

PATENT SPECIFICATION

(11)

1 553 576

1 553 576

- (21) Application No. 39528/76 (22) Filed 23 Sept. 1976
(31) Convention Application No. 690 401 (32) Filed 27 May 1976 in
(33) United States of America (US)
(44) Complete Specification published 3 Oct. 1979
(51) INT. CL.² A44C 17/00
(52) Index at acceptance
A3H 17



(54) STEP CUT STONE

(71) I, HENRY GROSSBARD, a citizen of the United States of America residing at 552 Beach 132nd Street, Belle Harbor, New York 11694, New York State, United States of America do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention pertains to cut stones and more particularly to gem stones such as diamonds.

It is known that the brilliant cut maximizes the fire of a diamond. For this reason such a cut is by far the most popular. However, the cut is the most wasteful of diamond raw material.

On the other hand step cut stones such as square cut diamond and emerald cut diamonds while being more conservative of diamond raw material have none of the fire of brilliant cut diamonds. These facts have been known to the diamond trade for a long time and attempts have been made to devise hybrid cuts to capture the advantages of the square and brilliant cut diamonds.

One such hybrid is shown and described in U.S. Patent No. 3,796,065 for a stone with an emerald cut crown and a modified brilliant cut base. While such a stone has more brilliance than the conventional square or emerald cut stones it does not approach the brilliance of a brilliant cut stone.

The invention provides a step-cut diamond having: a straight edged polygonal shaped girdle; a crown having at least a girdle break, a table break, and a table; and a pyramidal base having at least a girdle break, a culet break and a culet, at least one of the breaks of the crown being cut with triangularly shaped facets.

Preferred embodiments of the invention

will now be described by way of example only and with reference to the accompanying drawings in which:

Figures 1, 2 and 3 shows the side, bottom and top views respectively of a diamond according to the invention in an early stage of cutting;

Figure 4 is a bottom view of the base of a diamond cut in accordance with the invention;

Figure 5 is a side view of a diamond with a base cut in accordance with the invention and a crown cut in accordance with a first embodiment of the invention;

FIG. 6 is a top view of a diamond having a crown cut in accordance with the aforesaid first embodiment of the invention;

FIG. 7 is a top view of a diamond having a crown cut in accordance with another embodiment of the invention;

FIG. 8 is a top view of a diamond having a conventional three break emerald cut crown; and

FIG. 9 is a top view of the diamond of FIG. 8 after having its crown cut in accordance with a further embodiment of the invention.

FIGS. 1, 2 and 3 show a step cut diamond 10 having: an octagonal girdle with long side facets 12, short side facets 14 and corner facets 16; a pyramidal base having corner ridge lines 17, a girdle break 18, a culet break 20 and a culet 22; and a crown having a girdle break 24, a table break 26 and a table 28. The two breaks of the crown should be of approximately equal length. In addition, the angle between the plane of the girdle break of the crown and the table (ie the plane of the girdle) should be in the range from 35° to 42°.

The base of the stone is so cut that the girdle break has from 30 to 40 percent of the depth of the base with the culet break the remainder. Thus the angle between the

plane of the table and the plane of the girdle break is from 48° to 60° . On the long side the angle between the plane of the culet break and the plane of the table is from 40° to 42° . However, since the culet must be in the direct center of the base the angle between the plane of the culet break on the short side and the plane of the table can be as large as 42° if the original stone is square to as low as 31° if the length to width ratio of the stone is approximately 1.4 to 1.

The diamond 10 as shown and described with respect to FIGS. 1 to 3 is now brilliantized by further cutting of the base and crown.

To enhance the brilliance, the base is cut with a fan of a plurality of halves extending outwardly from each side of each corner ridge line 17 (FIG. 4). In particular it has been found for enhancing the brilliance to place one to three pairs of halves about each of the corner ridge lines 17. As shown in FIGS. 4 and 5 three pairs of halves are disposed about each corner ridge line, this being the most preferred number of pairs. More specifically, the first pair comprises halves 40 and 42, the second pair comprises halves 44 and 46 and the third pair comprises halves 48 and 50. After the cutting of the fans, there is left in each side of the base girdle break a shield facet 52 with a base 53 colinear with the girdle, and an apex 54. There is also left in each side of the culet break a kite facet 56. Each kite facet has one point in contact with the apex 54, a diagonally opposite point at the culet 22 and a pair of diagonally opposite points 58 and 60 at the radii of different fans. The kite facets make an angle of between 31° and 42° with the plane of the girdle. Finally, it should be noted that when looking directly down into the diamond from the table, the apex 54 of each shield facet 50 is not visible or at most just barely protruding.

The above-described base in accordance with the invention can be used with many crowns. For example, the base can be used with the crown shown and described in FIG. 3. However, to obtain more brilliance one should cut the crown of FIG. 3. A first desirable cut is shown in FIG. 6. There are cut a pair of star facets into each side of the table break 24 of the crown. See FIGS. 5 and 6. Thus the original eight "rectangular" facets 30 of the table break 26 (see FIG. 3) are transformed to sixteen triangular facets of which eight are the star facets 62, four are triangular facets 64 in the corners, two are triangular facets 66 in the long sides and two are triangular facets 68 in the short sides. These triangular facets enhance the brilliance of the diamond 10.

An alternative cutting of the crown shown in FIG. 3 has pairs of halves (half facets) cut starting at each of the middle corner points 70. Such alternative cutting of the crown is shown in FIG. 7 wherein the original sixteen "rectangular" facets of the crown are now cut into thirtytwo triangular facets. Four of these triangular facets are the remains of the table break 26; four are the remains of the girdle break 24; four are the remains of the table break in the corner 16B; four are the remains of the girdle break in the corner 16A; and the remaining sixteen are either of the pairs of halves, such as halves 70A and 70B.

Again starting from the crown of FIG. 3 a new crown can be cut having the three conventional breaks of the emerald cut stone by splitting the table and girdle breaks 26, 24. Thus FIG. 8 shows the crown having a girdle break 72, middle break 74, table break 76 and table 78. Although this crown can be used with the base described in FIGS. 4 and 5 the brilliance can be enhanced by further cutting this crown.

As shown in FIG. 9 the girdle and middle breaks 72, 74 of FIG. 8 are cut with pairs of half facets in the same fashion as the girdle and table breaks 24, 26 of FIG. 3 were cut to form the crown of the diamond of FIG. 7. In addition, the table break 76 of the stone of FIG. 8 is cut with star facets (ie triangular facets cut in the table) in the same way the table break 26 of the stone of FIG. 3 was cut to form the triangular facets in the stone of FIG. 6. Therefore the crown of the stone of FIG. 9 has fortyeight triangular facets.

There has thus been shown a step cut diamond, which can range from a square cut to rectangular cut and which has a brilliancy approaching the brilliancy of brilliant cut or round diamonds with nowhere near the loss of raw material. In fact, if the "raw material" stone is an original emerald cut stone which is now being recut there is only about a twelve percent loss in the weight. This minor loss is far outweighed by the large increase in brilliance which results from the star faceting of the crown and the fan cutting of the base to provide deep shield facets.

While only a limited number of embodiments of the invention has been shown and described in detail there will now be obvious to those skilled in the art many modifications and variations within the scope of the appended claims. For example, although there has been shown only a rectangular cut stone, the invention contemplates any straight edge polygon stone such as regular or irregular hexagonal stones, truncated kite shaped stones, pentagons, etc.

Reference may be made to the divisional

patent application No. 45303/78 (Serial No. 1 553 576) and 16810/79 (Serial No. 1 553 578).

WHAT WE CLAIM IS:

- 5 1. A step-cut diamond having: a straight edged polygonal shaped girdle; a crown having at least a girdle break, a table break, and a table, and a pyramidal base having at least a girdle break, a culet break
10 and a culet, at least one of the breaks of the crown being cut with triangularly shaped facets.
2. A diamond as claimed in claim 1 wherein some of said triangular facets are
15 star facets in the table break.
3. A diamond as claimed in claim 1 wherein said girdle has four side facets and four corner facets and said table is substantially rectangular.
- 20 4. A diamond as claimed in claim 3 wherein there are star facets in each side of the table break.
5. A diamond as claimed in claim 4 wherein there are triangular facets in each
25 corner of the table break.
6. A diamond as claimed in any of claims 1 to 5 wherein the girdle break of the crown makes an angle of from 35° to 42° with the plane of the girdle.
- 30 7. A diamond as claimed in any of claims 1 to 6 wherein the length of the girdle and table breaks of the crown are approximately equal.
8. A diamond as claimed in any of
35 claims 1 to 7 wherein some of said triangular facets are halves cut into both the table and girdle breaks of the crown.
9. A diamond as claimed in claim 1 wherein the crown has a middle break inter-
40 mediate the table and crown breaks.

10. A diamond as claimed in claim 9 wherein some of said triangular facets are halves cut into both the girdle and middle breaks of the crown.

11. A diamond as claimed in any of 45 claims 1 to 10 wherein the pyramidal base has a plurality of corner ridges and a fan of a plurality of halves is disposed about each corner ridge of the pyramidal base with a kite shaped facet on the culet break and 50 disposed between each fan, and a shield shaped facet on each side of the base in the girdle break, each shield shaped facet having a base line parallel to the girdle and an apex in contact with a point of the 55 associated kite shaped facet.

12. A diamond as claimed in claim 11 wherein the girdle break of the base occupies from thirty to forty percent of the total depth of the base. 60

13. A diamond as claimed in claim 11 or 12 wherein the kite facets make an angle of between 31° and 42° with the girdle plane.

14. A diamond as claimed in claims 1 65 to 9 wherein the pyramidal base has a plurality of corner ridges and extending outwardly from each corner ridge so that there are from one to three pairs of halves disposed about each corner ridge. 70

15. A step-cut diamond substantially as hereinbefore described with reference to Figures 4, 5, 6, 7 and 9 of the accompanying drawings.

BROOKES & MARTIN,
Chartered Patent Agents,
High Holborn House,
52/54 High Holborn,
London WC1V 6SE.
Agents for the Applicants.

patent application No. 45303/78 (Serial No. 1 553 576) and 16810/79 (Serial No. 1 553 578).

WHAT WE CLAIM IS:

- 5 1. A step-cut diamond having: a straight edged polygonal shaped girdle; a crown having at least a girdle break, a table break, and a table, and a pyramidal base having at least a girdle break, a culet break and a culet, at least one of the breaks of the crown being cut with triangularly shaped facets.
- 10 2. A diamond as claimed in claim 1 wherein some of said triangular facets are star facets in the table break.
- 15 3. A diamond as claimed in claim 1 wherein said girdle has four side facets and four corner facets and said table is substantially rectangular.
- 20 4. A diamond as claimed in claim 3 wherein there are star facets in each side of the table break.
- 25 5. A diamond as claimed in claim 4 wherein there are triangular facets in each corner of the table break.
6. A diamond as claimed in any of claims 1 to 5 wherein the girdle break of the crown makes an angle of from 35° to 42° with the plane of the girdle.
- 30 7. A diamond as claimed in any of claims 1 to 6 wherein the length of the girdle and table breaks of the crown are approximately equal.
8. A diamond as claimed in any of claims 1 to 7 wherein some of said triangular facets are halves cut into both the table and girdle breaks of the crown.
- 35 9. A diamond as claimed in claim 1 wherein the crown has a middle break intermediate the table and crown breaks.
- 40

10. A diamond as claimed in claim 9 wherein some of said triangular facets are halves cut into both the girdle and middle breaks of the crown.

11. A diamond as claimed in any of claims 1 to 10 wherein the pyramidal base has a plurality of corner ridges and a fan of a plurality of halves is disposed about each corner ridge of the pyramidal base with a kite shaped facet on the culet break and disposed between each fan, and a shield shaped facet on each side of the base in the girdle break, each shield shaped facet having a base line parallel to the girdle and an apex in contact with a point of the associated kite shaped facet.

12. A diamond as claimed in claim 11 wherein the girdle break of the base occupies from thirty to forty percent of the total depth of the base.

13. A diamond as claimed in claim 11 or 12 wherein the kite facets make an angle of between 31° and 42° with the girdle plane.

14. A diamond as claimed in claims 1 to 9 wherein the pyramidal base has a plurality of corner ridges and extending outwardly from each corner ridge so that there are from one to three pairs of halves disposed about each corner ridge.

15. A step-cut diamond substantially as hereinbefore described with reference to Figures 4, 5, 6, 7 and 9 of the accompanying drawings.

BROOKES & MARTIN,
Chartered Patent Agents,
High Holborn House,
52/54 High Holborn,
London WC1V 6SE.
Agents for the Applicants.

