(No Model.)

B. F. KELSEY.

METHOD OF MAKING DIES FOR PRODUCING DESIGNS ON SOFT METAL.

No. 491,179. Patented Feb. 7, 1893.

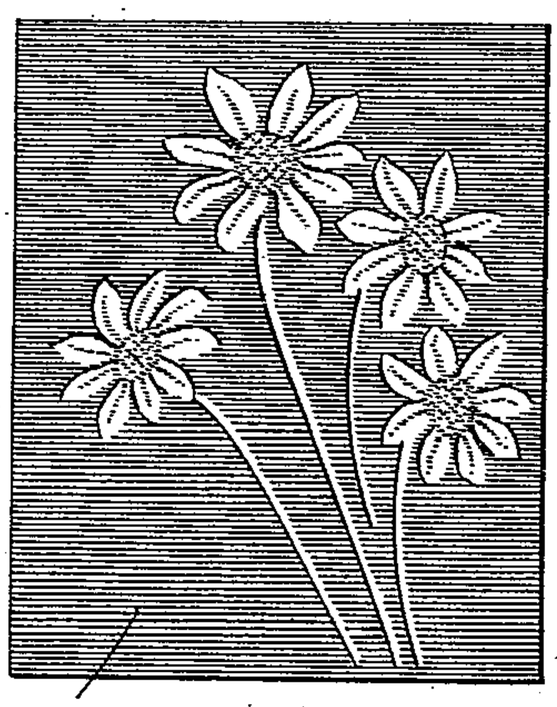

Fig. 1.

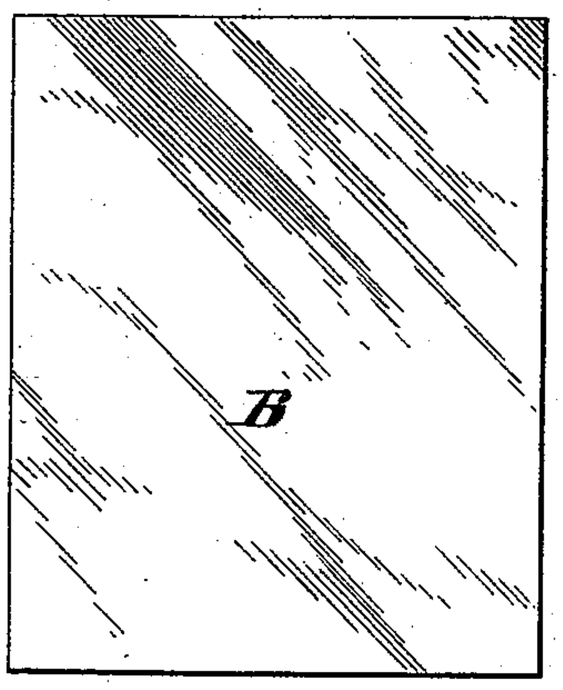

Fig. 2.

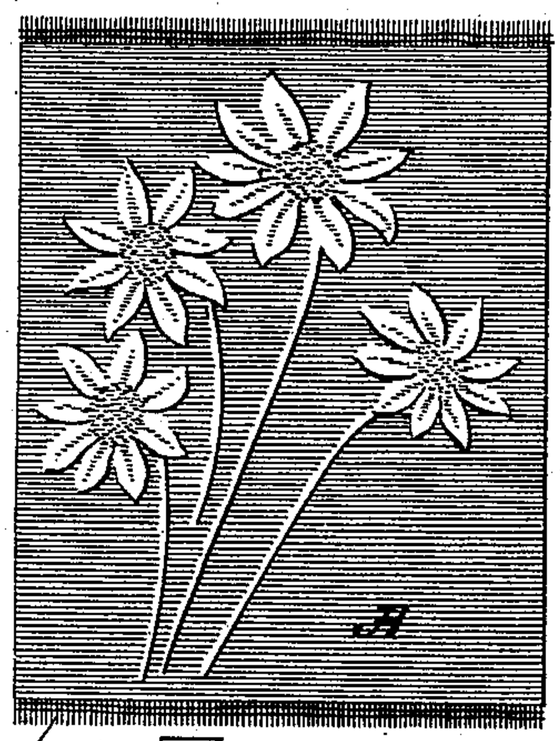

Fig. 3.

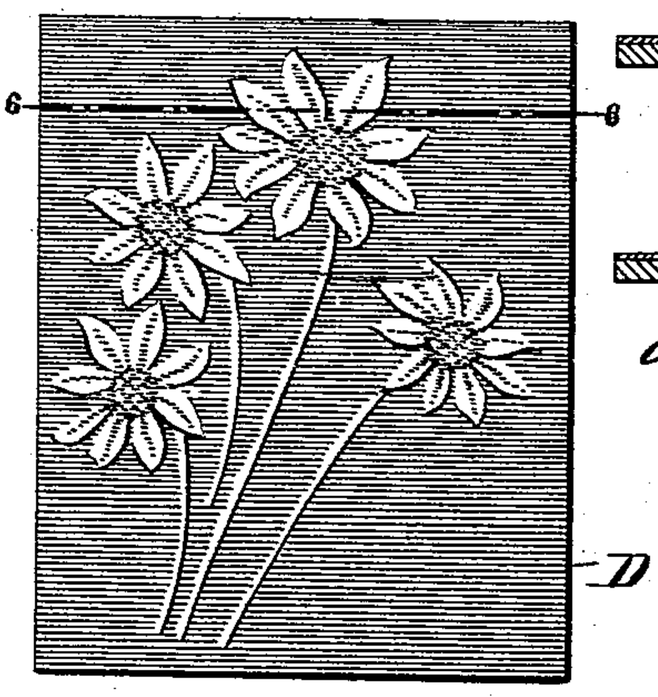

Fig. 5.

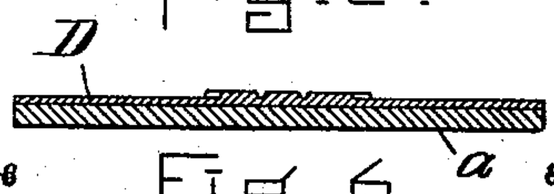

Fig. 6.

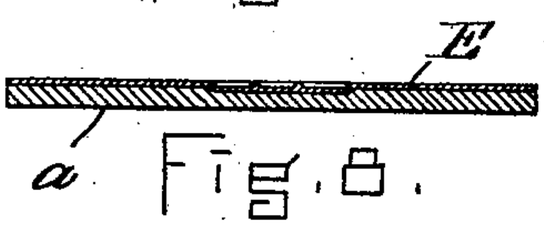

Fig. 8.

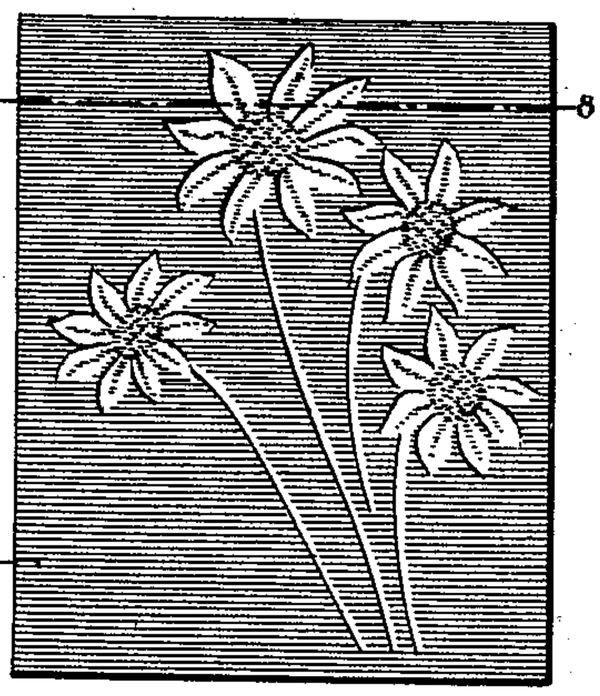

Fig. 7.

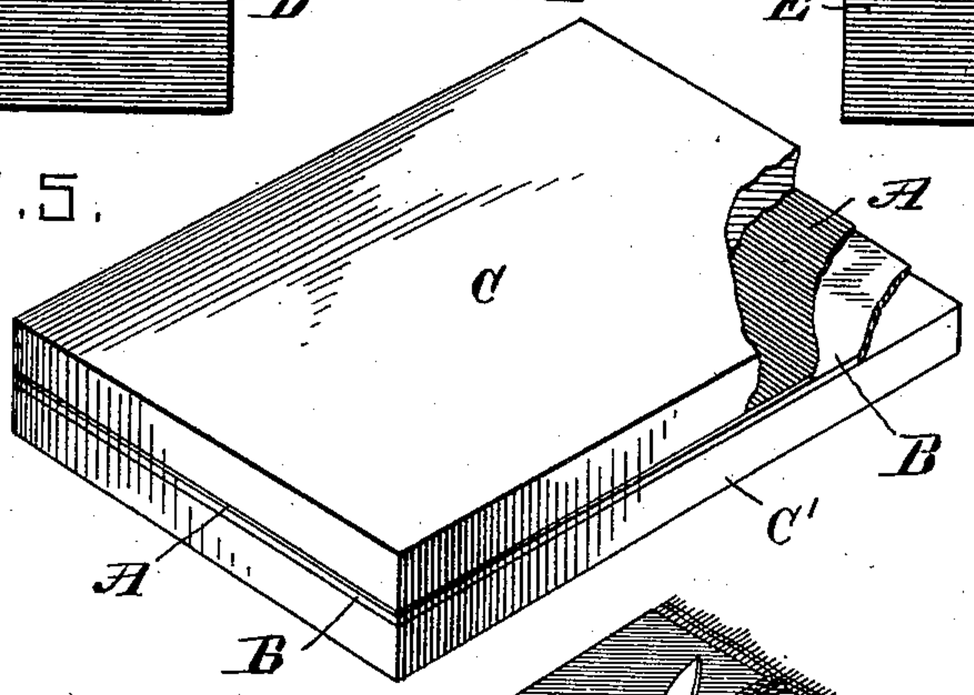

Fig. 4.

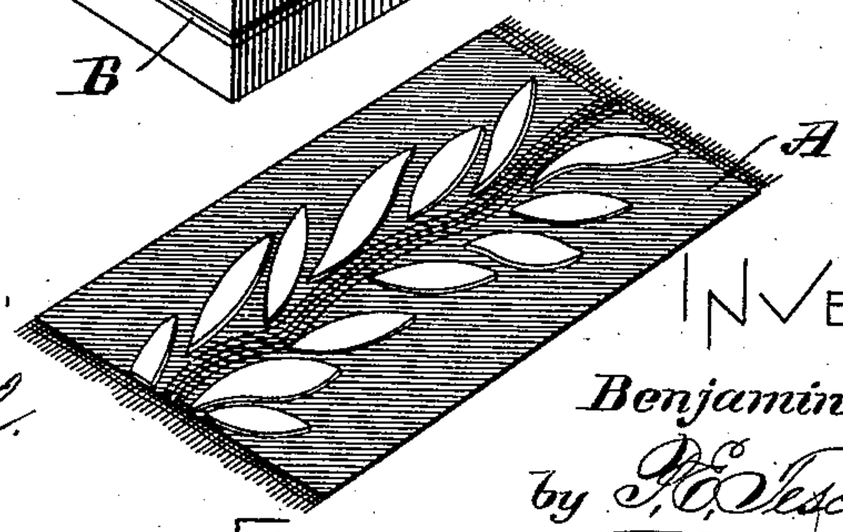

Fig. 9.

WITNESSES.

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UNITED STATES PATENT OFFICE.

BENJAMIN F. KELSEY, OF SOMERVILLE, ASSIGNOR TO THE AMERICAN SODA FOUNTAIN COMPANY, OF BOSTON, MASSACHUSETTS.

METHOD OF MAKING DIES FOR PRODUCING DESIGNS ON SOFT METAL.

SPECIFICATION forming part of Letters Patent No. 491,179, dated February 7, 1893.

Application filed June 13, 1892. Serial No. 436,584. (No specimens.)

To all whom it may concern:

Be it known that I, BENJAMIN F. KELSEY, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented an Improved Method of Making Dies for Producing Ornamental Designs on Britannia and other Soft Metals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a top view of a soft-metal plate having the pattern or design of a piece of woven fabric impressed thereon from the fabric itself, to form an intaglio mold from which to take an electro-type. Fig. 2 is a view of the soft-metal plate shown in Fig. 1 before having the design of the woven fabric impressed thereon. Fig. 3 is a view of a piece of woven fabric, the pattern or design of which is to be reproduced upon the plate shown in Fig. 2 by hydraulic or other suitable pressure. Fig. 4 represents the plate shown in Fig. 2, and the piece of fabric shown in Fig. 3 placed between two hard-metal plates, the whole being ready to be subjected to pressure to produce the effect shown in Fig. 1. Fig. 5 is a top view of a cameo electro-type die as it appears when taken from the intaglio mold shown in Fig. 1. Fig. 6 is a transverse section on the line 6, 6 of Fig. 5. Fig. 7 is a top view of an intaglio electro-type die taken from the cameo electro-type shown in Fig. 5. Fig. 8 is a transverse section on the line 8 8 of Fig. 7. Fig. 9 is a view of a piece of woven fabric having a portion of its design backed up to increase the depth of the negative counterpart taken therefrom as hereinafter referred to.

My invention relates to an improved method of producing ornamental designs on britannia and other soft metals, whereby an exact counterpart or reproduction of the woven pattern or design of a piece of textile fabric can be easily and cheaply produced upon the surface to be ornamented; and my invention consists in a novel method of making dies for producing said designs as is hereinafter fully described and specifically pointed out in the claims.

The operation of making my electro-type die is as follows: I first select a piece of textile fabric A, Fig. 3, having thereon, formed in the weave, the design or pattern which it is desired to reproduce upon the metallic surface to be ornamented. I then lay or spread this piece of woven fabric A smoothly upon the surface of a piece or plate B, (Figs. 2 and 4) of soft-metal with the pattern or right side of the woven fabric in contact with the surface of the soft metal, after which I place upon the upper surface or back of the said woven fabric a plate C of steel or other suitable hard metal or substance, as shown in Fig. 4. The plates B, C, with the piece of woven fabric A between them are then laid upon a steel plate C′ similar to the plate C, and the whole placed in a hydraulic or other suitable press or apparatus and subjected to a very heavy pressure in such manner as to cause the woven fabric to be impressed upon or against the surface of the soft metal plate B with such force as to produce thereupon a perfect fac-simile or counterpart in intaglio of the woven design or pattern of the said textile fabric, as shown in Fig. 1. After the plate B, having thereon the intaglio counterpart or fac-simile of the pattern or design of the woven fabric, is removed from the press, an electro-type is taken therefrom by suspending said plate in a decomposing trough containing the usual solution and connected with the battery or generator in the usual manner, where it is allowed to remain until the deposit is of sufficient thickness to form the face of a cameo die D, Fig. 5, which is then mounted upon a hard metal backing *a*, as seen in Fig. 6, the electro-type die thus formed being a negative counterpart of the plate B shown in Fig. 1, and from this die any desired number of impressions can be taken in the usual well-known manner at a trifling expense upon the soft-metal plates or articles to be ornamented.

The above described die D being in cameo, will when impressed upon the surface to be ornamented, produce a counterpart of the design in intaglio; when however it is desired to produce upon the surface to be ornamented, the design in cameo, an intaglio die must be employed which is made by taking a second electro-type from the one D first made from

the soft-metal plate B, said second electro-type when provided with a suitable hard backing *a*, as shown in Fig. 8, forming an intaglio die E as shown in Fig. 7, by means of which a raised or cameo reproduction of the original design of the woven fabric can be produced upon the surface to be ornamented.

Where it is desired to increase the depth of the design or any portion thereof as first produced in intaglio on the soft-metal plate B, the desired portions of the design or pattern of the woven fabric may be backed up by a suitable substance of the required thickness applied to the back of said fabric, as shown in Fig. 9, thereby increasing the depth of the negative counterpart taken therefrom by pressure as above described, beautiful and varied effects being thus easily produced.

By means of dies made by my improved process as above described, perfect fac-similes or reproductions of beautiful and elaborate designs woven upon the surface of textile fabrics of various descriptions with all the effects of light and shade found upon the original pattern on the fabric itself can be produced upon soft metal surfaces at a trifling expense, whereby I am enabled to embellish sheets of soft metal with ornamental designs that it would be impossible to produce by hand engraving or by any other method or process now known.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The process of making an electro-type die, which consists in producing on a soft-metal surface an intaglio fac-simile or counterpart of the woven pattern or design of a piece of textile fabric by impressing said fabric by hydraulic or other suitable pressure upon or against the said soft metal surface, and then taking an electro-type from said intaglio counterpart to form the die or mold in cameo, substantially as set forth.

2. The process of making an electro-type die, which consists in producing on a soft-metal surface an intaglio fac-simile or counterpart of the woven pattern or design of a piece of textile fabric by impressing said fabric by hydraulic or other suitable pressure upon or against the said soft metal surface, then taking an electro-type from said intaglio counterpart, and finally taking a second electro-type from the first electro-type to form an intaglio die or mold, substantially as described.

Witness my hand this 23d day of May, A. D. 1892.

BENJAMIN F. KELSEY.

In presence of—
P. E. TESCHEMACHER,
JOHN S. ARTHUR.