table 18. The bore 40 is vertical with the gem 10 and is perpendicular to the table 18 and the horizontal plane 15 formed by the girdle 14. The hole 40 need not be vertical nor need it be cylindrical in shape. It could be horizontal and/or spherical. The size of hole 40 is not critical although it is preferred that it be as small as practicable so as not to be conspicuous.

The interior surface 44 of wall 46 of hole 40 is cloudy after its formation because of the roughness of surface 44 due to the scratches, microscopic grooves, striations and rough edges making up the interior surface 44. The cloudiness caused by the roughness inhibits the passage of light through surface 44 thereby causing a considerable amount of brilliance to be lost.

To remove the cloudiness either interior surface 44 can be polished or a refractive index liquid, such as Refractol manufactured by Oitaldo Originals, can be used. The polishing, of course, removes the cloudiness by removing the roughness. The refractive index liquid is a liquid or semi-liquid clear substance having a refractive index near enough to the refractive index of the gem 10 that light will pass straight through the wall 46 of hole 40. Thus passage of light within the continuous medium will not encounter an uneven boundary which would otherwise deviate and deflect the uniform direction of the rays.

Upon the proper location and preparation of hole 40, a substance 42 such as a colored wire, bead, dye, pigment, or the like is embedded within hole 40. Where the gem 10 will be worn as jewelry it may be desirable to make substance 42 replaceable whereby the coloration of substance 42 will conform with the color scheme of the attire of the wearer. If substance 42 is to be permanent, hole 40 may be sealed off with an epoxy or other clear sealant.

In practice ambient light will be transmitted through the crown 12 with some of it impinging upon substance 42. This light may either pass directly to substance 42 or pass indirectly to substance 42 after being reflected from pavilion facets 30. Substance 42 will absorb certain wavelengths of the light reaching it so as to reflect the other wavelengths causing the reflected light to have some color. The portion of this colored reflected light which is reflected back to the crown 12 then causes a dispersed pattern to appear in crown facets 20 and table 18.

FIG. 13 illustrates a light ray 88 entering the table 18. It passes through the medium of the stone until it is reflected from one of the main facets 34 onto substance 42 embedded within pavilion 16. The color of substance 42 is imparted to ray 88 by substance 42 absorbing certain wavelengths of light in ray 88. Ray 88 is then reflected, for example, from substance 42 back to main facet 34 which reflects light ray 88 back to crown 12 at table 18 to form a small part of the dispersed pattern seen by the observer.

Referring again to FIGS. 1-4 a portion of the light passing through gem 10 will either directly or indirectly reach substance 42 which in turn will color this light and reflect it back into gem 10. Facets 30 and 20 will reflect a portion of the light reflected from substance 42 causing the dispersed colored pattern 50. The coloration of the reflections between the facets 20, 30 cause the brilliance of gem 10 to be further appreciated. It should be noted that even the cloudiness caused by the roughness of surface 44 would produce a dispersed pattern. Further it should be appreciated that if pavilion 16 had no facets 30, that no pattern 50 would appear since there would be no means by which to reflect the light to the crown 12. Without facets on the pavilion, one would merely see the outlines of the substance 42 in hole 40.

Of further significance is the angle 17 between the plane 15 formed by girdle 14 and the pavilion facets 30. There is a range of angles which provide the optimum reflection of light back through crown 12. The critical angle is the angle which allows the pavilion 16 to reflect the light back to crown 12. To allow maximum reflection from the pavilion facets 30, pavilion facets 30 are cut so that angle 17 exceeds the critical angle. The critical angle will vary with the basic material used for gem 10. These properties are discussed in detail in Faceting For Amateurs by Glenn and Martha Vargas, Chapters VI and VII pages 57-84 (1969 Edition).

There are a variety of methods of embedding substance 42 in gem 10 other than forming hole 40 as described. The substance 42 could be embedded into a molten material which would either be molded or pressed into a preform or a faceted shaped gem. The facets would be preformed in the mold.

It also must be understood that the American Brilliant Cut shown in FIGS. 1-4 is just one of a multitude of cuts which could be used with the present invention. For example, FIGS. 5 and 6 show the top and side view of substance 60 embedded in the faceted pavilion 62 of a Briollette 64 creating design 66 in the crown 68 of gem 64. Note that no table is required in gem 64.

FIGS. 7 and 8 show the top and side view of substance 70 embedded in the pavilion 72 of the Dandelion Cut 74 creating designs 76 in the crown 78. Note that crown 78 has no star facets, main facets, or girdle facets as shown in FIG. 1.

FIGS. 9 and 10 illustrate the Square Step-Cut Stone 80 which has horizontal facets 82 rather than the vertical facets previously described in FIGS. 1-8. Colored substance 84 has been embedded within pavilion 86 in the horizontal position as distinguished from the vertical positions previously described.

FIGS. 11 and 12 show the Spinning Wheel Cut 90 having facets 92 on the crown 94 and facets 96 on the pavilion 98. A circular design 100 is shown as the dispersed pattern. FIG. 11 showing the top view of the Spinning Wheel Cut illustrates how a multicolored inset 102 having different colors 103, and 105 would provide multicolored pattern 100 with ring 104 having color 103 and rings 106 having color 105.

Although only single holes have been described, multiple holes can be employed embedding more than one colored substance. This would cause a variation in the pattern for each of the different gem cuts.

While a preferred embodiment of the invention has been shown and described, modifications thereof can
3,835,665

be made by one skilled in the art without departing from the spirit of the invention.

I claim:

1. A gem of material for transmitting ambient light comprising:
   a crown having a plurality of facets;
   a pavilion having a plurality of facets; and
   means embedded within the pavilion for reflecting a colored light portion of said transmitted ambient light, said means coacting with said facets for causing a variable dispersed pattern of said reflected light and other transmitted light to be visible in the facets of said crown.

2. A gem according to claim 1 wherein said means includes a colored substance; said pavilion having a cavity for the insertion of said colored substance.

3. A gem according to claim 2 wherein said substance is removably disposed within said cavity.

4. A gem according to claim 2 wherein said colored substance includes a colored wire.

5. A gem of material for transmitting ambient light comprising:
   a crown having a plurality of facets and a table;
   a pavilion having a plurality of facets and a culet; said pavilion having a bore extending from the culet towards said table; and
   means including a solid colored substance in said bore of said pavilion for reflecting a portion of said transmitted ambient light corresponding to the color of said substance said means coacting with said facets for causing a variable dispersed pattern of said reflected light and other transmitted light to be visible in the facets of said crown.

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