J. D. HUSBANDS, Jr.

Modes of Inserting Diamonds in Metal Plates and Drills.

No. 150,862. Patented May 12, 1874.

Fig. 1.

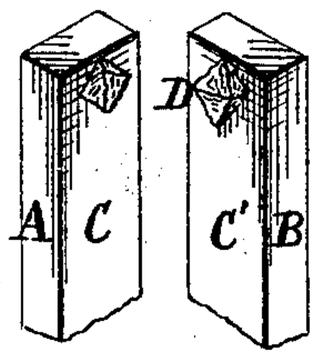


Fig. 2.

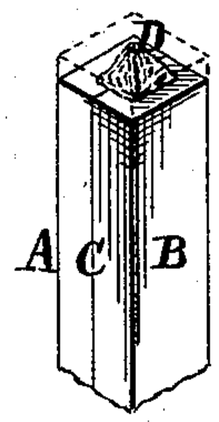


Fig. 3.

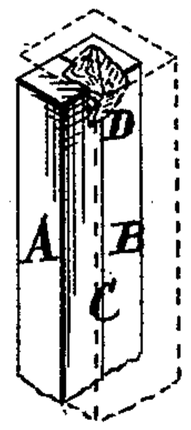


Fig. 4.

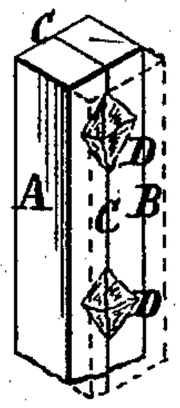
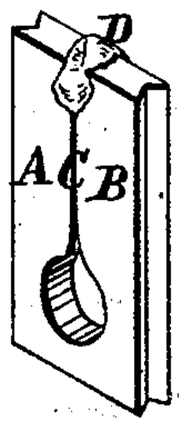


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH D. HUSBANDS, JR., OF ST. LOUIS, MISSOURI, ASSIGNOR OF HIS RIGHT TO JOSEPH W. BRANCH, OF SAME PLACE.

IMPROVEMENT IN THE MODES OF INSERTING DIAMONDS IN METAL PLATES AND DRILLS.

Specification forming part of Letters Patent No. **150,862**, dated May 12, 1874; application filed March 17, 1874.

To all whom it may concern:

Be it known that I, JOSEPH D. HUSBANDS, Jr., of the city of St. Louis, in the county of St. Louis and State of Missouri, have invented a certain new and useful Method of Inserting Diamonds in Metallic Plates and Bars, of which the following is a specification:

Heretofore it has been almost impossible to fit the diamonds uniformly into their proper seats in the saw or tooth holder, the diamonds being of irregular form, so as to render the engraving of the seat in the metal to exactly fit them practically impossible. A perfect fit of the diamond in its seat is necessary to prevent play, for if there is any play the diamond works itself from its seat. Further, diamonds being of such irregular shapes and sizes renders it difficult, if not impossible, to securely fit them in place, and yet to have the cutting-point project equally from either side or top, or both. The sole thing sought to be accomplished has been the holding of the diamond, and to do this heretofore it has been considered necessary to take that part of the diamond upon which the best hold could be obtained, and fit to that without reference to the cutting-edge. The uneven projection of a diamond cuts a wider and deeper kerf, and marks the stone so as to require much labor to make straight and smooth. To overcome these difficulties I devised my improved mode of securing diamonds, which consists in pressing them into the body of a metallic holder of any suitable form, while the metal is in a heated state, so that the diamond may become embedded in the metal, and form its own seat or cavity. I prefer to carry my invention into effect by heating two pieces of metal, inserting the diamond between them, and pressing them together on the diamond by means of a vise or other mechanical appliance, the pieces of metal being held together by a right-and-left screw, or by any suitable clip or holder—as, for example, such as described in Letters Patent No. 141,122, dated 22d July, 1873, or No. 148,027, dated 3d March, 1874; or they may be secured together by solder, if preferred. The diamonds may be placed between the metallic pieces in such a manner as to project to the required extent for use, or they may be completely embedded, and the metal subsequently ground away to expose the diamond, the latter not being acted on by the grinding. Instead of removing the surplus metal by grinding, it may be done by chipping, filing, or other means. The mode of embedding a diamond in heated metal, and subsequently removing the surplus metal by grinding, filing, chipping, or analogous means, constitutes the second part of my invention.

The accompanying drawings represent, by perspective views, various modes of applying my invention.

Figure 1 shows the inside faces of two pieces of metal opened apart after having been pressed together upon the diamond. Fig. 2 shows a diamond projecting from the end of the metal. Fig. 3 shows the diamond projecting from the end and one side. Fig. 4 shows the diamonds projecting from the sides. Fig. 5 shows the diamond projecting from both top and sides.

In Figs. 2, 3, and 4 is shown, by dotted lines, the original size of the metallic block before having been cut down to expose the diamond.

A B are two pieces of metal, which may vary in form, as found requisite. The faces C C′ may be made to fit closely, or not, together. D is the diamond, which is seated or embedded in the metal by first heating the pieces A B, so as to render them soft, say to a cherry red, and then placing the diamond or diamonds between them in a proper position, and imparting an outside pressure, so as to tightly embed the diamonds in the faces C C′.

In Fig. 1 the faces are shown as taken asunder by separating the parts A B after pressure upon the diamond. In Figs. 2, 3, and 4 the diamond is shown respectively projecting from the end, end and one side, and one side of the metal.

The metal may have originally had the dimensions shown by dotted lines, and been reduced to form shown by full lines by grinding or other means, so as to expose part of the diamond.

In Fig. 5 the diamond is shown as placed in a holder so constructed as to be inserted in a saw-plate.

It will be manifest that by reason of the expansion and contraction of metal under changes of temperature, the pressing of the metal upon the diamond while hot, and then permitting it to cool, causes it, by its own natural contraction, to gripe and press the diamond with great force in all directions, causing the whole to fit together as closely as if it were one piece of material, and the diamond to be held more securely than is possible with any merely mechanical appliance.

The following is claimed as new:

1. The process of fitting diamonds into metallic holders by softening the metallic holders by heat, and then pressing them on the diamonds.

2. The mode or process, substantially as described, of embedding diamonds in heated metal, and subsequently removing the surplus metal by grinding, chipping, filing, or other means.

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Witnesses:
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