J. H. LUDLOW & T. W. G. COOK.

DIAMOND CUTTING MACHINE.

APPLICATION FILED FEB. 19, 1914.

1,105,356.

Patented July 28, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

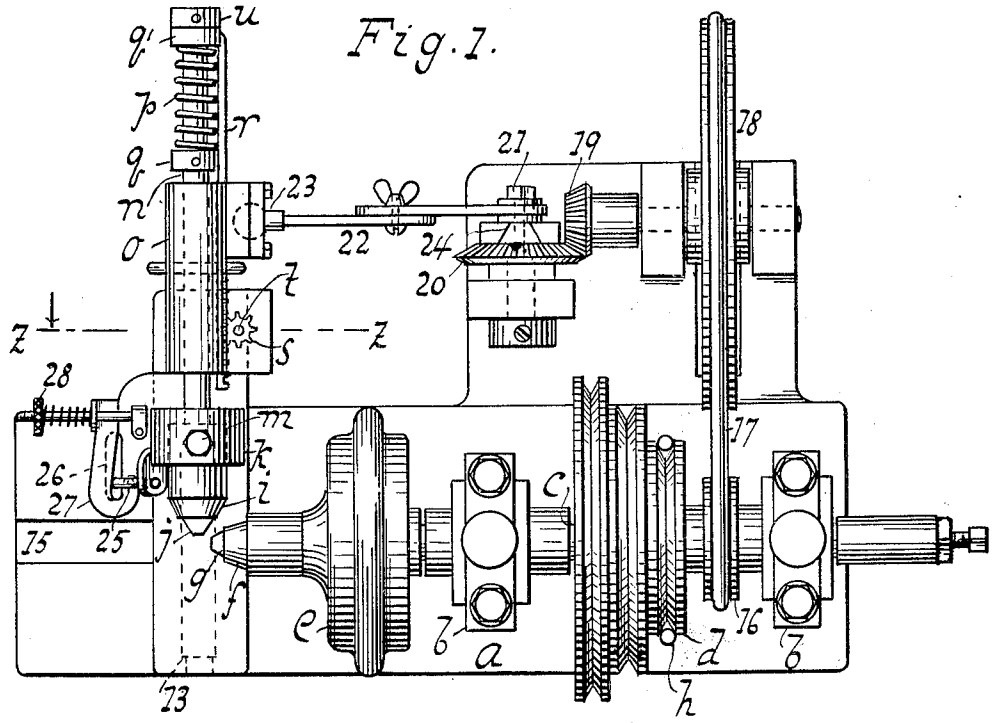
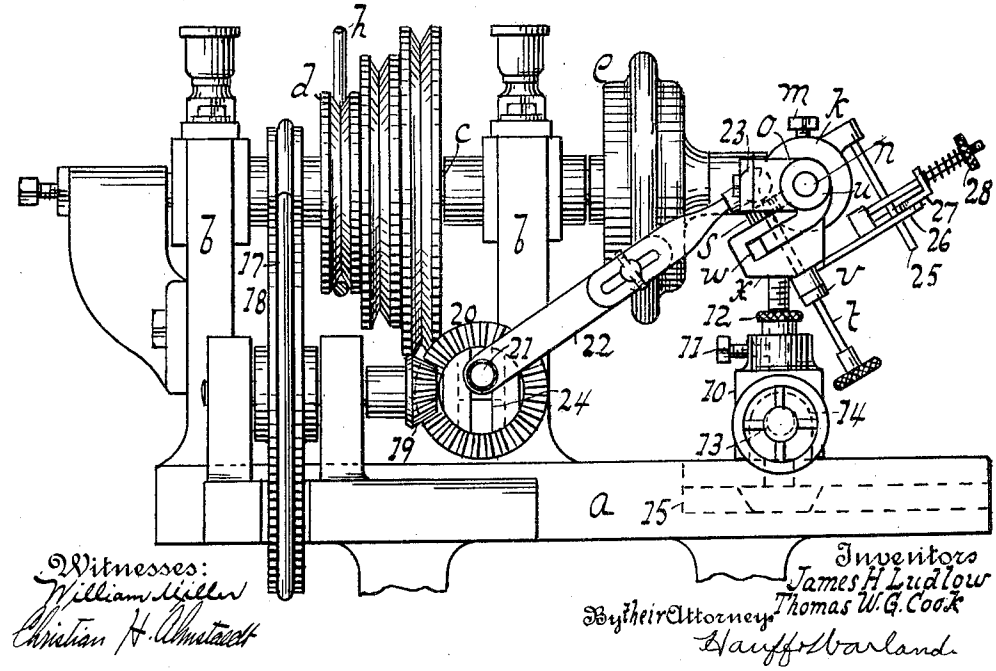


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

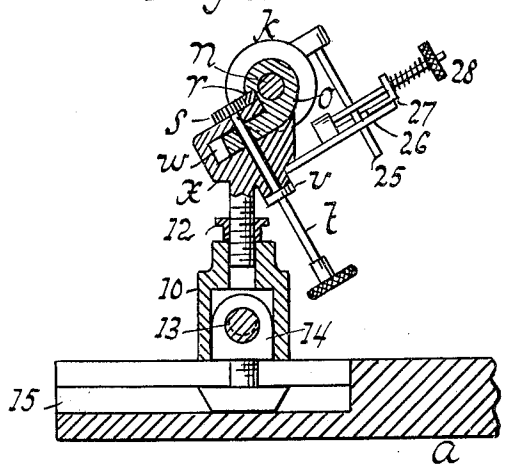
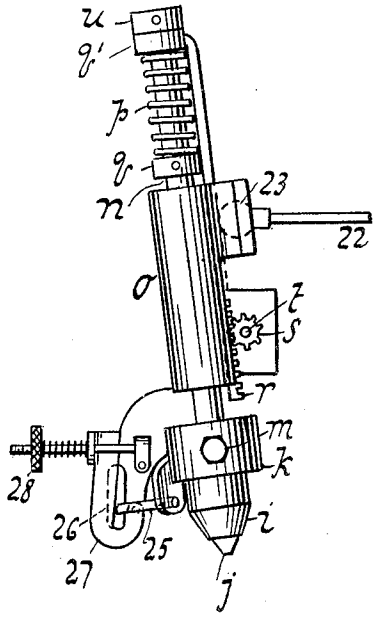


Fig. 4.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D

UNITED STATES PATENT OFFICE.

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DIAMOND-CUTTING MACHINE.

1,105,356. Specification of Letters Patent. Patented July 28, 1914.

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To all whom it may concern:

Be it known that we, JAMES H. LUDLOW and THOMAS W. G. COOK, citizens of the United States, residing at Jersey City, county of Hudson, State of New Jersey, and New York, county and State of New York, respectively, have invented new and useful Improvements in Diamond-Cutting Machines, of which the following is a specification.

This invention relates to a machine for cutting diamonds, and it includes a pair of dops which carry the diamonds for attrition against each other in order to shape and cut the stone.

The invention resides in the peculiar method of mounting the two dops whereby one of the dops is rotated and the other is given rocking and oscillating intermittent movement in connection with the rotating dop so as to cut the required shape on the diamond held by the rocking dop. The rocking movement of the dop can be controlled by adjusting the throw of a crank which is actuated by mechanism connected to the rotating dop. The rocking dop is provided with universal adjusting devices, that is to say, the dop can be adjusted vertically, longitudinally and transversely to bring it in proper alinement with the rotating dop. The rocking dop also has devices for converting the rocking movement of the dop into intermittent oscillating movement, the center of oscillation being the axis of the dop. The movement of the dop in relation to the rotating dop can be controlled by means of devices operated by the rocking movement of the dop.

The novel features of the invention are more fully described in the following specification and claims and illustrated in the accompanying drawings in which:

Figure 1 represents a plan view of a machine embodying this invention. Fig. 2 is a front elevation of the same. Fig. 3 is a detail section taken along the line *z z* of Fig. 1. Fig. 4 is a plan view of the rocking dop, showing it in a different position from Fig. 1.

In this drawing the letter *a* designates a base which is provided with standards *b* serving to journal a driving shaft *c* having a series of pulleys *d* and a chuck *e*. These elements are well known in the construction of lathes. This chuck carries a dop *f* of suitable construction for the reception of a diamond *g* fixed to the dop in the usual manner. This dop is rotated by the driving shaft *c* with belt connection *h* to one of the said pulleys *d*. The chuck *e* may be set to rotate the dop in a concentric or eccentric path, although it is preferred to have the dop rotate in a concentric circle with the shaft. Another dop *i* is normally positioned at right angles to the dop *f* and it is provided with a diamond *j* for frictional engagement with the other diamond. The dop *f* is fixed to a collar *k* by means of a set screw *m* threaded in the top of the collar. The collar is secured to a shaft *n* extending through a rocking head or sleeve *o*. The shaft *n* carries a spring *p* and it has mounted on it stops *q* and *q'* between which the spring is confined. The stop *q* is securely fastened to the shaft while the stop *q'* can slide thereon. The spring is adapted to be compressed when the diamond is in frictional engagement with the rotating diamond and breakage of the parts is thus avoided. To the stop *q'* is secured a rack *r* extending rearward and engaged by a pinion *s* having a stem *t* for actuating the pinion and the rack. It will be seen that when the pinion is operated it slides the rack and the stop *q'* will strike against a collar *u* fixed to the end of the shaft, the shaft with the dop *j* will thereby be adjusted in relation to the other diamond. The stem *t* carries a sliding collar *v* as indicated in Fig. 2, for preventing vertical movement of the pinion. The rocking head *o* is swingingly mounted on the stem *t* of the pinion and it is guided or has play room in a groove *w* forming a portion of a bearing *x*. This bearing has a stem mounted in the socket of a base member 10 and the latter carries a set screw 11 coacting with the stem. In order to give more accurate adjustment to the bearing a nut 12 having engagement with the stem can be employed in connection with the said set screw. By means of these devices the rocking dop can be adjusted vertically and brought into proper alinement with the other dop.

Eccentrically journaled to the base 10 is a shaft 13 carrying a clamp 14 slidingly mounted on the shaft. This clamp when loosened by the actuation of said shaft can slide in a groove 15 formed in the base *a* and the base 10 can be moved to the desired position along the eye of the clamp or along the groove of the base. This gives the rocking

dop and its connections transverse as well as longitudinal adjustment. The devices for rocking the dop include a pulley 16 mounted to revolve with the driving shaft *c* said pulley having a belt 17 connected to a pulley 18 mounted at the front portion of the machine. This pulley transmits motion to bevel gears 19 and 20 rotatively mounted on an extension of the base. To the gear 20 is pivoted at 21 a link 22 having universal connection 23 with the head *o* of the rocking head. The link is pivoted to a block which when the pivot 21 is loosened can be slid along a groove 24 located in the gear. By means of these devices the throw of the link can be adjusted, hence the swing of the crank movement in connection with the gear can be varied and the rocking movement of the dop is thereby controlled. The devices for giving the rocking dop intermittent vibrating movement consist of a bar 25 secured to the collar *k* and coacting with a slotted member 26 secured to the said bearing *x*. The slot can be partly covered by a swinging member 27 having adjusting devices 28 for yieldingly setting the swinging member in relation to the slot. In other words by having the slot wedge shaped as shown it will gradually feed the shaft of the rocking head toward the diamond of the rotating head and at the same time by reason of the adjusting devices it gives yielding contact with the diamond. When the rocking dop is in operation the head *o* swings about the stem *t* and the bar 25 strikes the slot to give the shaft *n* a twisting or oscillating movement in relation to the head.

We claim:—

1. In a diamond cutting machine the combination with a pair of dops, of means for rotating one of the dops, and means controlled by the rotating means for rocking the other dop.

2. In a diamond cutting machine the combination with a pair of dops, and means of rotating one of the dops, means controlled by the rotating means for rocking and oscillating the other dop.

3. In a diamond cutting machine the combination with a pair of dops, of means for rotating one of the dops, means for rocking and oscillating the other dop, and means for vertically adjusting the rocking dop.

4. In a diamond cutting machine the combination with a pair of dops arranged at an angle to each other, of means for rotating one of the dops, means for rocking and oscillating the other dop, means for vertically and universally adjusting the latter dop.

5. In a diamond cutting machine the combination with a pair of dops arranged at an angle to each other, of means for rotating one of the dops, means for rocking and oscillating the other dop, means for yieldingly pressing the rocking dop toward the axis of the rotating dop and means for adjusting the rocking dop.

6. In a diamond cutting machine the combination with a pair of dops arranged at an angle to each other, of means for rotating one of the dops, means for rocking and oscillating the other dop, a spring for pressing the rocking dop toward the axis of the rotating dop, and means for adjusting the rocking dop.

7. In a diamond cutting machine the combination with a pair of dops arranged at an angle to each other, of means for rotating one of the dops, means for rocking and oscillating the other dop, a spring for pressing the rocking dop toward the axis of the rotating dop, and means for horizontally adjusting the rocking dop.

8. In a diamond cutting machine the combination with a pair of dops arranged at an angle to each other, means for rotating one of the dops, means actuated by the rotating dop for rocking and oscillating the other dop, and manually adjustable means for controlling the rocking movement of the dop.

9. In a diamond cutting machine the combination with a pair of dops arranged at an angle to each other, of means for rotating one of the dops, a crank actuated by the rotating dop for rocking the other dop, means for adjusting the throw of the crank to govern the rocking movement of the dop and means connected to the rocking dop for oscillating the dop.

10. In a diamond cutting machine the combination with a pair of dops arranged at an angle to each other, of means for rotating one of the dops, a crank actuated by the rotating dop for rocking the other dop, and means operated by the rocking of the dop for giving intermittent oscillating movement to the dop.

11. In a diamond cutting machine the combination with a pair of dops arranged at an agle to each other, of means for rotating one of the dops, a crank actuated by the rotating dop for rocking the other dop, devices connected to the rocking dop for transmitting intermittent movement to the dop, and means coacting with the devices for controlling the forward movement of the dop.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JAMES H. LUDLOW.
THOMAS W. G. COOK.

Witnesses:
CHRISTIAN H. ALMSTAEDT,
HAZEL V. MCELROY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."