

(No Model.)

3 Sheets—Sheet 1.

D. H. LENTZ & A. W. THOMPSON.

ROLLS FOR FORMING CONNECTING PLATES FOR RAIL JOINTS.

No. 481,697.

Patented Aug. 30, 1892.

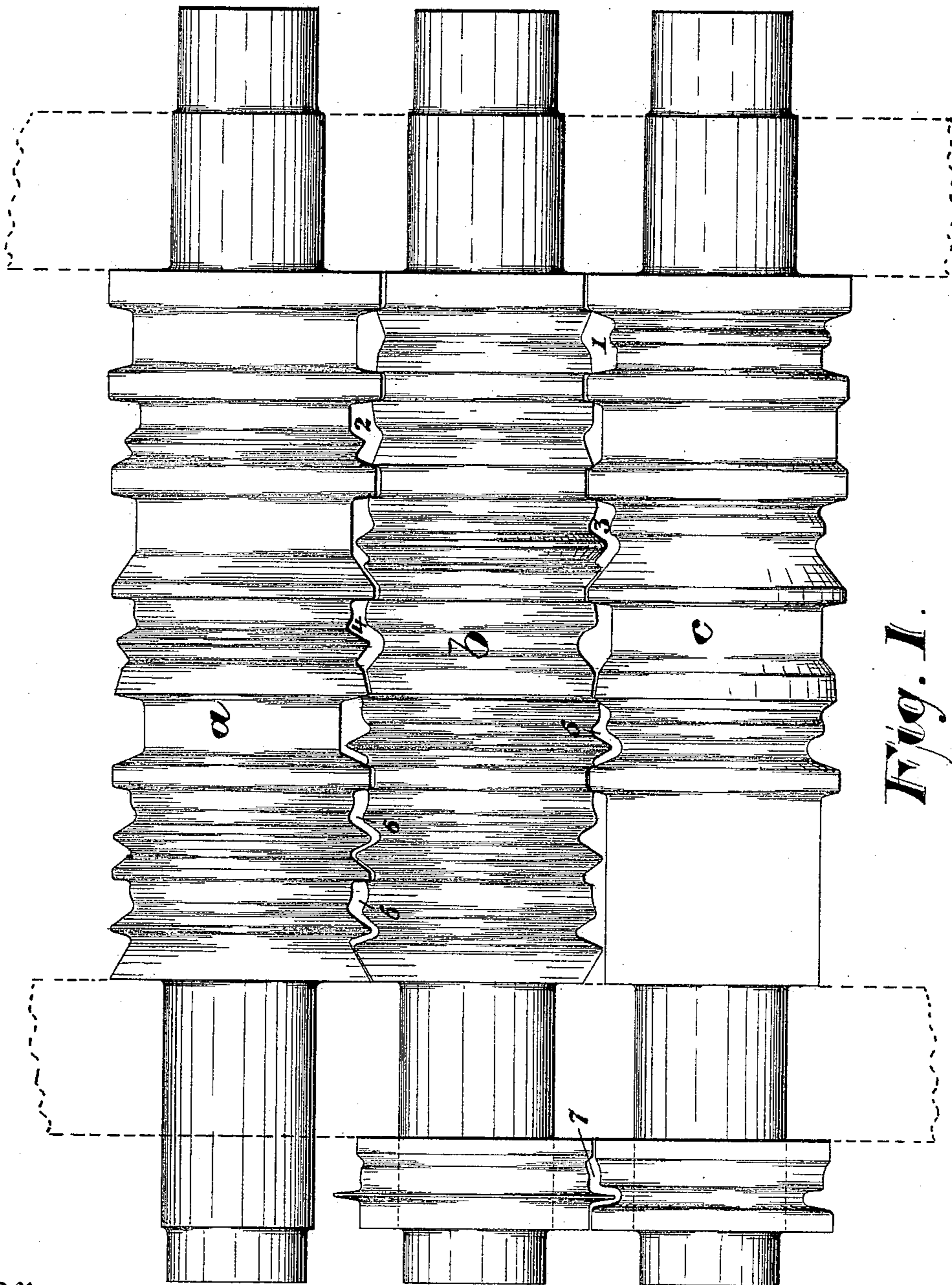


Fig. 1.

Witnesses

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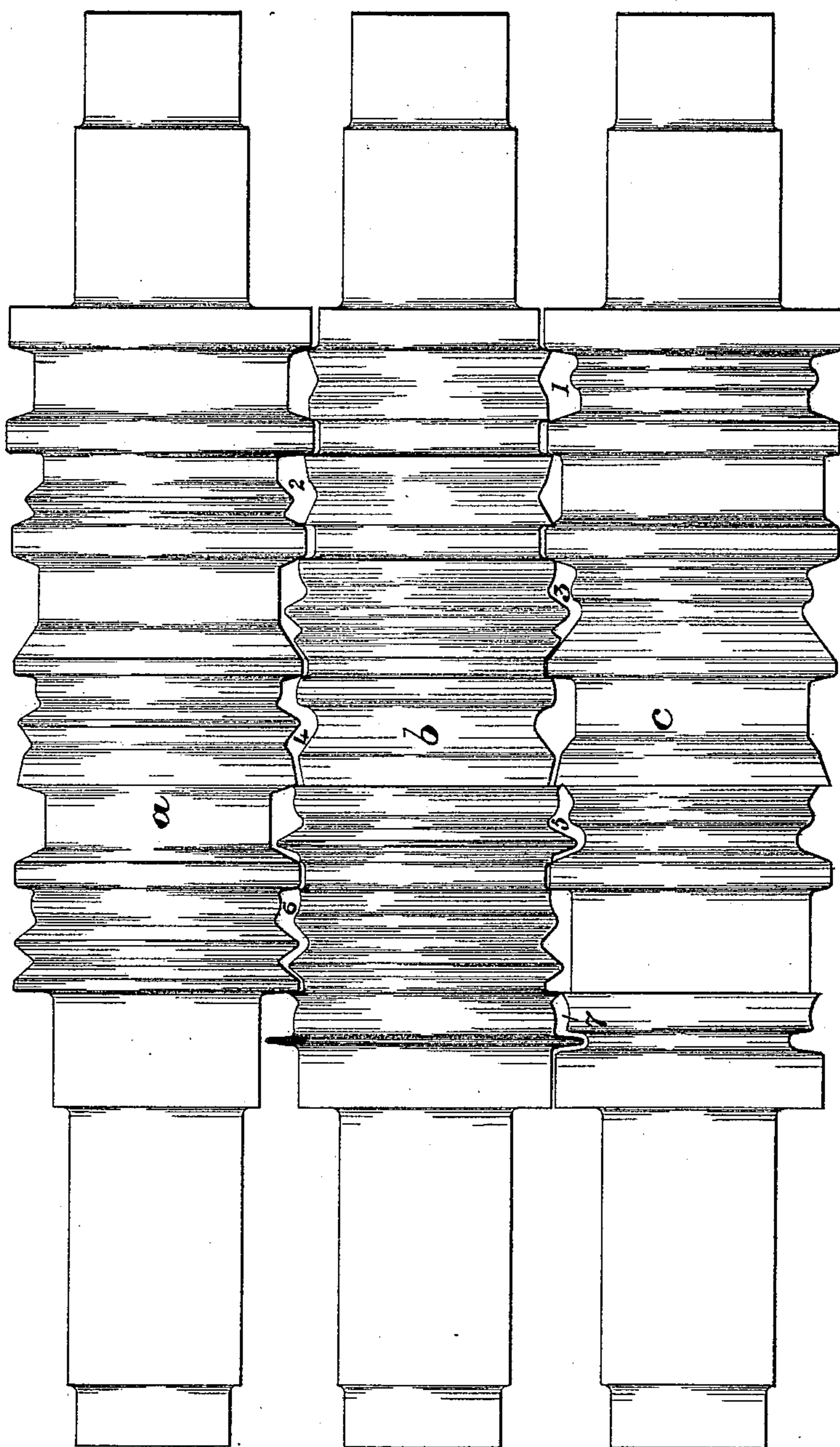


Fig. 2.

Witnesses

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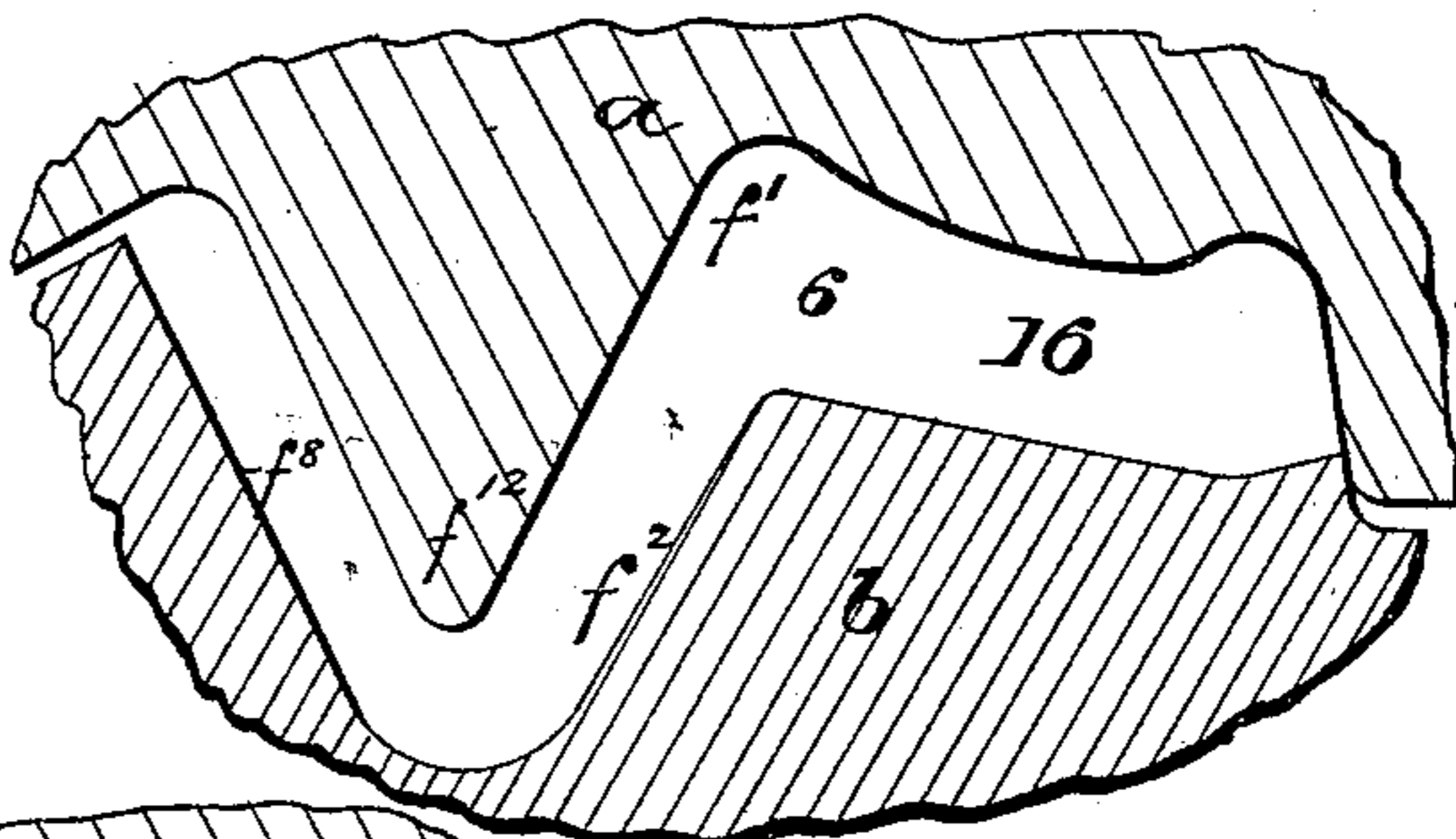
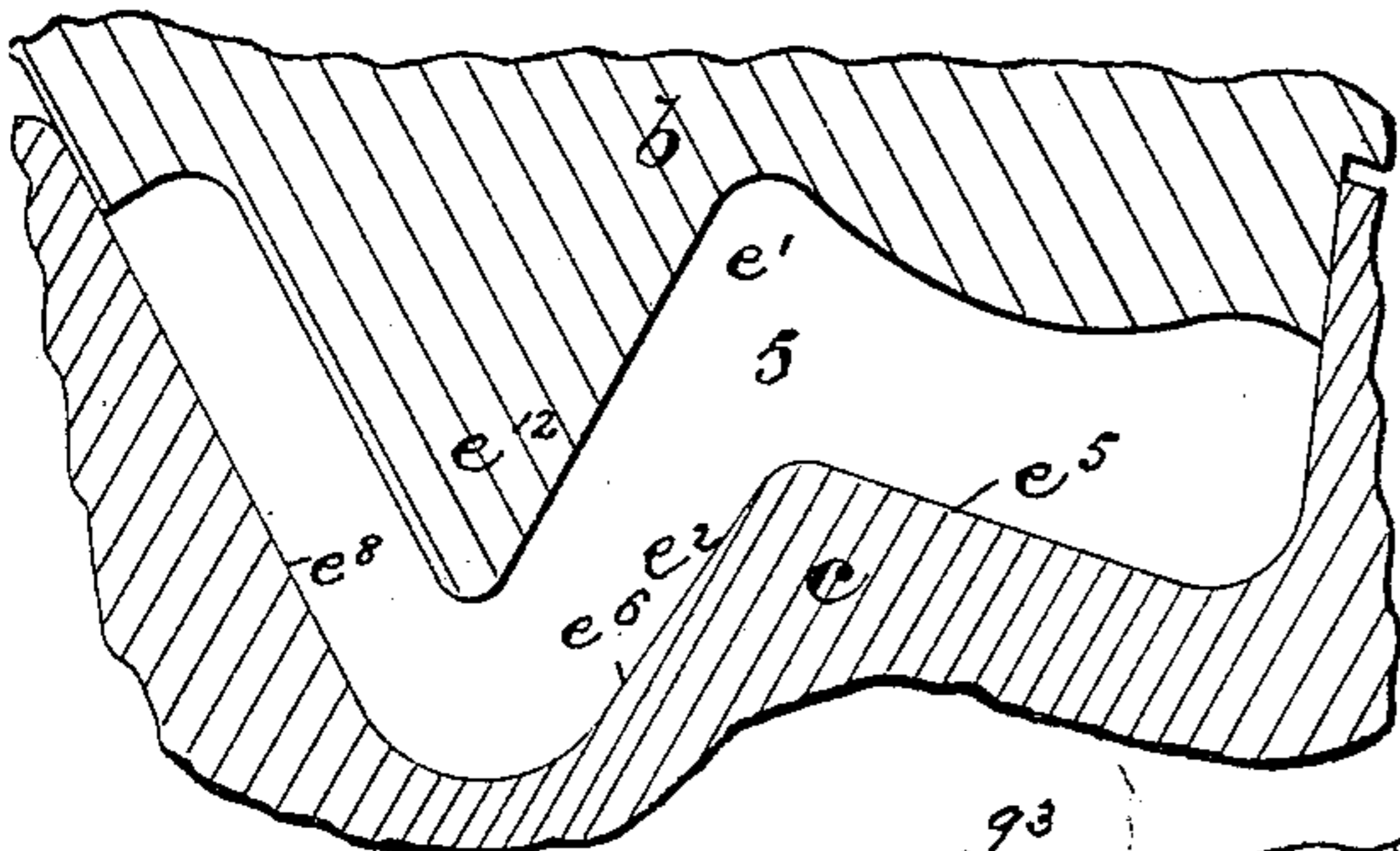
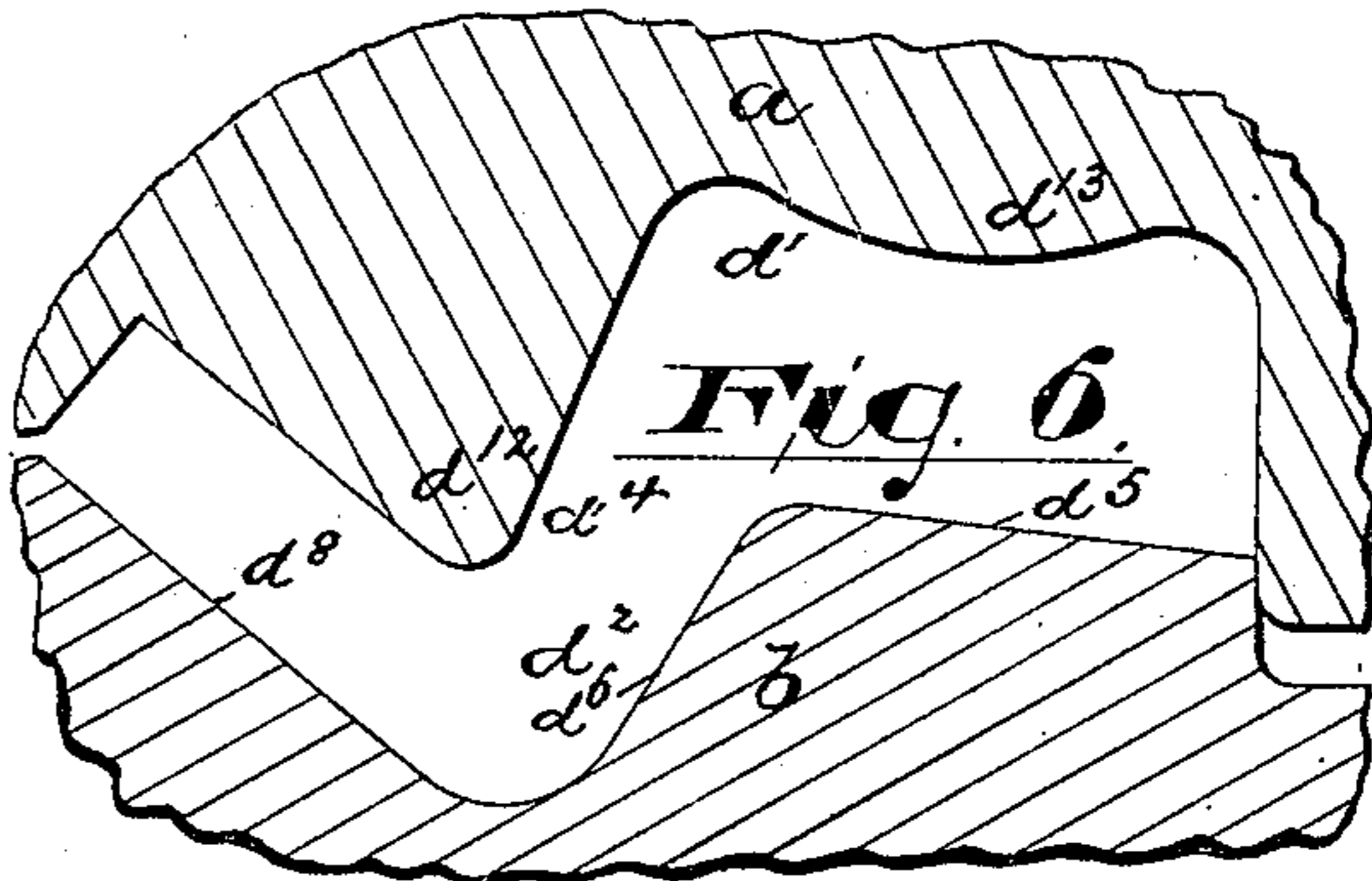
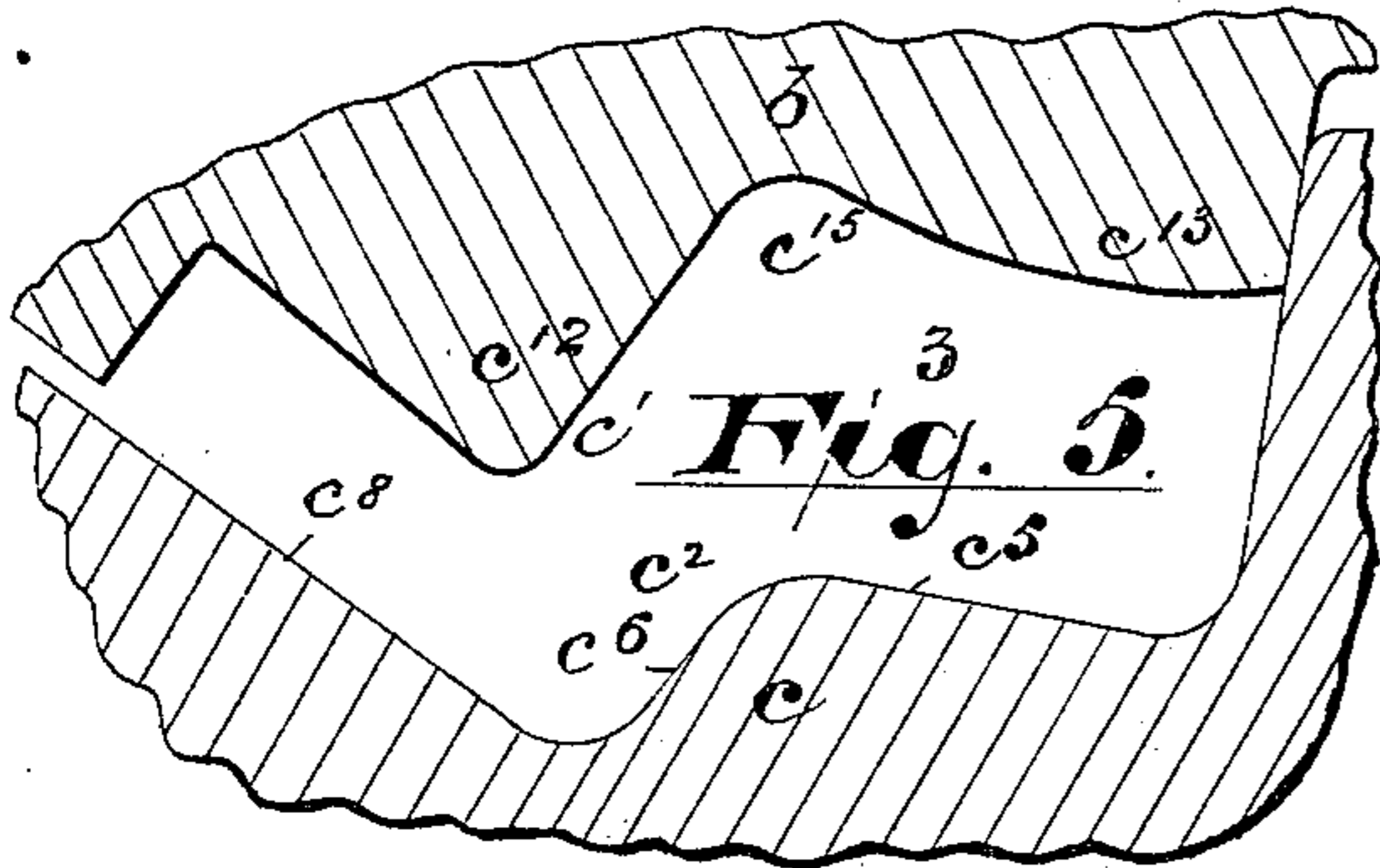
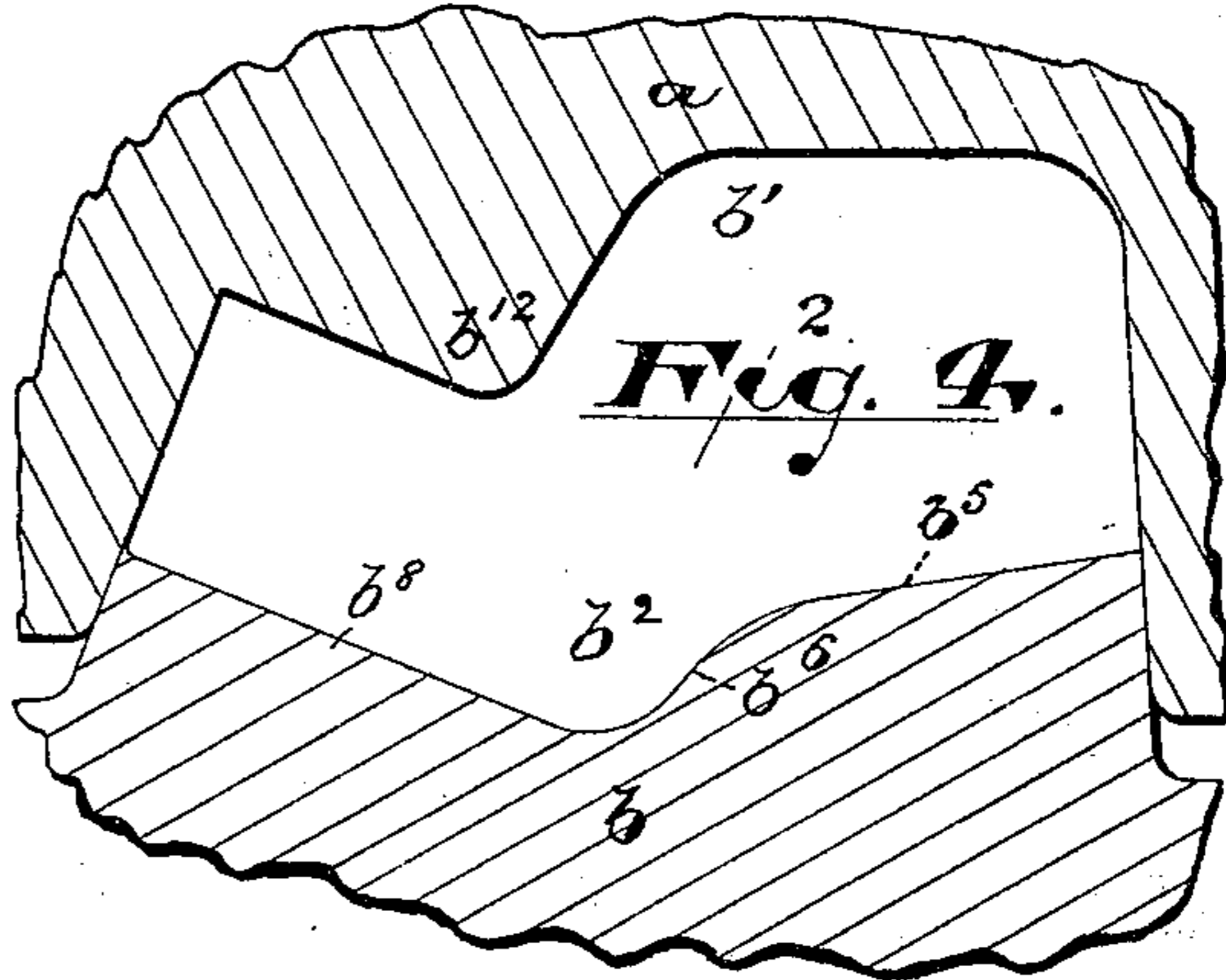
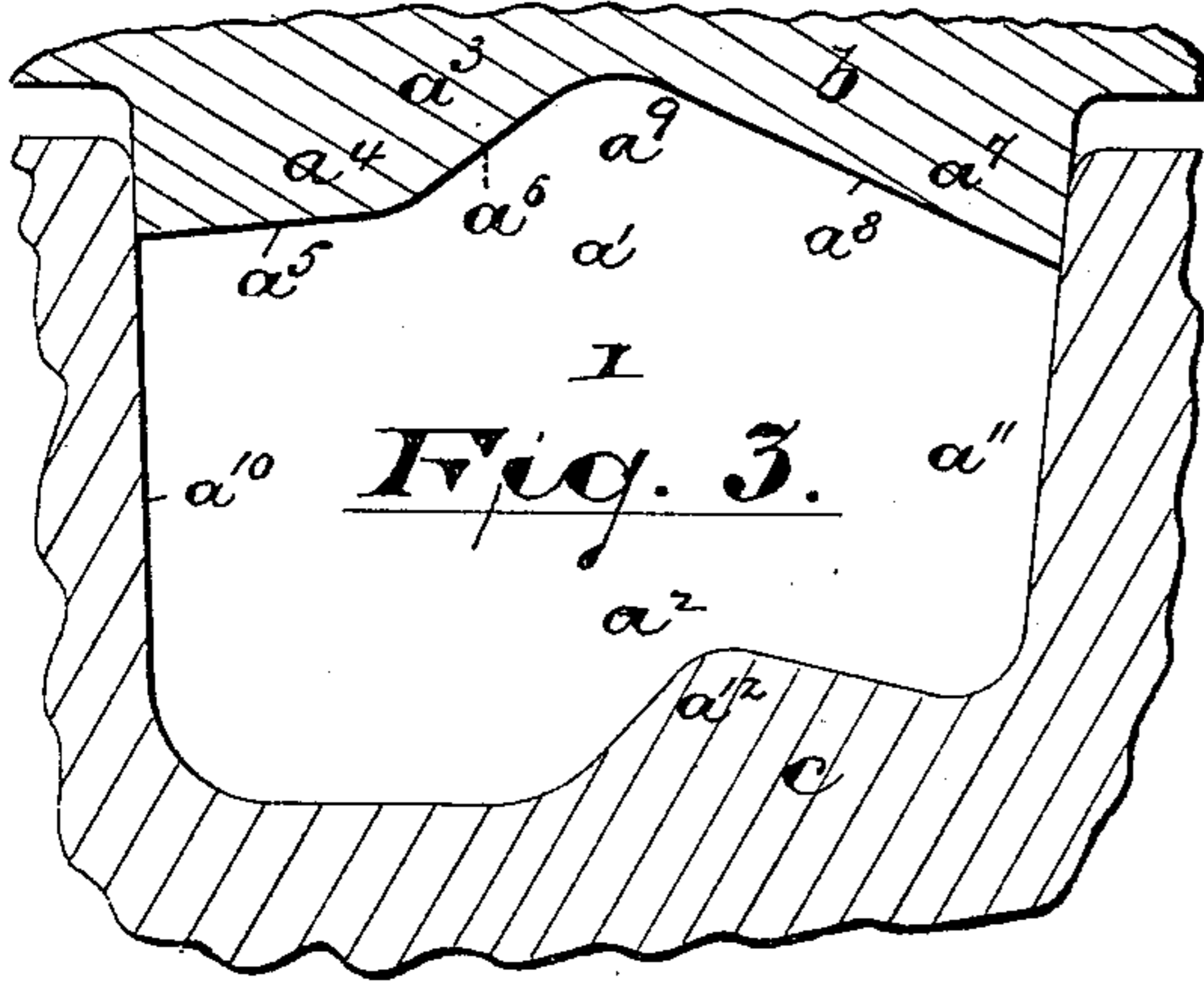


Fig. 7.

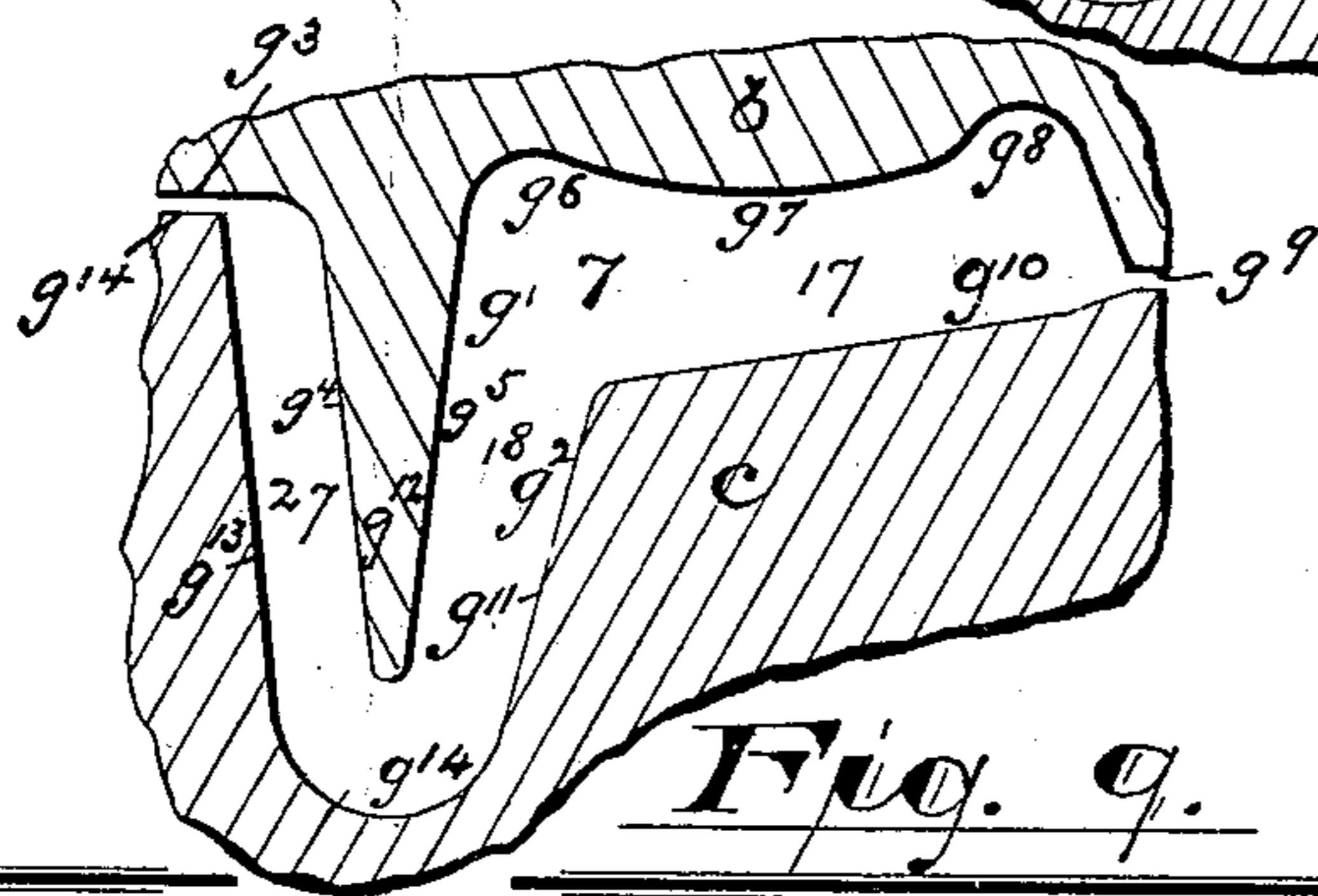


Fig. 8.

Fig. 9.

Witnesses

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UNITED STATES PATENT OFFICE.

DAVID H. LENTZ, OF ROANOKE, VIRGINIA, AND ABRAHAM W. THOMPSON, OF NEWARK, NEW JERSEY, ASSIGNORS TO THE CONTINUOUS RAIL JOINT COMPANY OF AMERICA, OF NEW JERSEY.

ROLLS FOR FORMING CONNECTING-PLATES FOR RAIL-JOINTS.

SPECIFICATION forming part of Letters Patent No. 481,697, dated August 30, 1892.

Application filed December 10, 1891. Serial No. 414,554. (No model.)

To all whom it may concern:

Be it known that we, DAVID H. LENTZ, residing at Roanoke, in the county of Roanoke and State of Virginia, and ABRAHAM W. THOMPSON, residing at Newark, in the county of Essex and State of New Jersey, citizens of the United States, have invented certain new and useful Improvements in Rolls for Forming Connecting-Plates for Rail-Joints; and we 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, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in rolls for shaping connecting-plates for railway-joints, and more particularly that class of plates described in United States Patent No. 427,017, the object of which invention is to facilitate the operation of manufacturing said connecting-plates and to enable the same to be made with greater uniformity and exactness, and thus better adapted to engage the bearings on the railway track or rail.

The invention consists in the improved rolls having the arrangements and constructions of parts, substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters and numerals indicate corresponding parts in each of these several views, Figure 1 is an elevation showing the relations of the rolls to one another, the bearings for the rolls being merely indicated in outline, there being no particular feature of novelty therein. Fig. 2 is a similar elevation showing a modified construction in which one of the passes is formed by rollers integral with those in which the other passes are formed; and Figs. 3, 4, 5, 6, 7, 8, and 9 are enlarged detail sections of the rolls, showing more clearly the outlines of the several apertures or passages between said rolls in which the bar of iron or steel is passed.

In said drawings, $a\ b\ c$ indicate three rolls, having sets of peripheral grooves and ridges

$a' a^2 b' b^2 c' c^2 d' d^2 e' e^2 f' f^2 g' g^2$, which co-operate in forming the series of apertures or passages in which the bar is shaped longitudinally and given the final form in which the said bar when cut to proper lengths and otherwise finished is adapted to engage the bearings of the rails, as has heretofore been described in the patent above referred to.

The first pass or opening through which the square bars of iron from which the connecting-plates are made has been numbered 1 in the drawings and has been shown more clearly in Fig. 3. The said opening is formed by the low-projecting male ridge a^3 , entering a deep groove in the opposite roll, the said projecting ridge having on the peripheral face thereof the set of working faces a' . Said set consists of the ridge a^4 , having the two inclined faces $a^5 a^6$, the first being nearly parallel with the axis of the roll and the second having a greater inclination, and the ridge a^7 , having the long inclination a^8 , formed at an angle to the face or bearing a^6 and forming with said face a^6 a shallow groove a^9 . The female part on the opposite roll is adapted to receive the male projection a^3 and form the passage 1. The sides of the deep groove are inclined, as at $a^{10} a^{11}$, to a degree closely approaching a right angle to the axis of the roll, and at the bottom is formed a low projection a^{12} , having oppositely-inclined working faces $a^{13} a^{14}$, approaching the inclinations of the working faces $a^6 a^8$ in the opposite walls. In passing the square iron or steel through the first aperture or passage the same is given an irregular oblong shape in cross-section, with a longitudinal V-shaped groove on one side and a corresponding ridge on the opposite side. In passing the iron from the first passage 1 to the second passage 2 the ingot is reversed in position for convenience in rolling; but the outlines are similar to those described in connection with passage 1, excepting that the depth of the passage is less, and the bar is consequently reduced in thickness but increased in length, as will be understood. In the set b' of this aperture the projecting ridge b^{12} corresponds with the ridge a^{12} , and the working faces $b^5 b^6 b^8$ likewise correspond with $a^5 a^6 a^8$. In the next passage of

the bar through aperture 3 the lines of the bar are materially changed and the said bar is still further reduced in thickness. The roll b is provided, in addition to the ridge c^{12} , with another ridge c^{13} , which is of a rounded shape in peripheral outline and has the groove c^{15} between. The projection c^{12} , corresponding to a^{12} and b^{12} , is given increased projection, and on the opposite co-operating roll working faces c^2 the bearings $c^5 c^6$ become oppositely inclined, and as a result the bar is given a more distinct corrugated shape, with distinct grooves on one side and a second groove on the other, and so in apertures 5 and 6 the working faces change by gradual variation and shape the bar so that when it is prepared to pass through the final passage 7 no work is left but to bend the bottom flange to a condition to engage the bottom of the rails when the inner working faces of the vertical part of the connecting-plate engage the web of the rail.

The construction of the aperture 7, through which the bar passes, is substantially as shown in Fig. 9, where the portion 17 of the passage 7 is substantially the same in outline as the portion 16 of the passage 6. The roll b at this final passage is formed at g^3 to engage or nearly engage the opposite roll. From this point the surface extends in a direction substantially parallel with the axis of the roll a distance equal to the desired thickness of the bottom flange to be formed in the portion 27 of the aperture or passage 7. The surface then abruptly inclines outwardly at g^4 and then backwardly, as at g^5 , in an opposite direction and forms the narrow flange g^{12} . At the base of the flange a shallow annular recess g^6 is provided, from which the peripheral surface has another low but comparatively wide projection g^7 , and on the opposite side of the projection g^7 from the recess g^6 is another recess g^8 . The walls of the recesses $g^6 g^8$ form the working faces on the inner side of the vertical portion of connecting-plate, while the projection g^7 forms the recess on the rear of said vertical portion. From the recess g^8 the walls of the aperture extend a distance equal to the desired thickness of the said vertical portion into or near to engagement with the co-operating roll, as at g^9 .

The set of working faces g^2 of the roll c give shape to the exterior faces of the connecting-plate and have the following constructions and relations: At g^{10} a long working face is formed, extending substantially at right angles to the working face g^4 , which working face terminates at a point distant from the working face g^5 equal to the desired thickness of the working face which engages the top of the flange of the rail. From this point the surfaces form a deep groove g^{14} in the roll c , the working faces g^{11} being substantially parallel with the working faces g^5 , and the opposite working faces g^{13} being substantially parallel with the working faces g^4 and terminating at or near the point g^3 of the roll b .

The series of projections $a^{12} b^{12} c^{12} d^{12} e^{12} f^{12}$

g^{12} vary from an obtuse angle to the acute angle shown at Fig. 9 and bring the portions 18 27 of the passage 7 so that the inner limits or walls of said openings correspond with the upper and under bearings of the flange of the rail.

By means of the rolls constructed as described we are enabled to roll out the connecting-plate so that great uniformity in the disposition of bearings is secured, which conduces to an increased smoothness and firmness at the joint, as will be understood upon inspection of Fig. 2.

The means for operating the rolls being old, it has been deemed unnecessary to illustrate the same.

We do not wish to limit ourselves to the number of rolls employed, as it is evident that the passages may be formed in other than the three rolls without departing from the spirit or scope of the invention.

Having thus described the invention, what we claim as new is—

1. In a machine for forming railway-rail connecting-plates, the combination of the roll b , having a narrow projecting flange g^{12} , with oppositely-inclined working faces $g^4 g^5$, and at one side of said flange having the working surfaces $g^6 g^8$ and comparatively low projection g^7 , the said working faces $g^6 g^7 g^8$ being adapted to give form with the co-operating roll to the concavous vertical portions of the said connecting-plates, and the roll c , having a working face g^{10} substantially parallel with the line of the working faces $g^6 g^8$ and having a deep groove formed by the oppositely-inclined faces $g^{11} g^{13}$ lying substantially parallel with the faces $g^4 g^5$, the said working faces being formed to produce a connecting-plate having a vertical part to engage the web of the rail and bearings to engage the top and bottom of the flange thereof, substantially as set forth.

2. In a machine for making connecting-plates for railway-rails, the combination, with the roll b , having the working surfaces g^4 , of the roll c , having the working surfaces g^2 , the two sets of surfaces forming the pass 7, of which the portions 18 27 form a sharply-acute angle one with the other, and the portion 17, having the bearing-recesses g^6 and g^8 , forms an obtuse angle with the portion 18 to roll a connecting-plate having a bearing or bearings on the web of the rail and on the top and bottom surface of the flange of the rail, substantially as set forth.

3. In a machine for making connecting-plates for railway-rails, the combination of rolls forming passes 1, 2, 3, 4, 5, 6, and 7, of which the first of said passes has a coincident angular recess and projection, the second a similar recess and projection, the pass being of reduced depth, the third of still further reduced depth and having another, an obtuse angle, formed in the pass, the fourth, fifth, and sixth passes being also of reduced depth and having, respectively, the projections d^{12} ,

e^{12} , and f^{12} forming, with the coincident working faces, pass portions approximating right angles, and the pass 7, having the projection g^{12} , formed much more acute than said projections d^{12} e^{12} f^{12} , the portions 18 27 of said pass being adapted to form the upper and lower bearings to engage the rail-flange and the portion 17 to form the web-bearings, substantially as set forth.

10 4. In a machine for making railway-rail connecting-plates, the rolls having a series of passes which gradually contract in depth and the last pass of the series having the portions 27 18 17, of which portions 27 18 form a

sharply-acute angle and the portions 18 17 15 an obtuse angle to give the desired shape or form to the vertical web-bearing and the top and bottom flange-bearings, substantially as set forth.

In testimony that we claim the foregoing 20 we have hereunto set our hands this 28th day of November, 1891.

DAVID H. LENTZ.

ABRAHAM W. THOMPSON.

Witnesses:

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