

No. 815,001.

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E. ALBERT.
PROCESS OF MAKING MATRICES.
APPLICATION FILED APR. 22, 1905.

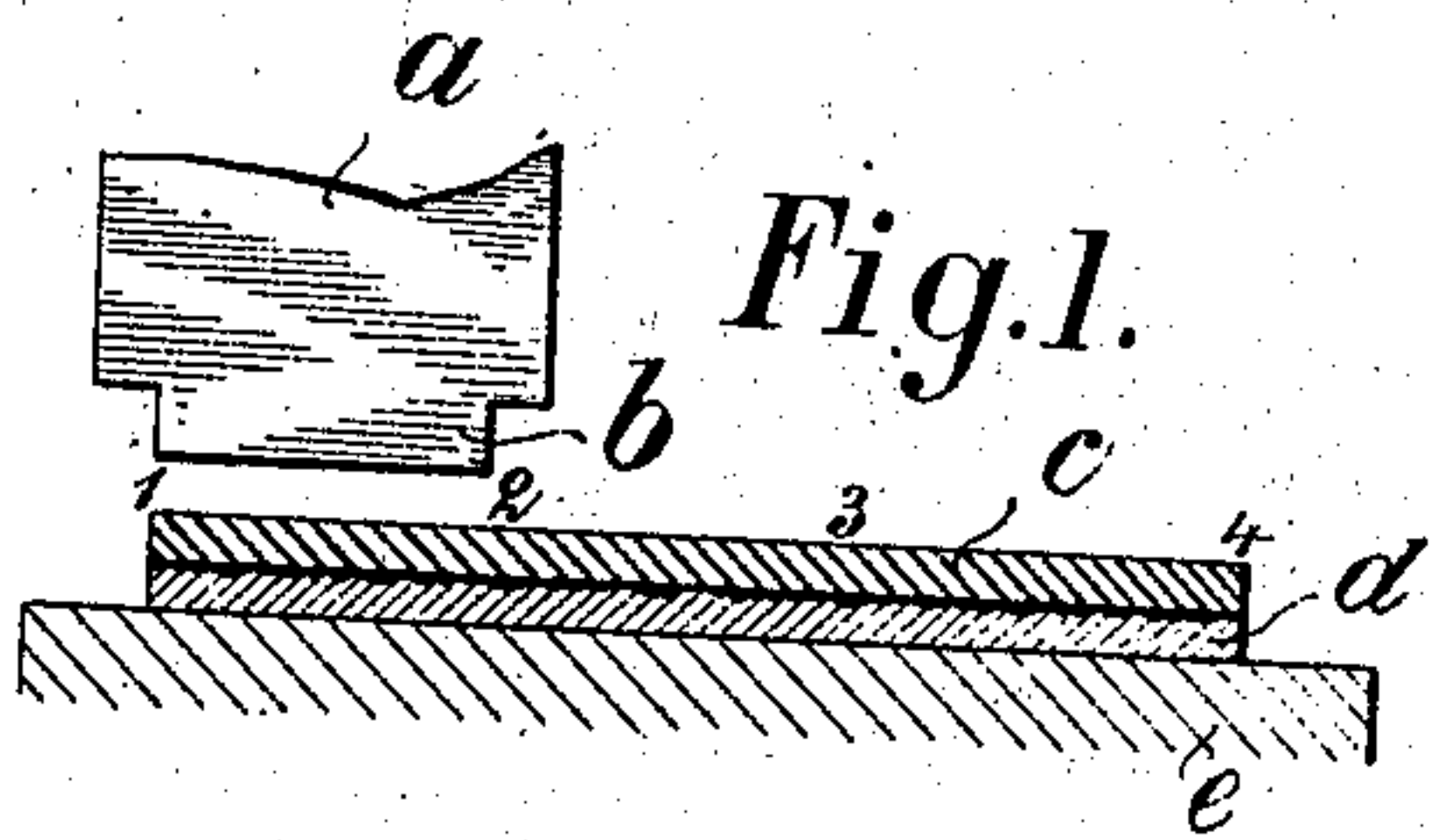


Fig. 1.

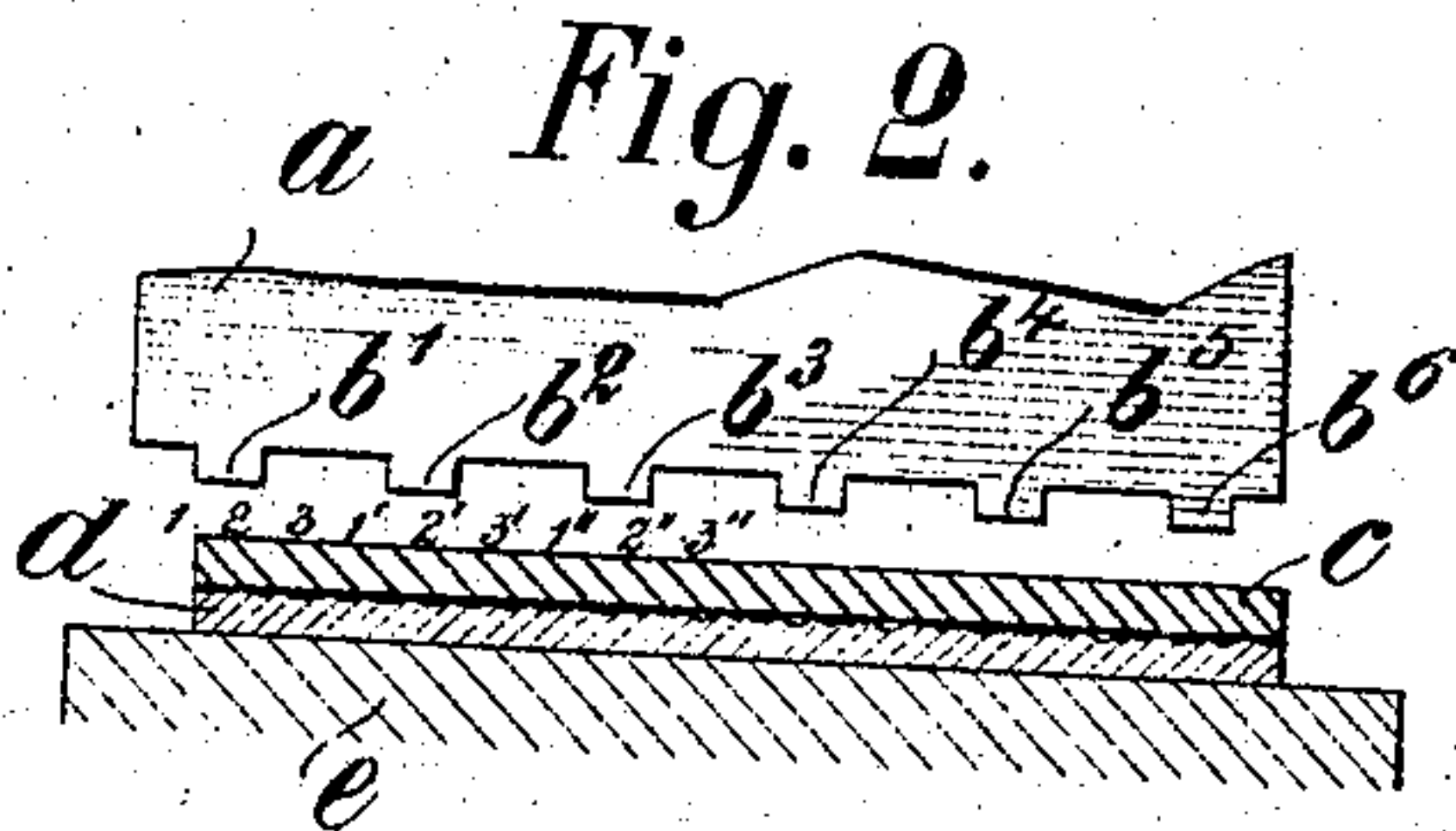


Fig. 2.

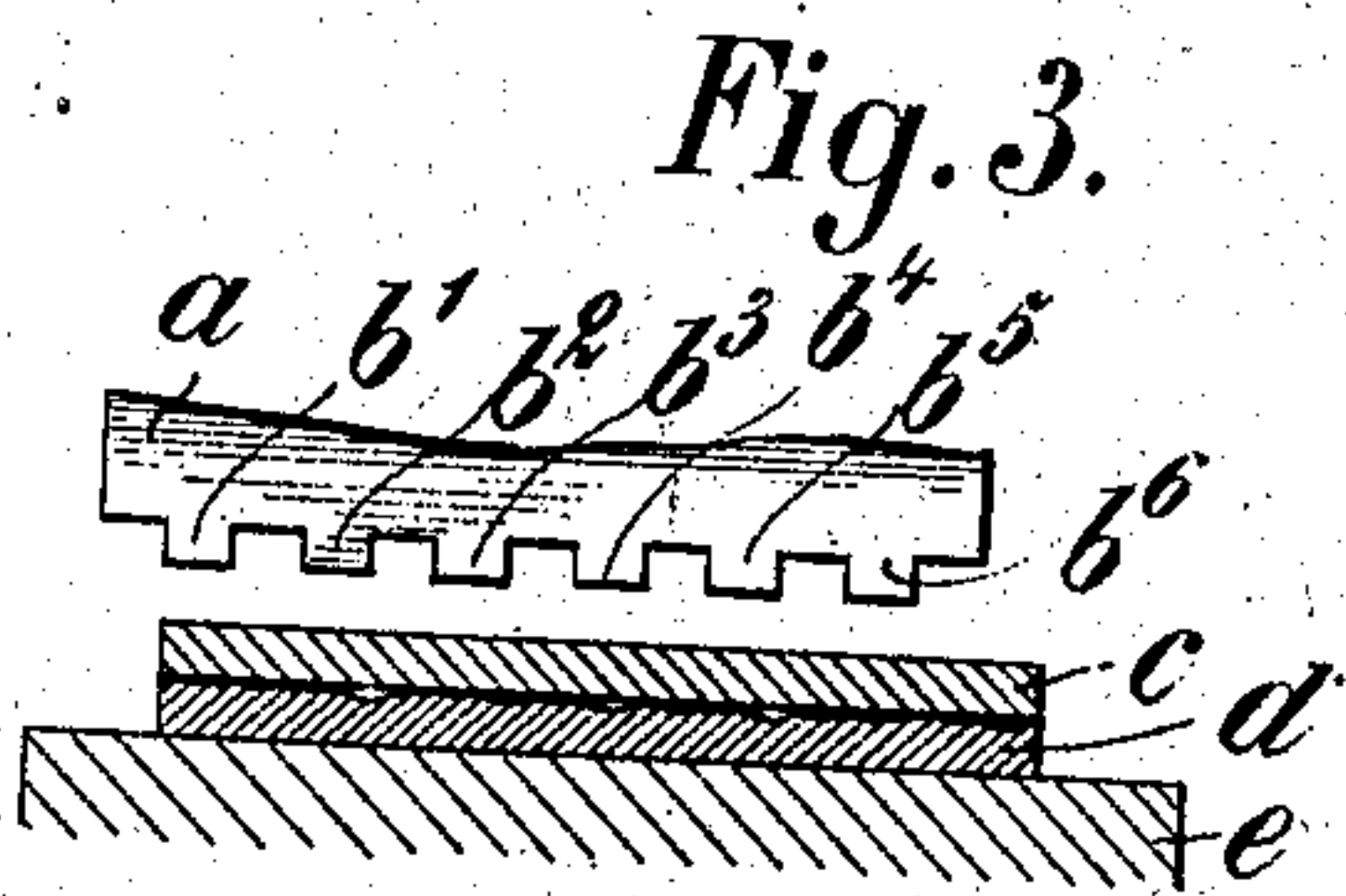


Fig. 3.

Fig. 4.

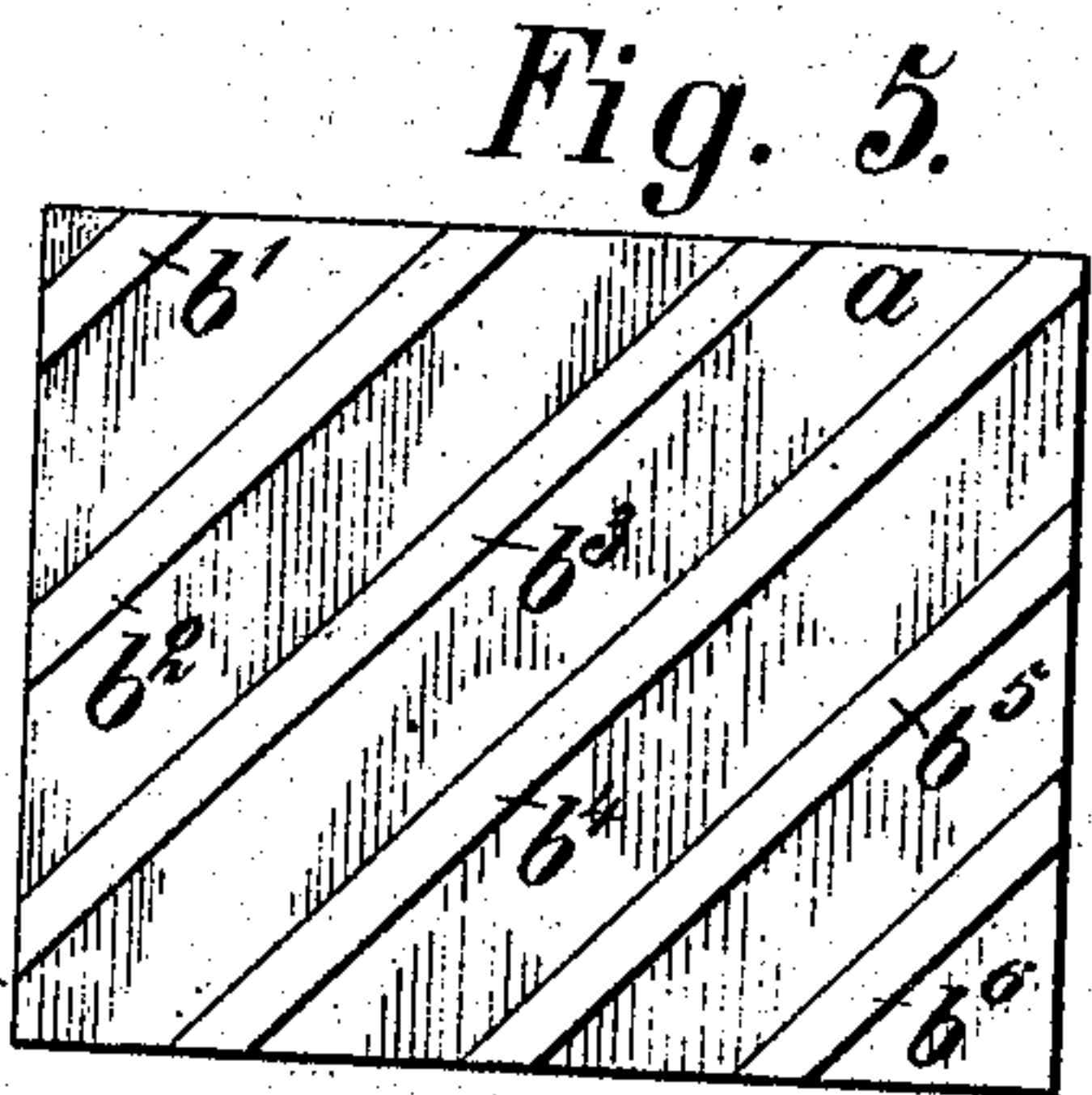
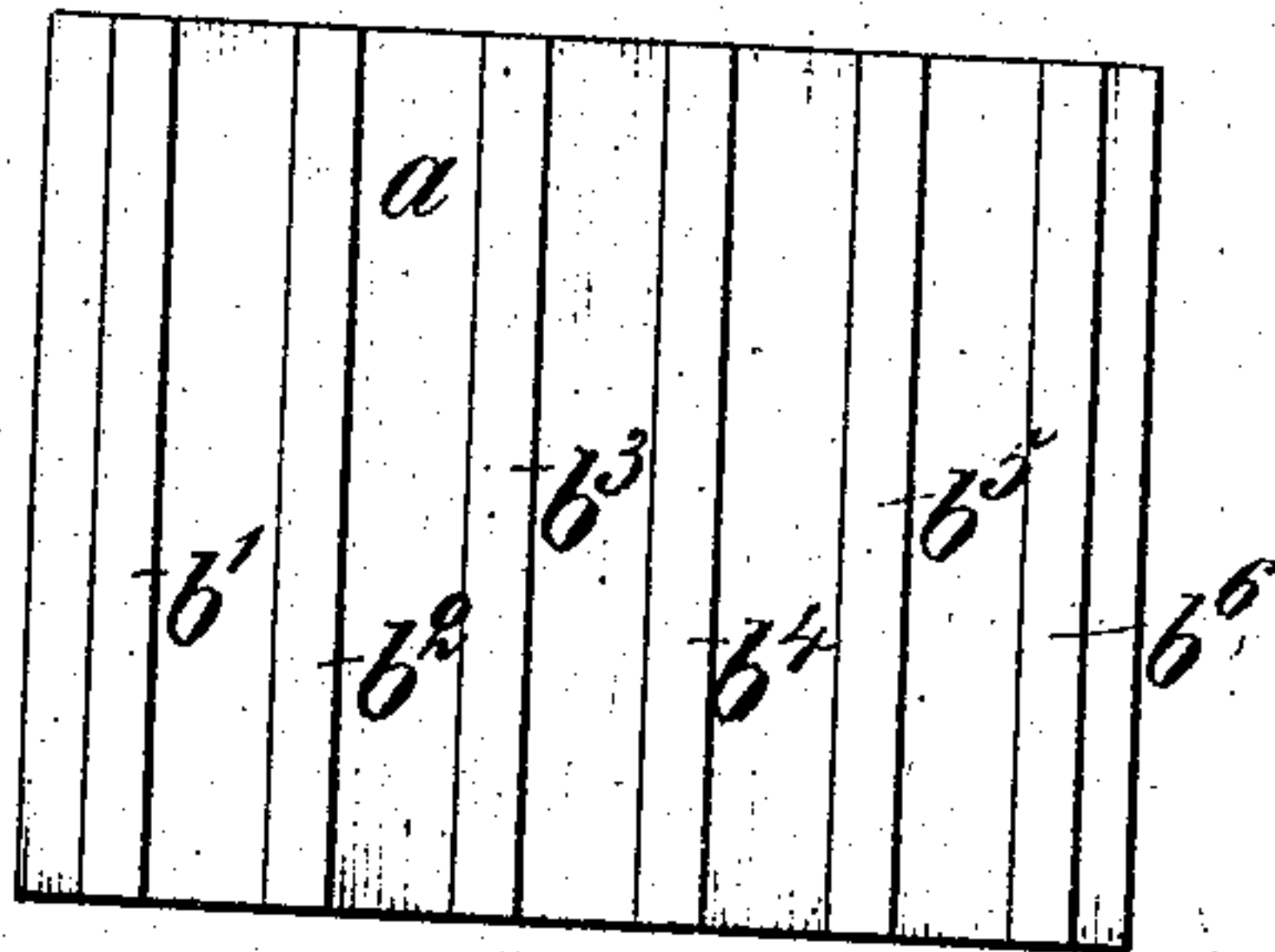


Fig. 5.

Fig. 7.

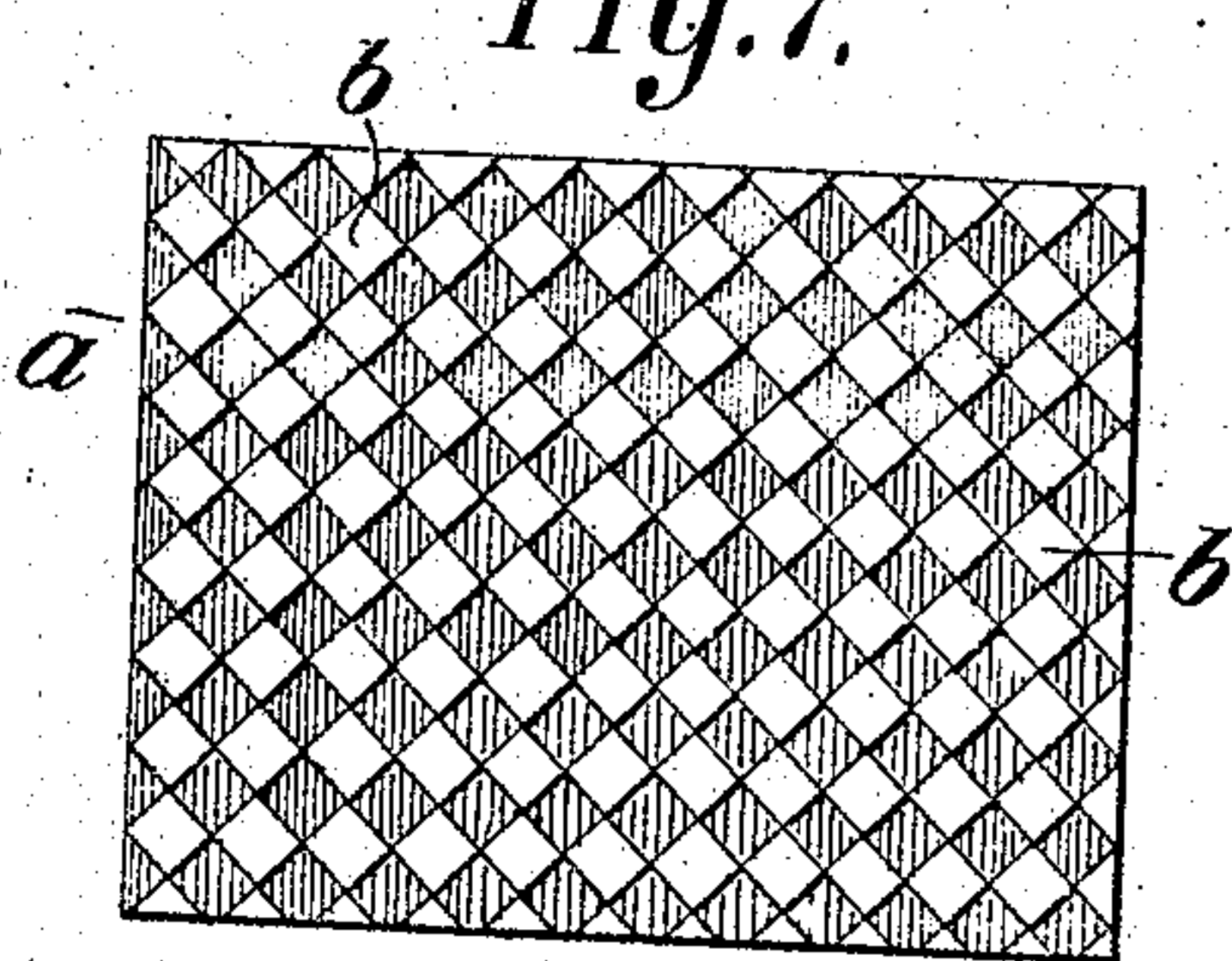


Fig. 6.

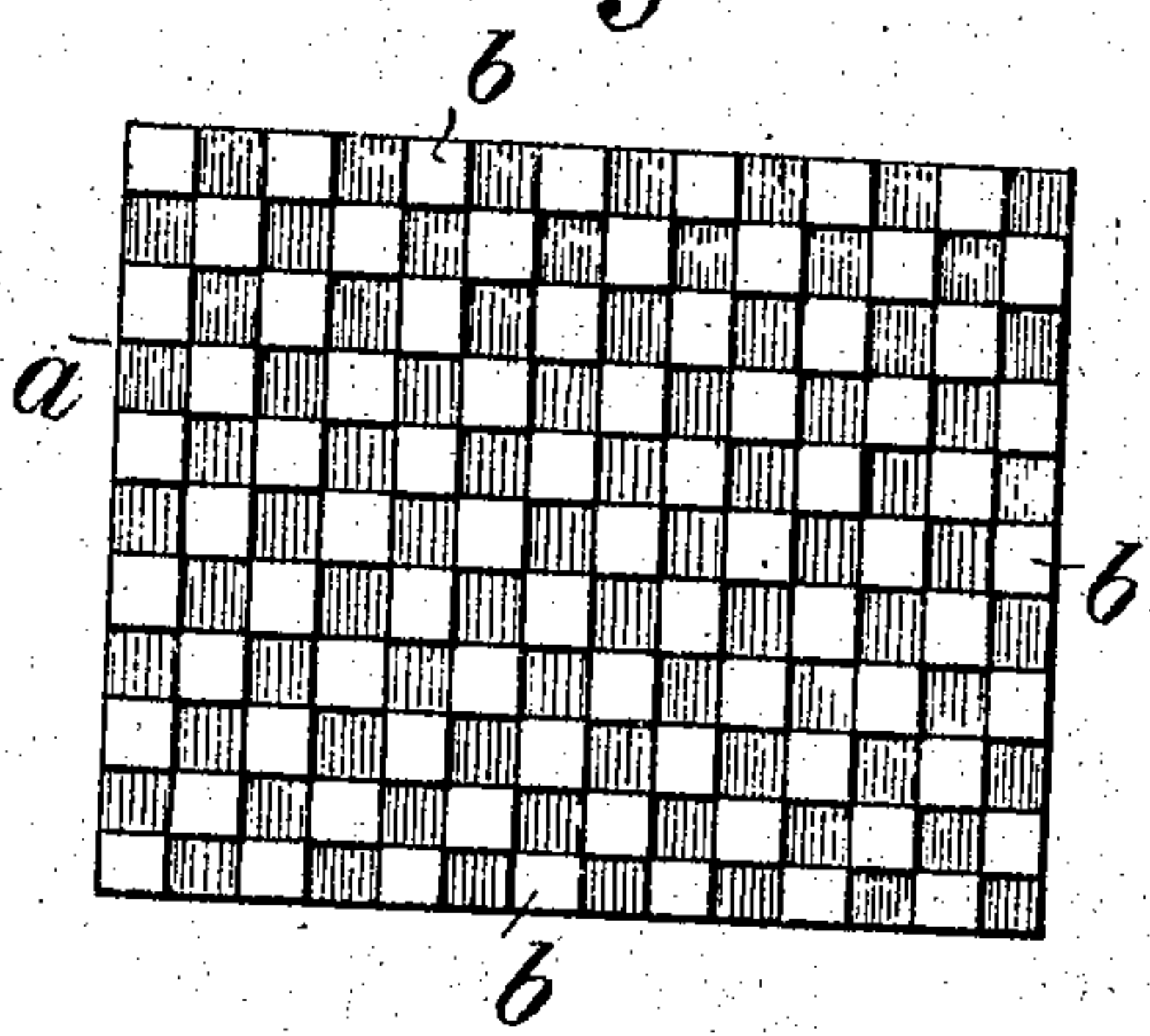


Fig. 8.

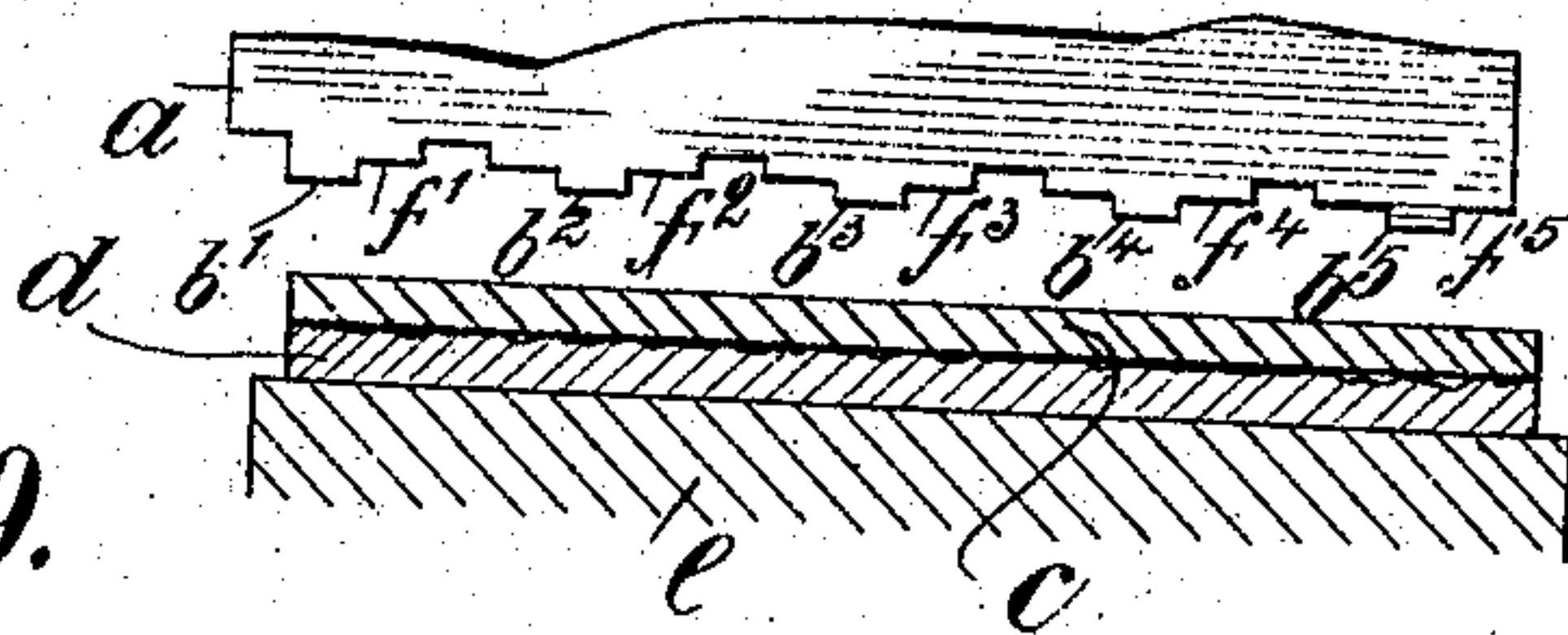
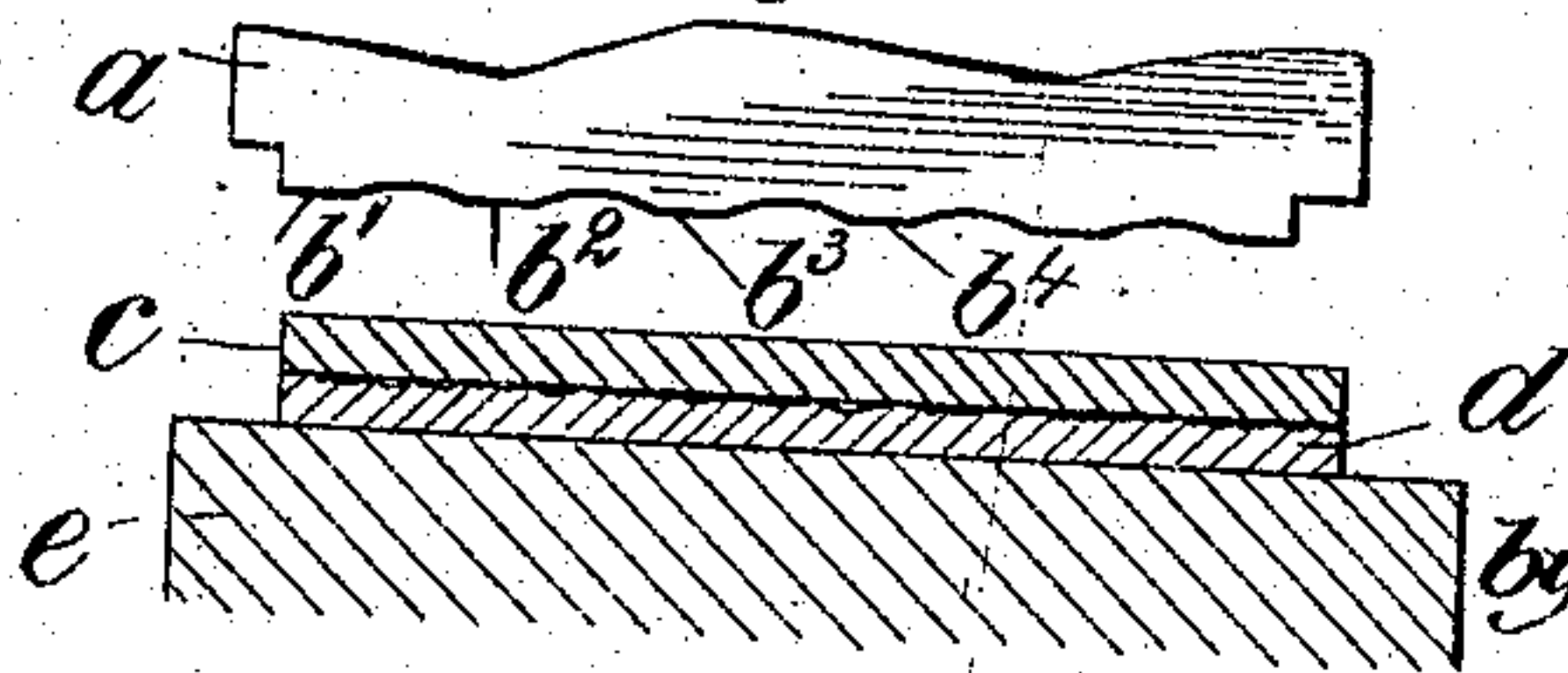


Fig. 9.



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UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING MATRICES.

No. 815,001.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed April 22, 1905. Serial No. 256,855.

To all whom it may concern:

Be it known that I, EUGEN ALBERT, a subject of the King of Bavaria, residing at 55 Schwabingerlandstrasse, Munich, in the Kingdom of Bavaria, Germany, have invented certain new and useful Improvements in Processes of Making Matrices, of which the following is a specification.

This invention relates to a pressing process which is specially adapted for pressing molds or matrices for the copying by electrodeposition of printing blocks or forms, autotypes, wood blocks, &c.

In the methods of pressing heretofore employed the surfaces of the press which exert the pressure are always greater than the surfaces subjected to the pressure of the material to be pressed. Since the force of the pressure to be exerted increases directly with the increase in area of the surface to be pressed, very heavy expensive presses would be required for relatively small sizes, and it would not be possible to go beyond a certain size. According to the present invention this disadvantage is obviated in that the whole of the surface to be treated is not subjected at once to the pressure of the press, but the press acts successively on separate parts of the surface to be treated until the whole surface has been pressed.

In the drawings, Figure 1 shows diagrammatically a device serving for carrying the method into practice with one pressing-surface on the punch. Figs. 2 and 3 show constructional forms with several pressing-surfaces. Figs. 4 to 7 show in under side view various constructional forms of the punch. Figs. 8 and 9 show modifications of the punch with several pressing-surfaces.

In the example of construction shown in Fig. 1 the punch *a* is provided with one pressing-surface *b*. The plate *c* to be pressed rests on the printing-block *d* to be copied, which itself rests on the support *e*. The surface to be pressed of the plate *c* in the example shown is three times the width of the pressing-surface *b* of the punch *a*. The plate must accordingly be pressed three times. In the descent of the punch *a* the surface 1 2 is first pressed. Then by moving the plate *c* and block *d*, or the support *e* with the plate *c* and block *d*, or the punch, or finally the latter and the plate *c* and block *d*, the surface 2 3 of the plate *c* is brought beneath the punch

a, so that on the descent of the said punch this surface 2 3 is pressed, and finally, after one or the other of the two parts, or both, have been again moved in the same manner, the pressing of the surface 3 4 takes place.

In Fig. 2 a constructional form is shown in which the punch *a* is provided with six pressing-surfaces *b'* *b*² to *b*⁶. Between these are spaces which are of double the width of the pressing-surfaces, so that in this case also the plate *c* must be pressed three times. In the descent of the punch *a* into the position shown the surfaces 1 2, 1' 2', 1'' 2'', &c., are pressed. After moving one or other of the two parts, or both, the pressing of the surfaces 2 3, 2' 3', &c., takes place, and finally, after again moving one or other of the said parts, or both, the pressing of the surfaces 3 1', 3' 1'', &c.

Fig. 3 shows another constructional form of the punch, in which the spaces between the pressing-surfaces *b'* *b*² to *b*⁶ have the same widths as these surfaces, so that only two pressings of the plate *c* are required. In this case moving of the punch or of the plate *c*, or both, after the first pressing can be avoided if after this first pressing a plane presser-plate is introduced between the punch *a* and the plate *c*. This presser-plate will lie on the parts of the plate *c* which are left elevated in the first pressing and compress them when the punch *a* descends on the intercalated presser-plate.

The pressing-surfaces of the punch can be of various forms. In the constructional forms shown in Figs. 4 and 5 they have the form of narrow strips, which lie parallel or obliquely to the lateral edges of the punch *a*. The pressing-surfaces can also be arranged like the squares in a chess-board, as shown in Figs. 6 and 7. The width of the pressing-surfaces can likewise be varied to suit different purposes. For the pressing of matrices for electrotypes when employing punches of the forms shown in Figs. 4 to 7 a width of the pressing-surfaces of about three millimeters has been found advantageous. If soft material—for example, lead—is employed, which is used for the production of matrices for electrotypes, this material has a tendency to yield laterally under the pressure exerted by the pressing-surfaces. This is preferably to be prevented by exerting an additional pressure on the material, this pressure being supplementary to that exerted by the pressing-

surfaces of the punch, since so long as the material is in a position to yield the details of the printing block or form *d*, which require the greatest pressure, can never be printed with the necessary sharpness, since the effects of a pressure can never be greater than the resistance opposed thereto.

In the employment of lead or the like the pressure exerted on a definite point will obviously not appear over the whole mass of the material, but only in the immediate neighborhood of the place where the pressure is exerted. It is therefore sufficient if the pressure additional to the main pressure be exerted only in this zone of yielding. For this purpose, as shown in Fig. 8, in addition to the pressing-surfaces b' b^2 to b^5 of the punch *a*, additional pressing-surfaces f' f^2 f^3 can be provided, which recede somewhat from the main pressing-surfaces. Thus during the penetration of the main pressing-surfaces into the plate *c* the material below the main pressing-surfaces will yield laterally and will accordingly rise up at the sides of the said main pressing-surfaces, will strike against these auxiliary pressing-surfaces, and will be thereby prevented from yielding further, so that in the further descent of the punch the material below the main pressing-surfaces will be sufficiently compressed to obtain a sharp impression in the finest details.

Instead of arranging the auxiliary pressing-surfaces in steps, as shown in Fig. 8, they may be made continuous with the main pressing-surfaces, Fig. 9, and gradually recede inward.

The action of the auxiliary pressing-surfaces can be assisted by introducing a soft elastic layer between the punch and the plate to be pressed.

What I claim is—

1. The process of forming matrices or molds for use in copying printing blocks or forms, autotypes, wood blocks and the like, which process consists in placing the matrix-plate and form together, advancing the matrix-plate and form between the pressing-surfaces by an intermittent movement, and compressing a portion of the plate between the successive movements thereof.

2. The process of forming matrices or molds for use in copying printing blocks or forms, autotypes, wood blocks and the like, which process consists in placing the matrix-plate upon the form, advancing the matrix-plate and form between the pressing-surfaces by an intermittent movement, and com-

pressing different portions of the plate each time the plate comes to rest between the successive movements thereof.

3. The process of forming matrices or molds for use in copying printing blocks or forms, autotypes, wood blocks and the like, which process consists in placing the matrix-plate upon the form, compressing a portion of the matrix-plate while stationary, then moving said plate and form relatively to the pressing-surface in order to bring another portion of said plate within range of the pressing-surface, stopping the plate and form and compressing said other portion of the plate.

4. The process of forming matrices or molds for use in copying printing blocks or forms, autotypes, wood blocks and the like, which process consists in compressing a portion of the matrix-plate by a main pressure and applying a supplemental pressure to said plate adjacent to the portion subjected to the main pressure to offset the lateral yielding of said plate.

5. The process of forming matrices or molds for use in copying printing blocks or forms, autotypes, wood blocks and the like, which process consists in compressing a portion of the matrix-plate by a main pressure, applying a supplemental pressure to said plate adjacent to the portion subjected to the main pressure to offset the lateral yielding of said plate, moving said plate relatively to the pressing-surface in order to bring another portion of said plate within range of the pressing-surface, and applying a main pressure and a supplemental pressure to another portion of the plate as before and so on until said plate has received the complete impression.

6. The process of forming matrices or molds for use in copying printing blocks or forms, autotypes, wood blocks and the like, which process consists in employing a yielding layer between the pressing-surface and the matrix-plate, pressing a portion of the matrix-plate by a main pressure, and applying a supplemental pressure to said plate adjacent to the portion subjected to the main pressure to offset the lateral yielding of said plate.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EUGEN ALBERT.

Witnesses:

ABRAHAM SCHLESINGER.
ULYSSES J. BYWATER.