

19 [logo] **SWISS CONFEDERATION**
FEDERAL INTELLECTUAL PROPERTY OFFICE

11 **CH 684301 A5**
51 Int.Cl.⁵: **A 44 C 17/00**

Patent of invention for Switzerland and Liechtenstein
Swiss-Liechtenstein Patent Protection Treaty dated December 22, 1978

12 **PATENT DESCRIPTION** A5

21 Application number: 839/91

22 Date of registration: 03/19/1991

24 Patent granted: 08/31/1994

45 Patent specification published: 08/31/1994

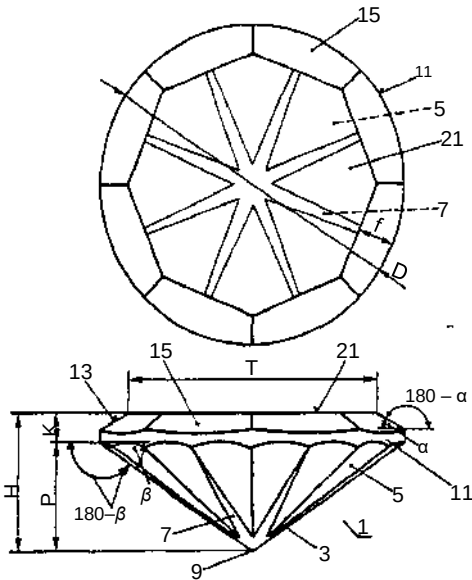
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54 **Cutting shape for precious stones.**

57 In order to give a cut, flat precious stone good brilliance and a relatively large appearance in relation to the size of the precious stone, the table diameter (T) is chosen to be at least 70% of the diameter of the girdle line (11) and the angle (β) between the pavilion surface (3) and the girdle plane is less than 38° .



Description

The present invention relates to a cut, flat precious stone with a relatively large appearance in relation to the weight or thickness of the precious stone.

Precious stone and diamond cutting has a long tradition and has always been carried out on the basis of empirical observation and experience.

Due to fashion trends and requirements for the appearance and shape of precious stones, more and more systematic and technical importance was attached to the cutting of precious stones in this century, so that basic measurements, dimensions, and cut sizes were determined according to which certain appearances could be achieved on the precious stone. In order to achieve the highest brilliance, especially in diamonds, both empirical and theoretical calculations have led to so-called brilliant cuts, wherein these relate in particular to sizes and dimensions on the precious stone, such as the height of the crown, depth of the pavilion, diameter of the table, angle between the surface of the crown and the plane formed by the girdle line or the girdle plane, surface of the pavilion in relation to the girdle plane, etc.

Various combinations of these values have resulted in stones with a special brilliance or "fire", as is the case with the Tolkowski cut, the Parker cut, the Scandinavian standard cut, the ideal cut, and the practical fine cut. The background to the cutting of precious stones, especially diamonds, will not be discussed further here, as the cutting technique itself is well known. For a better understanding of the subject matter, please refer to the "Handbook of Diamond Grading" by Verena Pagel-Theisen, Verlag Deutsche Gem. Gesellschaft, as the state of the art.

Due to the sharp rise in prices for brilliant-cut diamonds or cut precious stones and diamonds in general, the demand for relatively small stones with a low weight or low carat count is increasing. On the other hand, there is of course the desire to own a relatively large-looking or appearing precious stone or to set it in a piece of jewelry. It is therefore a task of the present invention to create a small precious stone that appears relatively large in relation to its size.

Furthermore, in certain technical and decorative applications there is a desire for a relatively flat precious stone or diamond, which in turn has an enlarged effect relative to its size and also has excellent brilliance, which is not usually the case with flat precious stones. One such application is the installation of cut precious stones or diamonds in a watch dial, for example within the area of the hands, wherein the precious stone must be flat so that the watch itself can be designed flat and the movement of the hands is not hindered by the arrangement of the precious stones.

The problem with cutting precious stones to create a flat shape is that, for example, if the pavilion tip is cut off too much to reduce the thickness of the stone, the brilliance is lost and the stone appears dull or "dead".

In contrast, it is possible to increase the appearance of the stone in relation to its weight and at the same time reduce the thickness of the stone by using a relatively large table, i.e., by lowering the crown more, wherein according to the literature, table diameters of up to 70% of the diameter of the girdle line are recommended. However, this does not achieve a significant reduction in the thickness of the precious stone.

Another option for producing a flat precious stone is to reduce the angle between the pavilion surface and the girdle plane, which simultaneously reduces the depth of the pavilion. However, it has been shown that at angles smaller than approx. 39° the stone exhibits a so-called circular reflection in the girdle plane, which is considered to be defective. On the other hand, precious stones with a pavilion, wherein the angle between its surface and the girdle plane is greater than 40°, are relatively thick and unsuitable for use in the above-mentioned dials, even if the crown is heavily worn and the stone has a correspondingly large table.

It is therefore a further task of the present invention to create a precious stone or diamond which is relatively flat, has good brilliance and, analogous to the above-mentioned task, has a large appearance relative to the stone.

According to the invention, the above-mentioned tasks are solved by means of a cut precious stone according to the wording of claim 1.

A cut, flat precious stone with a relatively large appearance in relation to the weight or thickness of the precious stone is proposed, in which the table diameter is at least 70% of the diameter of the girdle line and the angle between the surface of the pavilion and the girdle surface is less than 38°.

Surprisingly, it has been shown that despite the choice of a relatively small angle between the surface of the pavilion and the girdle plane, excellent brilliance can be produced in a cut precious stone if the table plane of the crown is kept large at the same time. The circular reflection that usually occurs in cut precious stones with such a flat pavilion does not appear as a defect in the precious stone cut and formed according to the invention, but rather leads to the required enlarged appearance and brilliance.

It is further suggested that the side facets of the crown form an angle with the girdle plane in the range of 28–32°. This flat angle compared to conventional cut precious stones, together with the large table surface, means that the side facets of the crown form a relatively narrow band, the width of which is in the order of approx. 6–14% of the diameter of the girdle line.

According to a further embodiment, it is proposed that the table diameter should be 82–88% of the diameter of the girdle line.

According to a preferred embodiment, it is proposed that the angle between the surface of the crown or the side facets of the crown and the girdle plane is 29–31° and the table diameter is approximately 85.5% of the diameter of the girdle line.

It is further proposed that the angle between the surface of the pavilion and the girdle plane is 32–37°, wherein this angle preferably is 34–36°.

By selecting an angle between the pavilion surface and the girdle plane as proposed according to the invention, it further results according to the invention that the depth of the pavilion is less than 38% of the diameter of the girdle line.

It is further proposed according to the invention that the cut precious stone is a circular precious stone, or that the girdle of the precious stone is substantially circular.

The precious stone can be a diamond with an eight-sixteen or thirty-two cut (8/8; 16/16; 32/24), but it is of course also possible to form a sapphire, ruby, or emerald according to the invention. Semi-precious stones, gemstones, or colored stones can also be cut according to the invention.

The above-mentioned precious stones according to the invention, or the diamond proposed according to the invention, are suitable for any application where flat, relatively large-looking precious stones with excellent brilliance are used.

The invention will now be explained in more detail, for example, with reference to the accompanying figures. The following is shown in the figures:

Fig. 1 side view of a diamond cut according to the invention, and

Fig. 2 top view of the diamond in Fig. 1.

The diamond shown in Figs. 1 and 2 is a circular diamond with a so-called octagonal cut, wherein the diamond in the example shown has eight side facets on its crown. However, it can of course also have more than eight side facets.

Fig. 1 shows the diamond 1 according to the invention in side view, while Fig. 2 shows the diamond according to the invention as seen from above.

The diamond 1 according to the invention has a downwardly oriented pavilion 3 and an upwardly formed crown 13. The girdle plane, which is formed peripherally by the circular girdle line 11, is positioned centrally between the crown and the pavilion.

The crown 13 has eight side facets, which have been formed using a so-called octagonal cut according to a known technique. It is of course possible to increase the number of facets accordingly by doubling or quadrupling the cut. On the upper side, the crown 13 has the so-called table plane 21, which is uniformly octagonal in the example shown. According to the invention, the angle α included between the facets 15 of the crown 13 and the girdle plane is preferably 28–32° and is 30° in the example shown in Figs. 1 and 2.

The pavilion 3 has lower girdle facets 5 on its surface, as well as main facets 7, which, as can be seen in Fig. 2, are visible shimmering through the table plane 21. The pavilion 3 preferably has a tip (culet) 9 at its lower end, but this can be very finely ground depending on requirements and the appearance to be created. According to the invention, the angle β between the pavilion surface or lower girdle facets 5 and the girdle plane is preferably less than 38° and is 35° in the example shown in Figs. 1 and 2. Due to the selected cut, the girdle line 11 is only circular in the top view according to Fig. 2, while the girdle line 11 is slightly ribbon-like in the side view according to Fig. 1, in that the base lines of the lower girdle facets 5 and the side facets 15 are slightly curved due to the cut. Preferably, the girdle 11 is kept as thin as possible, as a thick girdle has an unfavorable effect on the color and brilliance of the diamond, and a wide girdle allows light to escape through it. On the other hand, the girdle line must not be too sharp, otherwise there is a risk of the outermost edge of the girdle breaking off when gripping a stone.

Various parameters are essential for the sizing of a precious stone or diamond, which are also shown in Figs. 1 and 2. The initial measurement is the diameter D of the girdle line 11, which is usually given as 100%. The diameter of the table plane 21 is designated as T, wherein this size refers to the distance between two opposite corner points of the table plane 21. The height of the crown 13 is designated K and refers to the distance of the table plane 21 from the girdle surface formed by the girdle line 11. Similarly, P denotes the depth of the pavilion 3, i.e., the distance of the tip 9 from the girdle surface. The height H of the precious stone or diamond is made up of K and P. Ultimately, the distance f indicates the middle or largest width of the facet 15 on the crown 13.

The following key figures are an example of a diamond cut according to the invention:

D	= 1.70	(± 0.05)	mm
T	= 1.45	(± 0.05)	mm
H	= 0.7	(± 0.05)	mm
K	= 0.11	(± 0.01)	mm
P	= 0.59	(± 0.01)	mm
f	= 0.2	(± 0.03)	mm
a	= 30°	(± 1°)	
b	= 35°	(± 1°)	

The examples of diamonds cut according to the invention, as shown in Figures 1–2, can be varied or modified in any way. It is irrelevant whether an eight-, sixteen-, or thirty-two-side cut (8/8; 16/16; 32/24) is used, whether it is a diamond, a sapphire, a ruby, or an emerald, or whether it is a semi-precious, a colored stone, or a gemstone. It goes without saying that the cuts proposed in accordance with the invention can be used on any precious, semi-precious, or gemstones in order to solve the problem posed in accordance with the invention. Ultimately, it is also a question of optimizing the selected stone and the design of the girdle line, whether circular, square, rectangular, trapezoidal, etc., how the various angular dimensions of α and β are selected, as well as the size ratios of the table diameter to the diameter of the girdle line and the depth of the pavilion, etc. The essential feature of the invention is, on the one hand, that the angle enclosed between the pavilion surface and the girdle level is chosen to be less than 38°, preferably about 35°, and, on the other hand, that the table diameter is at least 70% of the diameter of the girdle line, wherein preferably a table diameter of at least 80° is selected.

Claims

1. Cut, flat precious stone with a large appearance in relation to the weight or thickness of the precious stone, characterized in that the table diameter (T) is at least 70% of the diameter (D) of the girdle line (11) and the angle (β) between the pavilion surface (3) and the girdle plane is less than 38°.

2. Precious stone as claimed in claim 1, characterized in that the angle (α) enclosed between side facets of the crown (13) and the girdle plane is 28–32°.

3. Precious stone according to one of the claims 1 or 2, characterized in that the table diameter (T) is 82–88% of the diameter (D) of the girdle line (11).

4. Precious stone according to one of the claims 1–3, characterized in that the angle (α) between the side facets of the crown (13) and girdle plane is 29–31° and the table diameter (T) is approximately 85.5% of the diameter (D) of the girdle line (11).

5. Precious stone, according to one of the claims 1–4, characterized in that the angle (β) between the pavilion surface (3) and the girdle plane is 32–37°, preferably 34–36°.

6. Precious stone, according to one of the claims 1–5, characterized in that the pavilion depth (P) is less than 38% of the diameter (D) of the girdle line (11).

7. Precious stone, according to one of claims 1–6, characterized in that the girdle line (11) is substantially circular.

8. Precious stone, according to one of the claims 1–7, characterized in that it is a sapphire, ruby, emerald, and/or a semi-precious stone, gemstone, or colored stone.

9. Precious stone, according to one of the claims 1–7, characterized in that it is substantially a diamond with an octagonal, hexadecagonal, or thirty-two-sided cut (8/8; 16/16; 32/24).

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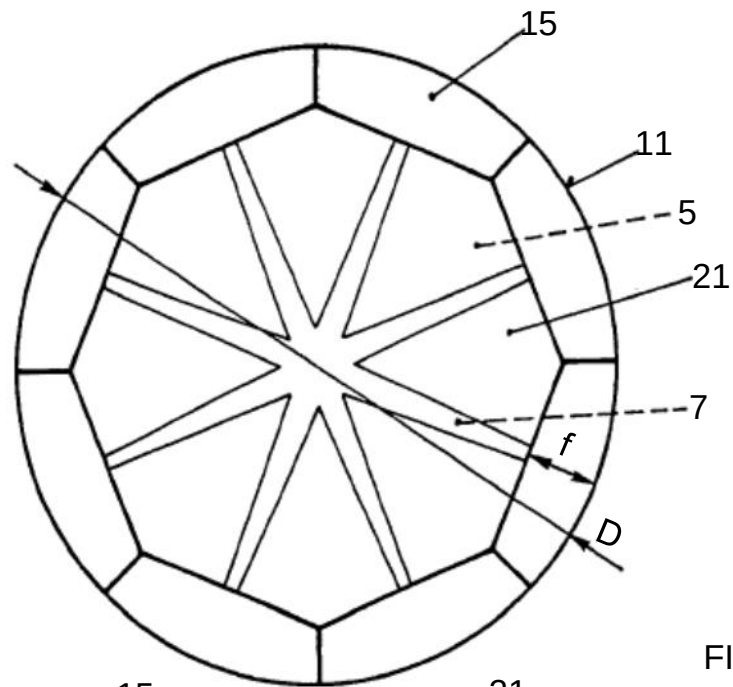


FIG.1

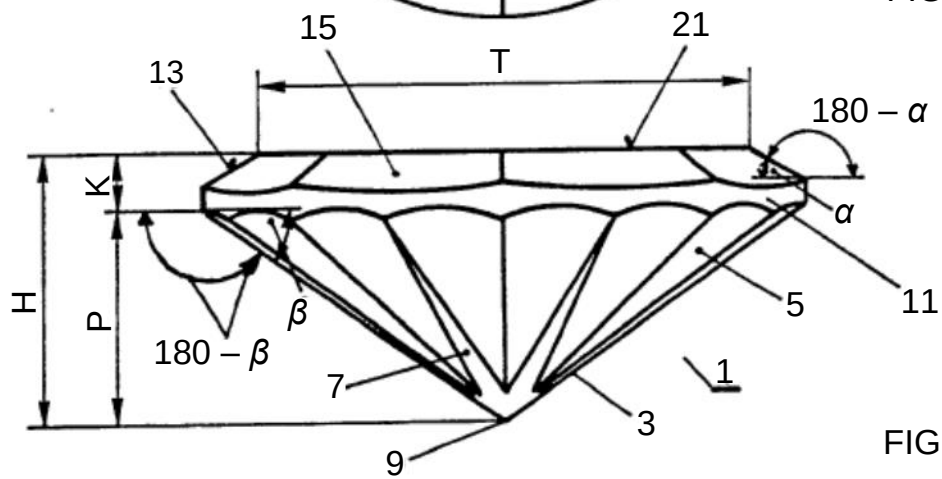


FIG.2



TRANSPERFECT

CERTIFICATE OF TRANSLATION

I, Irina Hinrichs, am fluent in the German and English Languages, I have been translating documents for over 15 years and am competent to translate from German to English. I hold a Master's degree in Anglistics/Germanistics, obtained in 2005 at the University of Niš, Faculty of Philosophy, English Department.

The attached translation is, to the best of my knowledge and belief, a true and accurate translation from Swiss Patent Publication No. CH684301A5, entitled Cutting Shape for Precious Stones (published August 31, 1994). I understand that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001). I declare under penalty of perjury that all statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true.

Irina Hinrichs

Date: Monday, October 28, 2024