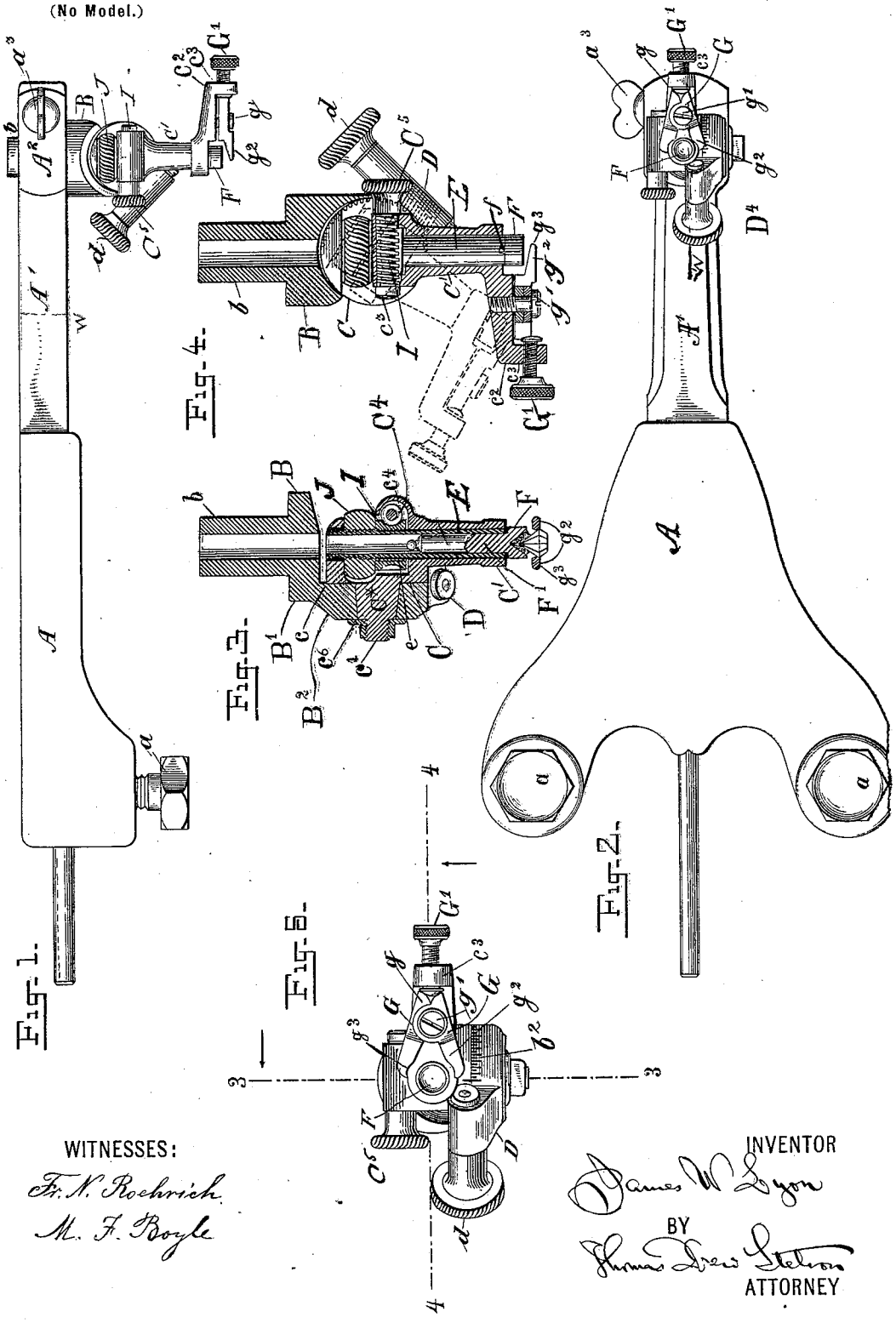
No. 615,083. Patented Nov. 29, 1898.

J. W. LYON.

DIAMOND POLISHING TOOL.

(Application filed Aug. 5, 1897.)

(No Model.)



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DIAMOND-POLISHING TOOL.

SPECIFICATION forming part of Letters Patent No. 615,083, dated November 29, 1898.

Application filed August 5, 1897. Serial No. 647,216. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. LYON, a citizen of the United States, residing in New York, (Brooklyn,) Kings county, in the State of New York, have invented a certain new and useful Improvement in Diamond-Polishing Tools, of which the following is a specification.

This invention has reference to diamond-polishing tools; and it consists in the improved construction hereinafter fully disclosed, whereby the gem is not only securely held and properly positioned for polishing, but is capable of comparatively ready insertion and removal.

The improved tool has also novel provisions for positively and axially adjusting the dop and revolving the same to provide for presenting the proper grain of the stone and for variously inclining and changing the position of the same to secure the proper plane of the facets.

In the drawings accompanying this specification, Figure 1 is a side view of a polishing-tool embodying my improvements. Fig. 2 is an inverted plan of the tool. The remaining figures are on a larger scale. Fig. 3 is a vertical transverse sectional view taken in the plane of the dop-spindle and contiguous parts. Fig. 4 is a view similar to Fig. 3, but quartering thereto, as indicated by 4 4 in Fig. 5. Fig. 5 is an inverted plan view of the parts shown in Figs. 3 and 4.

Similar characters of reference indicate corresponding parts throughout the several figures of the drawings where they occur.

The stock A has the usual screws *a a* in its base to afford a vertically-adjustable rest therefor. This stock A is of contracting form at its front and rigidly carries a horizontal metal shank A′, which terminates in a laterally-enlarged and approximately-rounded head A^2, having a longitudinal slot or slit *w*, which intersects a vertical cylindrical opening. The slotting of the head results in two spring parts, which may be readily drawn toward each other and held by a pinching-screw a^3 to contract the opening. Within this opening bears the tubular neck *b* of a metal bracket B, designed to occupy a position immediately beneath the head A^2 and of the shape generally represented in Figs. 3 and 4, comprising a top horizontal portion B′ for bearing against the under face of the head, and vertical offset B^2, having a horizontal central and preferably conical perforation, and a support for an inclined worm-shaft, to be described farther on.

A block C has an inner face in bearing relation to the vertical face of the bracket-offset B^2 and is integrally provided with a horizontal conical lug c^2, which turns snugly in the opening in the offset and terminates in a threaded end *c′* for the application of a nut c^6 to hold the block in swiveled engagement, and a descending tube and laterally-extending arm, as will be presently described.

As will be noted, the bearing portion of the block C is approximately circular and has its edges provided with a series of gear-teeth concentric with its pivoted center, a small worm-shaft D, meshing with said teeth, serving to effect the turning of the block on its horizontal axis. This shaft D is supported, as shown, in suitable inclined bearings on the bracket B and is equipped at its upper and more prominent end with a milled head *d* to facilitate its convenient operation.

In one piece with the block C and depending therefrom in axial line with the neck *b* of the bracket B is a tubular bearing C′, formed integrally with a lateral arm c^2, terminating in a vertical ear c^3. Contained within the bearing C′ is a sleeve E, supporting a dop-holder and extending vertically through a worm-wheel I and nut J, both located in a recess provided in the block C. The sleeve E has a feather *e*, engaging a groove therefor in the worm-wheel I, insuring its rotation with said wheel, but permitting the movement up and down therein. The upper portion of the sleeve E is externally threaded for engagement by the nut J, milled to permit its ready turning to vertically adjust said sleeve.

The block C has a bearing c^4 for a horizontal worm-shaft C^4, meshing with the wheel I for revolving the same and having an operating-head C^5.

Within the sleeve E is the dop-spindle F′, carrying at its lower end the dop F, which is shouldered to have an under bearing against the lower end of the sleeve, the dop being provided with a small lug *f*, engaging a notch therefor in the sleeve E to insure the rota-

tion of the dop with the sleeve. The dop F has the usual conical under recess for receiving the metal or cement bed and the diamond to be polished. By the employment of a novel arrangement of clamp, to be now described, common plaster-of-paris may be used for the gem-bed in the dop.

It will be understood that the diamond is always of a cylindrical form, having been carefully shaped by the previous diamond-cutting process and requiring only a polishing of its several faces.

The clamp referred to comprises a pair of members G G, pivoted on a lower stud g', having a threaded bearing in the arm c^2. The inner ends of the members G are vertically angular to adapt them for engaging the projecting portion of the diamond, such angular portions constituting clamping-fingers g^2, bearing against and holding the gem in the dop. The fingers g^2 at their contiguous edge g^3 are cut away, as indicated more clearly in Figs. 2 and 5, to expose a section of a diamond corresponding in angular area with the surface to be polished. The fingers are further similarly cut away on their upper sides to provide for embracing the diamond adjacent to the girdle of the same. The extent of the gem exposure by the fingers may be regulated by a threaded screw G', turning in the ear c^3 and having its inner end between the outer portions of the members G to move the fingers g^2 toward each other and properly hold the same.

In practice the diamond is embedded, as explained, and the clamp-fingers are adjusted to hold and yet expose the desired portion for polishing. If the table or culet is to be produced, the parts occupy the position indicated most clearly in Fig. 3. When it is desired to present the diamond at an angle to polish a facet, the shaft D is manipulated to turn the block C on its pivotal horizontal axis and incline the tubular bearing C' and parts carried thereby, as illustrated by dotted lines in Fig. 4.

The diamond may be horizontally rotated to change the particular portion of the gem presented for the formation of the facet. This operation is effected through the worm-shaft C^4 and wheel I. The vertical position of the dop and its diamond may be adjusted by simply turning the thumb-nut J, Fig. 3.

When the grain of the stone is not suitably presented for proper polishing, the difficulty may be readily remedied by loosening the pivot-screw a^3 and giving the bracket-neck b a partial turn in the head, so as to change the position of the bracket B, block C, and appurtenances.

From the foregoing description it will be clear that by the use of the improved polishing-tool diamonds can be readily and securely adjusted and the desired facets and culets conveniently produced thereon with precision.

The device is extremely simple and durable in construction, the bracket B and the block C carrying the dop and provisions for securing the several more important adjustments. The presence of threads in the adjusting means serves to permit fine adjustments and the retention of the same. In other constructions, in so far as I am advised, binding-screws were employed, which necessitated loosening, setting, and tightening of each adjustment. The main portion represented by the stock shank and head is strong and aside from the clamping of the neck b carries none of the adjusting means, these being all combined with the bracket B and block C. The compactness of the arrangement is largely promoted by the inclination and location of the worm-shaft D, such arrangement affording ready access to the finger portions of the shaft C^4 and nut J as well as the shaft D.

The face of the bracket B adjacent to the gear edge of the head C may have graduations b^2 to indicate the degree of movement of the head on its pivot. In fact suitable graduations may be located to serve in connection with the other adjusting provisions.

I claim as my invention—

1. In a diamond-polishing tool, the members G, G, pivotally supported and having inner gem-clamping fingers, in combination with adjustable means for holding the members against opening, substantially as herein specified.

2. In a diamond-polishing tool, the combination with a bracket attachable to suitable supporting means and provided with a worm-shaft D, of a vertically-rotatable block C, pivoted on the bracket and operable by said shaft, a dop-holder and provisions for revolubly and vertically adjusting it, all carried by said block, substantially as set forth.

3. In a diamond-polishing tool, the combination with a bracket attachable to suitable supporting means and provided with a worm-shaft D, of a vertically-rotatable gear-block C pivoted on the bracket and in mesh with said shaft, a threaded dop-holder, its vertically-adjusting nut, and worm wheel and shaft C^1 for rotating the holder but permitting its vertical movement, the holder and its rotating and vertical adjusting means being carried by the block, substantially as set forth.

4. In a diamond-polishing tool, the combination with a bracket attachable to suitable supporting means and provided with a worm-shaft D, of a recessed vertically-rotatable gear-block, pivoted on the bracket and in mesh with said shaft, a threaded dop-holder, its vertically-adjusting nut and rotating worm-wheel both located in the recessed portion of the block, and shaft C^1 for operating the worm-wheel, the several adjusting means including the shaft D being in close juxtaposition, substantially as set forth.

5. In a diamond-polishing tool, the combination with a bracket attachable to suitable supporting means and provided with a worm-shaft D, of a vertically-turnable block and carrying a dop-spindle and dop C, pivoted on

the bracket and operable by said shaft, a vertically-extended tubular bearing C' integrally depending from said block, a tubular dop-holder within said bearing and notched at its lower end, provisions for revolubly and vertically adjusting it, and a spindle and dop having a lug for engaging the dop-holder, substantially as set forth.

6. In a diamond-polishing tool, the combination with the suitably-supported block having the integral lateral arm c^2, a dop-holder bearing in said block and carrying a dop-spindle and dop, provisions for adjusting said holder, and members G, G, pivoted on the arm and having inner clamping-fingers extending below the position of the dop, substantially as set forth.

7. In a diamond-polishing tool, the combination with the suitably-supported block having the integral lateral arms c^2, a dop-holder bearing in said block, provisions for adjusting said holder, members G, G, pivoted on the arm c^2 and having inner gem-clamping fingers, and a screw-bearing in the arm for locking said members, substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JAMES W. LYON.

Witnesses:
J. B. CLAUTICE,
M. F. BOYLE.