ABSTRACT: A method of cutting a diamond to produce 72 pavilion facets comprising the steps of cutting four pavilion facets, then dividing the four into eight pavilion facets, then cutting the eight into 16 pavilion facets with substantially overlapping edges, then polishing the girdle to a 90° edge, then cutting a facet at 53° at each overlap and intermediate each overlap, then dividing each such latter facet into three facets such that each latter facet is provided with a diamond shape, and then cutting 38 facets into the girdle.
DIAMOND CUTTING METHOD

BACKGROUND OF THE INVENTION

1. Field of the Invention
   Diamond cutting.

2. Description of the Prior Art
   The art and science of diamond cutting is generations old but it is a curious fact that the pavilions of round cut diamonds have   commonly for many years been provided with 24 facets cut and polished at an approximate 41° angle with respect to the   plane of the girdle. Thus, as stated in Goldstein U.S. Pat.   No. 2,340,659 dated Feb. 1, 1944, the pavilion normally has   "conventional 24 facets." This common cut is well known in the   trade as "brilliant" cut.

   Our U.S. Pat. No. 2,826,486, dated Nov. 22, 1966, shows a   greatly improved stone in which the pavilion is provided with   72 facets or 48 more than the common brilliant cut.

SUMMARY OF THE INVENTION

The present invention provides an entirely novel method of   making a diamond having 72 pavilion facets and 38 girdle facets.

One of the novel aspects of the method herein described and   claimed is the making of facets with overlapping intermediate   side edges, the overlap being an entirely new step. Also   among the novel features of the method herein described and   claimed is the intermediate girdle thickening and polishing   step which not only provides a relatively thick girdle as   opposed to the thin girdle of the brilliant cut but also promotes   through the making of girdle facets the extraordinary fire and   brilliance of the resulting gem.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a bottom view of a diamond after four facets have   been cut into the pavilion.

FIG. 2 is a side view of the stone of FIG. 1.

FIG. 3 is a bottom view showing eight facets cut into the   pavilion.

FIG. 4 is a side view of the stone of FIG. 3.

FIG. 5 is a bottom view of a 24 facet pavilion which is   developed from the pavilion of FIG. 3 by dividing each facet of   the latter into three facets with new and overlapping   facets together with a portion of the original facet. The three   facets are not necessarily equal in size or shape.

FIG. 6 is a side view of the stone of FIG. 5.

FIG. 7 is a bottom view of a 40 facet pavilion created by the   formation of 16 overlapping facets adjacent the girdle.

FIG. 8 is a side view of the stone of FIG. 7.

FIG. 9 is a bottom view of a 72 facet pavilion.

FIG. 10 is a side view of the stone of FIG. 9.

FIG. 11 is an enlarged fragmentary view of a faceted girdle.

FIG. 12 is a side view of a girdle-polishing machine, partly in   phantom.

FIG. 13 is a bottom view of a modified stone produced in   accordance with the method of the present invention in which   the pavilion has 88 facets.

FIG. 14 is a side view of the stone of FIG. 13.

DESCRIPTION OF PREFERRED EMBODIMENTS OF THE   INVENTION

It will be understood that the method of the present invention   is intended to yield a diamond of substantially round cut   which in earlier configurations is known as the brilliant cut to   which reference has been made. It should also be noted that   the apex 10 or lowermost portion 10 of the pavilion (upper-   most in FIGS. 2, 4, 6, 8 and 10), while a cut and polished facet   in its own right is not included in the numerical tabulation of   facet numbers hereinbelow.

The first step of the method produces the four substantially   triangular pavilion facets shown in FIGS. 1 and 2. The second   step of the method comprises dividing each of the aforesaid   four facets in half to yield the eight substantially triangular   pavilion facets shown in FIGS. 3 and 4.

The third step in the method is the cutting of each of the   eight pavilion facets into a substantially trifurcated configu-   ration in which two new facets 18 adjoining the girdle 15 are cut   with an overlapping intermediate side edge 20. Overlapping   side edge 20 begins at a point approximately two-thirds of   the way up from apex 10 and continues to girdle 15. If facets 18   did not overlap but met only at girdle 15, they would be   substantially triangular; the result of overlapping at intersection   20 is that each facet 18 has an abridged triangular configu-   ration as shown.

The fourth step in the method is the polishing of girdle 15 to   a 90° edge; that is, girdle 15 is polished to an annular ring   concentric with and having its side edge parallel to the longitu-   dinal axis of the stone. It is this step, inter alia, which is   entirely different from any method known to the art heretofore.   Prior methods involved the production of thin girdles and   polishing, if any, was reserved as a last step. The present in-   vention provides this intermediate step of polishing the girdle   into a relatively broad member capable, as will be seen, of   receiving cut facets.

The fifth step of the method is the cutting of a facet 30 ad-   jacent girdle 15 at each overlapping side edge 20 and inter-   mediate each overlapping side edge 20 at an approximate 53°   angle yielding 16 abutting facets with overlapping inter-   mediate side edges 31.

The sixth step of the method of the present invention is the   cutting of each facet 30 by two triangular facets 40, the height   of which is coextensive with the height of each overlapping   side edge 31 and the hypotenuse of which extends from the   top of each such overlapping side edge 31 to girdle 15 cen-   trally of facet 30. Each facet 30 is thereby cut into a diamond   shape. There are 32 such triangular facets and the total   number of pavilion facets at this stage is 72. Triangular facets   40 are cut at an angle of 58°—60°.

The last step of the method is the cutting of girdle 15 into 30   facets as shown in FIG. 11. Due to pavilion facets 40, the girdle   facets are trapezoidal and rectangular, there being two ad-   jacent trapezoidal facets and one as a triangular facet in series.   It will be noted that girdle 15, although polished in the   fourth step of the method and faceted in the last step,   nevertheless appears relatively thin. A primary reason is that   when facets are cut adjacent the girdle such as in the fifth and   sixth steps, they may be cut partially into the girdle thereby   reducing the girdle's thickness from that resulting from the   fourth step polishing.

The stone shown in FIGS. 13 and 14 is the result of a slight   modification to facets 30 as previously cut in accordance with   the present invention. A further step is the division of each   facet 30 into substantially similar halves 30a whereby the   pavilion, excluding apex or culet 10, has 88 facets.

FIG. 12 is a representation of a girdle polishing machine such   as may be utilized in the cutting and polishing of girdle   15. Cutting and polishing wheel 50 is, of course, a diamond   wheel and the jaws which hold the diamond are rotationally   driven either continuously to produce the polished facet in the   third step of the method or intermittently to produce the   faceted girdle of the last step of the method.

The girdle polishing machine provides several unique ad-   vantages not heretofore attainable. The first advantage is an   ability to accurately cut stones weighing as little as 1 point   (1/20 of a carat) which represents a marked advance over   earlier methods which could make practical use of stones no   smaller than 20 points (1/5 of a carat). Another advantage is   the ability to cut the final facets at relatively deep angles.

What we claim is:

1. A method of cutting diamonds and other stones having   pavilion, girdle and culet, comprising the steps of:
   a. cutting the pavilion into four substantially similar facets;
   b. bifurcating each of said four facets into two similar sub-   stantially triangular facets;
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3. trifurcating each of said substantially triangular facets into three facets of which two are girdle-adjointing and one is culet-adjointing;
4. intermediate polishing of the girdle to a 90° edge;
5. cutting a further facet at each intersection of said girdle-adjointing facets; and
6. cutting into a portion of each said further facet two substantially triangular girdle-adjointing facets.

2. A method of cutting diamonds and other stones having pavilion, girdle and culet in accordance with claim 1, wherein:
3. said two girdle-adjointing facets are cut with an overlapping intermediate side edge.
4. A method of cutting diamonds and other stones having pavilion, girdle and culet in accordance with claim 2, wherein:
5. said overlapping intermediate side edge extends from the girdle to approximately two-thirds of the distance to the culet.

4. A method of cutting diamonds and other stones having pavilion, girdle and culet in accordance with claim 1, additionally comprising the step of:
5. cutting facets into the girdle.
6. A method of cutting diamonds and other stones having pavilion, girdle and culet in accordance with claim 1, additionally comprising the step of:
7. cutting 38 facets into the girdle.
8. A method of cutting diamonds and other stones having pavilion, girdle and culet in accordance with claim 6, wherein:
9. said 38 facets comprise trapezoidal and rectangular facets.
10. A method of cutting diamonds and other stones having pavilion, girdle and culet in accordance with claim 6, wherein:
11. said 38 facets comprise trapezoidal and rectangular facets in repeating series of two trapezoidal and one rectangular facet per series.
12. A method of cutting diamonds and other stones having pavilion, girdle and culet in accordance with claim 1, additionally comprising the step of:
13. dividing each said further facet into substantially similar half-facets.