

No. 667,898.

Patented Feb. 12, 1901.

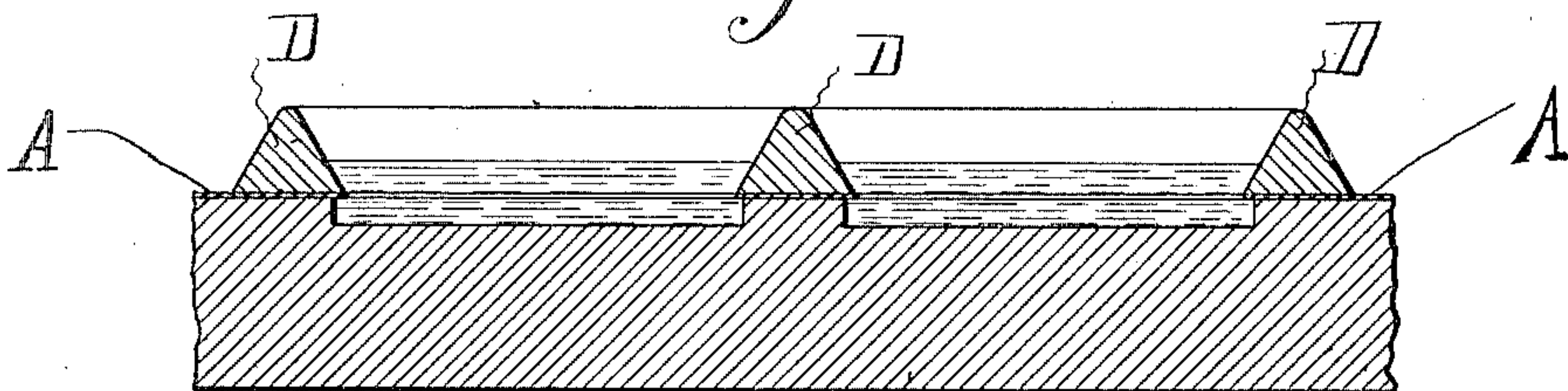
A. WILCKE.

PROCESS OF ORNAMENTS POLISHED STONE SURFACES.

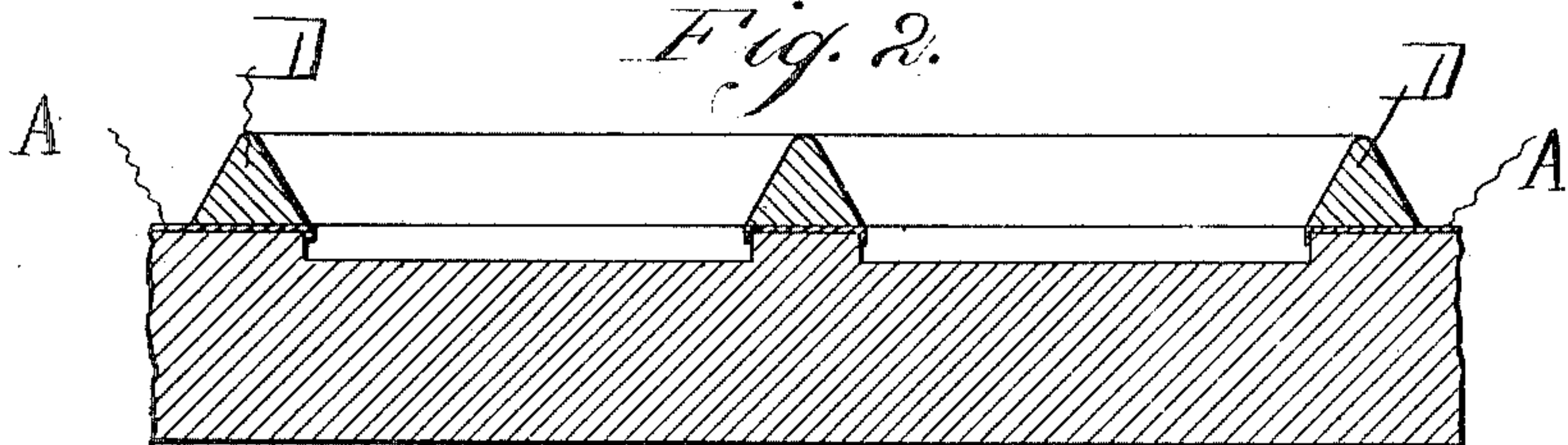
(Application filed Feb. 14, 1900.)

(No Model.)

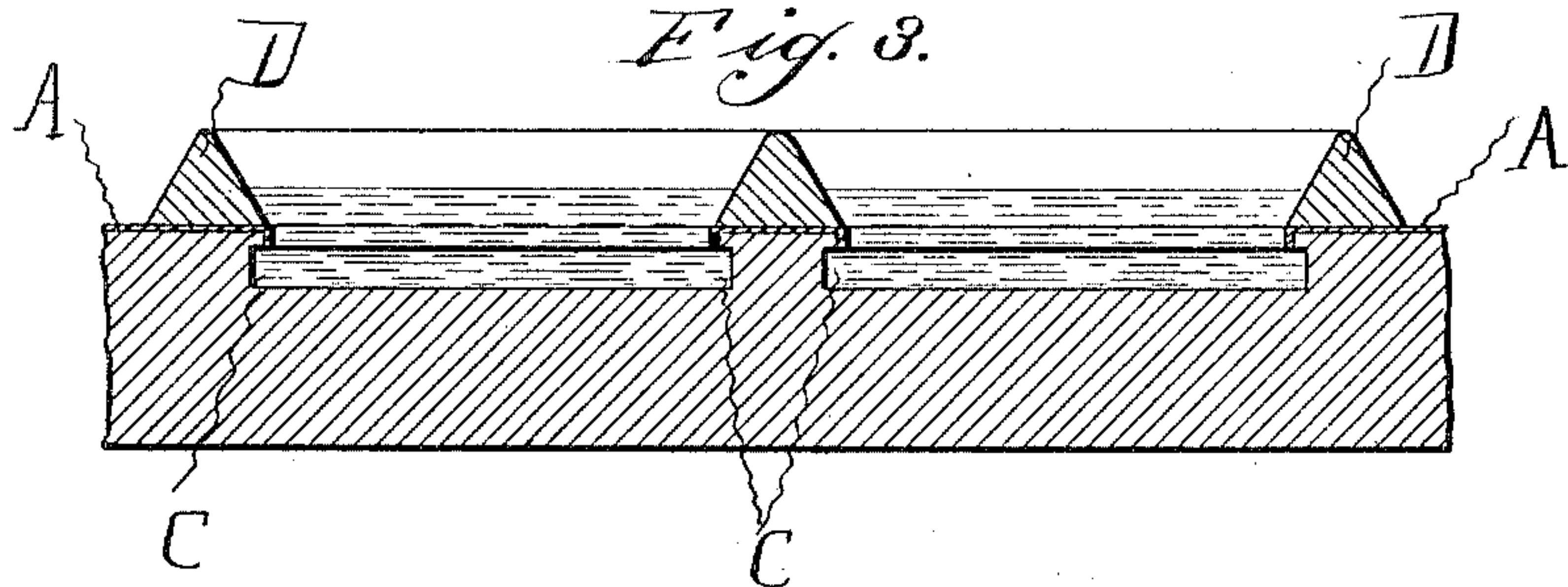
*Fig. 1.*



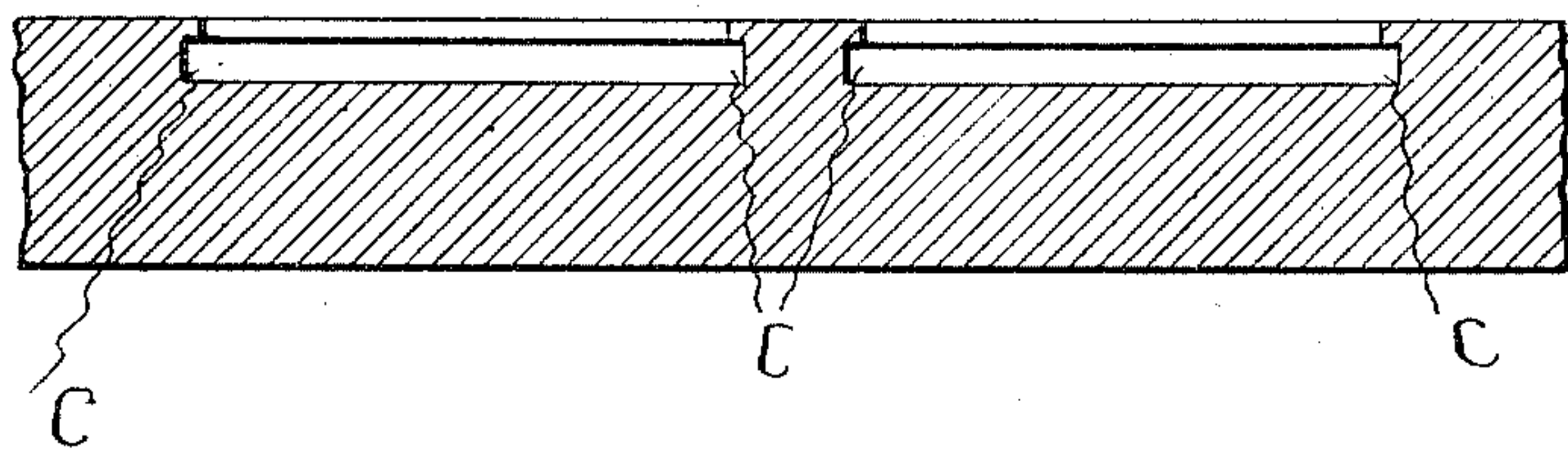
*Fig. 2.*



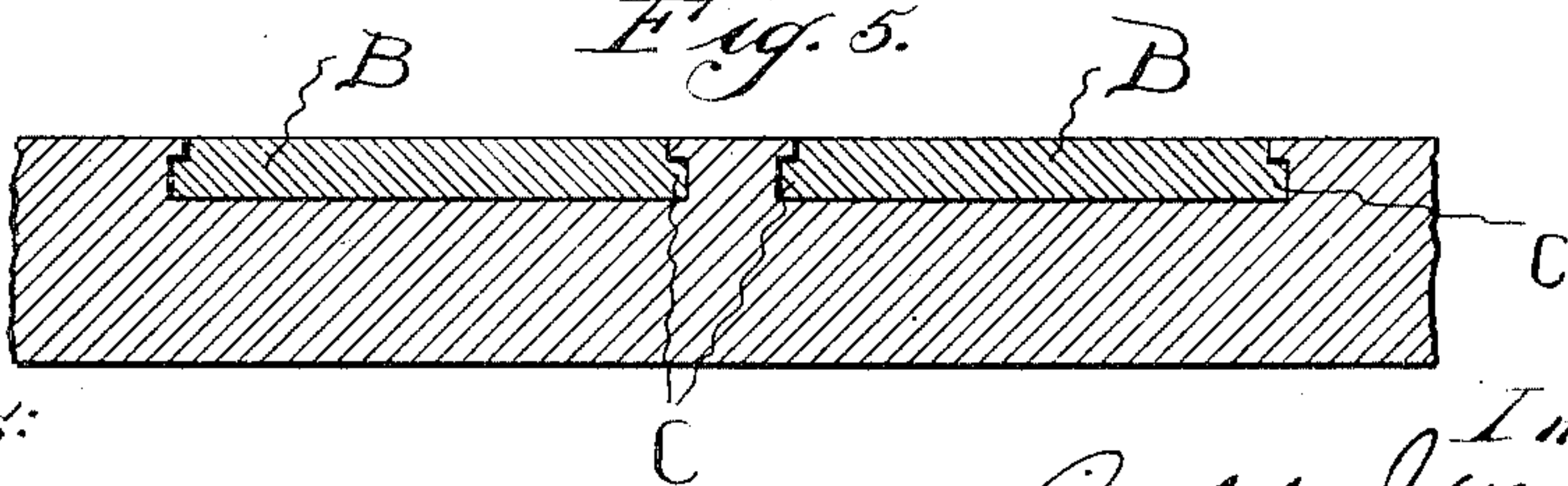
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## PROCESS OF ORNAMENTING POLISHED STONE SURFACES.

SPECIFICATION forming part of Letters Patent No. 667,898, dated February 12, 1901.

Application filed February 14, 1900. Serial No. 5,222. (No specimens.)

*To all whom it may concern:*

Be it known that I, ADOLPH WILCKE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes of Ornamenting Polished Stone Surfaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a novel process for ornamenting stone surfaces by producing designs in relief therein or in mosaic patterns, the object being to provide a process which is cheap to carry out and will produce clear-cut designs; and it consists in the various steps hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a sectional view showing the manner of building dams on the stencil to hold the etching fluid and showing the manner in which said etching fluid undercuts. Fig. 2 is a similar view showing the acid removed and the edges of the stencil bent over to protect the side walls of the recesses. Fig. 3 shows the stone etched deeper and undercut below the protected edges of the side walls. Fig. 4 shows the stone with acid and stencil removed ready to receive the plastic filling. Fig. 5 shows the finished stone, the recesses being filled in with the plastic artificial stone.

My invention consists in first providing a stencil A, of suitable metal, preferably heavy tin-foil, which is not affected by certain acids hereinafter named. The said stencil is mounted upon the surface of the stone to be treated in the following manner: The surface of the stone is first covered with a paste consisting of ten parts (by weight) yellow wax, ten parts (by weight) strained mutton-tallow, and five parts (by weight) raw linseed-oil. This mixture, which is non-drying and adhesive, is applied in any suitable manner, the under side of the stencil being likewise coated therewith. Said stencil is then laid upon the coated surface of the stone and pressed smooth and in uniform contact by means of a rubber roller, such as is used by paper-hangers. The wax covering the stone in the interstices in said stencil is then removed in any suitable manner, but preferably by means of plaster-of-

paris and a stiff brush, of broom-corn. Acid may then be applied in said interstices to eat out the stone, the acids used being either muriatic, nitric, or fluoric, or mixtures of said acids. In order to admit the use of a large quantity of acid to obviate the necessity of frequent renewal, the edges of the stencil or the entire solid surface thereof may be covered to any desired depth, as at D, with a compound consisting of yellow wax and pine-tar, about half of each, thus forming deep recesses to receive the acid. Said acid is left until the stone has been eaten out the desired depth and is then drawn off by means of a rubber syringe. Water is then poured in and the recesses formed in the stone thoroughly washed out and dried. The said interstices may then, if desired, be colored by application of enamels or gold or bronze paints, or, if so desired, filled with artificial stone B in plastic condition. As soon as said color is sufficiently dry the stencil is removed and the mixture still coating the stone where protected by the stencil removed by means of a soft cloth.

When it is desired to introduce artificial stone in the recesses, the latter are etched very deeply and laterally, as at C, so that the recesses are wider at the bottom than at their orifices. The artificial stone is then introduced in plastic condition, this being preferably done after removing the stencil, and said artificial stone filled in higher than the surrounding surface, and after hardening the entire surface is leveled and polished, thus producing a handsome mosaic effect.

The above process may also be carried out by coating the stone with varnish, then applying the stencil, then removing the varnish in the interstices by means of turpentine or alcohol and fusel-oil and thereafter applying acids, as above described; and then after removing the stencil removing the varnish by means of said same substances. This mode of procedure is, however, more expensive than my present process and is objectionable also, for the reason that the acid used in finally removing the varnish after removal of the stencil also affects colors, and where the latter are used to form a background for the design great care must be exercised in removing the varnish. Should such decoration be unsatis-



factory in any way—that is, that the recesses in the stone are not sufficiently deep or a change of color of the background is desired—this can be readily remedied in the following manner: The color may be removed by means of turpentine or alcohol and fusel-oil. The stone is then thoroughly scrubbed with soap and water and dried. Then a thin sheet of tin is coated on one side with the mixture first above given and said coated side laid upon the stone and pressed upon same by means of said roller, thereby causing said wax to adhere to the stone wherever it is pressed upon same, thus obviously coating only the projecting portions or design and leaving the openings or recesses clear, the wax not pressed upon stone remaining on the tin when the latter is removed. The stencil is then replaced, and thereupon the recesses may be colored as desired or etched out still further.

To produce a deep etching for the purposes of inlaying, as hereinbefore described, I preferably cut my stencil so that all edges of the design are extended one-eighth of an inch, thus covering so much more space on the stone to be etched. As soon as the acid has etched to the depth of one-sixteenth of an inch it begins to undercut or eat away under the stencil just as rapidly as it etches in depth, so that at a depth of three-sixteenths of an inch the acid will have etched one-eighth of an inch under the stencil, or to the lines actually desired for the design on the stone. The acid is then removed and the edges of the stencil bent down to cover the side walls of the recesses produced, and a fresh supply of acid is then poured into the recesses. This will continue to eat away all parts of the stone not protected by the stencil. As soon as the desired depth has thus been attained the acid is again removed, the stencil also removed, the stone thoroughly cleansed, and the filling of plastic artificial stone pressed in. The entire surface is then smoothed off and polished as soon as the artificial stone becomes hard.

I claim as my invention—

1. The process of etching stone and the like, which consists in first cutting a stencil of a soft metal containing the design to be reproduced on the stone, the interstices in said stencil being of less area than the corresponding recesses to be produced in the stone applying said stencil to the surface of said stone by means of an adhesive acid-proof compound, applying an etching fluid in the interstices in said stencil, and etching out said stone to a given depth and to a given extent underneath said stencil, then removing said etching fluid, bending down the edges of said stencil to protect the side walls of said recesses, then reapplying the etching fluid to etch said recesses to a greater depth and to undercut same below the said protected walls, then again removing said etching fluid, removing the stencil, cleaning the stone, filling said recesses

with plastic artificial stone, allowing the latter to harden and then smoothing and polishing the entire surface of the stone.

2. The process of ornamenting stone, which consists in coating the same with a non-drying adhesive compound, removing portions of the coating from the stone to correspond or follow a predetermined pattern, forming walls about said removed portions outlining said pattern, applying an acid to said stone in the removed portions and within said walls which thereby act as reservoirs to retain the acid, said acid eating into and forming recesses in the stone, removing the acid and washing the exposed portions of the stone, removing the pattern and cleaning the surface covered thereby.

3. The process of ornamenting stone, which consists in coating said stone with a non-drying, adhesive, acid-proof compound, applying a pattern to said stone, said pattern being retained thereon by means of the compound, the interstices in the pattern being of less area than the corresponding recesses to be produced in the stone, removing the compound from those portions of the stone left bare by the interstices of the pattern, applying an etching fluid to said uncovered portions and etching out said stone to a certain depth and to a certain extent underneath said pattern, removing the etching fluid and bending down the edges of said pattern to protect the side walls of the recesses from the acid, reapplying the etching fluid to etch said recesses to a greater depth and to undercut them below the said protected walls, whereby recesses are formed in said stone of greater width at their bottoms than at their orifices, removing the acid, removing the pattern, cleaning the recesses and stone, filling said recesses with a plastic artificial stone, allowing said stone to harden and then leveling the entire surface uniformly whereby a mosaic or inlaid effect is produced, substantially as described.

4. The process of ornamenting stone, which consists in coating the same with a non-drying adhesive acid-proof substance, removing portions of the coating from the stone by means of plaster-of-paris and a stiff brush to correspond or follow a predetermined pattern, forming walls about said removed portions, applying an acid to the stone in the removed portions and within said walls which thereby act as reservoirs to retain the acid, said acid eating into and forming recesses in the stone, removing the acid and washing the exposed portions of the stone, and cleansing the entire surface of the stone from the coating.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLPH WILCKE.

Witnesses:

RUDOLPH WM. LOTZ,  
E. F. WILSON.