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(72) Inventors:  
• **ZHANG, Kunzhi**  
**Shandong 262100 (CN)**  
• **ZHANG, Feng**  
**Shandong 262100 (CN)**

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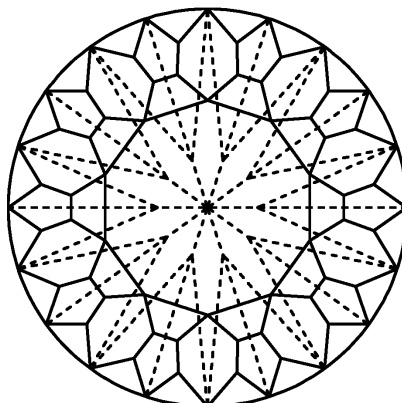
(74) Representative: **Price, Nigel John King**  
**J A Kemp**  
**14 South Square**  
**Gray's Inn**  
**London WC1R 5JJ (GB)**

(71) Applicant: **SHENZHEN PERFECT LOVE DIAMOND CO., LTD**  
**Shenzhen (CN)**

(54) **81-FACET DIAMOND WITH 10-HEART-AND-10-ARROW STRUCTURE INSIDE**

(57) The present invention relates to an 81-facet diamond with a 10-heart-and-10-arrow structure inside. The diamond comprises 10 main crown facets and 10 main pavilion facets. The diamond further comprises one table facet. Crown star facets are disposed at places where the main crown facets are connected to the table facet, and the number of the crown star facets is 10. Crown small facets are disposed at places wherein main crown facet edges are connected to the crown star facets, and the number of the crown small facets is 10. Small sector facets are disposed at places where the main crown facets are connected to the crown small facets, and the

number of the small sector facets is 20. Auxiliary facets of the main pavilion facets are disposed at main pavilion facet connection places, and the number of the auxiliary facets of the main pavilion facets is 20. The present invention has the following beneficial effects: the diamond is cut into 81 facets, and a 10-heart-and-10-arrow structure is provided inside, higher quality and value are provided for the diamond by using a high-end cutting process, and the brightness of the diamond under sunshine is increased by 20 to 30%. The diamond according to the present invention has a higher brilliant degree.



**FIG. 7**

## Description

### TECHNICAL FIELD

[0001] The present invention relates to the field of jewelry, and more particularly, to a diamond with eighty-one facets having a ten hearts and ten arrows inner structure.

### BACKGROUND OF THE INVENTION

[0002] With the improvement of people's standard of living, the jewelries as people's ornaments are more and more widely used, in which the diamond jewelries are especially prominent. In a quality evaluation of the diamond, four aspects of color, clarity, carat, and cut are considered primarily. Because their English names all begin with the letter of "C", these four standards are called 4C for diamond. Because the color, clarity and carat are its own properties during diamond formation and can not be altered, only cutting can endow the diamond with better quality and value and endow the diamond with more brilliant radiance. With the continuous development of the cutting technology, the diamonds that present inner eight hearts and eight arrows radiance after light refraction and reflection are loved by the users, and it is now also an advanced cutting method for the diamond.

### SUMMARY OF THE INVENTION

[0003] In view of the above-described shortcomings, the purpose of the present invention is to provide a diamond with eighty-one facets having a ten hearts and ten arrows inner structure.

[0004] To achieve the above-described purpose, the technical solution of the present invention is a diamond with eighty-one facets having a ten hearts and ten arrows structure, it includes ten main crown facets and ten main pavilion facets; said diamond has also one table facet; and crown star facets are disposed at the junction of said main crown facets with the table facet, the number of said crown star facets are 10; and crown small facets are disposed at the junction of the main crown facet edges with the crown star facets, the number of said crown small facets is ten; and small sectors are disposed at the junctions of the main crown facets with the crown small facets, the number of said small sectors is twenty; and auxiliary surfaces of the main pavilion facets are disposed at the junctions of said main pavilion facets, the number of said auxiliary surfaces of the main pavilion facets is 20.

[0005] It is preferred that the girdle length of said crown star facets is 50% of the edge length of the main crown facets, and the angle between the crown star facets with the table facet is 15.5-18.5°.

[0006] It is preferred that an angle between a short side of said crown small facets with the edges is 110°, and the height of the crown small facets is 75% of the height of the main crown facet edges.

[0007] It is preferred that the length of said small sector

sides is 50% of the edges, the small sectors present sector shape, and the angle between said small sectors and the girdle facets is 35.5-36.5°.

[0008] It is preferred that a bottom boundary line of said main pavilion facet auxiliary surfaces is 50% of a bottom boundary line of the main pavilion facets, and the main pavilion facet auxiliary surface edge is 75% of the main pavilion facet edge.

[0009] It is preferred that the angle of said main pavilion facets with the girdle facets is 40.5-40.8°.

[0010] It is preferred that the angle between said main pavilion facet auxiliary surfaces with the girdle facets is 42-42.3°.

[0011] It is preferred that the angle between said main crown facets with the girdle facets is 34-35°.

[0012] It is preferred that the roundness of said diamond is 99-100%, the diamond height is 60.5% of the diamond diameter, the table facet diameter is 56-57% of the diamond diameter, the crown height is 14.5-15.5% of the diamond diameter, the girdle width is 2.5% of the diamond diameter, the pavilion height is 43.5-45% of the diamond diameter, the main pavilion facet angle is 40.5-40.8°, and the main crown facet angle is 34-35°.

[0013] The beneficial effect of the present invention is that: by cutting the diamond into eighty-one facets and having a ten hearts and ten arrows inner structure, not only endowing the diamond with higher quality and value by an advanced cutting technology, but also improving the brilliance of the diamond under sunlight, and its brilliance can be improved by 20-30%. When a diamond of this structure is viewed under a specialized magnifier, if viewed from the pavilion toward the crown, the "heart" effect is more obviously bright; if viewed from the crown toward the pavilion, there are numerous radial bright facets between the arrow shafts. The diamond of the present invention has more brilliance.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

Fig. 1 is a view of the main pavilion facets of the present invention;

Fig. 2 is a view of the main crown facets of the present invention;

Fig. 3 is a view of the crown star facets of the present invention;

Fig. 4 is a view of the crown small facets of the present invention;

Fig. 5 is a view of the small sectors of the present invention;

Fig. 6 is a view of the main pavilion facet auxiliary surfaces of the present invention;

Fig. 7 is a top view of the present invention viewed from the crown toward the pavilion; and

Fig. 8 is a front view of the present invention.

wherein, 1 - the main pavilion facets; 2 - the main pavilion

facet auxiliary surfaces; 3 - the main crown facets; 4 - the table facet; 5 - the crown star facet girdle; 6 - the main crown facet edge; 7 - the crown star facets; 8 - the short side of the crown small facets; 9 - the girdle facets; 10 - the crown small facet; 11 - the edge of the small sector; 12 - the edges; 13 - the small sectors; 14 - the bottom boundary line of the main pavilion facet auxiliary surfaces; 15 - the bottom boundary line of the main pavilion facets; 16 - the main pavilion facet auxiliary surface edge; 17 - the edge of the main pavilion facets; d1 - the diameter of the table facet; d - the diamond diameter; h - the diamond height; h1 - the pavilion height; h2 - the crown height; h3 - the girdle width;  $\alpha$  - the angle of the main pavilion facets;  $\beta$  - the angle of the main crown facets.

## DETAILED DESCRIPTION OF THE EMBODIMENTS

[0015] The present invention will be further explained below in conjunction with the specific embodiments.

[0016] A diamond with eighty-one facets having a ten hearts and ten arrows inner structure, it includes ten main crown facets 3 and ten main pavilion facets 1. The diamond also has one table facet 4. The crown star facets 7 are disposed at the junction of the main crown facets 3 with the table facet 4, the number of said crown star facets is ten, the length of the crown star facet girdle 5 is 50% of the length of the main crown facet edge 6, and the angle between the crown star facets 7 and the table facet 4 is 15.5-18.5°. The crown small facets 10 are disposed at the junction of the main crown facets 3 with the crown star facets 7, the number of said crown small facets is ten, the angle between the short side of the crown small facets 8 and the edges 12 is 110°, and the height of the crown small facets is 75% of the height of the main crown facet edge 6. The small sectors 13 are disposed at the junction of the main crown facets 3 with the crown small facets 10, the number of said small sectors is twenty, the length of the small sector side 11 is 50% of the edge 12, the small sector presents sector shape, and the angle between said small sectors and the girdle facets is 35.5-36.5°. The main pavilion facet auxiliary surfaces 2 are disposed at the junction of the main pavilion facets 1, the number of said main pavilion facet auxiliary surfaces is twenty, the main pavilion facet auxiliary surface bottom boundary line 14 is 50% of the main pavilion facet bottom boundary line 15, and the main pavilion facet auxiliary surface edge 16 is 75% of the main pavilion facet edge 17.

[0017] In addition, the angle between said main pavilion facets 1 and the girdle facets 9 is 40.5-40.8°. The angle between the main pavilion facet auxiliary surfaces 2 and the girdle facets 9 is 42-42.3°. The angle of the main crown facets 3 and the girdle facets 9 is 34-35°.

[0018] In order to ensure the diamond can present a perfect cutting of ten hearts and ten arrows, the roundness of said diamond is 99-100%, the diamond height is 60.5% of the diamond diameter d, the table facet diameter d1 is 56-57% of the diamond diameter d, the crown

height h2 is 14.5-15.5% of the diamond diameter d, the girdle width h3 is 2.5% of the diamond diameter d, the pavilion height h1 is 43.5-45% of the diamond diameter d, the main pavilion facet angle  $\alpha$  is 40.5-40.8°, and the main crown facet angle  $\beta$  is 34-35°.

[0019] The position of the diamond tip is at central position, the deviation should be less than 1%. All the facets with the same shape have the equal size and are matched to each other, and polished at a certain angle.

## Claims

1. A diamond with eighty-one facets having a ten hearts and ten arrows inner structure, **characterized in that:** it includes ten main crown facets (3) and ten main pavilion facets (1); said diamond also has one table facet (4); crown star facets (7) are disposed at the junction of said main crown facets (3) with the table facet (4), the number of said crown star facets is ten; crown small facets (10) are disposed at the junction of main crown facet edges (6) with the crown star facets (7), the number of said crown small facets is ten; small sectors (13) are disposed at the junction of the main crown facets (3) with the crown small facets (10), the number of said small sectors is twenty; main pavilion facet auxiliary surfaces (2) are disposed at the junction of said main pavilion facets (1), the number of said main pavilion facet auxiliary surfaces is twenty.
2. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** the length of said crown star facet girdle (5) is 50% of the length of the main crown facet edge (6), and the angle between the crown star facets (7) with the table facet (4) is 15.5-18.5°.
3. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** the angle between the short edge of said crown small facets (8) with the edge (12) is 110°, and the height of the crown small facets is 75% of the height of the main crown facet edge (6).
4. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** the length of said small sector side (11) is 50% of the edge (12), the small sectors present sector shape, and the angle between the small sectors and the girdle facets is 35.5-36.5°.
5. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** said bottom bound-

ary line of the main pavilion facet auxiliary surface (14) is 50% of the bottom boundary line of the main pavilion facets (15), the main pavilion facet auxiliary surface edge (16) is 75% of the main pavilion facet edge (17).

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6. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** the angle between said main pavilion facets (1) and the girdle facets (9) is 40.5-40.8°. 10
7. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** the angle between said main pavilion facet auxiliary surfaces (2) and the girdle facets (9) is 42-42.3°. 15
8. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** the angle between said main crown facet (3) and the girdle facets (9) is 34-35°. 20
9. The diamond with eighty-one facets having the ten hearts and ten arrows inner structure according to claim 1, **characterized in that:** the roundness of said diamond is 99-100%, the diamond height (h) is 60.5% of the diamond diameter (d), the table facet diameter (d1) is 56-57% of the diamond diameter (d), the crown height (h2) is 14.5-15.5% of the diamond diameter (d), the girdle thickness (h3) is 2.5% of the diamond diameter (d), the pavilion height (h1) is 43.5-45% of the diamond diameter (d), the main pavilion facet angle ( $\alpha$ ) is 40.5-40.8°, and the main crown facet angle ( $\beta$ ) is 34-35°. 25 30 35

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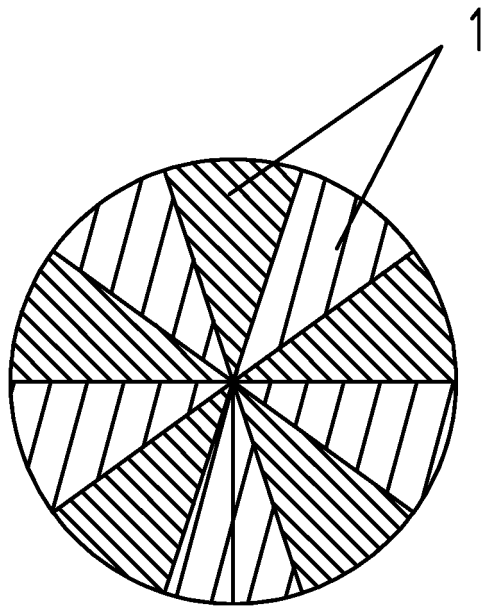


FIG. 1

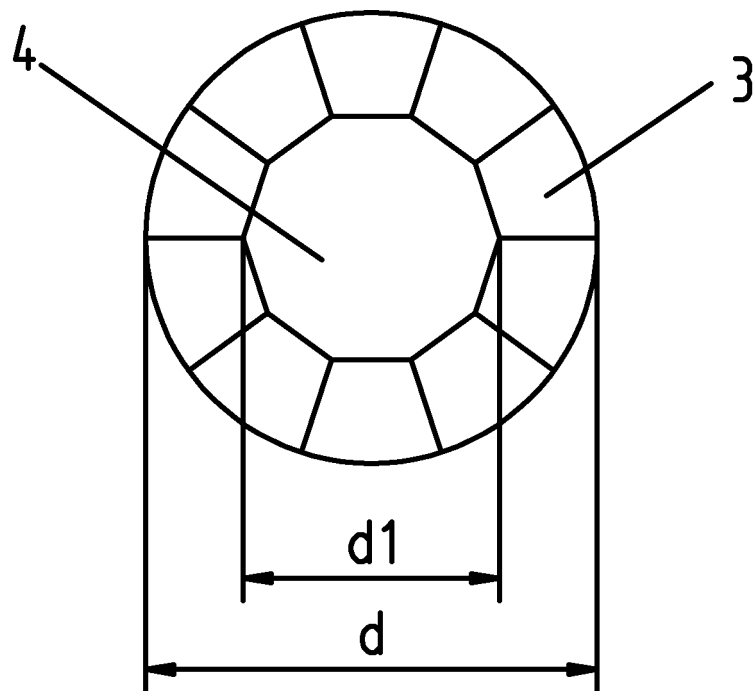


FIG. 2

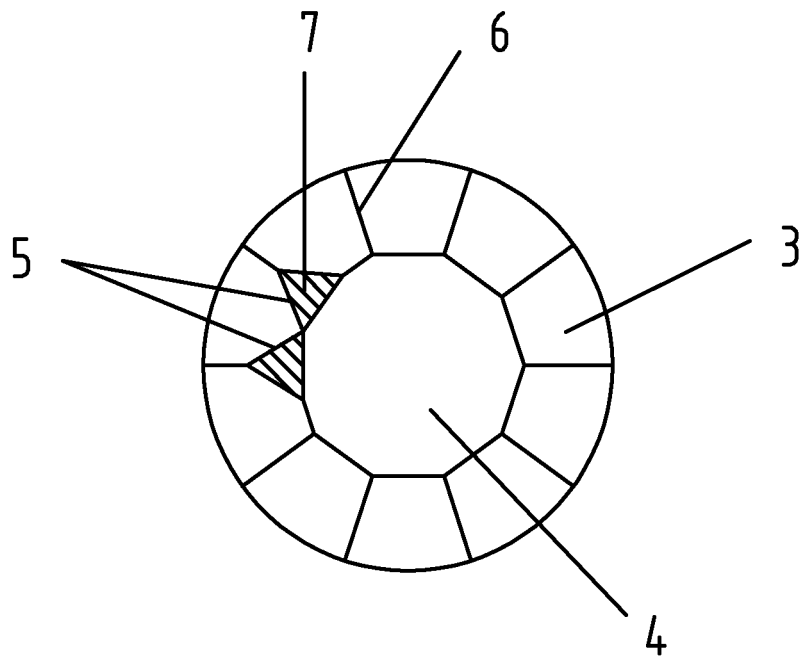


FIG. 3

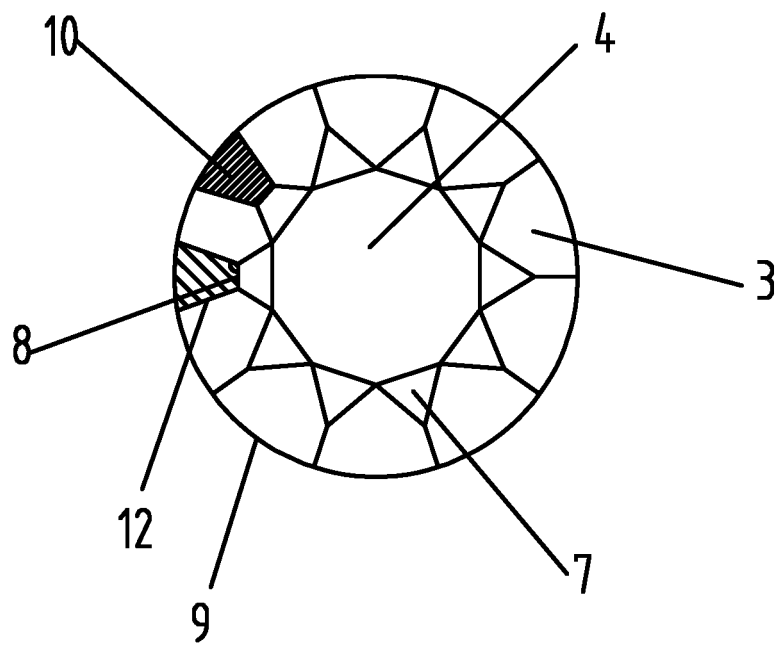


FIG. 4

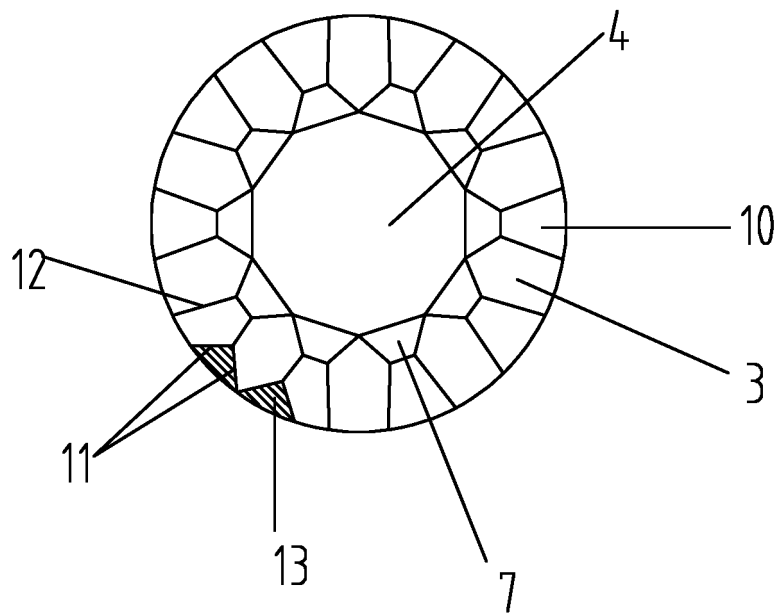


FIG. 5

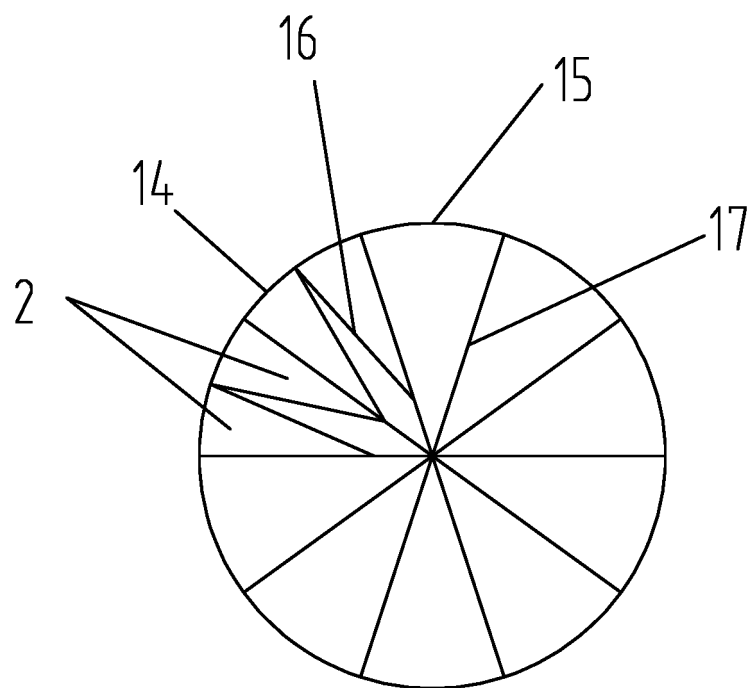


FIG. 6

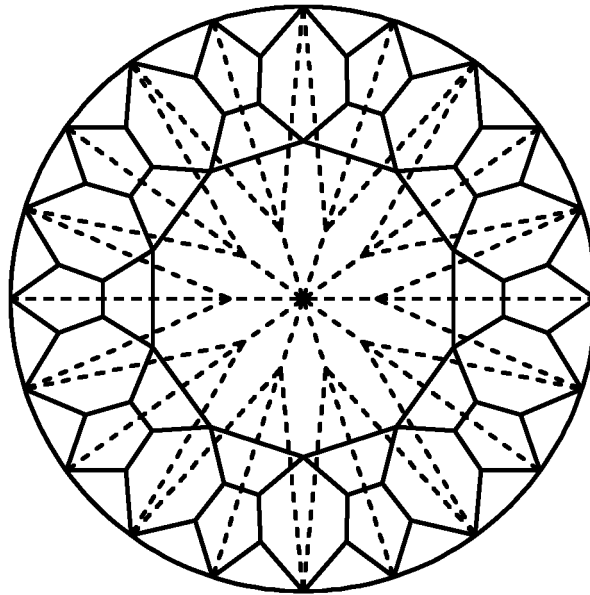


FIG. 7

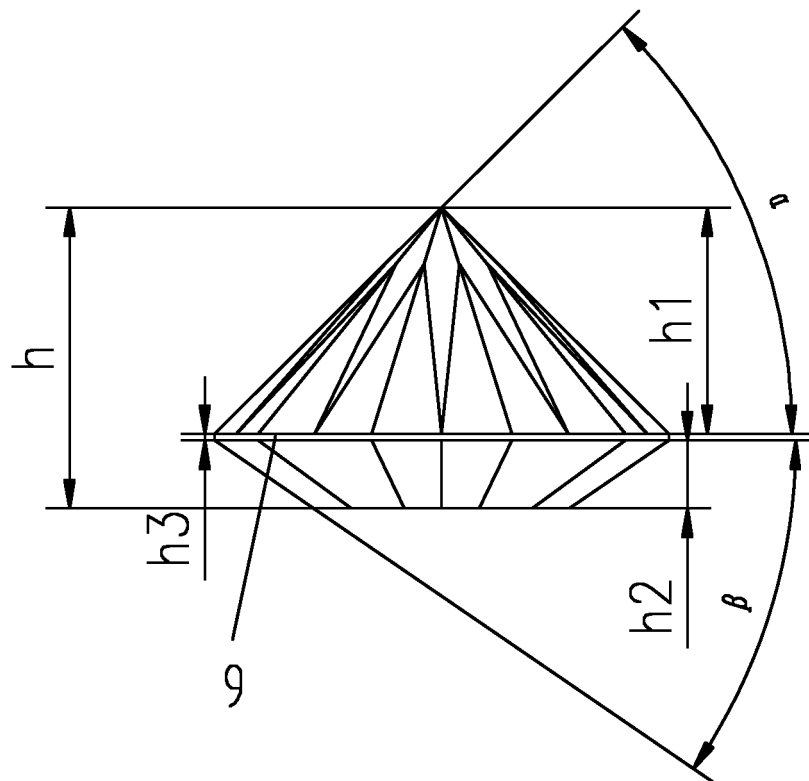


FIG. 8

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/087111

## A. CLASSIFICATION OF SUBJECT MATTER

A44C 17/00 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A44C 17/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, CNKI, CNPAT, CNTXT: ZHANG, Kunzhi; ZHANG, Feng; ten core, ten arrow, 81, eighty-one, ten, core, arrow, facet, diamond, crown, pavilion

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☐ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

|                                                                                                                                                                         |                                                                                                                                                                                                                                                  |
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Date of the actual completion of the international search<br>10 January 2014 (10.01.2014)                                                                                                                          | Date of mailing of the international search report<br>30 January 2014 (30.01.2014) |
| Name and mailing address of the ISA/CN:<br>State Intellectual Property Office of the P. R. China<br>No. 6, Xitucheng Road, Jimenqiao<br>Haidian District, Beijing 100088, China<br>Facsimile No.: (86-10) 62019451 | Authorized officer<br><br>XU, Hui<br>Telephone No.: (86-10) 62414170               |

**INTERNATIONAL SEARCH REPORT**  
 Information on patent family members

International application No.

**PCT/CN2013/087111**

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