H. D. STOVER.

DIAMOND CUTTING MACHINE.

No. 175,390. Patented March 28, 1876.

Fig. 1.

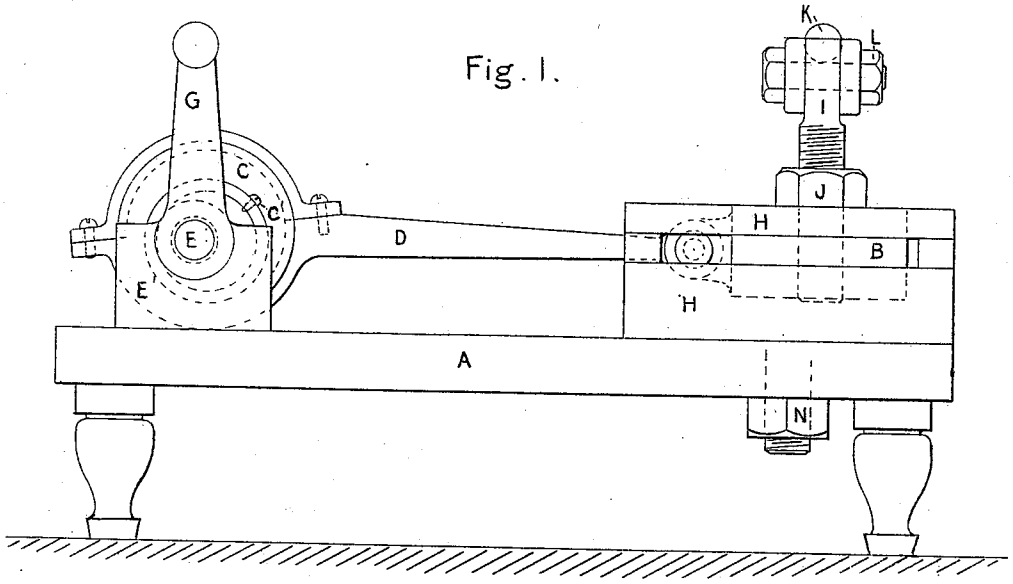
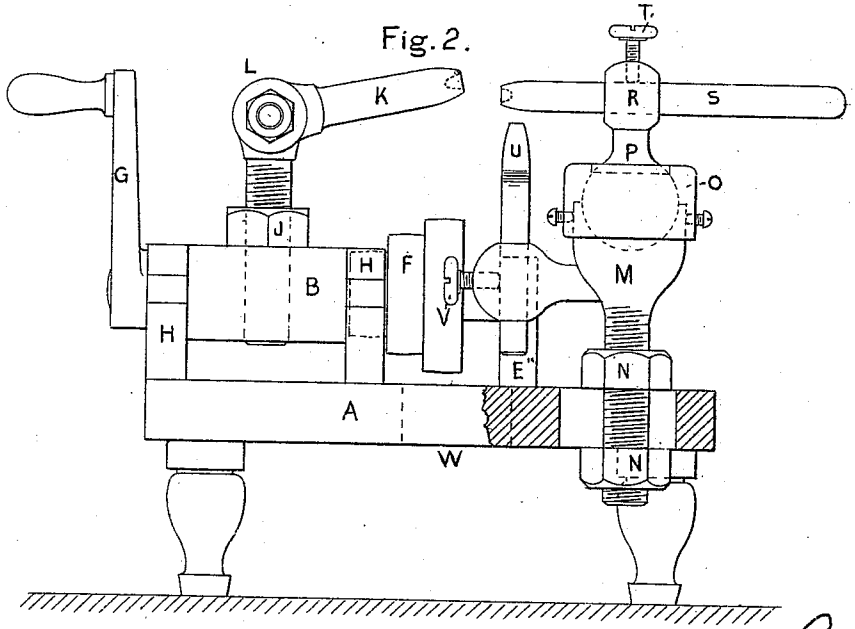


Fig. 2.



WITNESSES.

Matthew P. Wood

Charles G. Stearns.

Harry D. Stover

INVENTOR.

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN DIAMOND-CUTTING MACHINES.

Specification forming part of Letters Patent No. **175,390**, dated March 28, 1876; application filed June 1, 1874.

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 Diamond or Gem Cutting Machine, of which the following is a specification:

The cutting of diamonds and other valuable or precious stones, either for the purpose of ornament or use in the arts, is, by the usual process of hand-labor, a slow, tedious, and expensive one, and one involving great skill upon the part of the operator.

From the constrained position of the hands when manipulating the diamonds, together with the pressure required to grind away the surfaces of the gems by mutual attrition, the hands of the operators become swollen and misshapen, and are subject to permanent disfigurement.

The object of my invention is to accomplish by mechanism what is now done by hand, and at the same time to accomplish by ordinary labor and intelligence, in less time and in a more perfect manner, what now requires the best of skilled labor and a long time to perform.

Figure 1 is a side elevation of the machine. Fig. 2 is an end elevation of the machine, showing the cross-head and tool-post I, also the tool-post M and rest.

A is a rectangular table, mounted upon legs or placed upon a suitable frame to support it; B, a cross-head receiving a reciprocating motion by means of an eccentric, C, and its rod D; C, a variable or adjustable eccentric, consisting of one eccentric placed outside of and surrounding another one of the same or of a different stroke, and secured together or in the desired position by a set-screw, C′, or equivalent device; D, eccentric rod, communicating the motion of C to the cross-head B; E, shaft, the rotation of which, by the cam-pulley F or crank G, drives the eccentric and connecting parts; E′ E′, boxes supporting shaft E; F, cone-pulley to regulate the speed of the machine when driven by power; H H, guides confining the cross-head B to the table and to a right line, exact motion; I, a post or stud secured to the cross-head B and partaking of its motion. This post has a vertical adjustment, as well as an angular one, by means of the screw-thread cut on its lower end, which fits into a hole tapped in the cross-head B, and locked, when at the desired height and angle, by the lock-nuts J. The upper end of eye is fitted with an adjustable joint or diamond-holder, K, carrying upon its outer end one of the diamonds or other precious stones to be operated upon. A further adjustment of the gem is secured by means of the joint connecting I and K, which is locked by the jam-nut or binding-screw L. M is a second tool post or holder, to support the other diamond or gem to be operated upon. This holder is secured to the table in a slotted hole, to afford a lateral adjustment, and by means of the lock-nuts N N any degree of adjustment in height and angularity to the cross-head B and its tool-post and attachments. The post M carries at its upper end a socket, O, in which the ball-joint P rotates to any point in the circle, or to any angle relative to the cross-head B required. The joint P carries a socket or tube, R, through which a bar or tube, S, slides, and is locked at any point of its length by the binding-screw T. S carries upon its inner end a socket or cavity, in which one of the diamonds or gems to be operated upon is fixed by the usual methods in vogue for hand-labor, and the outer end is formed into a handle to grasp, in order to bring the two gems together for the purpose of cutting each other. U is a rest to support the inner end of S in the cutting process. This rest is adjustable in height and angular position by means of a jam-screw, V, and at the same time it is carried by and partakes of all movements given to the post M. W is an opening in the table, through which the dust formed by attrition of the gems falls, and is collected in a drawer or other convenient receptacle. (Not shown in the drawing.)

The two diamonds or other gems requiring cutting being secured in the dop or holders K and S, and adjusted to the proper height to bring the two facets requiring to be cut together, the rotation of the shaft E causes the surfaces of the gems to travel past each other in right lines, and at the same time the one in the holder S can receive, by means of the hand, a slightly rotary or gyrating motion, by which its surface will be cut in a very slightly-rounding form, approximating that

given by the old process of hand-cutting, only being more even and uniform in shape, and thus lessening the after process of polishing the gem.

It will be apparent from an inspection of the machine that when the first facets on each diamond are cut as required, any other two points upon the surface of the gems can, by means of the adjustable nature of the various parts of the device, be brought together and cut, which can be repeated until all the external surfaces are cut and made ready for the polishing-machine.

The speed of the machine can be regulated by the cone-pulley, and the length of the stroke of the cross-head, and its tool-post and diamond, by means of the adjustable eccentric. Any variation in the hardness of the gems or in their size that requires changing conditions of speed or motion, and that hand-motion could apply at once, can be secured in equally as effective manner by this device.

Having thus described the construction and operation of my machine, what I claim, and desire to secure by Letters Patent, is—

1. The cross-head B with its rigid but rotary and adjustable post or tool-holder I and jointed arm K, when operated in the manner and for the purpose set forth.

2. The rigid but rotary and adjustable tool-post or holder M, with the ball-and-socket joint O and ball P, socket or tube R, and sliding dop or tube S, with the jam-nuts or binding-screws N N and T, when operated in the manner and for the purpose set forth.

3. The rigid and adjustable slide-rest U, with its binding-screw V, in combination with the holder S, operating in the manner and for the purpose set forth.

4. The reciprocating dop K, in combination with a stone-supporting holder, S, capable of free movement or adjustment in any direction, in order to present the gem to be cut at any desired angle, substantially as described.

HENRY D. STOVER.

Witnesses:

MATTHEW P. WOOD,
CHARLES G. STEARNS.