

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements in and relating to Holders for Gem Stones

We, SPECTRUM DIAMONDS (PROPRIETARY) LIMITED, of 44 Main Street, Johannesburg, South Africa, a Company registered under the laws of the Republic of South Africa, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a holder for supporting a gem stone during polishing.

It is conventional to polish a gem stone, for example a diamond, by gripping it in a press-pot which in turn is gripped by a holder, the holder being located in a dop. The dop in turn is attached to an arm which is used to locate the gem over a polishing wheel, the arm being referred to in the art as a tang.

It is known to provide press-pots which are made of suitable metal shaped in the form of an elongated pear. At the blunt or leading end of the pear a cavity is defined in which the gem stone is to be located and the pear is split axially from the blunt end to a point towards the sharp end so that a series of fingers are provided. These fingers expand radially outwardly to permit the gem to be located in the pot or cavity and on radially inward movement of the fingers the gem is gripped sufficiently tightly for polishing to be carried out on an underlying wheel. Radially inward movement of the fingers is accomplished by pushing the press-pot axially into a bore in the leading end of the polishing holder.

In operation, the holder and the press-pot are normally inclined to the vertical and polishing takes place in a plane which will ultimately cause contact to be established between the leading tip of the press-pot and the wheel surface. If axial slits, between which are defined the press-pot fingers, do not close, these gaps between adjacent fingers could fall in the path of the polishing wheel and contact with the metal of the press-pot

could be delayed if a gap is directly in such path. This is of significance if an electrical path is to be established through the holder to indicate completion of a facet. The effect of the presence of one of these gaps could be such that the polishing wheel continues its attack on the stone beyond the limit predetermined for the form of polish required, and a badly polished stone might result.

The present invention consists in a holder for supporting a gem stone during polishing the holder having a compartment at its forward end for accepting and retaining a gem carrying press-pot inserted therein, and an outer movable ring which can be advanced along the holder so that its forward end can be used as a guide to terminate polishing. By this arrangement it can be ensured that during polishing contact is made with the ring before polishing can be effected in the gap between the press-pot fingers.

The invention also provides a holder as set out in the preceding paragraph including means to adjust its effective length. For instance, a cylindrical nut may be located on a threaded shank provided at the rear end of the holder. By screwing the nut axially outwardly the effective length of the holder is increased. Likewise, when the nut is turned up on the threaded shank the effective length is shortened.

In order to illustrate the invention an example is described hereunder with reference to the accompanying drawing, showing a cross-section through a holder and a press-pot for insertion therein.

The holder is a cylindrical piece of suitable metal which is bored centrally to provide a hole 1 through which a tool may be passed to eject a press-pot. A press-pot compartment 2 is provided in the leading end of the holder and the bore 1 communicates with the compartment. At the rear or trailing end of the holder a threaded shank 3 of reduced diameter is located and a nut 4 is fitted over the shank.

The nut and the holder body are of uniform diameter and the nut and rear portion of the body are adapted frictionally to engage in a bore in a dop. (The shank and threaded nut could alternatively be replaced by a suitable head screw and threaded hole in the end of the holder).

By means of the nut the effective length of the holder may be varied to adjust for different projections of gem stones from the press-pot.

The compartment in the holder for the press-pot accommodates a metallic sleeve insert 5 for gripping the press-pot and between the insert and outer walls 6 of the holder there is a nylon insulating sleeve 7. Over the cylindrical body of the holder a metal ring 8 is frictionally fitted and this metal ring is capable of axial movement into any desired position. It will be seen that when a press-pot is inserted into its compartment the press-pot will be electrically insulated from the remainder of the holder by the insulating sleeve 7. However, it is possible to establish electrical connection between the pot and the holder through the bores 1 and 9.

The form of press-pot employed is conventional and is characterized in a metal pear-shaped body 10 which is adapted to be inserted in the compartment with its blunt end projecting therefrom. In the blunt end a cavity (not shown) is provided for the accommodation of portion of a gem stone and the sides of the press-pot are split axially to define a series of fingers *a*, *b* and *c*. These fingers expand radially to permit a gem to be fitted in the pot and contract to grip the gem. Radial contraction is effected when the press-pot is pushed into the compartment in the holder.

The leading end of the press-pot tapers outwardly, and a slope or bevel is also to be seen on the leading edge 11 of the ring surrounding the holder body.

When a stone is to be polished the press-pot is opened to permit the back of the stone to be inserted in the cavity in the leading end of the press-pot. The press-pot is then pushed into the compartment so that radial contraction of the fingers takes place with the stone firmly gripped between them. The ring is then advanced to ensure that during polishing when the required depth of polish is obtained the leading edge 11 of the ring contacts the polishing surface. Then an electrical circuit can be completed between the polishing plate, ring and holder, and the operation can be

terminated. The slits between adjacent fingers of the press-pot are now shielded by the ring and when polishing of a facet is complete electrical contact will be established through the ring and the body of the holder to stop the operation and raise the stone off the polishing plate. In case the ring fails to contact the polishing wheel in good time a further electrical path may be provided through the press-pot.

When the stone has been polished it is removed from the press-pot for a further stone to be inserted therein. Any differences in the extent to which the stone project from the press-pot is taken into account by adjusting the nut on the threaded shank at the rear end of the holder.

Many more examples of the invention exist each differing from the other in matters of detail only. The essence of the invention is the provision of the sliding ring for ensuring that polishing is not permitted in the gap between two adjacent fingers of the press-pot as well as to provide a depth control in regard to polishing. A further aspect of the invention, together with the ring, is means for adjusting the effective length of the holder.

Other features of the holder described herein form the subject matter of our co-pending Application No. 2644/67 (Serial No. 1171211).

WHAT WE CLAIM IS:—

1. A holder for supporting a gem stone during polishing, the holder having a compartment at its forward end for accepting and retaining a gem carrying press-pot inserted therein, and an outer movable ring which can be advanced along the holder so that its forward end can be used as a guide to terminate polishing.

2. A holder as claimed in claim 1, in which the forward edge of the ring is bevelled.

3. A holder as claimed in either of the preceding claims, including means to adjust the effective length of the holder.

4. A holder as claimed in claim 3, in which the adjusting means comprises screw adjusting means at the rear end of the holder.

5. A holder as claimed in any of the preceding claims having a longitudinal bore formed therethrough leading into said compartment.

6. A holder as claimed in any of the preceding claims having a gem carrying press-pot inserted into said compartment.

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