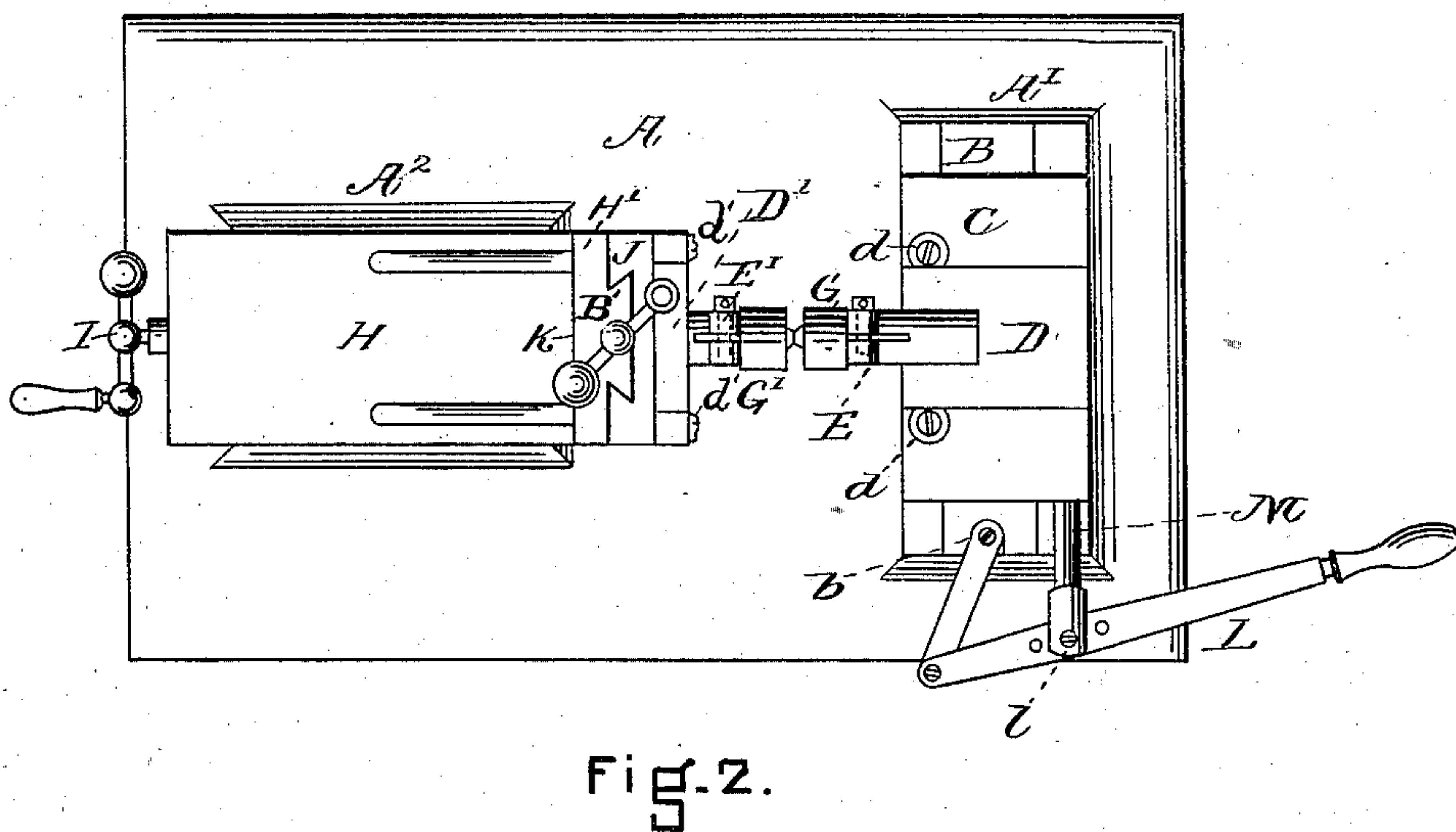
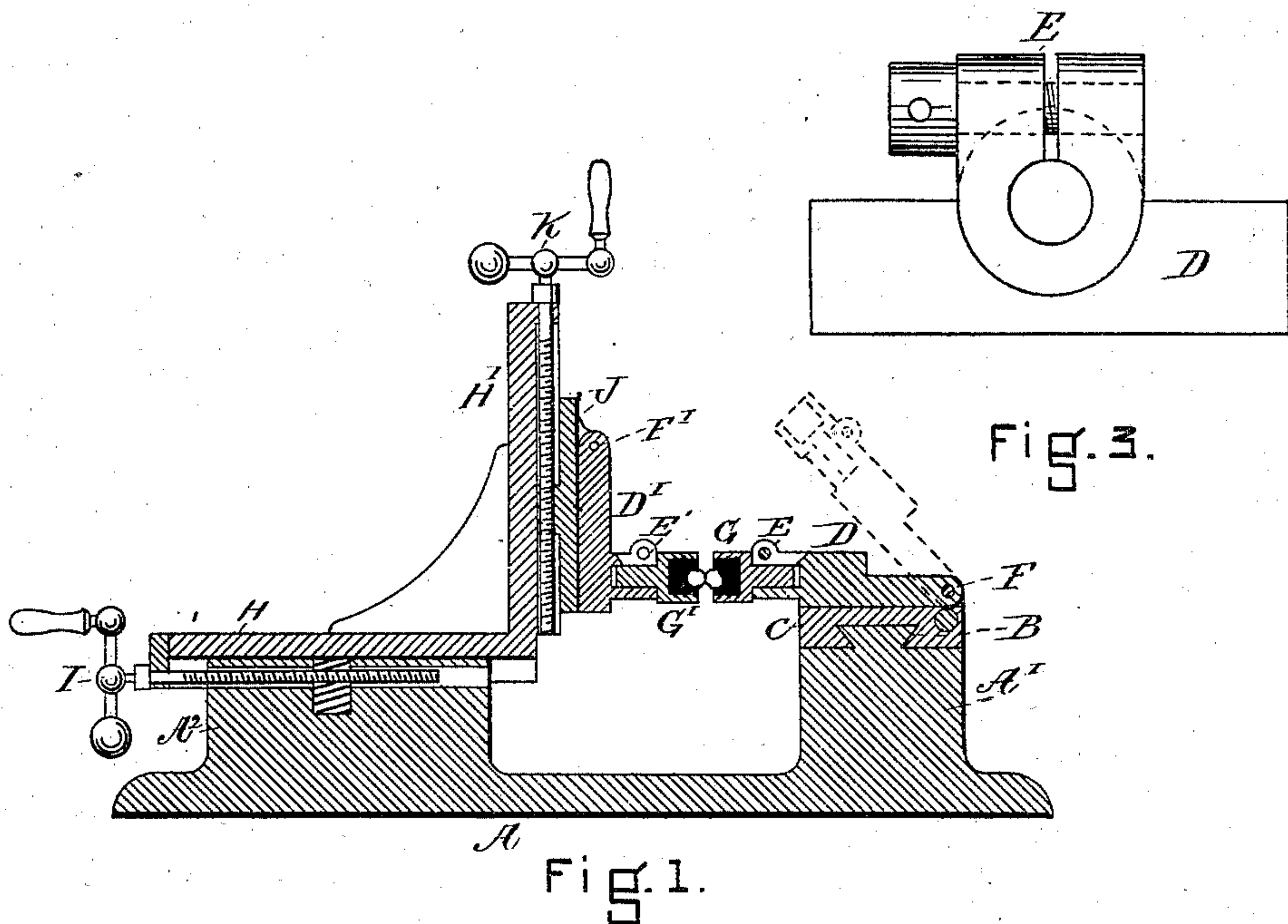


(No Model.)

F. A. HARKINS.  
DIAMOND CUTTING MACHINE.

No. 254,817.

Patented Mar. 14, 1882.



WITNESSES

Robert W. Sanford.  
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# UNITED STATES PATENT OFFICE.

FRED. A. HARKINS, OF NEW YORK, N. Y.

## DIAMOND-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 254,817, dated March 14, 1882.

Application filed December 5, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, FRED. A. HARKINS, a citizen of the United States, residing in the city, county, and State of New York, have invented a new and useful Improvement in Machines for Cutting Diamonds, of which the following is a specification.

My invention relates to machines for cutting facets or plane surfaces upon diamonds by the action of one stone upon another, such machines consisting of a bed-piece upon each end of which is mounted apparatus for holding one of the stones, provision being made for giving to one of them a reciprocating or vibratory movement, and the holders of one or both of the stones being made adjustable, so as to vary their positions with relation to each other during the process of cutting.

For the purpose of effecting the work with as great rapidity as possible the machines hitherto made have been operated by steam, or in some similar way, and the diamond-holders have been made adjustable in every direction, in order that the several facets might be cut without removing the stones from the holders. In practice, however, it is found that these machines, if run at a high rate of speed, are liable to produce flaws and otherwise injure the diamonds, and are not sufficiently under control, and notwithstanding the variety of adjustments it is found to be better to remove the stones from the holders in cutting the different facets. The provision made for examining the stones during the process of cutting is also defective.

The operation of cutting diamonds is a delicate one, and it is not only extremely important that the mechanism should always be perfectly under the control of the operator, but that it should be so arranged that the stones can be readily examined during the process without disturbing their relative position, and so changing the "grain" of the cut. To effect these results is the purpose of my invention, which consists, first, in the employment of a horizontally-vibrating jointed lever operated by hand for the purpose of giving to the cutting stone the necessary reciprocating motion; and, second, in attaching the diamond-holders to blocks which, during the cutting operation, are held fast in recesses in their respective carriages, to which they are attached at one end

by hinges, permitting them to be raised to a convenient position for examination and then restored to exactly their original position, ready for the cutting to be resumed. I have also simplified the general construction of the machine by providing for fewer adjustments.

In the annexed drawings, Figure 1 is a vertical section of the machine. Fig. 2 is a plan or horizontal view, showing the position of the parts as seen from above. Fig. 3 is an end view of one of the clamps in which the diamond-holders are held.

A is a heavy metal bed-piece, upon which the rest of the mechanism is supported. One end of this bed-piece, A', is raised above the adjacent surface, forming a transverse tablet, upon the upper surface of which slides the carriage C, in a line at a right angle with the front line of the bed-piece, being held in place by the dovetailed guide B. A reciprocating motion is given to this carriage by means of the jointed lever L, one arm of which is loosely attached to the tablet A' at b, and the other arm at l to a shaft, M; projecting horizontally from the carriage C. This lever is made to vibrate in a horizontal plane by the hand of the operator, who is thereby enabled to control the extent of each cut and the speed of cutting, and to stop the machine instantly when desired, thus combining the safety and certainty of hand-cutting with the ease of machine-work.

In the upper side of the carriage C is a recess or channel in which rests the block D, upon one end of which is mounted a clamp, E, for grasping the dop or diamond-holder G, the other end being secured to the carriage C by a hinged joint, F. The dop or diamond-holder G is made in the usual way, with a socket in which the gem is secured by cement, presenting only a portion of its surface to be operated upon. When in position for working the block D is held in its recess by the buttons or set-screws d. Whenever it is desired to examine the stone these buttons are released and the block turned back on the hinge F, placing the stone in a position where it can be readily examined on all sides, and measuring instruments applied to it, if necessary. By turning the block back to its former position the stone will be returned to the identical place occupied by it when the cutting was suspended.

On the opposite end of the bed-piece A is



the sliding carriage H H', resting upon the raised tablet A<sup>2</sup>, and provided with a screw, I, by which its distance from the cutting-diamond is regulated. On this carriage is mounted  
5 the sliding block J, which is held in place by a dovetailed guide, B', and is provided with a screw, K, by which it is moved in a vertical direction. In a vertical recess or channel in this block is fitted another block, D', suspended  
10 at its upper end by the hinged joint F', and furnished near its lower end with a clamp, E', for grasping a diamond-holder, G', and also with buttons or set-screws d' d', for holding it in place during the operation of cutting. By  
15 releasing these buttons the block D' may be swung on its hinge so as to bring the diamond-holder G into a perpendicular position for the examination of the diamond, in the same manner as the corresponding block, D, on the other  
20 side of the machine, and then restored to its

original position for the resumption of the work.

It will be seen that by means of the screws I and K the diamond operated upon may be fed toward the cutting-diamond in such man- 25  
ner that a plane surface or facet will be formed upon it by the action of the latter.

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

In a diamond-cutting machine, the swinging 30  
blocks D D', provided with clamps E E', and attached at one end to the carriages C and J, respectively, by means of hinge-joints, substantially in the manner and for the purpose described.

FRED. A. HARKINS.

Witnesses:

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