(No Model.)

A. W. HOFMANN.

METHOD OF ORNAMENTING WATCH CASE CENTERS AND OTHER LIKE ARTICLES.

No. 435,835. **Patented Sept. 2, 1890.**

Fig. 1.

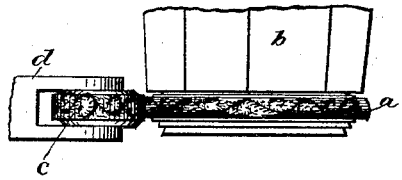


Fig. 2.

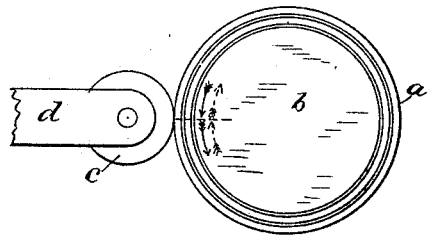
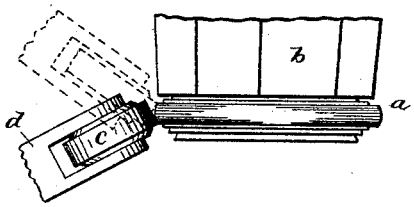


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

ADOLPH W. HOFMANN, OF BROOKLYN, ASSIGNOR TO ROBBINS & APPLETON, OF NEW YORK, N. Y.

METHOD OF ORNAMENTING WATCH-CASE CENTERS AND OTHER LIKE ARTICLES.

SPECIFICATION forming part of Letters Patent No. 435,835, dated September 2, 1890.

Application filed December 31, 1887. Serial No. 259,496. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH W. HOFMANN, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Method of Ornamenting Watch-Case Centers and other Like Articles, of which the following is a specification.

This invention relates to the ornamentation of the peripheries of watch-case centers and other articles of circular or approximately circular form; and it consists in presenting the article to be ornamented to a rotary embossing-roll having on its periphery the design ornamentation to be applied and reversely rotating said article, or, in other words, rotating it first in one direction and then in the opposite direction, the contact between the roll and article being continuously maintained during the entire operation, so that during each successive pass the roll will deepen the indentations formed by it during the preceding pass, as I will now proceed to describe.

In carrying out my invention as applied to the ornamentation or embossing of watch-case centers, I place the case-center *a* upon a chuck *b*, which is secured in any suitable way to a rotary shaft, as the head-stock of a lathe. Said shaft is reversely rotated or rotated first in one direction and then in the opposite direction by any suitable means, each movement being preferably not more or slightly less than a complete rotation. While the case-center is being thus reversely rotated I present to its periphery an embossing-roll or die *c*, the periphery of which bears the design which is to be applied to the case-center. Said roll or die is rotated by its contact with the case-centers, and from the commencement to the end of the operation is continuously held against the periphery of the case-center. At the same time the inclination of the roll or die is varied so as to cause its point of contact with the surface of the case-center to move laterally across said surface, said point of contact preferably commencing at one edge of the surface to be ornamented and progressing gradually across the same.

It will be seen that the reversing rotation of the case-center and the continuous rolling contact of the embossing-roll therewith produce the following results, viz: First, during each reverse or backward rotation of the case-center the impressions made by the embossing-roll during the preceding forward rotation are caused to exactly coincide with the lines of the roll which formed such impressions, and are therefore deepened by each successive pass until the desired depth is attained; secondly, when the roll is moved laterally by the varying inclination of its axis to enable its point of contact to move laterally across the surface to be ornamented, the impressions made after each successive change in the position of the roll will coincide with and constitute continuations of the previously-formed impressions, the area of ornamentation being thus laterally extended or widened. The roll should be supported by a pivoted holder *d*, which is adapted to oscillate in such manner as to permit the roll to assume the two extreme positions indicated in full and dotted lines in Fig. 3, and all intermediate positions, said holder being moved by the operator to cause the described lateral movement of the point of contact between the roll and case-center.

It is not new to continuously rotate a watch-case center and at the same time hold in rolling contact therewith a roll the periphery of which is formed to make regular or set figures—such as crossed diagonal grooves or parallel grooves—either diagonal to the axis of the center or parallel therewith; but heretofore the case-center has always been continuously rotated and not reversely rotated, the regular character of the configuration of the embossing-roll enabling the projections thereof during each successive rotation to enter or catch into and make lateral coincidence with the indentations formed in the case-center during the preceding rotation, and all ornamentation thus produced has been necessarily confined to regular patterns, such as are above indicated, it being impossible to produce by the continuous rotation any pattern having irregular curved lines resembling hand-engraving—such, for example, as the chasing or "vermicelli" work shown in Fig. 1—because the relief-lines of the character last mentioned formed on the roll cannot coincide

with or catch into the previous or initial impressions made by them when the case-center is continuously rotated. By my improved method, however, there is no possibility of failure of the relief-lines of the roll to catch into or coincide with the impressions previously made in the case-center, each relief-line remaining in the groove formed by it when the rotation of the case-center in either direction is stopped, so that the lines of the roll are always in operative engagement with the impressions in the case-center.

In the accompanying drawings, Figure 1 represents a top view of the embossing-roll and a case-center held by a chuck and presented to the roll, the roll having its periphery formed to produce a chased surface or vermicelli work. Fig. 2 represents a side view of the roll and case-center. Fig. 3 represents a top view, showing the extreme positions occupied by the roll in acting on a periphery which is convex in cross-section.

The means which I prefer to use to oscillate the chuck and to support the roll and permit the lateral movements thereof are shown in another application for Letters Patent filed by me December 31, 1887, Serial No. 259,495.

It is obvious that the roll may be formed to impart any ornamentation which is capable of being made by hand. The roll may be oscillated about the case-center, the latter being held stationary, without departing from the spirit of my invention.

Finger-rings and other circular or approximately circular articles may be ornamented by this improved method.

I am aware that it has been proposed to ornament a gun-barrel by longitudinally reciprocating the barrel while it is in contact with a roll having an ornamented periphery, said roll being rotated by its contact with the reciprocating barrel. The roll thus used, however, was not moved during the operation to cause its point of contact with the surface being ornamented to move laterally across said surface. This lateral movement of the point of contact is an important part of my process, since it enables a very narrow point of contact to be maintained, so that deeper and more pronounced indentations may be produced than could be made if the point or line of contact of the roll with the surface being ornamented were of the same width as the area of ornamentation.

I claim—

1. The improved method, hereinbefore described, of ornamenting the peripheries of watch-case centers or other like articles, the same consisting in holding a portion of the surface of an embossing-die in contact with the surface of the article to be ornamented, said portion being less in width than the entire width of the ornamenting-surface of the die, imparting a reciprocating or reversing rotary movement to one of said surfaces and at the same time laterally moving the point of contact of the die with the surface being ornamented, thereby laterally extending or widening the area of ornamentation, as set forth.

2. The improved method, hereinbefore described, of ornamenting the peripheries of watch-case centers or the like articles, the same consisting in holding the surface of an embossing-die in contact with the surface of the article to be ornamented, imparting a reciprocating or reversing rotary movement to one of said surfaces and at the same time laterally moving the point of contact of the die with the surface being ornamented, as set forth.

In testimony whereof I have hereto signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of December, 1887.

ADOLPH W. HOFMANN.

Witnesses:
C. F. BROWN,
J. E. SEARING.