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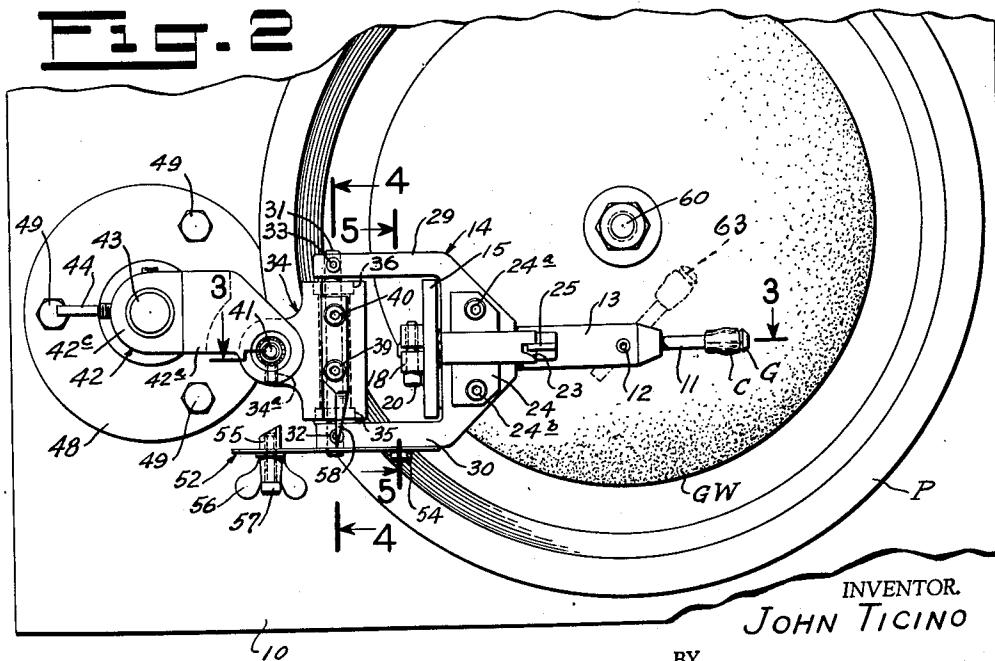
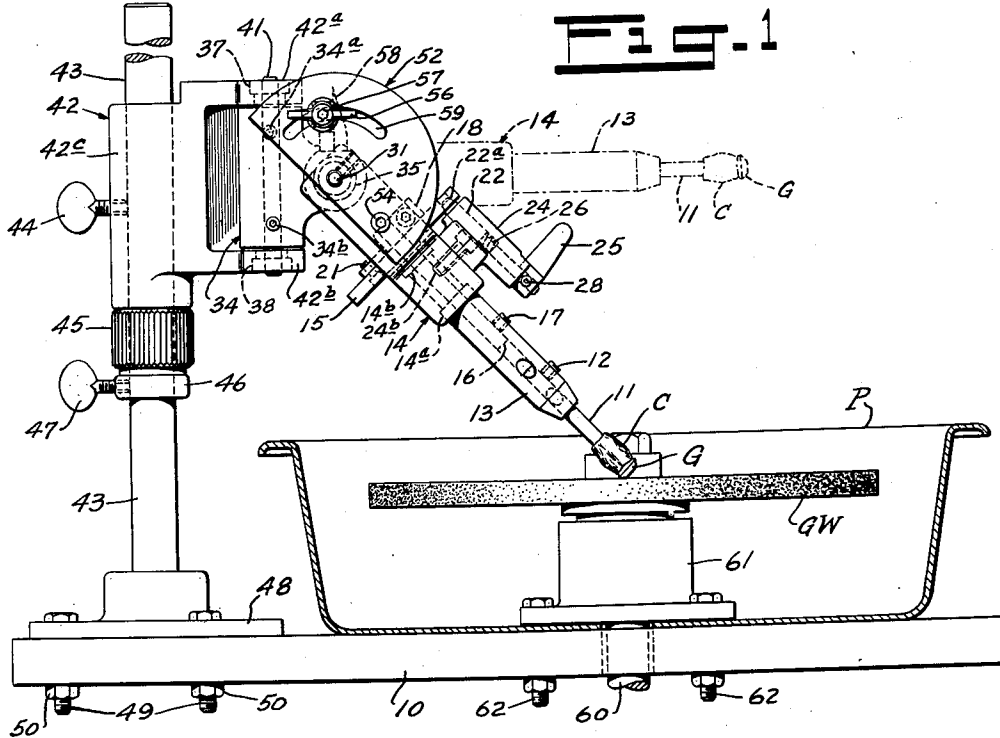
J. TICINO

3,073,085

MACHINE FOR GRINDING AND POLISHING FACETS OF PRECIOUS STONES

Filed May 18, 1961

2 Sheets-Sheet 1



INVENTOR
JOHN TICINO

BY

H. G. Manning
ATTORNEY

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J. TICINO

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Fig. 3

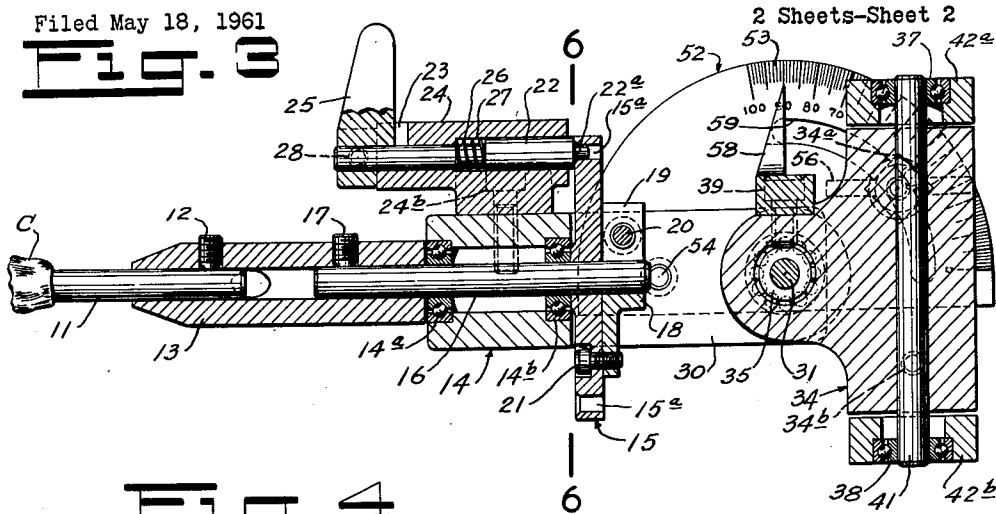


Fig. 4

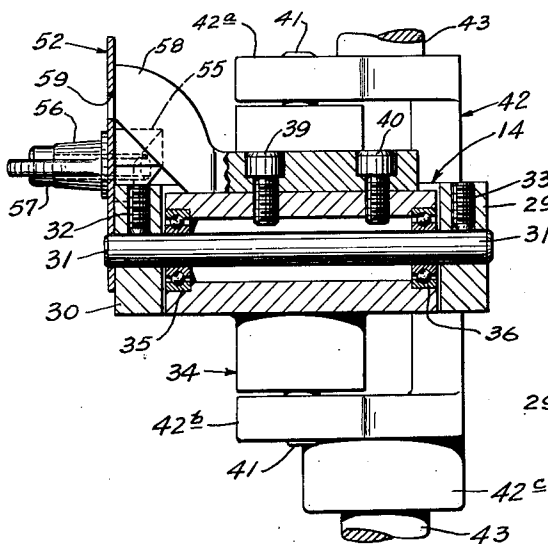


Fig. 5

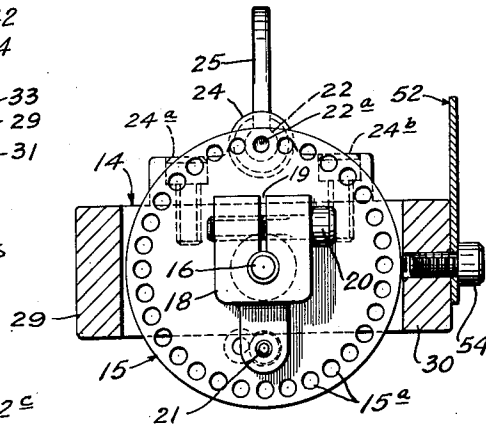


Fig. 6

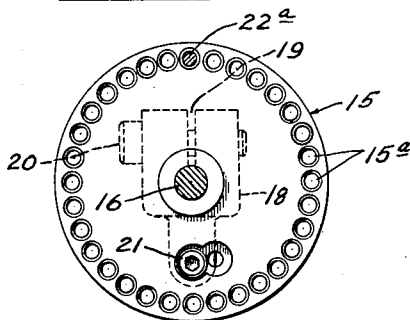
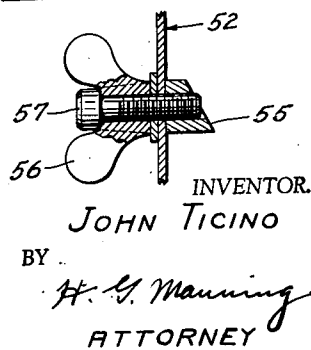


Fig. 7



INVENTOR.
JOHN TICINO
BY
H. G. Manning
ATTORNEY

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MACHINE FOR GRINDING AND POLISHING
FACETS OF PRECIOUS STONES
John Ticino, 15 Coe St., Meriden, Conn.
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This invention relates to grinding apparatus, and more particularly to a machine for grinding the facets of precious stones or gems.

One object of the present invention is to provide a machine of the above nature for holding precious stones and gems in various positions and angles to enable a grinding wheel to accurately cut the facets without having recourse to templates or other devices.

A further object is to provide a device of the above nature by means of which the facets of the precious stone may be cut by a person of ordinary ability without requiring highly skilled labor.

A further object is to provide a machine of the above nature, in which the angle of the facet with respect to the grinding wheel may be readily adjusted.

A further object is to provide a machine of the above nature which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, compact, ornamental in appearance and very efficient and durable in use.

With these and other objects in view there has been illustrated on the accompanying drawing one form in which the invention may conveniently be embodied in practice.

In the drawings,

FIG. 1 represents a side view in elevation, of the improved gem grinding and polishing machine as it appears in use with the precious stone held against the grinding wheel located therebeneath.

FIG. 2 is a fragmentary top plan view of the same.

FIG. 3 is a side sectional view, taken along the broken line 3-3 of FIG. 2, looking in the direction of the arrows.

FIG. 4 is a vertical sectional view, taken along the line 4-4 of FIG. 2, looking in the direction of the arrows.

FIG. 5 is a vertical sectional view, taken along the lines 5-5 of FIG. 2, looking in the direction of the arrows.

FIG. 6 is a sectional view, along the line 6-6 of FIG. 3, illustrating the shape of the indexing plate for controlling the angle of the facet with respect to the grinding wheel.

FIG. 7 is a partial sectional view of the thumb screw for locking the stop on the protractor at the desired angle.

Referring now to the drawings, in which like reference numerals denote the corresponding parts throughout the several views, the numeral 10 indicates a metal base upon which the machine is mounted. The gem or precious stone indicated by the letter G is secured by cement C to a small rod known in the trade as a "dop stick," and indicated by the numeral 11, which in turn is secured by means of a set screw 12 within a tubular housing 13, as clearly shown in FIGS. 1 and 2 of the drawing. The housing 13 is secured to a fork 14 having ball bearings 14a and 14b as clearly shown in FIG. 3, for a shaft 16 secured by a set screw 17 to the tubular housing 13.

Provision is also made of a circular indexing plate 15 secured upon the shaft 16 by a block 18 having a split section 19, the sides of which are adjustably clamped upon said shaft 16 by means of a cap screw 20 (FIG. 5). The block 18 is adjustably secured to the indexing plate 15 by means of a flat head screw 21 (shown in FIGS. 3 and 6 of the drawing).

In order to hold the indexing plate 15 in any desired

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angular position, provision is made of a slidable pin 22 (FIG. 3), having a reduced rear tip 22a which is adapted to fit within any one of a circular row of countersunk holes 15a of said index plate 15, according to the number of facets required on the precious stone G, to be ground by a grinding wheel GW, located above a fixed pan P.

The slidable pin 22 is held in selected indexed position by means of a handle 25 which is adapted to seat in a helical cam slot 23 of a bearing block 24, said handle 25 extending at right angles to said pin 22. The bearing block 24 is secured to the fork 14 by a pair of cap screws 24a and 24b (FIG. 2).

Provision is also made of a helical spring 26 surrounding the pin 22 and located within a recess 27 in the bearing block 24. The handle 25 is adapted to be secured to the pin 22 by means of a set screw 28.

The fork 14 is provided with a pair of parallel arms 29 and 30 (FIG. 2) which are adapted to be pivotally mounted upon a horizontal shaft 31 secured to said fork by means of a pair of set screws 32, 33.

The shaft 31 serves to connect the fork 14 to a universal swivel block 34 which is mounted on said shaft 31 by ball bearings 35, 36. Provision is also made of a pair of cap screws 39, 40, (FIG. 4) for securing a pointer 58 to the universal swivel block 34.

Provision is also made of top and bottom ball bearings 37, 38 mounted in the upper and lower bearing arms 42a and 42b of the main body 42, said ball bearing holding the shaft 41, as clearly shown in FIG. 3 of the drawing, said shaft 41 being secured in the universal swivel block 34 by means of the set screws 34a and 34b. The main body 42 (FIGS. 1 and 2) has a vertical hollow boss 42c secured by a thumb screw 44 to the vertical main shaft 43.

Beneath the main body 42, provision is made of a fine pitch micrometer nut 45, below which is a lock nut 46, by means of which the main body 42 may be accurately held in adjusted vertical position, said lock nut 46 being secured to the shaft 43 by a thumb screw 47. The bottom of the vertical shaft 43 is secured to the base 10 by a pedestal flange 48, bolts 49, and nuts 50, as clearly shown in FIGS. 1 and 2 of the drawing.

In order to control the angle of the dop stick 11 with respect to the swivel block 34, provision is made of a semi-circular protractor 52 rigidly mounted on the fork 14 and having a scale 53 (FIG. 3) adjacent the edge thereof. The protractor 52 is secured to the fork 14 by means of a cap screw 54 and is provided with a stop 55 having a beveled edge for clearance, (as shown in FIG. 7). The stop 55 is secured to the protractor 52 by a thumb nut 56 and a set screw 57.

Provision is also made of a pointer 58 secured to the swivel block 34 (FIG. 4) and located close to the protractor scale 53. The stop 55 may be adjustably mounted in an arcuate slot 59 of the scale 53 to which it is secured by the thumb nut 56 (FIG. 1).

The grinding wheel GW is secured to a vertical arbor 60 mounted to rotate in a bearing block 61 which is secured by bolts 62 to the base 10.

The numeral 63 (FIG. 2) indicates in dotted lines the appearance of the dop stick 11 when it is adjusted to an angle 45 degrees from the full line normal position prior to swinging it beneath the housing 13 into vertical position for the purpose of grinding or polishing the crown or top facet of a stone.

Operation

In the operation of this machine, the gem G to be cut is secured by cement C to the dop stick 11, and the housing 13 will then be indexed to bring the desired facet of the gem G into engagement with the grinding wheel GW. The main body 42 will be adjusted to the desired height

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by means of the micrometer nut 45 and held in adjusted position by the thumb screw 47.

It will be understood that after the facet of the precious stone has been ground to the desired extent, the housing 13 and the dop stick 11 may be swung upwardly about the axis of the horizontal shaft 31, and readjusted.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not limited to this specific disclosure, but may be modified and embodied in various other equivalent forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent is:

1. In a machine for grinding and polishing the facets of a precious stone, a main body mounted on a base, a vertical shaft journaled in said main body, a universal swivel block pivotally mounted on said vertical shaft, a horizontal shaft mounted in the forward part of said swivel block, a two arm fork pivotally mounted upon the ends of said horizontal shaft, a cylindrical housing carried by the forward portion of said fork, and a precious stone-holding dop stick adjustably secured within said housing, for permitting any desired facet of said precious stone to be held manually against a horizontal grinding wheel located beneath it, said fork carrying a small inclined shaft in alignment with and behind said dop stick, a cir-

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cular indexing plate secured at right angles on the rear end of said small shaft and provided with a row of spaced holes at its perimeter, and a spring-pressed sliding pin mounted in said fork for selectively engaging within any one of said holes, said spring-pressed sliding pin being parallel to said small shaft.

2. The invention as defined in claim 1, in which the main body rests upon a micrometer nut screwed on said vertical shaft to permit the height of said swivel block to be minutely adjusted.

3. The invention as defined in claim 1, in which a longitudinal semicircular protractor scale is mounted on one side of said fork, said swivel block carrying a pointer in proximity to said scale to indicate the exact angular position of said dop stick with respect to said grinding wheel.

4. The invention as defined in claim 1, in which said sliding pin has a forward upstanding handle, and said fork has a helical cam slot in its forward end engaged by said handle to permit the manual retraction of said pin whenever it is desired to rotate said precious stone to a different adjusted angular position.

References Cited in the file of this patent

UNITED STATES PATENTS

698,521	Kneip	Apr. 29, 1902
753,992	Marcher	Mar. 8, 1904
2,444,795	Weir	July 6, 1948
2,542,698	O'Brien	Feb. 24, 1951
2,779,138	Collor	Jan. 29, 1957