

(No Model.)

H. KELLER.

SECURING DIAMONDS IN CUTTING TOOLS.

No. 398,053.

Patented Feb. 19, 1889.

Fig. 1.

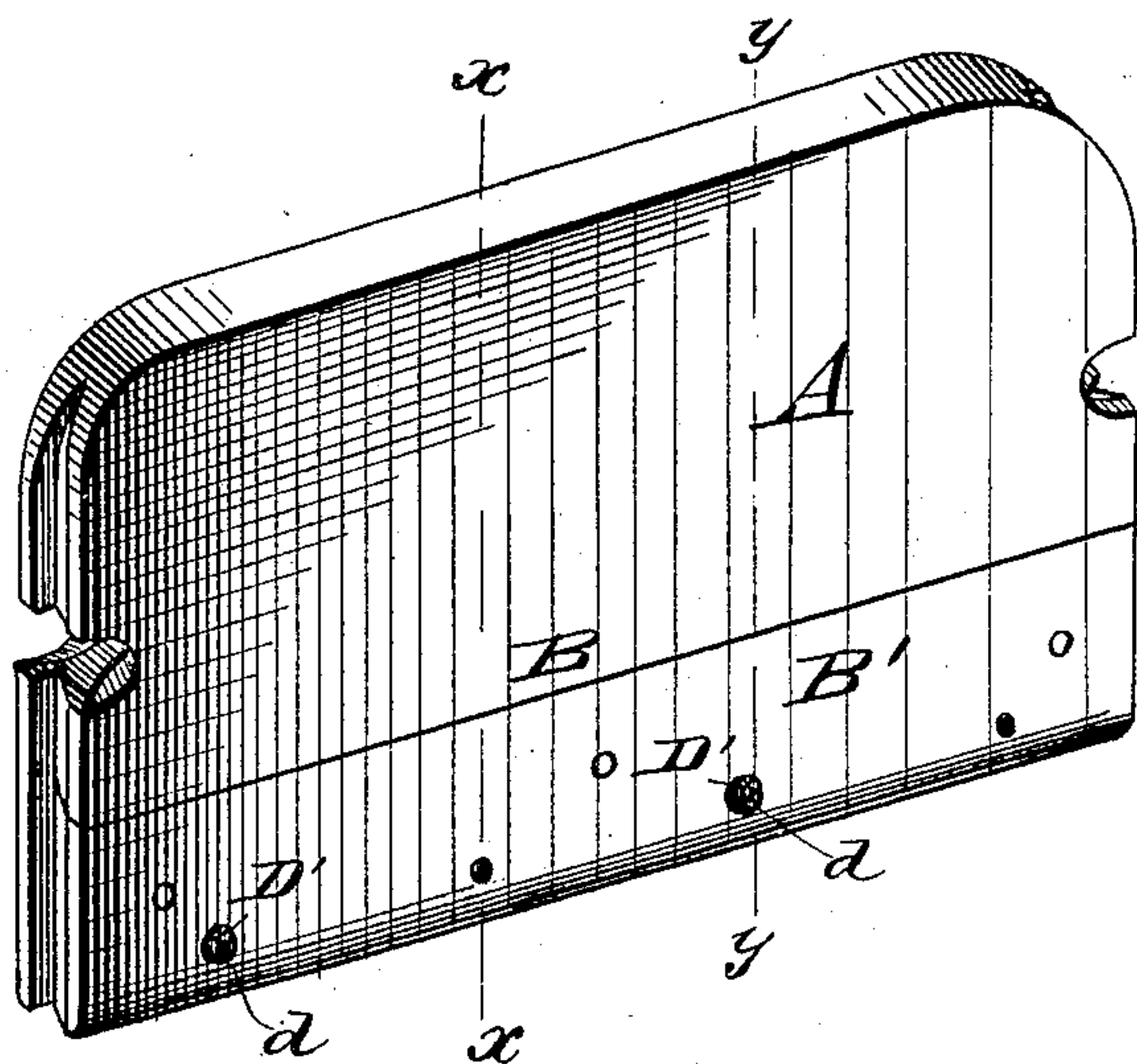


Fig. 2.

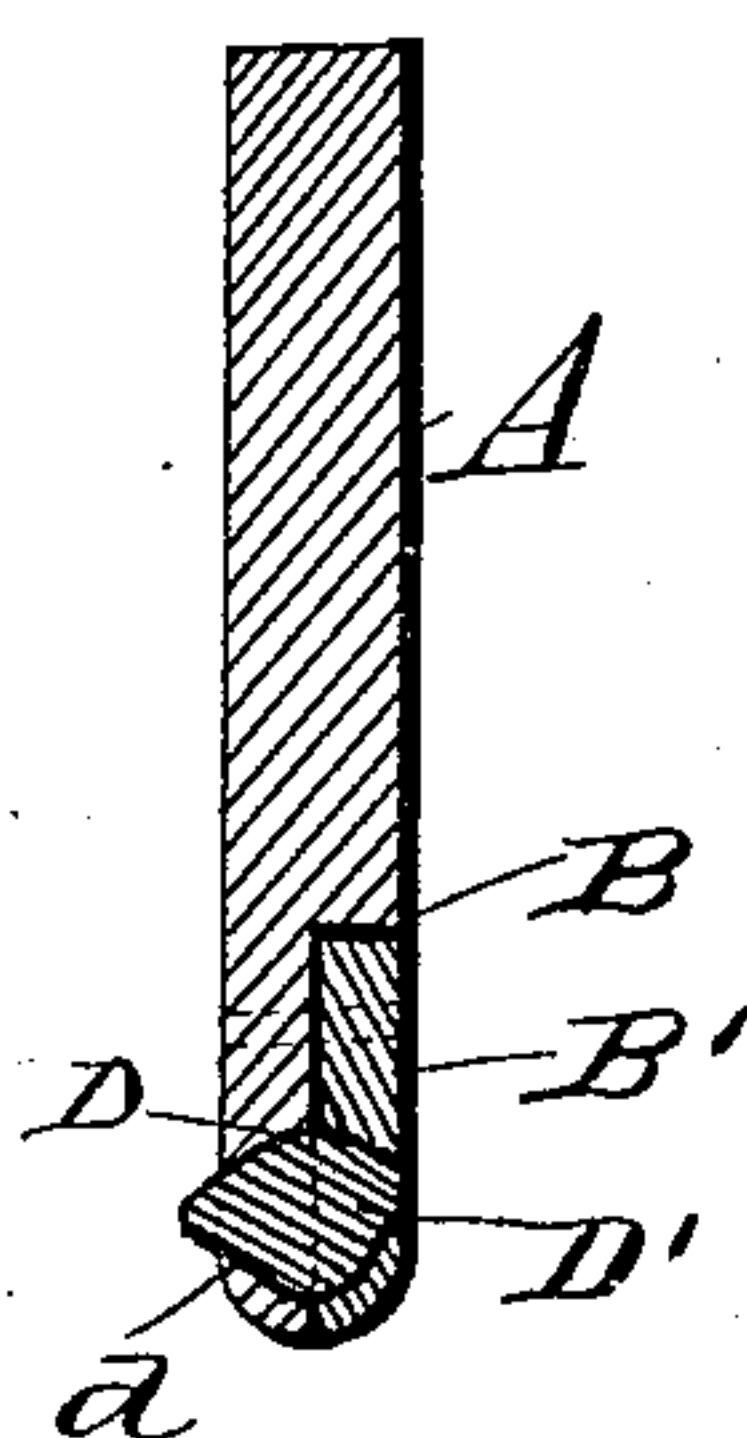
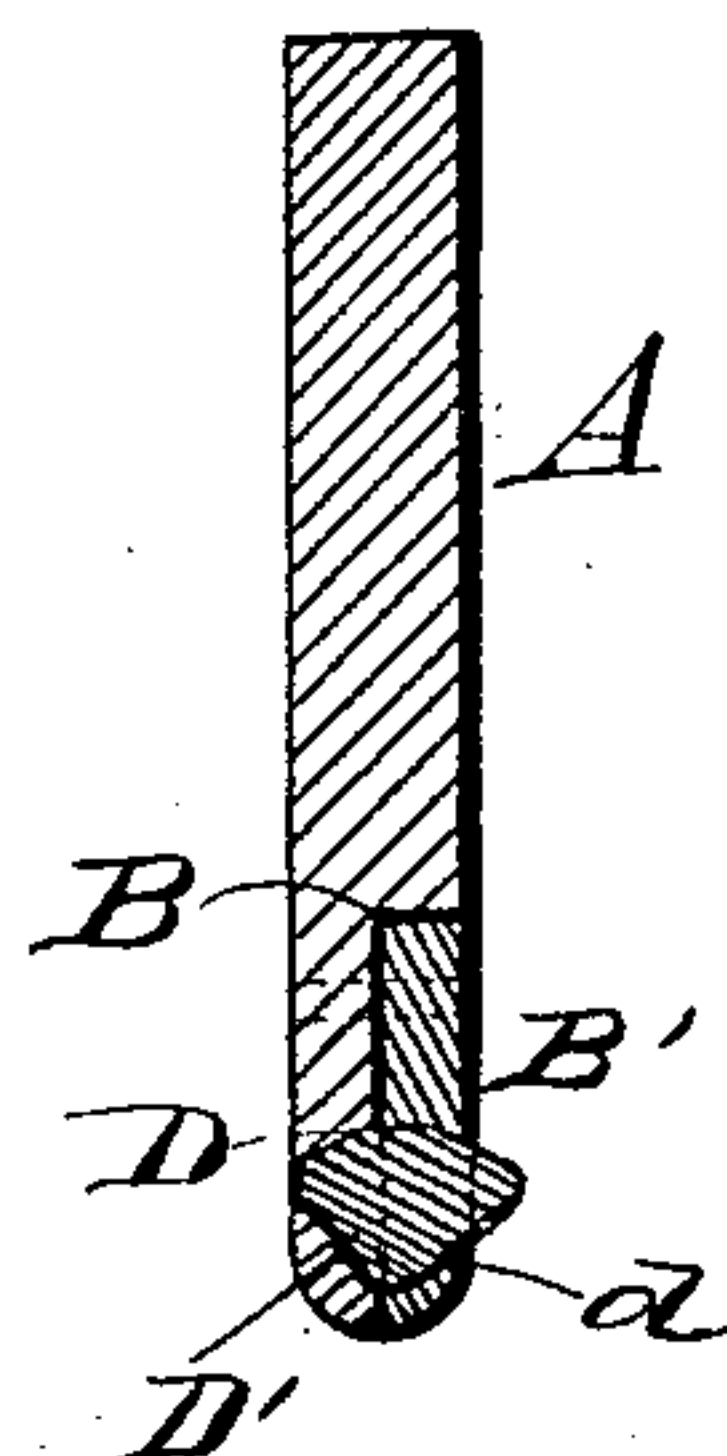


Fig. 3.



WITNESSES:

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SECURING DIAMONDS IN CUTTING-TOOLS.

SPECIFICATION forming part of Letters Patent No. 398,053, dated February 19, 1889.

Application filed April 26, 1888. Serial No. 271,911. (No model.)

To all whom it may concern:

Be it known that I, HUGO KELLER, of the city, county, and State of New York, have invented a new and useful Improvement in Securing Diamonds in Cutting-Tools, of which the following is a full, clear, and exact description.

My invention relates to an improvement in the art of securing diamonds in cutting-tools, and has for its object to provide a setting which will be strong and durable and wherein the diamonds will be securely held under all conditions of usage, and, further, wherein when the tool becomes worn down the diamonds may be readily removed without the slightest injury thereto.

The invention consists in the method of securing diamonds in the tools, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a saw-tooth having my improvement applied. Fig. 2 is a section on line $x x$ of Fig. 1, and Fig. 3 is a section on line $y y$ of the same figure.

In carrying out the invention I have illustrated the diamonds as set in the tooth of a stone-saw, but desire it distinctly understood that I do not confine myself to such application, as I contemplate a similar application to any cutting-tool in connection with which diamonds are employed.

The body of the tooth A at the cutting-edge is provided with a longitudinal and preferably rectangular recess, B, in one face, which recess is formed by a vertical longitudinal and an intersecting horizontal cut, as illustrated in Figs. 2 and 3, whereby a detached plate, B', is obtained, which for convenience is designated a "clamping-plate."

The vertical cut is preferably made through the center, and may, if desired, extend altogether through the body, in which event the horizontal cut is dispensed with. When, however, the horizontal cut is employed, it may be taken at any point between the upper and lower edges, but preferably at the point indicated in the drawings.

The clamping-plate B' and the vertical wall of the body-recess are provided with spaced horizontal aligning hemispherical recesses D, which recesses are produced a slight distance from the lower edge and may project through the body and clamp, in which event each alternate opening is a large one, as shown at d in Fig. 1, and when the clamp is secured to the body the large openings are alternately arranged upon opposite faces of the tooth. If in practice it is deemed advisable, the small opening intervening larger ones may be omitted.

The diamonds D' are placed in the several aligning recesses D, one end of the same being adapted to project through the opening d a sufficient distance to present a cutting-surface.

The clamping-plate is then riveted and brazed or otherwise attached to the body, whereby the diamonds are securely held in the spherical or other suitable pockets or sockets formed by the combined recesses D, as best shown in Figs. 2 and 3. When the teeth have been passed through or across the surface of the stone, the under metal edge is worn off, exposing the diamond, whereupon the said teeth cut.

In brazing, any spaces left between the walls of the diamond-socket and the diamond are filled up with the brazing material.

When the tooth is so worn as to be practically useless, or so that the sockets of the stones are essentially worn away, to remove the diamonds it simply becomes necessary to drive out the rivets, if they are employed, and place the tooth in the fire until the brazing is melted off, whereupon the clamp-plate may be removed and the diamond taken out without the least injury thereto.

I am aware that diamonds have been set in saw-teeth by casting or manipulating the metal when said teeth are formed around the diamonds; but this method is open to many objections—namely, the metal does not take a good hold upon the stones, and they therefore readily drop out and are lost, and when held properly in place to remove the same involves much labor, as the tooth must be drilled adjacent to the stone and the latter hammered out of the setting, whereby the stones

are frequently broken. To overcome these objections and provide a perfect setting and a convenient and safe means of removing the stone is the prime object of the present invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. That improvement in the art of setting diamonds in cutting-tools which consists in longitudinally dividing the cutting-edge of the tool, forming registering recesses in the contiguous faces of the sections, inserting the diamonds in said recesses, and brazing the said contiguous faces, substantially as shown and described.

2. The method herein described of setting diamonds in cutting-tools, which consists in

providing the body of the tool A at its cutting-edge with a longitudinal rectangular recess, B, and a clamping-plate, B', adapted to fit said recess, said clamping-plate B' and the vertical wall of the recess being provided with registering hemispherical recesses D, formed at a slight distance from the lower edge of the tool A, said recesses forming sockets to receive the stones, said stones being retained in said sockets by means of the clamping-plate B being detachably secured to the body of the tool, substantially as shown and described.

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Witnesses:

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