

UNITED STATES PATENT OFFICE.

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DEVICE FOR JEWELING WIRE-DRAWING DIES.

SPECIFICATION forming part of Letters Patent No. 362,789, dated May 10, 1887.

Application filed December 26, 1883. Serial No. 115,550. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SAWYER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Devices for Jewel- ing Wire-Drawing Dies; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved machine for setting in supporting-plates that class of wire-drawing dies made of hard costly stones or metals, commonly known as "jewel-dies;" and my improvements consist, essentially, of the details of construction and general arrangement of parts, all as will be hereinafter fully described, and specifically designated in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of a wire-drawing die formed by my improved apparatus; Fig. 2, a diametric section of the same; Fig. 3, a side elevation of my improved apparatus used in setting the jewels; and Fig. 4, a front view of the apparatus, in partial section, with a jewel and holding-plate, also in section.

Similar letters of reference indicate like parts in the several figures.

Referring to the drawings, F represents an upright standard, from one side of which, near its foot, projects a horizontal platform, G, having at its center, or thereabout, a screw-threaded aperture, in which is screwed a step-chuck, H, which is a tapering screw-threaded hollow plug slitted downward from its upper edge to form fingers *h*, having their upper ends provided with notches or steps to receive the jewel-supporting plate A.

The lower portion of the plug H is provided with holes to receive a pin, *k*, by which it may be turned. It will readily be seen that when the jewel-supporting plate A is laid in the notches at the upper ends of the fingers *h* and the chuck screwed downwardly, the fingers *h* will be compressed and grasp the plate A firmly.

Above the platform G an arm, L, projects from the standard F, and is provided with a vertical passage, in which is arranged an ad-

justable rod, M, which is held in any position to which it may be adjusted by means of a clamp-screw, *m*. This rod M is pointed at its lower end, and its position with respect to the chuck is such that when a jewel-supporting plate, as at A, is secured in said chuck the point of the rod will be exactly in line with the center of the wire-passage in the plate.

In securing a die-jewel or other wire-drawing die in its supporting-plate by the aid of the apparatus which I have described, I proceed as follows: First, I secure the jewel-supporting plate A in the chuck H, as shown in Figs. 3 and 4, and then lay the drilled jewel C upon the bottom of recess *a* of said plate. I then adjust the rod M downwardly, and at the same time adjust the jewel C so that the point of the rod will enter the hole in the jewel and rest lightly on the edge wall of said hole, owing to the tapering form of the point. I then secure the rod in position by means of the screw *m*, and it will be observed that now the jewel has its hole centered exactly in line with the wire-passage in the plate A, as the point of the rod stands exactly in line with the center of said passage. The parts having been arranged as now described, I partly fill the recess *a* in the jewel-supporting plate with some easily-fusible metallic alloy, (preferably of tin and bismuth, melting at about 280° Fahrenheit.)

I now apply heat to the supporting-plate A, preferably by introducing the flame of an alcohol-lamp up through the hollow clutch H, and thus melt the alloy so that it flows around the jewel in the recess. I then add more alloy until the jewel is completely covered by the melting thereof, and preferably until all the recess is filled. Instead of a metallic alloy I may use a strong cementing-wax, and when I use the metallic alloy I prefer to use a proper quantity of soldering-acid in order to make a strong union between the alloy and the supporting-plate. When the alloy or cementing-wax, as the case may be, has been all melted, I remove the heat and allow it to set around and over the jewel, the hole in the jewel and the wire-passage in the plate being kept perfectly clear by the point of the rod M. After the alloy or wax has set I raise the rod M and release the supporting-plate A from the clutch, and place it in a similar clutch in a lathe, and

with a suitable turning-tool turn off the alloy to form a flaring passage to the jewel-hole, as shown in Figs. 1 and 2. This having been done, I turn the plate in the chuck, first loosening and then securing it again, so as to bring its other side outward, and then with a suitable tool countersink the wire-passage, and then with a diamond tool ream out the hole in the jewel or other die to proper size and shape.

10 The wall of the hole must then be polished with a fine wire and diamond-dust. After the hole in the jewel has been reamed and polished the die is ready for use in the usual manner in drawing wire.

15 Having now fully described my invention, I claim—

1. The herein-described apparatus for facilitating the setting of wire-drawing jewels or dies, the same consisting in the combination of
20 a suitably-supported clutch for holding the

jewel-supporting plate, and an adjustably-supported pointed rod arranged to enter the hole of the jewel or die and secure said jewel or die upon the plate, substantially as described.

2. The combination, with the suitably-supported compressible clutch H, of the adjustable pointed rod M, having its point in line with the center of the clutch, substantially as described.

3. The combination, with the platform G, of the clutch H, plate A, jewel C, adjustable rod M, and a mass of easily-fusible alloy or cement, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. SAWYER.

Witnesses:

GILMAN E. JOPP,
W. A. HATHAWAY.