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LAPIDARY DEVICE

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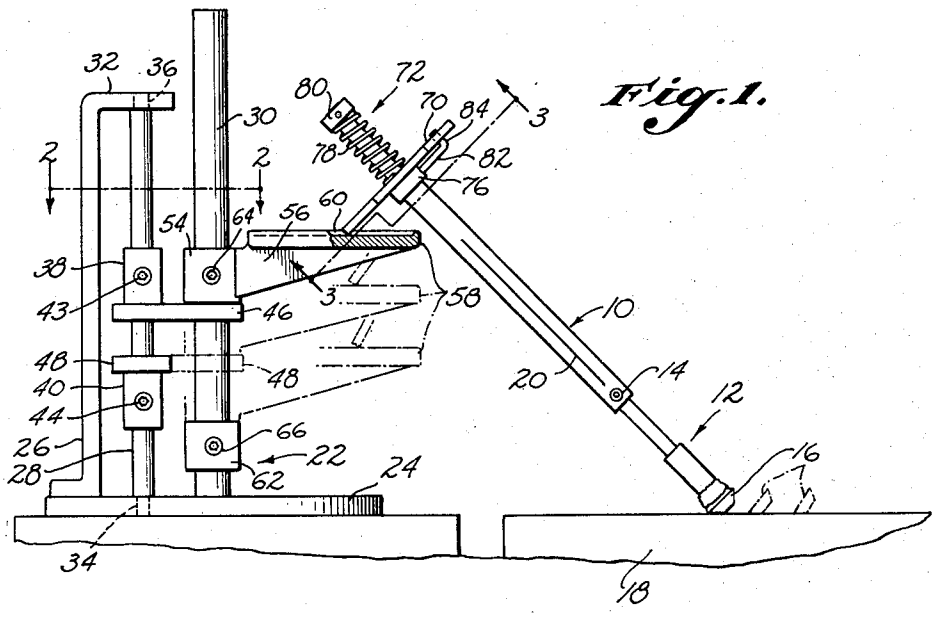


Fig. 1.

Fig. 2.

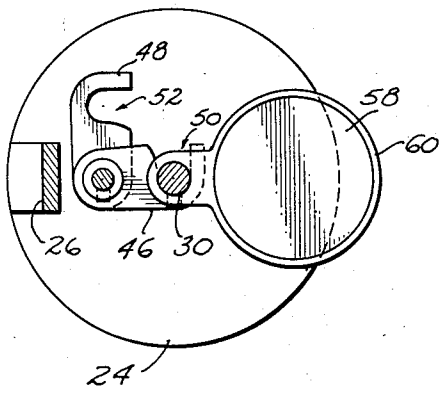


Fig. 3

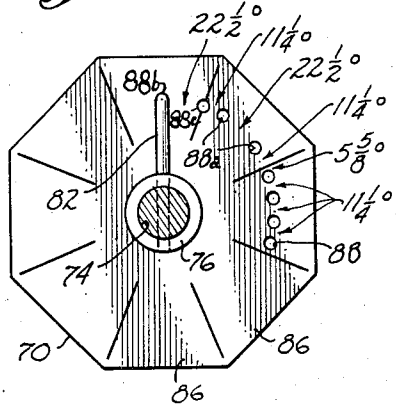
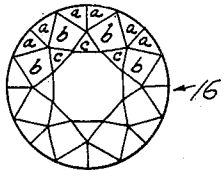


Fig. 4.



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LAPIDARY DEVICE

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1 Claim. (Cl. 51—229)

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This invention relates to a lapidary device of the type adapted to position a gem or precious stone for grinding and polishing the facets thereof upon a rotary table.

In such work, it is desirable to have the selected number of facets which constitute a row, equally spaced thereabout, as well as to have the facets of a subsequent elevation or row uniformly staggered or laterally displaced in relation to the adjacent row. Accordingly, by my device this positioning is effected in a highly efficient and automatic manner and with a minimum of manipulation as well as a simplicity of structure.

In addition, my arrangement of elements is such that one may return the gem to any previous position in order to rework any facet of any row without having to reset the device and hence without possibility of misalignment which is generally inherent in resetting. Thus means are provided for presetting the device simultaneously for (1) a number of rows of facets, (2) the desired number of facets in a row, and (3) the angular deviation of the facets of one row from those of an adjacent row.

Other objects and advantages of the invention will be apparent from the following description and claim, the novelty consisting in the features of construction, combination of parts, the unique relations of the members and the relative proportioning, disposition, and operation thereof, all as more completely outlined herein and particularly pointed out in the appended claim.

In the drawings, which form part of the present specification:

Figure 1 is a side elevational view of my lapidary device in operating position for working one row of facets of a gem, with the corresponding positions of the device for two subsequent rows indicated in broken lines;

Figure 2 is a top view of the left portion of the structure only, as seen along the section line 2—2 of Figure 1, the dop arm and connected parts being removed;

Figure 3 is a bottom plan view of the index plate and locking pin as viewed along the line 3—3 which sections the dop arm of Figure 1; and

Figure 4 is an elevational view of a gem, showing the arrangement of three rows of facets which can be ground and polished by my device.

As here illustrated my gem faceting device includes a conventional angularly positioned dop arm 10 carrying a longitudinally adjustable dop stick 12 secured within the lower tubular end thereof by a set screw 14. The dop stick is adapted to have a gem 16 firmly attached to its

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lower extremity by wax, resin or the like so as to be positioned at a predetermined angle atop a generally horizontal, rotary grinding or polishing table 18, operated by an electric motor (not shown). The dop arm is provided with a longitudinal guide line 20 so that a protractor placed atop the rotary table 18 may quickly indicate the angle of the dop arm and gem 16 thereto.

By the present construction, means are provided for setting the gem and dop arm at any three successive angles—corresponding to three rows of facets—by supporting the upper end of the dop arm at predetermined elevations or stops. The positions of elevation are arranged so that the dop arm can be changed from one to the other at will, without altering the setting of any of the adjustable supports so that the gem can be instantly shifted back to a facet of a previous row without requiring adjustment of the setting anew. Thus three rows of facets can be ground in turn on the rotary table and then the same successions of facets be brought back to the table for polishing.

For this purpose there is provided a standard 22 consisting of a flat base 24 having three upright posts 26, 28, 30 located thereon, laterally spaced apart, with the top of the post 26 turned in at right angles to form a supporting cross arm 32 for the upper end of the center post. The center post 28 is rotatable on its longitudinal axis by means of pintles 34, 36 inserted in corresponding sockets in the base 24 and cross arm 32 respectively. This post has a pair of collars 38, 40 individually slidable therealong and capable of being secured against displacement by corresponding set screws 43, 44. Each collar has a laterally projecting finger 46, 48 formed integral therewith and provided with a mutually facing, side-opening notch 50, 52 positioned to engage the inner post 30 when rotated thereagainst.

The inner post 30 also carries a longitudinally displaceable collar 54 affixed to an outwardly projecting bracket arm 56 which supports a horizontal pan or tray 58 having an upstanding peripheral shoulder 60 about its upper surface. Disposed beneath the collar 54 is a second collar 62 slidingly mounted on the post 30, each of which collars may be anchored along the post by a corresponding set screw 64, 66. The collar 54 is fastened to the post only while adjusting the other three positioning collars for the three desired elevations of the tray 60. In use, the screw 64 is loosened and the collar 54 allowed to rest upon the under collar 62 which is set at the position adapted to give the desired angle of the dop arm when supported by the tray 58. The collars

38 and 40 are set for successive positions of elevation, with their arms 46, 48 set to include a wide angle so that first one and then the other may be swung in, under the collar 54 to support it at a desired elevation corresponding to other rows of facets on the gem 16.

There are further provided means for positioning the stone 16 for cutting or polishing a varied number of facets which constitute a complete row. This is achieved by a flat, polygonal sided index plate 70 adapted to have the upper end 72 of the dop arm inserted thru a central aperture 74 thereof and in such position to be securely lodged against a boss 76 of the dop arm by a helical spring 78 held in compression about the arm 10 by a locking collar 80. The index plate is rotatable about the dop arm and is restrained against same by means of a right-angle locking pin 82 carried by the boss 76 and having its turned-up end 84 received in a socket of the plate 70. The knive edge of the plate rests upon the tray 58 back of the annular shoulder 60 at an angle dependent upon the elevation of the tray. However the whole unit of dop arm and assembled gem and index plate can be lifted off the tray 58 at will and placed back again to resume its original position. In addition, by turning the dop arm and index plate to rest on successive side edges of the latter, the gem could be turned to the number of facets for each row (or elevation), corresponding to the number of sides of the plate. Thus the index plate shown in Figure 3 has eight sides, so that by its use eight facets can be located for any elevation of the plate 58 without changing the setting of the locking pin 82.

However means are also provided for faceting successive rows of the gem at planes non-parallel or angularly displaced from the facets of the preceding row. Such angular deviation represents an aliquot divisor of the radical sector 86 defined by each polygonal edge of the index plate. Accordingly sockets 88 are placed in the plate 70 to receive the end 84 of the locking pin in positions corresponding to desired rotational positions of the dop arm in relation to the index plate. Thus, assuming the socket 88*c* corresponds to the facets *c* of Figure 4; the socket 88*b* which bisects the sector 86 corresponds to the facets *b*; the sockets 88*a* correspond to the facets *a*; and so on. An index plate having a different number of edges, e. g. 3, 4, 5, 6, etc. can likewise have its sectors divided up for such intermediate sockets. It will be seen likewise that as soon as the locking pin 82 is located in the desired socket of any sector, the plate and dop arm can be rested on successive polygonal edges of the plate without disturbing the setting of the locking pin through a complete (360°) rotation of the unit.

Here again, it will be evident that not only can an elevation—or row of facets—be returned to at will by means of the stops 38, 40, 62, but the device can be reset for any individual facet in any row by means of the sockets 88.

While I have shown and described in some detail a presently preferred embodiment of my gem faceting device, it is understood that various modifications may be made in the construction and operation thereof within the spirit and scope of the subsequently claimed invention which it is my intention to claim broadly within the limitations imposed by the prior art.

I claim:

A lapidary device of the character described, comprising in combination: a pair of upright posts laterally spaced apart, one of which carries a vertically adjustable horizontal support and an independently vertically adjustable positioning collar disposed beneath the support, the other of which posts is axially rotatable and carries a pair of independently vertically adjustable collars axially spaced apart and each having a rigid lateral extension individually adapted alternately to support said horizontal support from beneath, whereby the three collars may be set to position the horizontal support at three successive elevations; an elongated shaft one end of which is adapted to support a gem on a rotatable grinding or polishing surface; a polygonal sided plate axially traversed by said shaft and rotatable to selected stations thereabout, said plate being supportable along any one of its edges by said horizontal support and containing sockets at successive positions which are divisions of the sector angle defined by consecutive ends of a polygonal edge; a projection arm carried by said shaft and insertable in successive sockets; and retaining means disposed in opposition to said arm and adapted normally to hold same in its selected socket.

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