E. LOESSER.

APPARATUS FOR MAKING DOPS FOR HOLDING PRECIOUS STONES TO BE GROUND.

APPLICATION FILED JUNE 1, 1910.

1,088,233. Patented Feb. 24, 1914.

Fig. 1.

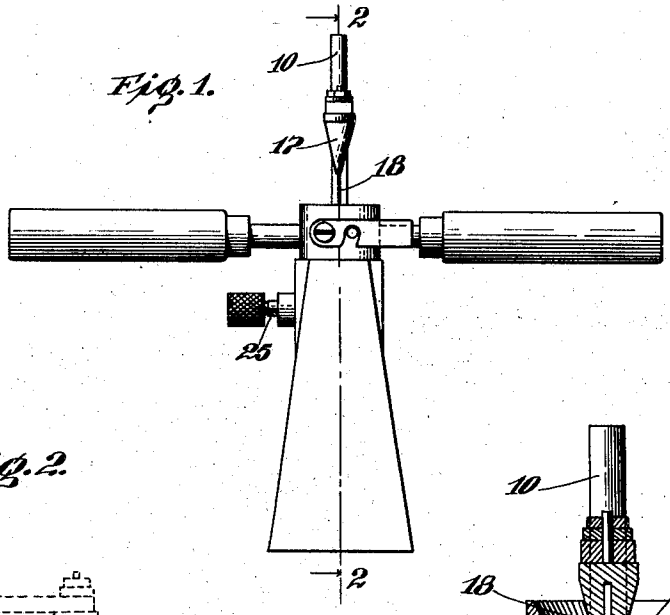


Fig. 2.

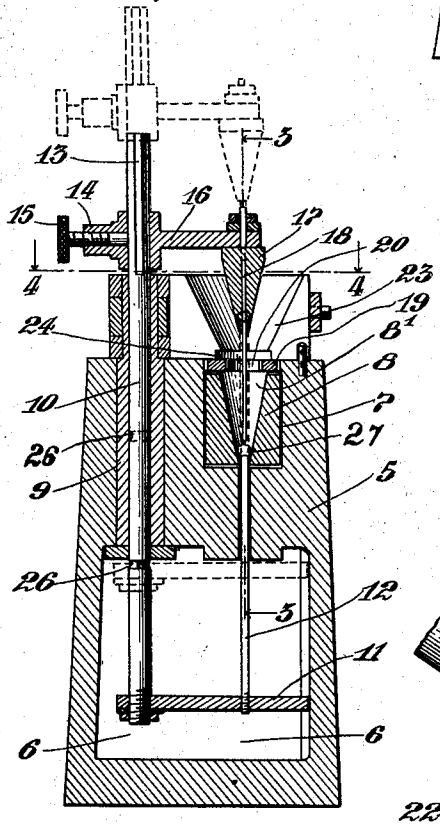


Fig. 3.

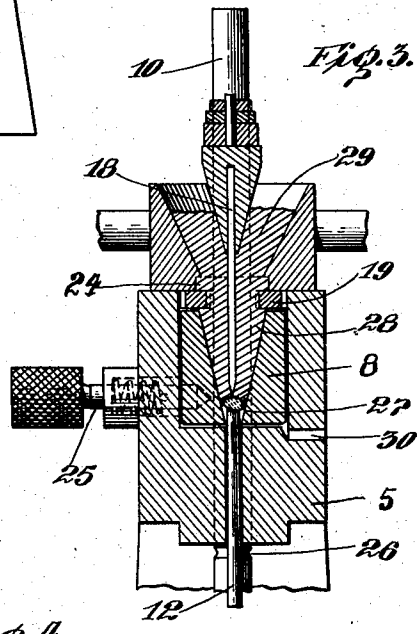


Fig. 4.

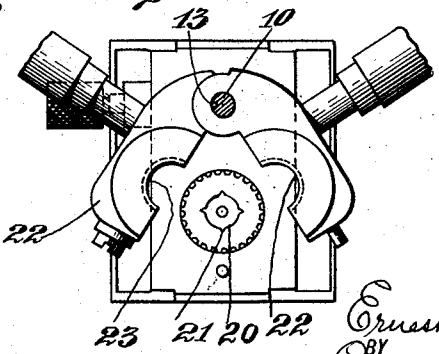
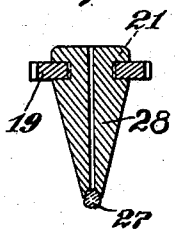


Fig. 5.



WITNESSES:

C. S. Ashley

L. L. Browning

INVENTOR

Ernest Loesser

BY

Edward C. Davidson

ATTORNEY

UNITED STATES PATENT OFFICE.

ERNEST LOESSER, OF GLEN RIDGE, NEW JERSEY, ASSIGNOR OF THREE-FOURTHS TO SAMUEL JACOBSON, TRUSTEE, OF NEW YORK, N. Y.

APPARATUS FOR MAKING DOPS FOR HOLDING PRECIOUS STONES TO BE GROUND.

1,088,233. Specification of Letters Patent. Patented Feb. 24, 1914.

Application filed June 1, 1910. Serial No. 564,346.

To all whom it may concern:

Be it known that I, ERNEST LOESSER, a citizen of the United States of America, residing in Glen Ridge, county of Essex, and State of New Jersey, have invented a certain Improved Apparatus for Making Dops for Holding Precious Stones to be Ground, of which the following is a specification.

This invention relates to apparatus for casting dops upon the stone to be ground, the latter being held in a position corresponding with the point of the dop and is held fast by the metal cast upon it.

In the accompanying drawing, Figure 1 is a front elevation; Fig. 2, a vertical central section on the line 2, 2, of Fig. 1; Fig. 3, a detail vertical section on an enlarged scale on the line 3, 3, of Fig. 2; Fig. 4 is a horizontal section on the line 4, 4, of Fig. 2; and Fig. 5, a vertical central section through the dop.

The base 5, of suitable dimensions and of metal of adequate weight, has in its lower part a chamber 6 and in its upper part a mold receptacle 7 in which fits the dop mold 8. This receptacle is shown as circular in cross section and the mold 8 fits snugly therein. At one side of the receptacle 7, a vertical passage way extends through the base from chamber 6 to the top of the base and in it is a bushing 9 in which is fitted to move vertically a rod 10. On the lower end of this rod is a horizontally disposed arm 11 which carries a vertical rod 12 that passes upwardly through an aperture into the mold receptacle 7 in line with the axis thereof. The upper end of the rod 10 is provided with a key 13 fitting in a key way in a vertically adjustable sleeve 14 held at any desired elevation on the rod by a set screw 15. This sleeve has a horizontally projecting arm 16 that extends over the mold and has secured in its end a downwardly extending projection 17 having a bore or passage in line with the axis of the mold. This passage way is adapted to receive and frictionally retain a thin straight rod 18 such as a piece of drill rod. The mold 8 is composed of a cylindrical piece of metal having centrally formed therein a conical mold cavity 8′ that is open both at the top and bottom, the small or apex end of this cavity being of sufficient diameter to just receive the upper end of the rod 12. The mold is of less height than the receptacle into the top of which it is introduced or dropped so that there may be placed upon the top of the mold a toothed or ratchet wheel 19 having an enlarged central opening 20 preferably having one or more notches or recesses 21 in its wall. The upper face of this ratchet wheel when in position is substantially flush with the top of the base 5. Hinged upon the bushing 9 are two parts or jaws 22 in each of which is formed one half of the mold in-gate 23 through which the metal is poured. The diameter of the in-gate at the bottom is less than that of the toothed wheel 19 but greater than its central opening 20 and at the bottom of the in-gate there is formed an annular recess 24 that overlies the face of the toothed wheel.

The function or mode of operation of the apparatus described is as follows: Rod 10 is moved upwardly until a spring detent bolt 25 engages an annular groove 26 in the rod. The parts will then be in the position indicated in dotted lines in Fig. 2,—that is, the upper end of rod 12 projects above the upper face of the base 5. The horizontally projecting arm 16 of sleeve 14 carries a piece of drill rod 18 that is vertically movable with said sleeve. A diamond, or other precious stone, to be ground or polished is placed upon the horizontal face of rod 12 and the pointed end of rod 18 is brought down upon it so that the stone is clamped between the ends of the two rods; and then the set screw of the sleeve 14 is tightened upon rod 10. This operation is conducted when the jaws 22 are open as in Fig. 4. They may then be closed, detent pawl 25 withdrawn and rod 10 lowered to the position indicated in the full line in Fig. 2. The metal may now be poured through the opening or in-gate 23 and a dop formed and in its lower or apex end will be molded, contained or embedded the stone 27. The dop is indicated by 28. When sufficiently cooled, the sleeve 14 is elevated to disengage rod 18 from the dop and its sprue 29, the gate jaws 22 are thrown open and the dop carrying the toothed or ratchet wheel 19 is lifted from the mold. The sprue 29 is then ground or cut away and the complete dop carrying at its larger end the toothed wheel 19 and at its apex the embedded stone 27 will have the shape indicated in vertical sectional view, Fig. 5,—that is to say, the toothed wheel disposed concentrically to the

axis of the conically shaped slug or dop is held in an annular recess adjacent the head of the dop and the wheel and dop prevented from turning relatively to each other by reason of the recesses 21 in the bore of the wheel occupied, of course, by the metal of the dop. Since there may not be, and indeed ordinarily will not be, sufficient vent for air, there is provided an air vent 30 extending through the wall of the base and communicating at its inner end with the bottom of the chamber 7 in which the mold 8 is seated.

The metal employed in the molding of the dop may be the composition or alloy ordinarily used in dops for diamonds and other precious stones or may be of any other appropriate alloy or composition. As will be apparent, it is not necessary that the metal should be plastic at a temperature considerably below its melting point which is a condition usually necessary in ordinary dops. The rough stones, when preferred, may be placed between the rods 18 and 12 as described but, of course, the tables and collets may be first formed or ground.

The dop herein disclosed carrying the stone to be cut or polished and the toothed wheel 19 forms the subject matter of a divisional application hereof and is to be used in an apparatus for grinding or polishing precious stones disclosed and claimed in an application filed simultaneously herewith, Serial No. 564,347. According to that application, the dop is to be placed in a correspondingly shaped holder disposed at any desired angle to the horizontal surface of the grinding "skief" or "lap" and when one facet has been ground or polished, the toothed or ratchet wheel, whose teeth are to be, of course, appropriately spaced and proportioned, affords a positive means for changing the position of the stone through a known determined angle which may be that of the next adjoining facet to be ground or polished.

The apparatus described has been shown by experience to be in general arrangement and detail efficient for the purpose stated. Obviously, variations or changes therein may be made by those skilled in such matters without departing from the principles involved.

In the use of this apparatus it is not necessary to permit the rod 18 to remain in the mold during the casting operation. After the stone is properly placed at the apex of the mold where it will be supported by rod 12 and the surrounding mold walls, the rod 18 may be withdrawn and the metal be then poured.

I claim:

1. Dop molding apparatus comprising a mold having a conical cavity open at both ends, a stone clamping rod movable through the apex end of the mold, a correspondingly adjustable stone clamping rod movable through the larger end of the mold cavity whereby a stone may be clamped between the ends of the rods and held in the apex end of the mold.

2. Dop molding apparatus comprising a mold having a conical cavity open at both ends, a rod movable axially through the apex end of the mold and means whereby it may be raised to above the larger end of the cavity and lowered to the apex end thereof, a coöperating stone clamping rod movable through the larger end of the mold and means whereby it may be independently raised and lowered so that a stone may be clamped between the opposing ends of the two rods when they are at or above the larger end of the mold and may be lowered to the molding point adjacent the apex end of the mold.

3. Dop molding apparatus comprising a mold having a conical cavity open at both ends, a seat at the top of the mold to receive a wheel with a central bore, an in-gate having in its lower edge an annular recess overlying the upper face of the wheel, means for holding the mold and wheel concentric to the axis of the mold and means comprising two stone holders movable respectively through the top and bottom of the mold for holding a stone adjacent the apex end of the mold so that it may be molded therein, the organization being such that the wheel will be cast in the larger end of the dop and the stone in the apex end thereof.

4. Dop molding apparatus comprising the combination of a mold having a conical cavity open at both ends, means comprising two stone holders movable respectively through the top and bottom of the mold for holding a stone at the apex end of the mold in line with the axis thereof, means for holding a wheel at the larger end of the mold concentric with the axis thereof and means for molding above the wheel a dop head between which and the body of the cast dop the wheel is molded.

5. Dop molding apparatus comprising the combination of a base having an opening in the lower part thereof, an open mold receiving receptacle in the top thereof, an endwise movable rod adjustable parallel with the axis of said receptacle, a mold seated in the receptacle and having a tapered mold cavity open at both ends, a stone clamping rod movable with the first named rod, a coöperating stone clamping rod also movable with the first named rod, means whereby the last named rod may be independently adjusted endwise, a seat to receive a wheel and hold it above and concentric with the axis of the mold cavity, and jaws adapted to open and close above the wheel and mold and having formed in each part of a pouring in-gate

and part of an annular recess overlying the wheel for the purpose described.

6. Dop molding apparatus comprising a mold open at both ends and tapered at one end, a seat or mold cavity at the top of the first mentioned mold cavity and of greater cross-sectional area than the top of said first mentioned mold cavity, an in-gate having in its under face a third mold cavity overlying the second named mold cavity and means for supporting at the apex end of the first mentioned mold cavity a stone to be molded into the end of the dop.

7. Dop molding apparatus comprising a mold open at both ends, two coincident stone holding means movable respectively through the top and bottom of the mold and between the adjacent ends of which a stone may be clamped and an adjustable support upon which both stone holding means are carried, whereby a stone may by said movable means be positioned at one end of the mold.

In testimony whereof, I have hereunto subscribed my name.

ERNEST LOESSER.

Witnesses:
S. A. STORY,
N. DUTTON.