

(No Model.)

W. H. SAWYER.

METHOD OF REMOVING BROKEN TOOL POINTS FROM DRAWING DIE PLATES.

No. 357,860.

Patented Feb. 15, 1887.

Fig. 1.

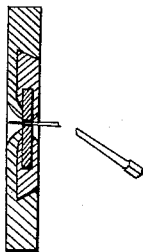


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM H. SAWYER, OF PROVIDENCE, RHODE ISLAND.

METHOD OF REMOVING BROKEN TOOL-POINTS FROM DRAWING-DIE PLATES.

SPECIFICATION forming part of Letters Patent No. 357,860, dated February 15, 1887.

Application filed June 21, 1886. Serial No. 205,829. (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 a certain new and useful Method of Removing Broken-off Tool-Points from Holes, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a sectional view of a wire-drawing die having the point of tool broken off therein, and Fig. 2 a similar view of a die with the broken point removed.

In drilling or reaming out small holes in refractory substances it frequently happens that the points of fine drills and reamers are broken off and remain wedged so tightly in the holes as to defy removal by mechanical means without breakage of the material in which they are lodged. This breaking off of the tool-points in the holes is especially incident to the drilling and reaming out of holes in jewels for making dies for drawing fine wire; and my invention has for its particular object the removal of tool-points broken off in such jewels. The points of the tools are often less than one one-thousandth of an inch in diameter, and when broken off for a length hardly greater than the diameter and tightly jammed in a sapphire or other hard stone their removal has heretofore been a tedious work.

In my improved process or method I immerse the die in which a tool-point has been broken off in an acid sufficiently strong to gradually dissolve the broken-off point, so that it will become loose and drop out of the hole, or may be washed out by drenching the die with water, or easily pushed out with a fine instrument.

If the jewel is mounted in a metallic supporting-plate, I regulate the strength of the acid used according to the nature of the metal,

so that said plate will not be corroded; or I may cover the supporting-plate with paraffine or other wax, to protect it when it is necessary to use a strong acid to properly act on the tool-point.

I generally use dilute sulphuric acid to act on steel tool-points, though nitric or any other suitable acid may be used, a sufficient quantity being placed in a vessel to cover the die, which should be immersed therein and allowed to remain a few moments, and examined to see if the point has fallen out or become loose enough to be removed.

If the article being drilled or reamed should be too large for convenient immersion, it may be laid with the hole in which the tool-point has lodged turned upward, and a drop of acid may then be laid in the hole, or a rim of wax may be formed around the hole, so as to hold a small portion of acid in position to act on the tool-point which is fast in the hole.

Having now described my invention, what I claim is—

1. The herein-described method of removing broken-off tool-points from holes in refractory mineral substances, the same consisting in subjecting the jammed or wedged-in points to the action of acid, substantially as described.

2. The herein-described method of treating wedged-in or jammed and broken-off tool-points for removal from holes in refractory mineral substances, the same consisting in immersing the said refractory substances and points jammed therein in acid to dissolve or loosen the points, so that they may be dislodged, substantially as described.

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

WILLIAM H. SAWYER.

Witnesses:

GILMAN E. JOPP,
WM. A. HATHAWAY.