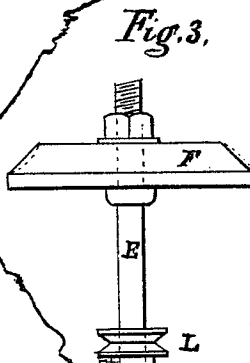
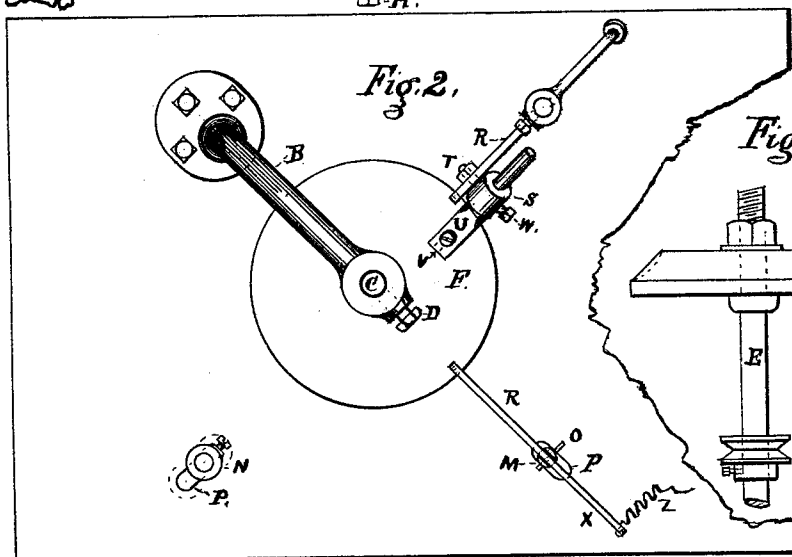
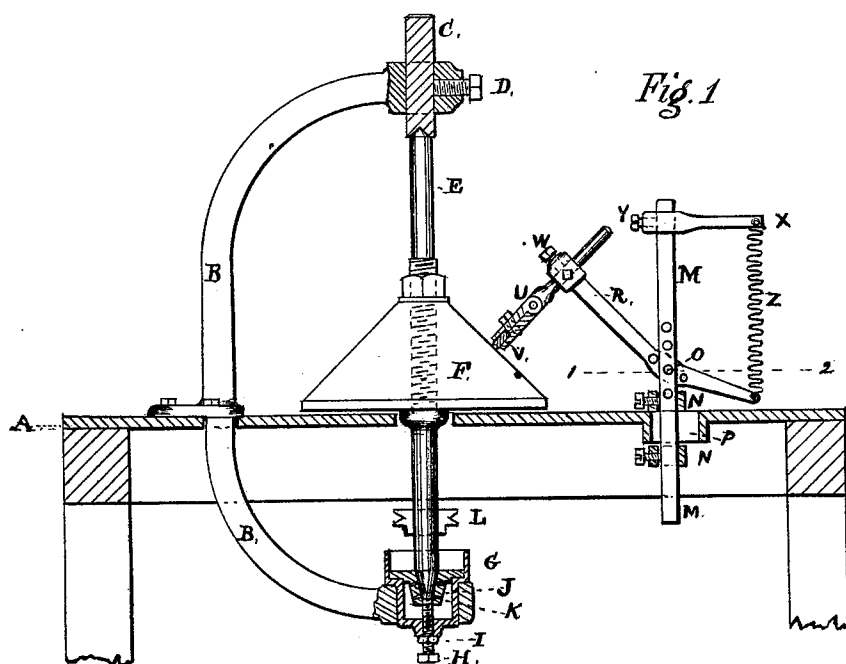


MACHINE FOR POLISHING DIAMONDS, &c.

Patented March 28, 1876.



Levi M. Northrop
Simon W. Brown.

INVENTOR,

UNITED STATES PATENT OFFICE.

HENRY D. STOVER, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR POLISHING DIAMONDS, &c.

Specification forming part of Letters Patent No. **175,262**, dated March 28, 1876; application filed March 16, 1876.

To all whom it may concern:

Be it known that I, HENRY D. STOVER, of the city, county and State of New York, have invented a Machine for Polishing Diamonds and other precious stones, of which the following is a specification:

The polishing of diamonds and other precious stones by the usual methods in vogue requires a great amount of hard labor and time from skilled workmen, and, by reason of the hardness of the gems, and the varying conditions required in the speed and temper of the skive or plate upon which it is ground and polished, and the amount of weight or pressure requisite to cause the skive to bite the gem, is an operation that, with existing machines, is attended with great expense, and none but skilled workmen can superintend, and even they cannot manage more than one machine. The object of my invention is to make the process as nearly an automatic one as is possible, and to allow a skilled workman to superintend a number of machines or a less skilled employé to perform wholly or in part what is now accomplished only by the former class, and also to avoid the danger of injury to the workman arising from the larger masses falling from the tongs, and being driven about the room by the rapidly-revolving machine.

Figure 1 is an elevation of the skive and spindle with the step and guide, and with the adjustable tongs for holding the diamond or gem to be polished. Fig. 2 is a plan of the skive and tongs. Fig. 3 is a modified form of a truncated-cone skive.

A is a rectangular table of iron, supporting the various parts of the device, and mounted upon legs or carried by a simple frame. B is a bracket of iron bolted firmly to A, and carrying in a socket at its upper end a sliding spindle-bearing, C, in which the upper end of the skive-spindle E rotates and is guided. The lower end of the bracket B carries the step on which the spindle E is supported. D is a binding-screw for spindle C. E is the skive-spindle. F is the skive of a conical or truncated-cone form. Its polishing-surface may be either flat, concave, or convex, as shown in dotted lines, Fig. 3, made from cast-iron, copper, or other metal, and secured to E by a

nut or other device, and rotating with it. This skive is smeared with an unguent mixed with diamond dust or other powder, and the gem being held to its surface is ground and polished in a rapid and correct manner. G is the step for the spindle E, consisting of an exterior shell or case that contains the oil, and adjustable screw H and lock-nut I, that receives the weight of the skive and spindle, an interior conical step bearing, J, containing radial or lateral openings K K, which communicate with the oil-chamber, and through which the oil is drawn by the rotation of the conical spindles, and by centripetal action causes a thorough and positive lubrication of all the parts. L is the pulley that drives the spindle E. M is a slotted post, adjustable in height and position, and locked by the set-collars or jam-nuts N N. It also has a movement laterally on the table by means of the slotted holes P. This post carries an arm, R, adjustable by means of the holes in it and in M with the pin O, and carries upon its inner end a cat-head joint, S, locked by nut T. U is the tongs that confine the diamonds, either in a dop or holder, or it may be secured by cement in the cavity V. This tong is fitted to rotate and slide in S, and is locked at any point or position by the jam-screw W. X is an arm sliding upon the standard M, and locked by jam-screw Y. This arm carries a spiral or other spring, Z, one end of which is secured to the vibrating arm R, and any degree of pressure that is necessary to cause the skives to bite the gem can be secured and maintained by adjusting the tension of the spring, or a weight can be used in place of a spring. The diamond or gem to be polished, having been secured in a separate dop or in the cavity at V, is, by the adjustable nature of the device, brought to bear securely and truly upon the skive, and then locked firmly in position by the various jam-nuts, &c., and at the same time it receives from the spring or weight Z a pressure graduated according to the hardness of the gem or temper of the skive, and is free to be instantly withdrawn from the revolving skive, either for the purpose of resetting, or for inspection. The absence of cumbersome weights allows three or more diamonds to be placed around the skive

while the conical form of the skive allows each gem to be set in the best position and to receive the exact speed necessary to polish it without changing the speed of the spindle or affecting the other diamonds around it. When thus set a less skilled workman can superintend its cutting, or the skilled workman can handle and control more tongs than by the usual plan of weights, and at the same time the difficulty and delays attendant upon the heating of the step as usually constructed—viz, to run in a solid or babbitted box—are obviated, and the spindle and skive can be changed in a moment's time.

The holding-tongs may be caused to rotate within the cat-head bearing S, by the frictional contact with the skive or otherwise, and when it is desired to form a true rounding or convex face, or a hollow concave face, upon the gem, the skive is made slightly convex or concave upon its polishing surface.

What I claim, and desire to secure by Letters Patent, is—

1. A revolving conical or truncated-cone skive, either flat, convex, or concave on its polishing-surface, in combination with suitable mechanism for holding the gems in contact therewith, for the purpose specified.

2. The conical or truncated-cone skive F, supported by and revolving with the conical step G upon the adjustable screw H, and in the step-bearing J, which contain radial or lateral openings K K for the admission of oil, when operated in the manner and for the purpose set forth.

3. The rigid but rotary and adjustable post M, jam-nuts N N, the adjustable vibratory arm R with its pin O, the rigid but adjustable and rotary joint or cat-head S, and lock-nut T, with the tongs U, jam-screw W, when operated in the manner and for the purpose set forth.

4. The rigid but rotary and adjustable arm X, with jam-screw Y, and spring or weight Z, when operated in the manner and for the purpose set forth.

5. The radial openings P in the table A, by which radial or lateral movements can be given to the post M, in relation to the skive F, in the manner and for the purpose set forth.

H. D. STOVER.

Witnesses:

AINSWORTH BROWN,
C. A. PEASE.