Sept. 20, 1932. E. HERRMANN 1,878,138

METHOD OF PRODUCING A FLAT PICTORIAL REPRESENTATION FROM A PATTERN IN RELIEF

Filed Aug. 14, 1928

Fig. 1.

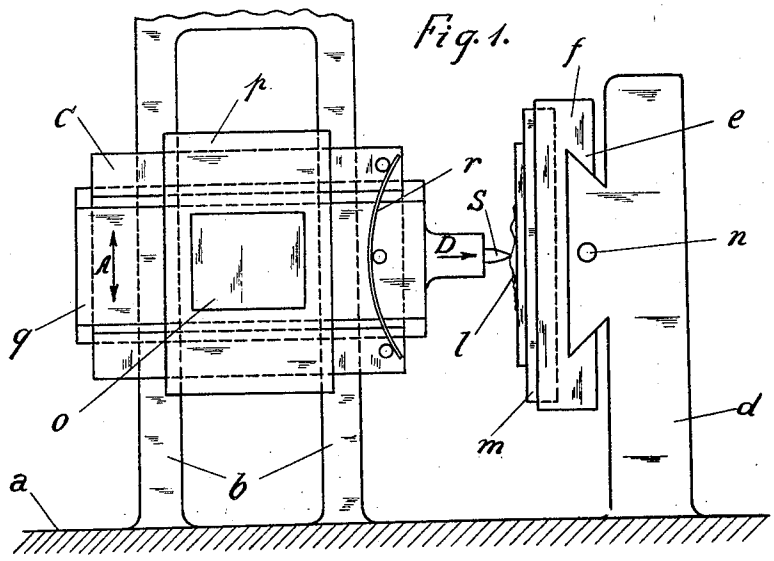
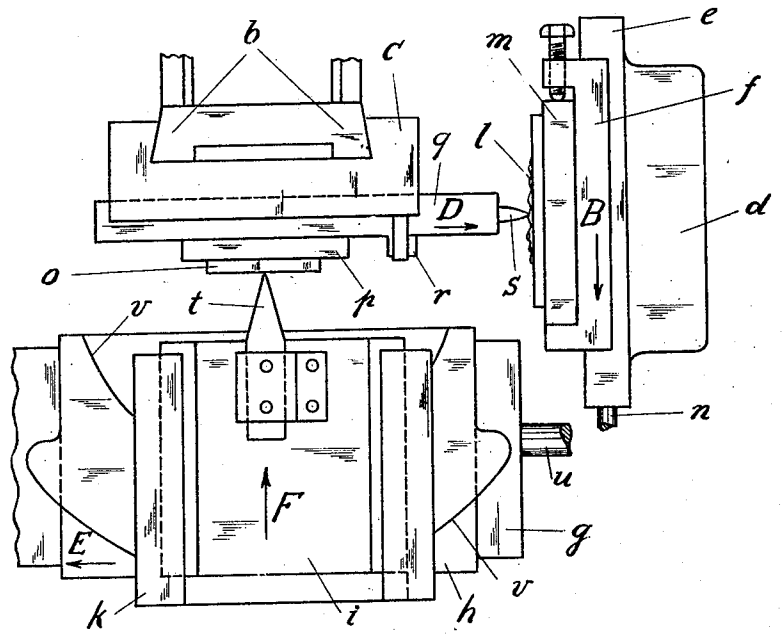


Fig. 2.



Inventor:
Ernst Herrmann
by
Attorney

Patented Sept. 20, 1932 1,878,138

UNITED STATES PATENT OFFICE

ERNST HERRMANN, OF PFORZHEIM, GERMANY

METHOD OF PRODUCING A FLAT PICTORIAL REPRESENTATION FROM A PATTERN IN RELIEF

Application filed August 14, 1928, Serial No. 299,571, and in Germany August 15, 1927.

It has become known to provide on the plates of cuff-links and other buttons pictorial representations as animal heads, flowers, initials, crests or the like by pressing or engraving. The pressing is carried out with the aid of stamp and swage, the engraving either by hand or by a machine, the engraving tool of which, guided by means of a feeler sliding over a pattern in relief, lifts out more or less deep indentations.

In all these cases relief-like pictorial representations are produced which, when produced by means of the engraving machine, are generally in reduced scale, but otherwise exactly like the relief-pattern.

Owing to the comparatively great differences in depth shown by the plate with the pictorial representation, it is impossible to coat this plate with a layer of transparent ornamental enamel of uniform thickness designed to increase the natural brightness of the metal and to preserve the same. The enamel applied in the molten liquid state flows from the higher points to the deeper points and settles in the same.

This inconvenience is avoided by the reproducing-method according to the invention which has for its object to multiply or reproduce a relief-pattern in such a manner that the copy is not relief-like but absolutely plane like an engraving.

The plate carrying the flat reproduction can be covered without any difficulty with a layer of enamel of uniform thickness, or it may be used like an engraved plate for copying by printing.

The pictorial representation made by the artist in high-relief can therefore be printed with the aid of the flat copy in catalogues, on deeds, banknotes or similar papers.

For jewelry-articles the most various materials, as precious and not precious metal, mother of pearl, glass, ivory, artificial corn, artificial resin and the like, may be used as carriers for the flat reproduction.

The new manufacturing method consists in that the feeler which, controlled by a spring, is shiftably mounted at right angles to the pattern, is rigidly connected to the plate mounted at right angles to the pattern and on which the reproduction has to be made and that said feeler slides during the operation over the pattern so that the work executes the same up and down movements as well as the same axial-movements as the feeler in accordance with the profiled surface over which the feeler moves.

In the carrying out of the method the engraving tool cuts into the work-plate one line at the side of the other, in accordance with the transverse movement of the plate and the undulated lines, resulting from the unevennesses of the pattern in high-relief, produce on the work-plate shadings, which make the reproduction look absolutely like a relief-representation, although it is quite plane.

The carrying out of the method is illustrated in the accompanying drawing in connection with a long draw-guilloching machine.

Fig. 1 shows in elevation the tool and in side-elevation the carrier of the relief-pattern.

Fig. 2 is a top-plan-view of Fig. 1 showing further the carrier for the engraving tool.

On the plate *a* of the machine two uprights *b* are mounted on which the sliding support *c* is adapted to be moved up and down in the direction of the arrow-line A. Another upright *d* serves as support for the pattern-slide *f* carrying the plate with the pattern in relief. On the base-plate there is further mounted the support *g* for the tool-carrier *h* on which a rotary element *k* is mounted, carrying the holder for the engraving tool *i*.

The pattern-plate *l* is cemented on a plate *m*, clamped in the pattern-slide *f*, and it can be shifted in the direction of the arrow-line B or in opposite direction by rotation of a spindle *n*.

The work *o*, for instance a rectangular plate, is fixed on a supporting plate *p* which is fixed on a slide *q*, continually pressed by the action of a blade-spring *r* in the direction of the arrow-line D towards the relief-pattern *l* against which bears the feeler *s*. The movement of the tool *t* in the direction of the arrow-line E or in opposite direction is produced by rotation of a spindle *u*. To make it possible to adjust the tool *t* at the working on a curved work-plate always perpendicularly to said plate, the tool-holder *i*, pressed by the action of a spring in the direction of the arrow-line F, is mounted in a rotary element *k* oscillatably mounted in arc-shaped guides *v* of the tool-slide.

After each up and down movement of the slide *c* the pattern *l* and the plate *o* are slightly displaced laterally so that at every stroke the feeler traverses a different line on the pattern parallel to the front line, and the tool will also trace a different line on the work dividing from the vertical by the displacement caused by the irregularities in the surface of the pattern. This is repeated until the feeler has travelled over the whole pattern from one side to the other when the tool will have traced as many lines on the work plate as the strokes performed by the feeler on the pattern.

For the transmission of the relief-pattern upon a plane or curved surface of the work-plate *o* this plate carries out movements in front of the tool in the direction of the double arrow-line A. The tool *t* cuts off thin chips and the feeler *s* slides over the pattern *l*. The pattern-plate *l* as well as the tool *t* carry out each a slow lateral shifting movement after every working stroke, for instance in the direction of the arrow-lines B and D. The angular value of the rotation of the spindles *n* and *u* necessary herefore is adjusted by means of graduated discs or graduated heads in such a manner that the flat reproduction of the whole relief-picture fits accurately into the surface designed for the same.

I claim:—

A method of producing flat pictorial reproduction from a relief pattern, consisting in mounting the work plate on which the flat reproduction is to be made perpendicularly to the pattern plate in high relief, in rigidly connecting to said work plate a feeler bearing at right angles on said pattern, in repeatedly moving said feeler over the surface of said pattern so that when said feeler advances or recedes in following the contour of said relief pattern said work plate moves backwards and forwards at the same time and carries out lateral movements corresponding to the advancing and receding movements of the feeler on the surface of said pattern, and in shifting a cutting tool pressed at right angles against the work plate and the relief pattern a certain distance in lateral direction so that said feeler travels in parallel lines over the whole surface of said pattern and the tool traces closely juxtaposed lines on the work plate, said lines deviating more or less from the straight according to the height of the relief of the pattern and therefore the distance through which the feeler is forced back and displaces the work plate.

In testimony whereof I affix my signature.

ERNST HERRMANN.