

No. 785,779.

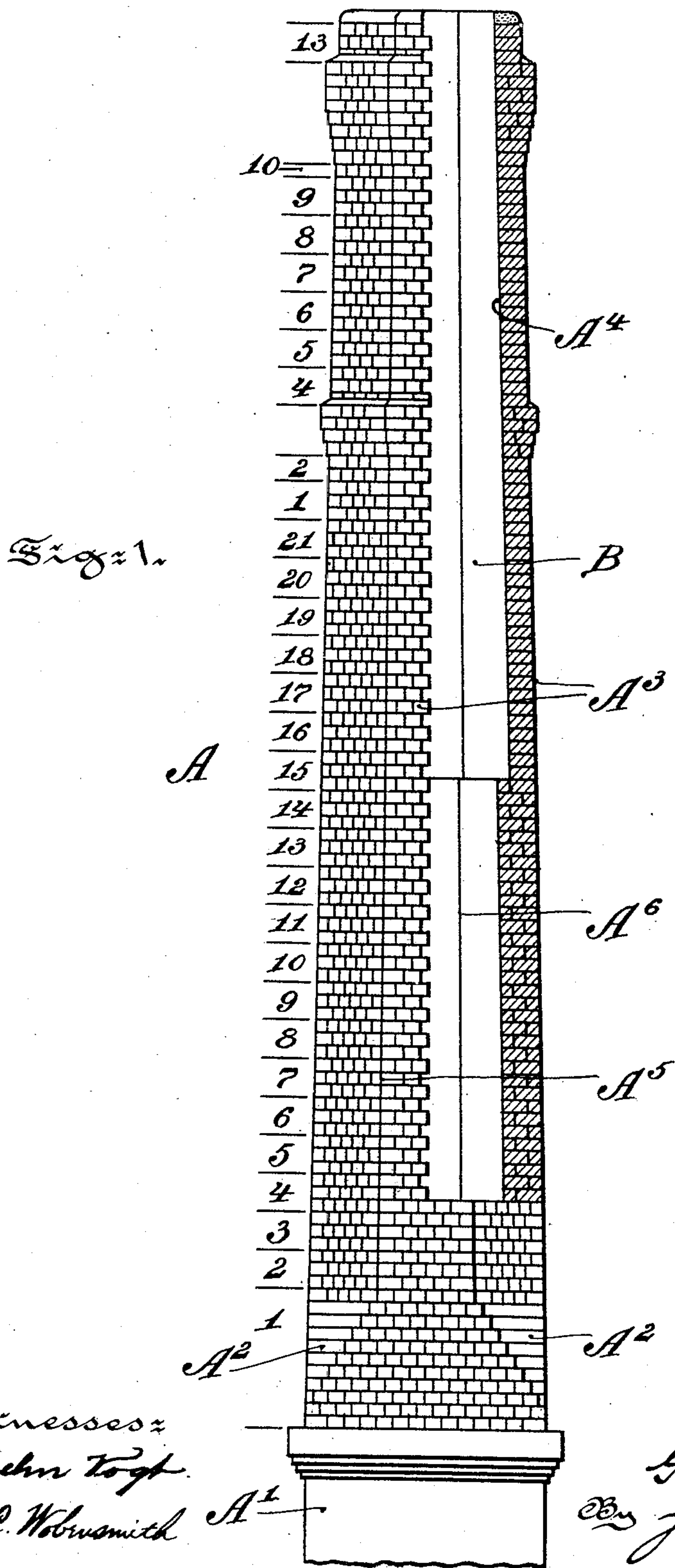
PATENTED MAR. 28, 1905.

G. H. THIRSK.

ART OF CONSTRUCTING CHIMNEYS OR STACKS.

APPLICATION FILED DEC. 5, 1904.

4 SHEETS—SHEET 1.



Witnesses:
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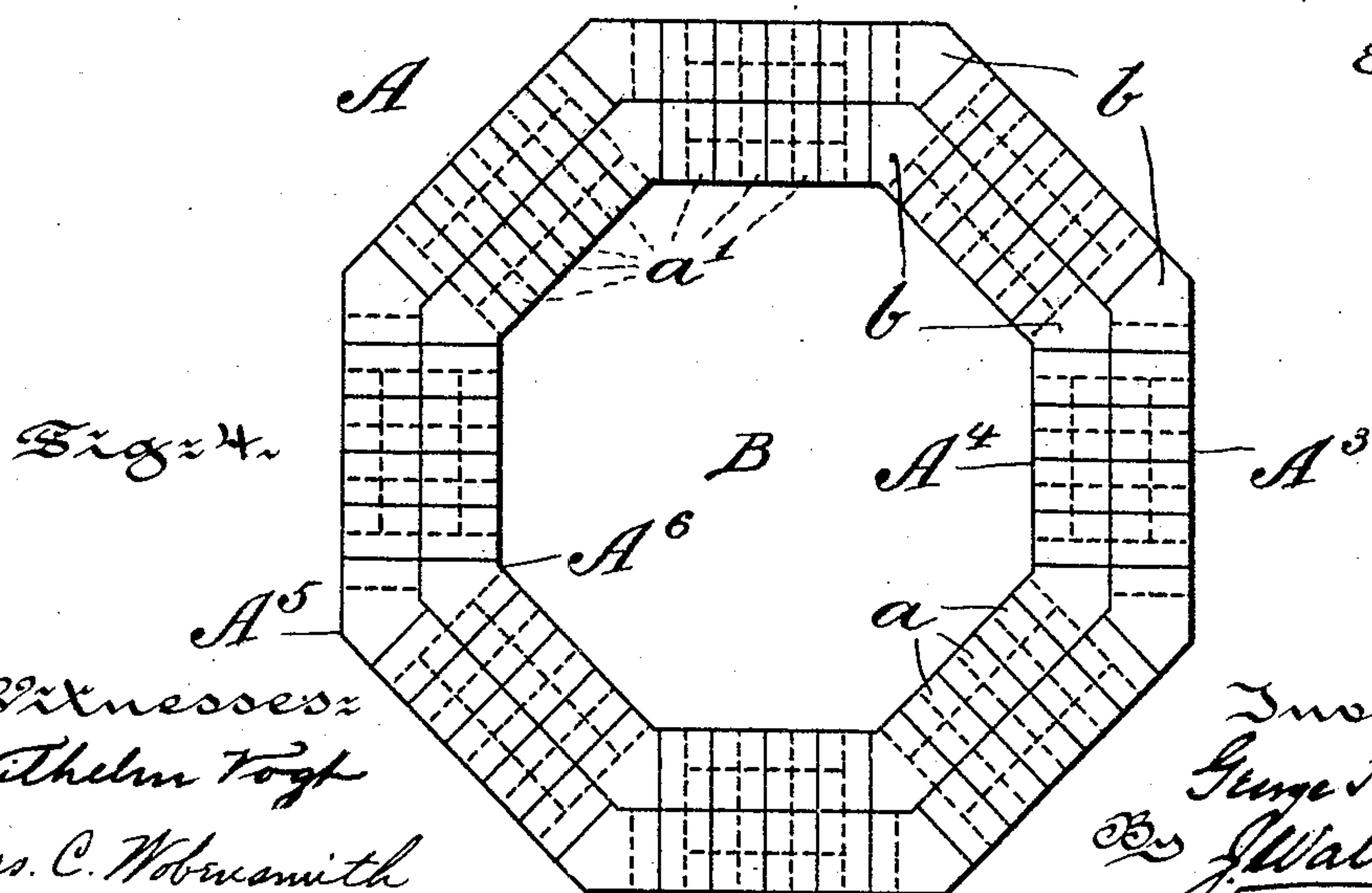
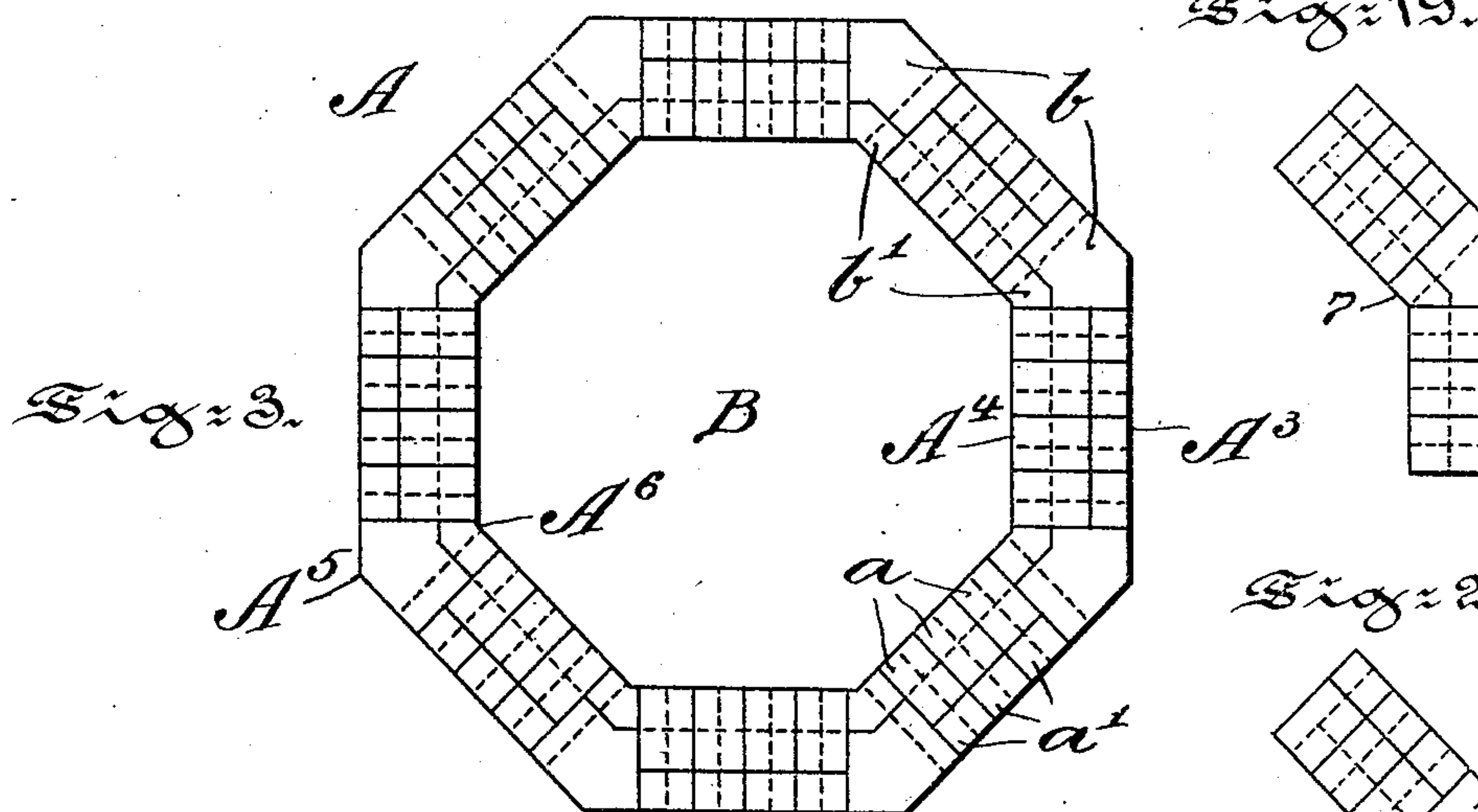
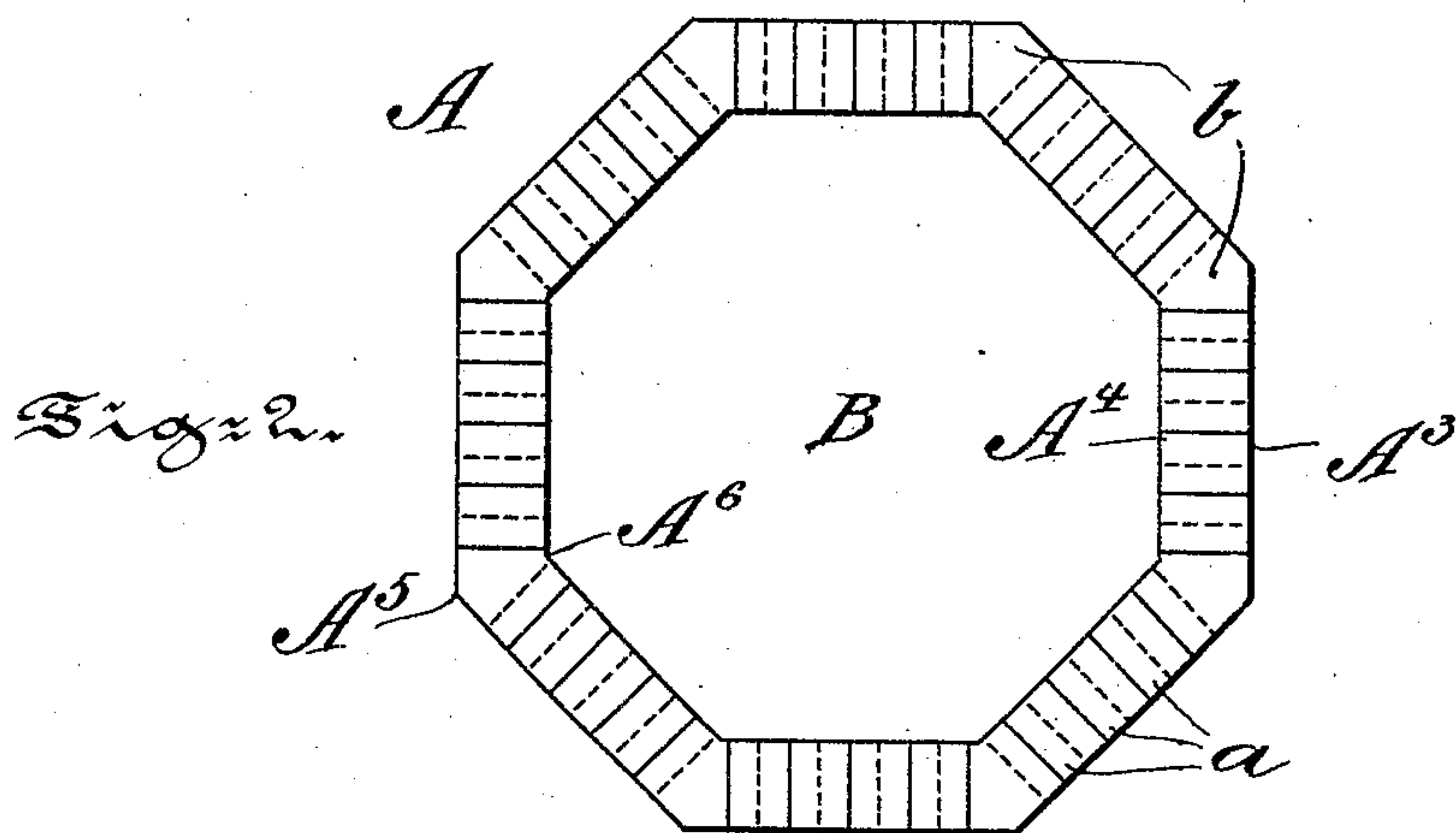
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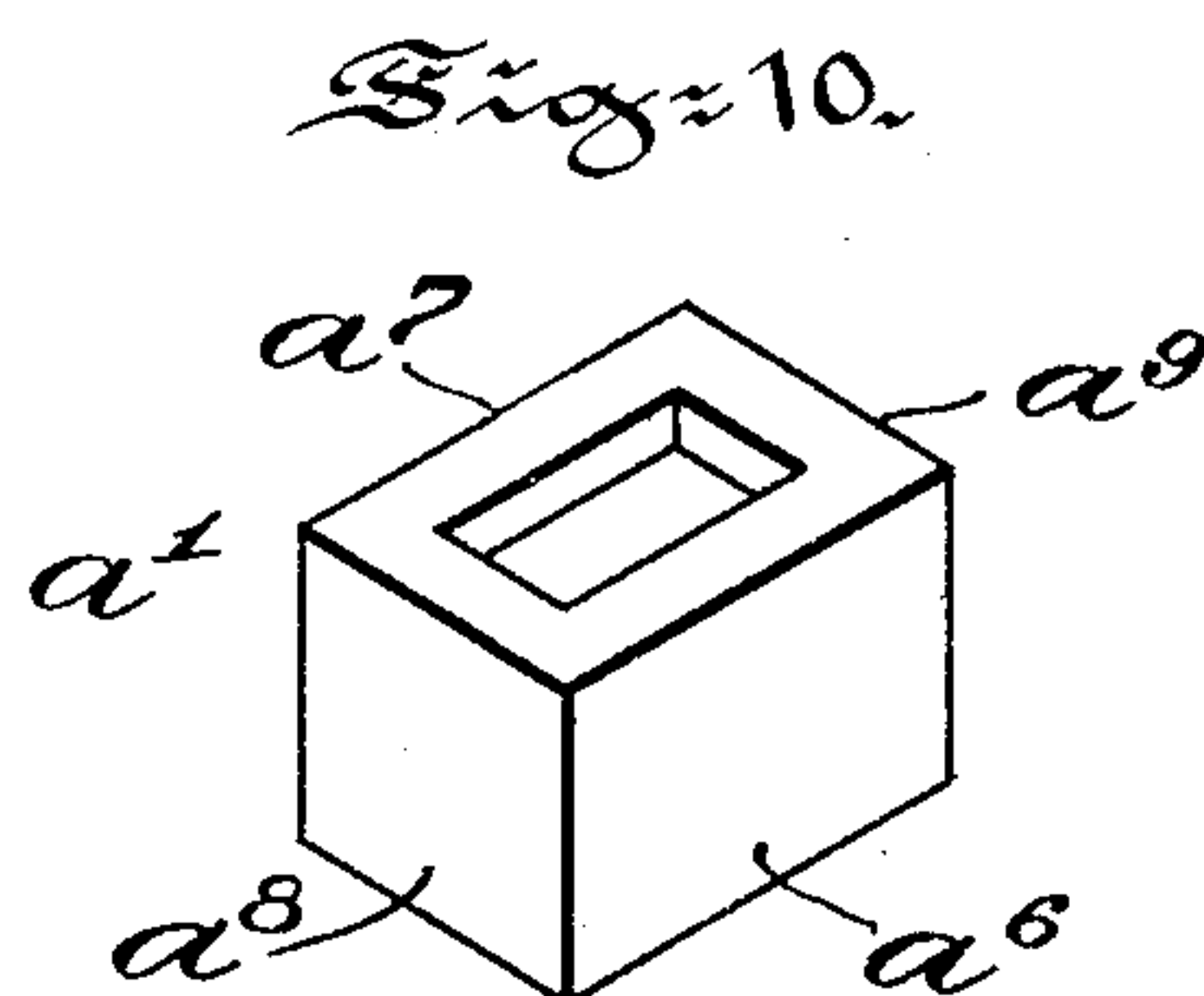
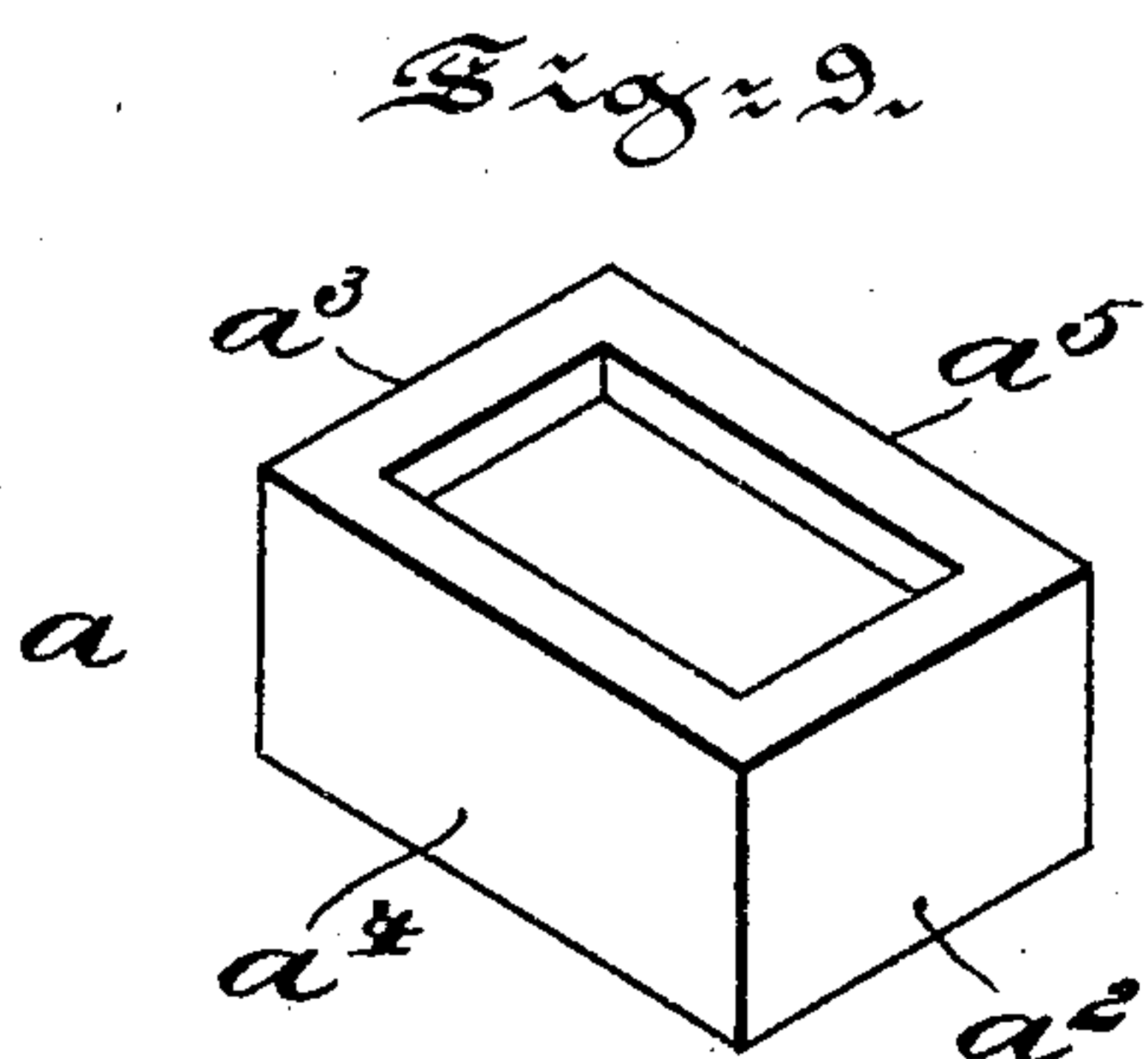
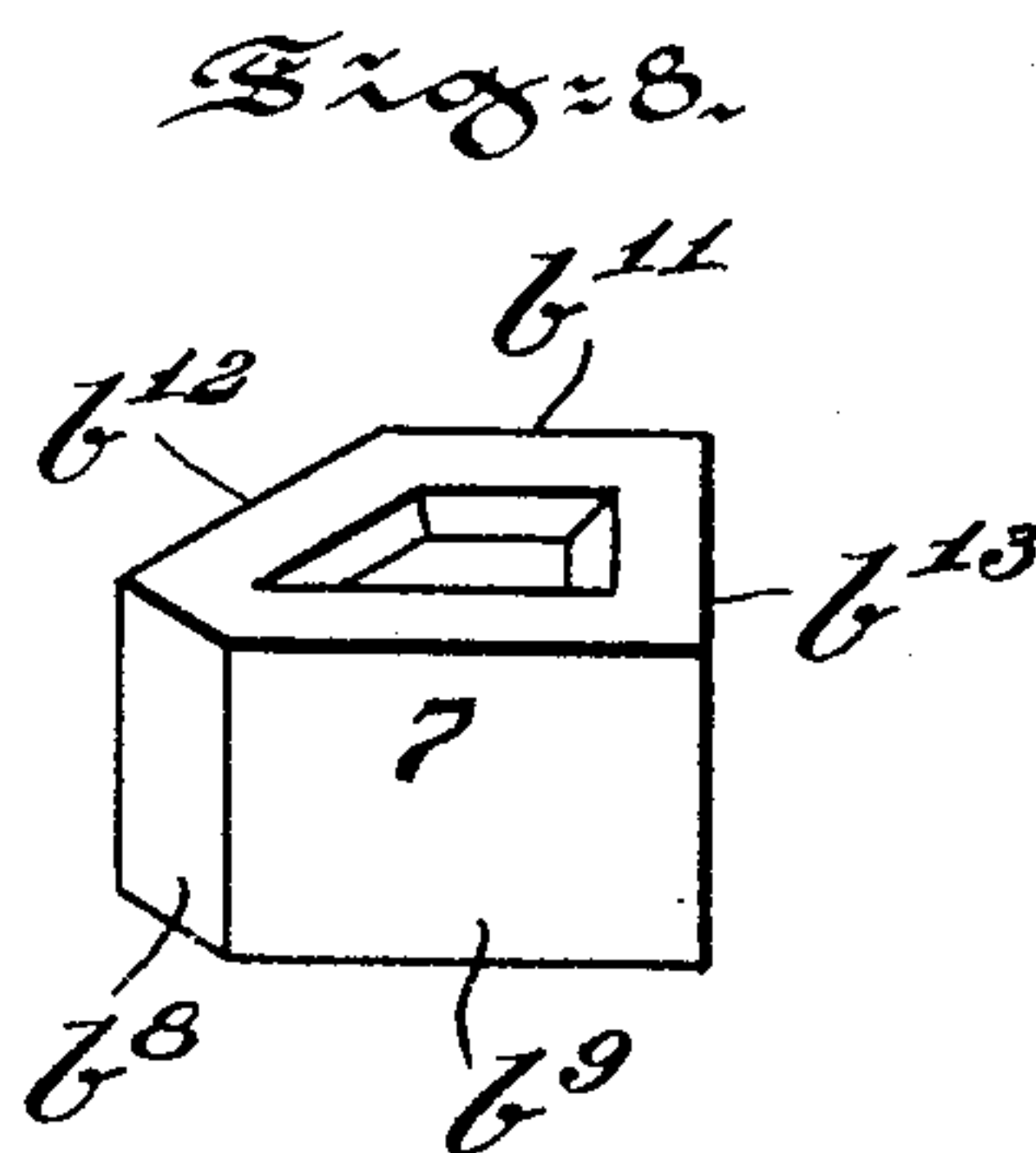
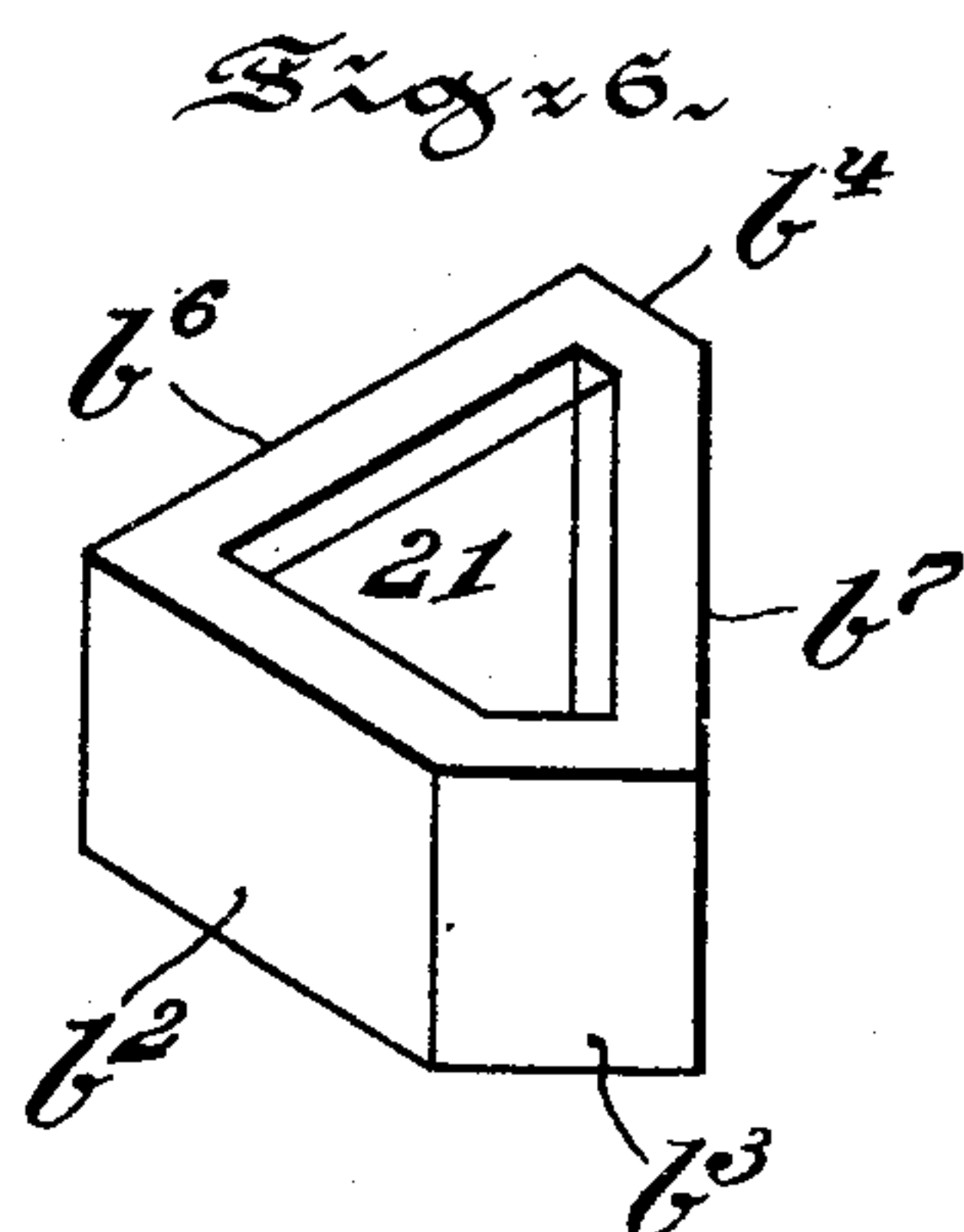
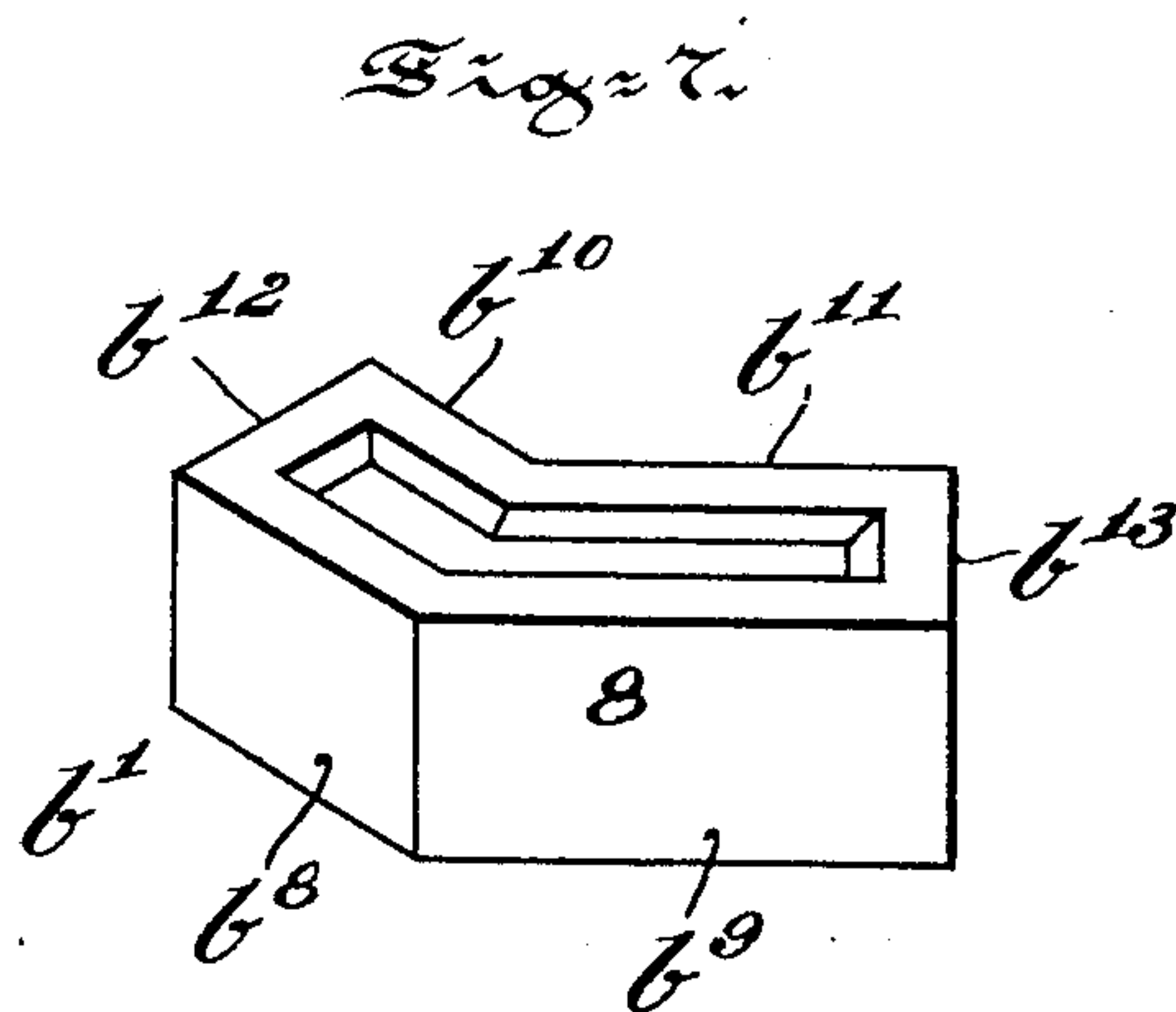
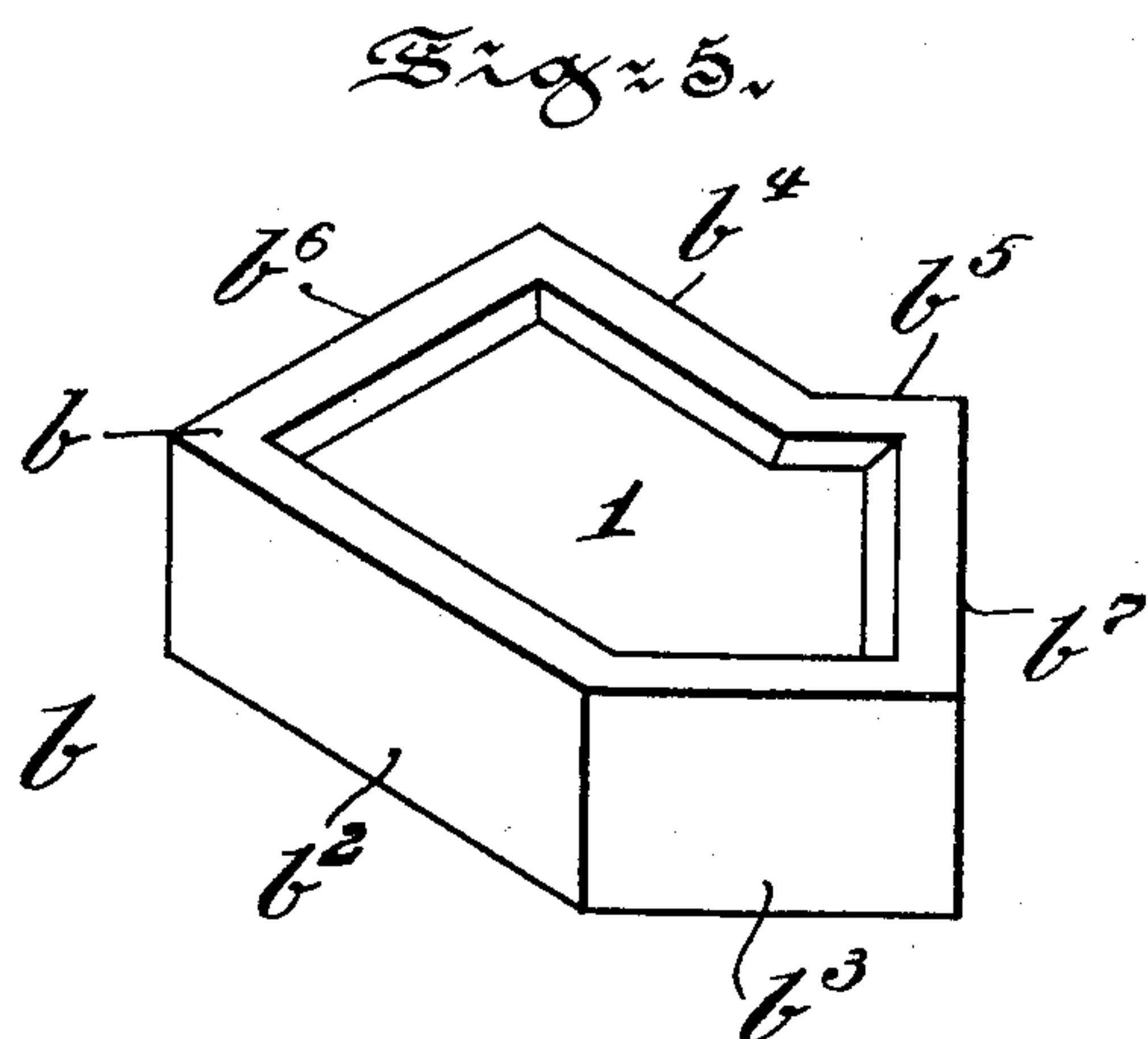
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4 SHEETS—SHEET 3.



Witnesses:
 Wilhelm Togh
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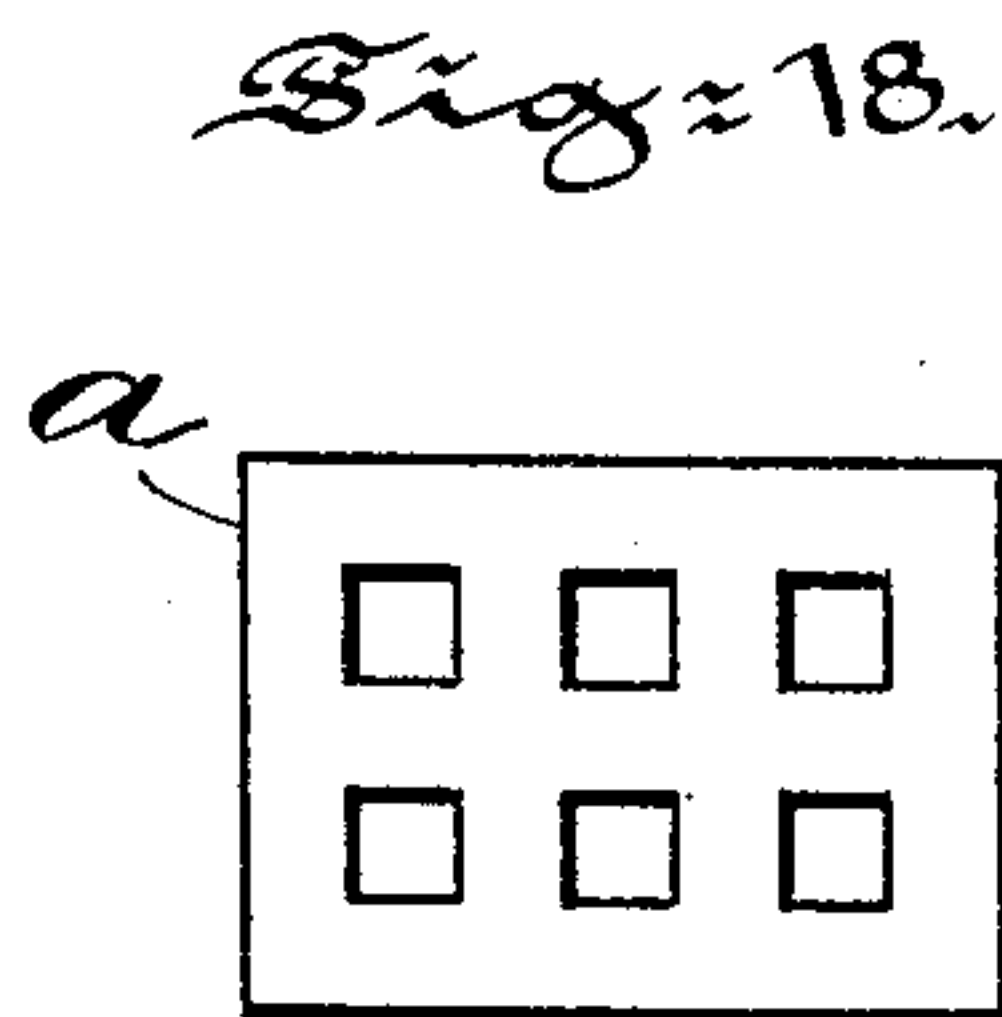
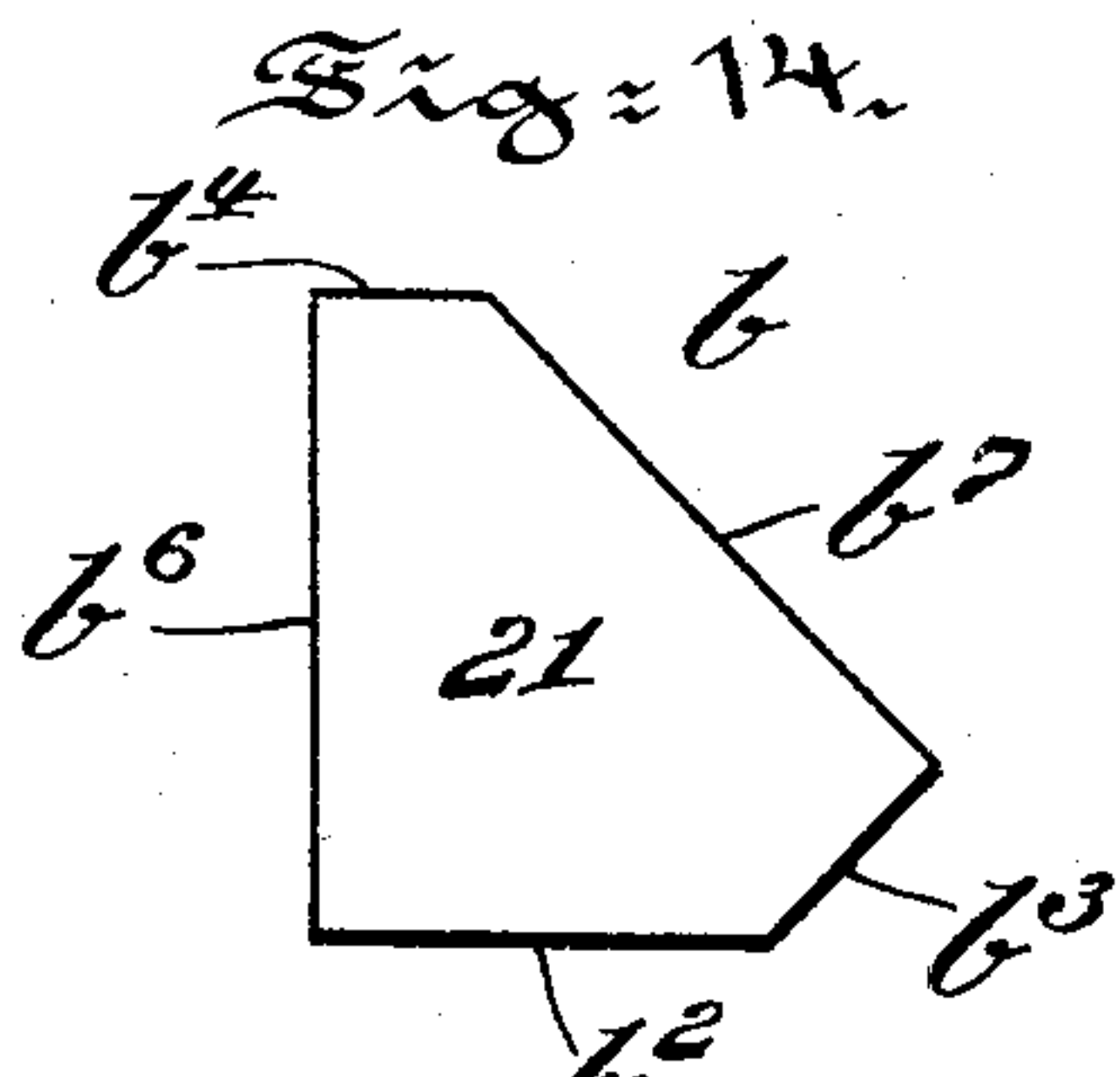
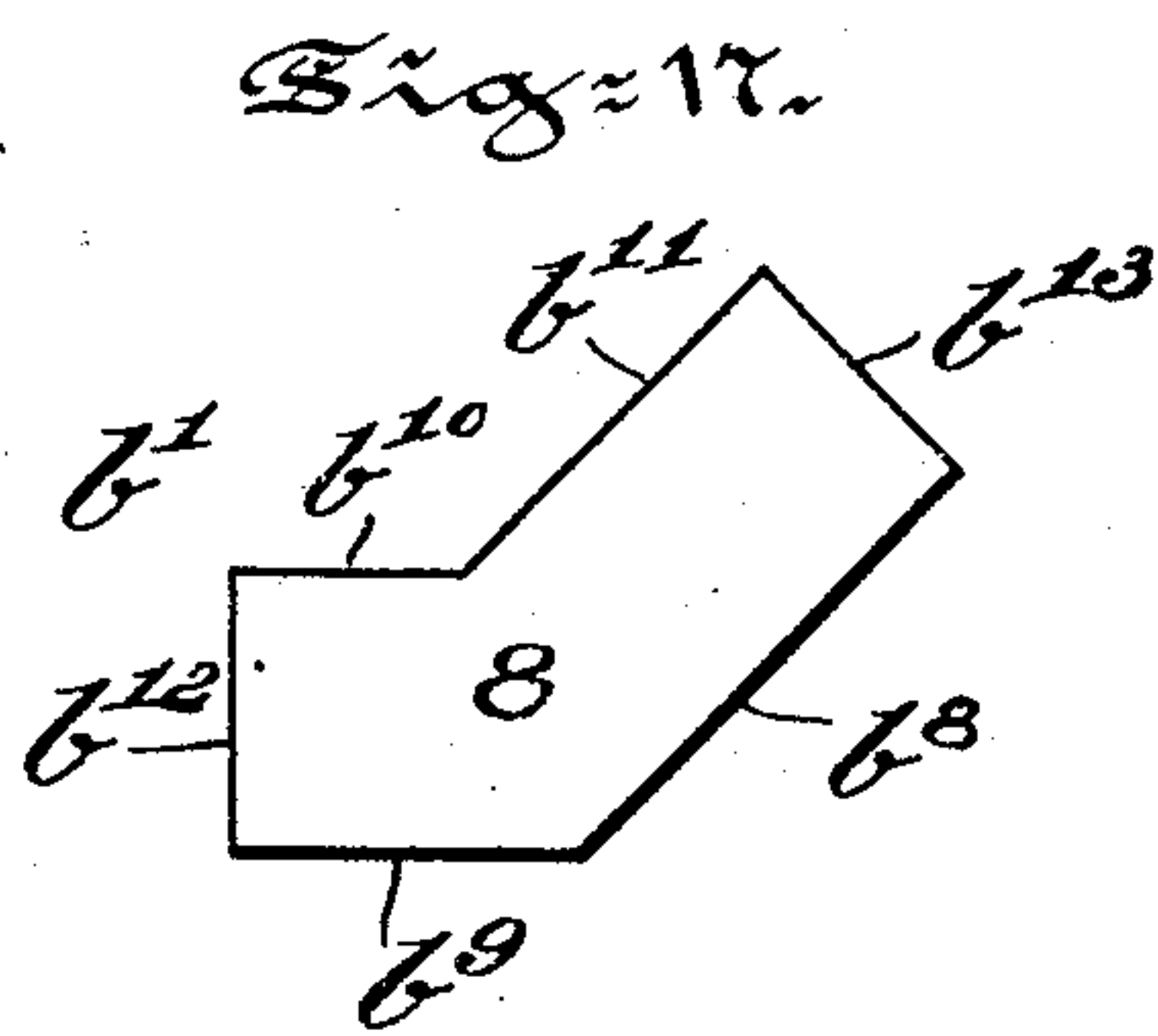
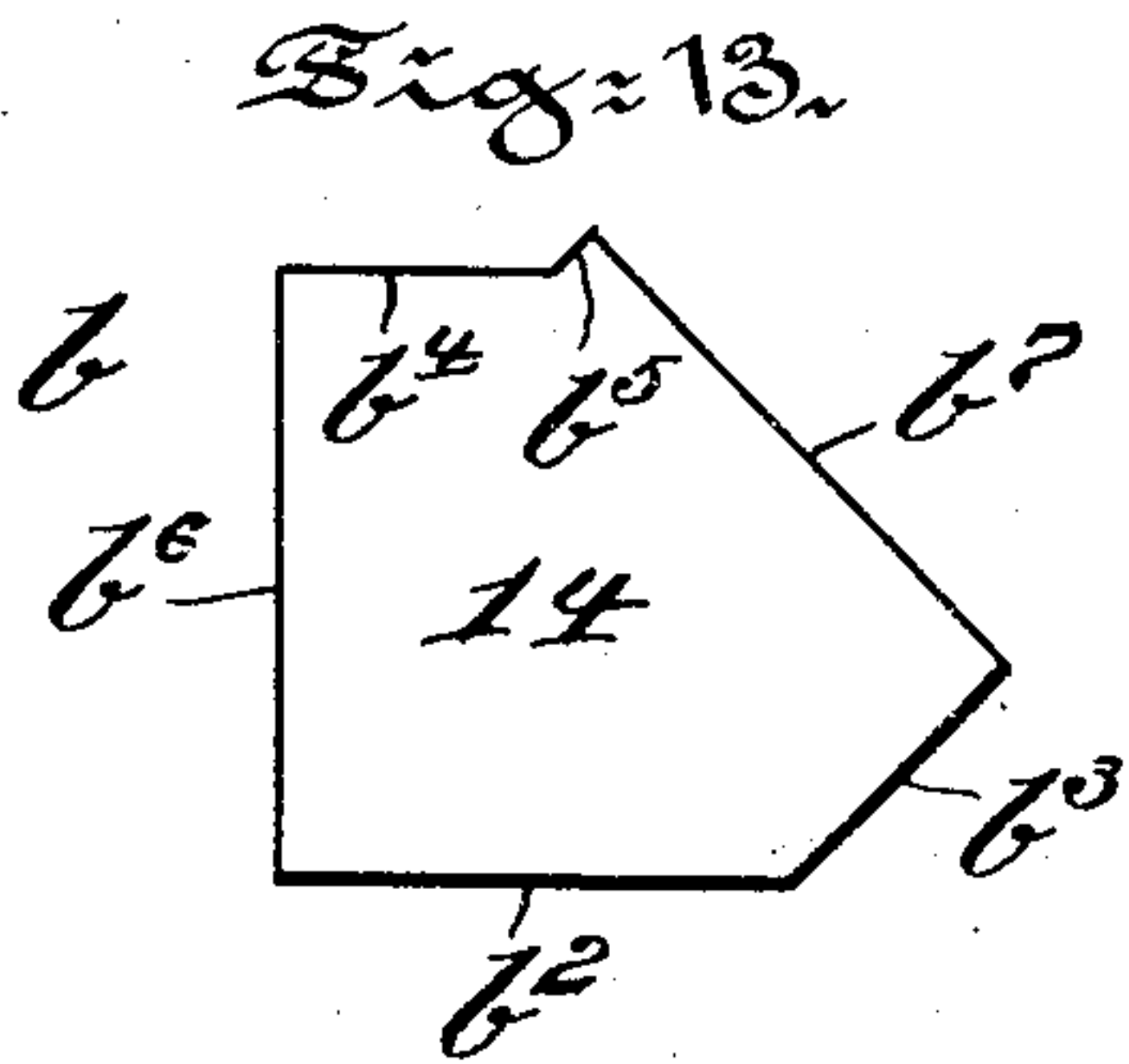
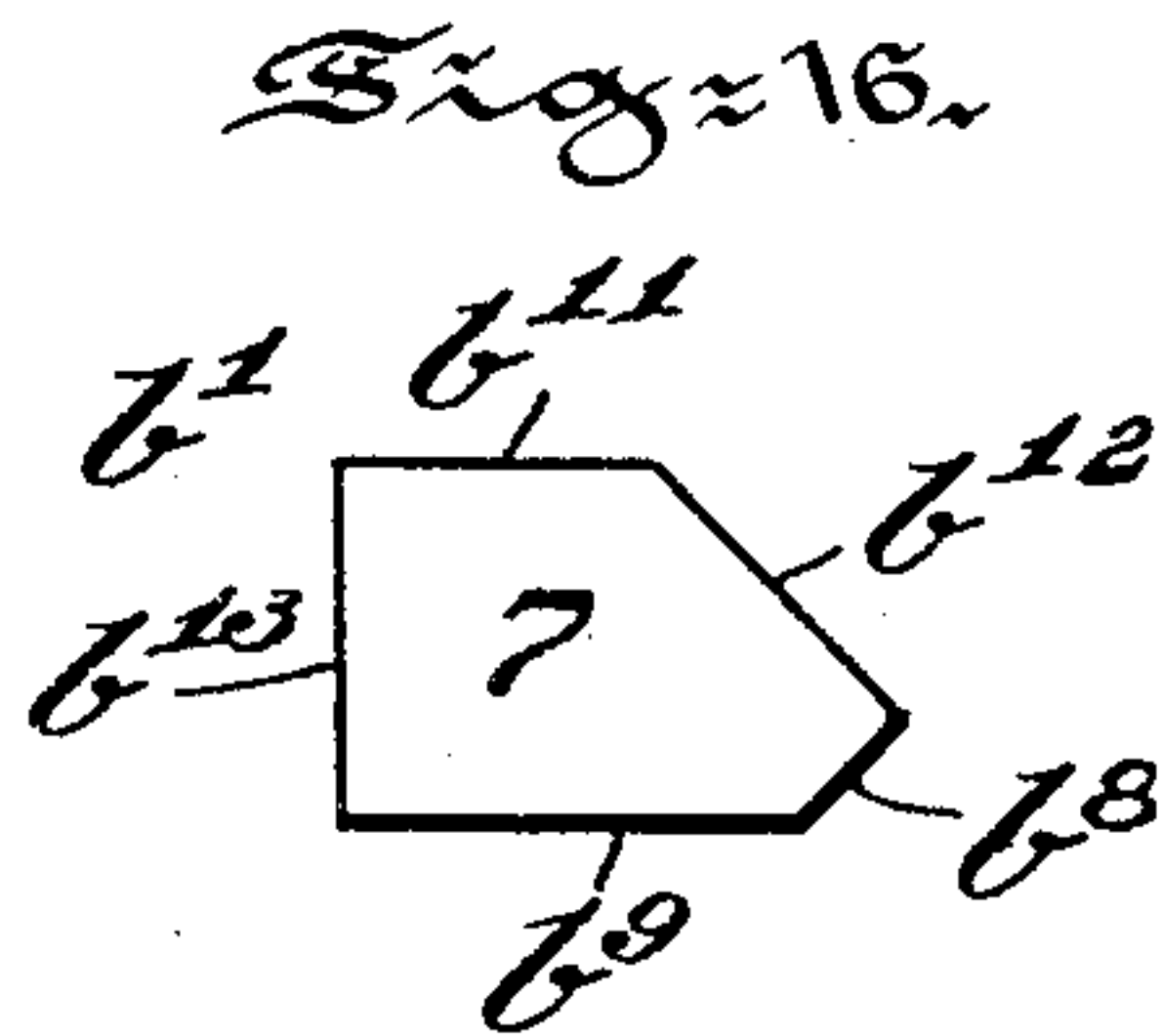
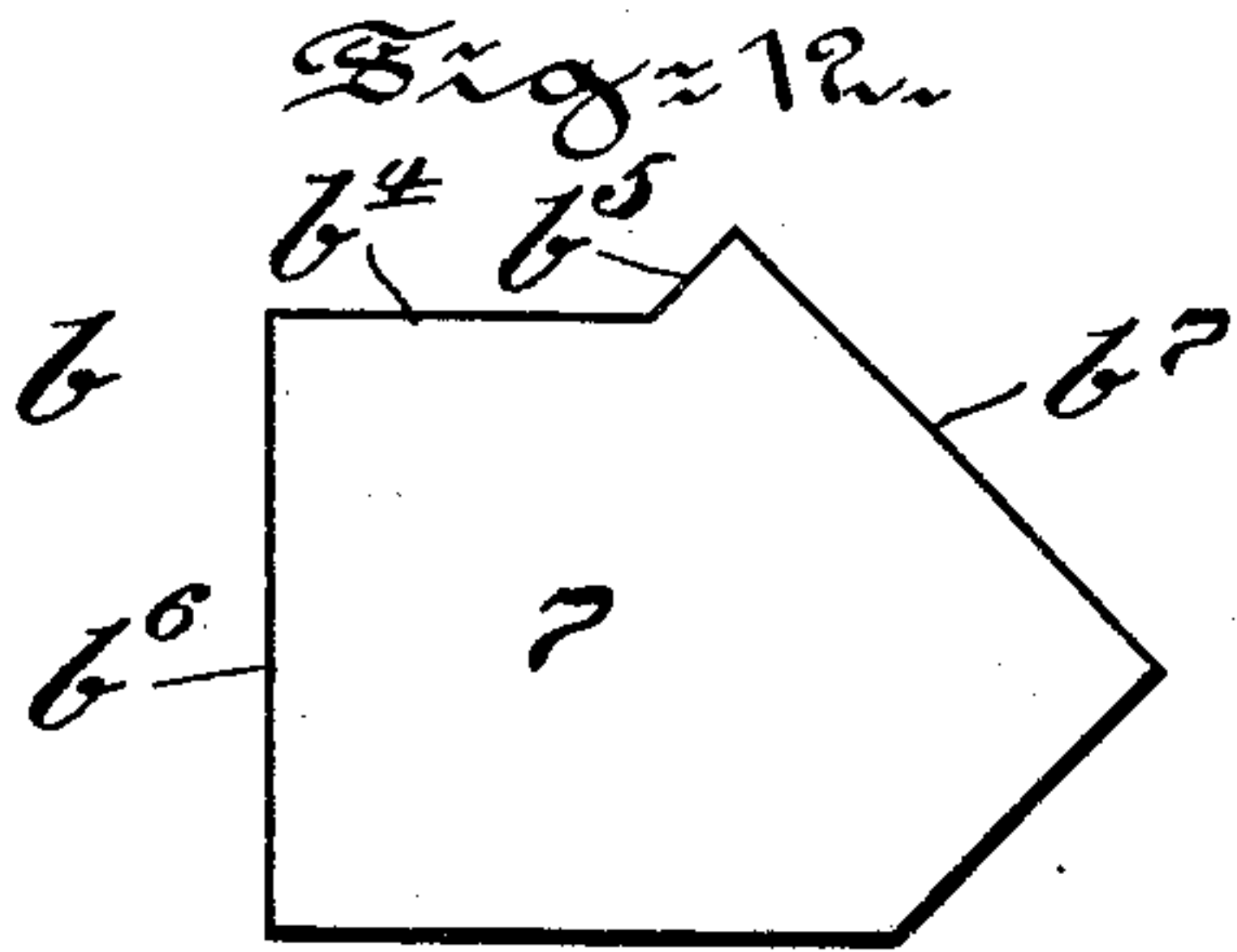
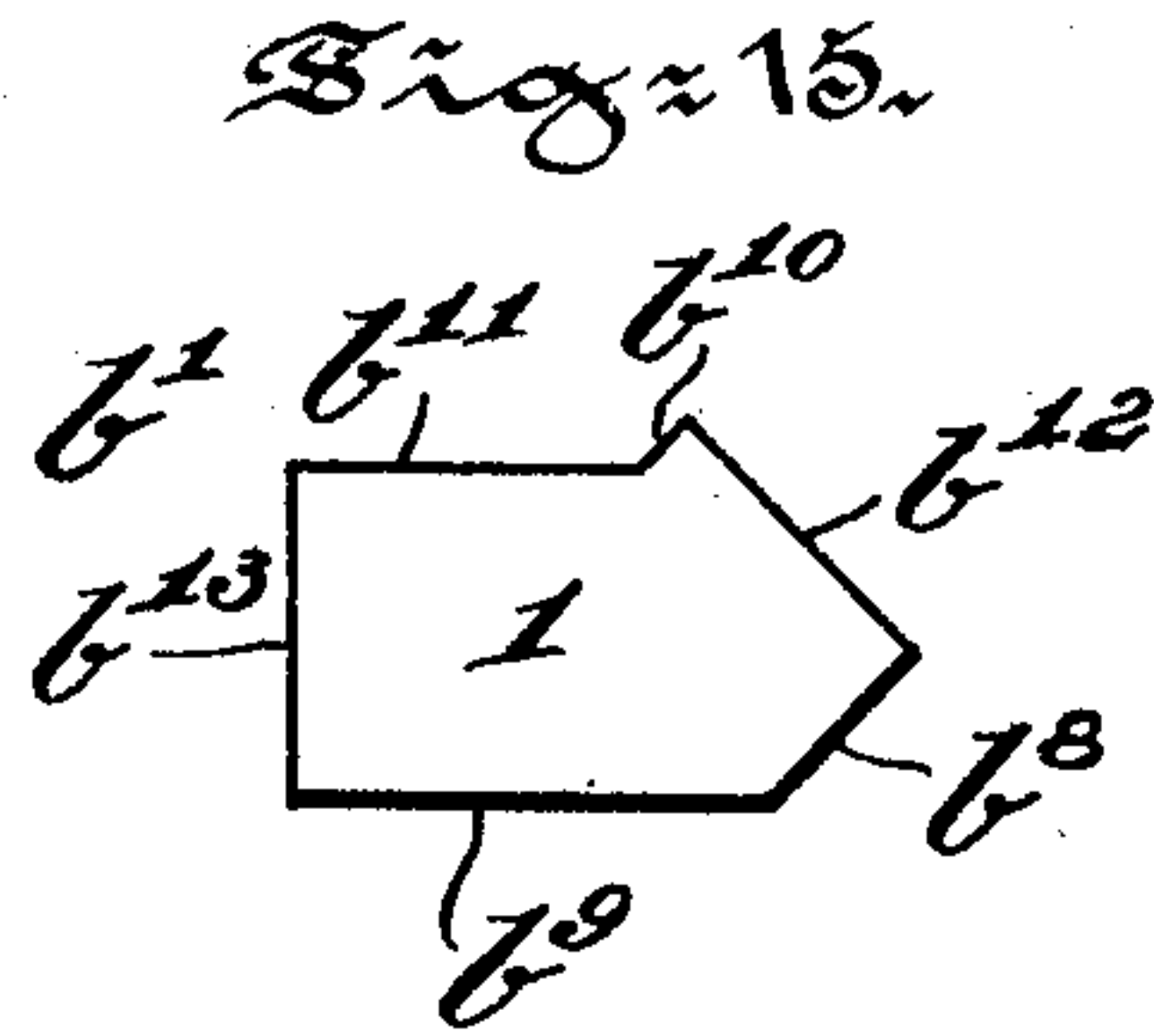
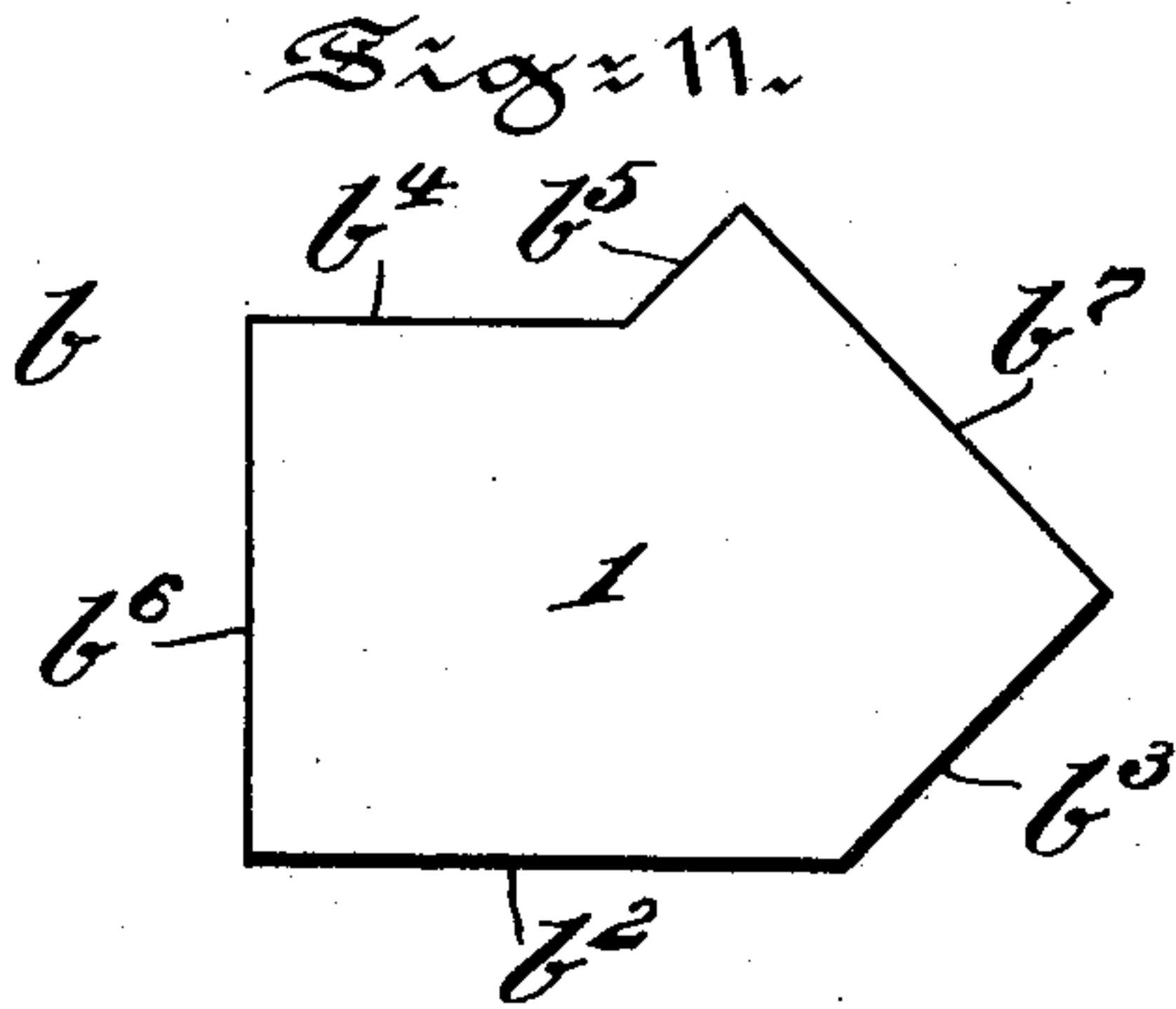
Inventor:
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APPLICATION FILED DEC. 5, 1904.

4 SHEETS—SHEET 4.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

GEORGE H. THIRSK, OF PHILADELPHIA, PENNSYLVANIA.

ART OF CONSTRUCTING CHIMNEYS OR STACKS.

SPECIFICATION forming part of Letters Patent No. 785,779, dated March 28, 1905.

Application filed December 5, 1904. Serial No. 235,530.

To all whom it may concern:

Be it known that I, GEORGE H. THIRSK, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Art of Constructing Chimneys or Stacks, of which the following is a specification.

My invention has relation to improvements in the art of constructing chimneys or stacks, and in such connection it relates particularly to the arrangement, shape, and size of brick employed in the construction of a tapering chimney or stack, with the provision in such a structure of true vertical and lateral bonding of the same.

The principal object of my invention is to construct an angular chimney or stack of any required dimension and taper and with a true lateral and vertical bond throughout with two types of brick, whereof one consists of two different size rectangular bricks forming the sides of the structure and producing the true lateral and vertical bond therein and whereof the other type consists of two different size angular bricks divided into a series of brick of constantly-decreasing size to form the corners of the structure and to permit of the production of any required taper therein and permit, in conjunction with said rectangular brick, a true lateral and vertical bond at the point of juncture of one type of brick with the other type of brick.

Hitherto it was impossible to construct a tapering chimney or stack angular in cross-section with a true lateral and vertical bond throughout, since all the bricks employed in such structures were of the same size and shape and for this reason did not permit of the formation of a true bond, but only of a so-called "staggered" bond, which rendered such structures weak and unsafe. With one exception, however, varied size bricks were used. This was in the construction of chimneys or stacks circular in cross-section, in which the bricks in order to attain the required taper were of uniformly-decreasing size, which nevertheless did not produce a true bond, and, furthermore, they were expensive to produce by reason of requiring a

great number of molds, as well as skilled labor in the handling of the same for the installing of the structure.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevational view, partly in section, of a chimney or stack embodying main features of my present invention. Figs. 2, 3, and 4 are cross-sectional views of different portions of an octagonal chimney or stack, as shown in Fig. 1, illustrating in top or plan view the arrangement of the rectangular bricks and angular bricks to produce a true bond in the courses of bricks and the taper in the external and internal corners or angles thereof. Figs. 5, 6, 7, and 8 are perspective views illustrating, respectively, the largest and smallest of two sets of angular bricks adapted to form the corners or angles of the chimney or stack. Figs. 9 and 10 are similar views illustrating, respectively, two types of rectangular bricks adapted to form the sides of the chimney and a true bond therein. Figs. 11, 12, 13, 14, 15, 16, and 17 are detail views illustrating in top or plan view the largest and smallest of the two sets of angular bricks and of bricks intermediate thereof. Fig. 18 is a detail view illustrating in top or plan view a modified form of a rectangular brick; and Figs. 19 and 20 are detail views similar to Fig. 3, illustrating certain features of my invention.

Referring to the drawings, with particular reference to Figs. 5 to 17, inclusive, a and a' represent rectangular bricks, and b and b' represent angular bricks, all of which are of the same uniform height. The rectangular brick a is preferably of twice the size of the rectangular brick a' ; but both their faces a^2 and a^3 and a^6 and a^7 , either of which may be exposed in the sides A^3 and A^4 of the chimney or stack A , (shown in Fig. 1,) are of the same size, whereas the sides a^4 and a^5 of the brick a is of twice the size as the sides a^8 and a^9 of the brick a' . The angular bricks b differ from the angular bricks b' in that they are larger and are exclusively employed to form the outer corners or angles of the chimney or

stack and will be hereinafter called the "outer angular" bricks. In the present instance the outer faces b^2 and b^3 and inner faces b^4 and b^5 of the bricks b are arranged at an angle of one hundred and thirty-five degrees to each other in order to permit of the construction of an octagonal chimney or stack. It is, however, obvious that the faces b^2 and b^3 and b^4 and b^5 may be arranged at an angle differing from that shown when an angular stack of any other shape than an octagonal shape is to be constructed with the aid of the angular bricks b . The ends b^6 and b^7 of the angular bricks b are arranged at an angle of forty-five degrees to each other and at a right angle to the outer and inner faces b^2 and b^3 and b^4 and b^5 of the bricks b to permit of the joining of a rectangular body thereto, which in the present instance is formed by the rectangular bricks a and a' . The angular bricks b' are smaller than the bricks b , since the same are designed to form the inner corners or angles of the chimney or stack A. The outer and inner faces b^8 and b^9 and b^{10} and b^{11} , as well as the ends b^{12} and b^{13} , are arranged at the same angle to each other, as hereinbefore explained, in conjunction with the faces and ends of the angular bricks b . These angular bricks b' , according to their use in the stack or chimney A, will hereinafter be called the "inner angular" bricks. In order to produce a certain taper in the height of the stack A, the outer angular bricks b in the present instance are divided into a series of twenty-one bricks of constantly-decreasing size and for convenience sake are numbered from 1 to 21, inclusive, in the drawings. The inner angular bricks b' are also divided in a series of twenty-one bricks of constantly-decreasing size.

The rectangular bricks a and a' and the outer and inner angular bricks b and b' permit of the construction of an octagonal chimney or stack A, such as shown in Fig. 1, or of any other required dimension and taper of stack or chimney to that shown and with a true vertical and lateral bond throughout by the arrangement of the same in the following manner: The base A' of the chimney A may be built of stone, concrete, common or standard brick, or with the rectangular bricks a and a' , as hereinbefore described. The base A' being square in cross-section, the batter A² is formed in the usual manner; but in the present instance it has been formed with the angular and rectangular bricks until the chimney has reached an octagonal shape. After this stage in the construction of the chimney has been arrived at the largest or first of the outer corner-bricks b is used, and to produce the taper in proper proportion in the chimney or stack A in the present instance three courses of each number of angular bricks b numbered 2 3 4 &c., are used in regular sequence, as clearly shown in Fig. 1. When the taper amounts to half of the width of a

rectangular brick, which corresponds to half of the width of the faces a^2 and a^6 thereof, it will be found that the angular brick 21 will be reached. From this point on the series of outer angular bricks b commence anew with No. 1, and there will be used one less rectangular brick on each face A³ of the chimney in each of the courses of brick above the angular bricks 21. By this arrangement of angular bricks in the corners or angles A⁵ of the chimney or stack A, in conjunction with the rectangular bricks arranged intermediate thereto, the formation of a true bond is made possible in the entire structure of the chimney or stack, which in this art is termed a "plumb bond." Where the thickness of the walls of the chimney A varies, owing to different heights of the same, there may be used in the construction of the walls either one or more of the larger rectangular bricks a and one or more of the outer angular bricks b , as shown in Fig. 2, or these larger rectangular bricks a and angular bricks b may be used in conjunction with the smaller rectangular bricks a' and angular bricks b' , as shown in Figs. 3 and 4. In the latter case the rectangular bricks a and a' in the different courses of bricks will be placed alternately on the outside and inside faces A³ and A⁴ of the stack A, as shown in full and dotted lines in Figs. 3 and 4, and in such manner will permit of the formation of a true lateral and vertical plumb bond throughout the structure. However, a true vertical bond can also be obtained by the arrangement of the rectangular bricks a and angular corner-bricks b , in which instance the corner-bricks form both the outer and inner corners or angles A⁵ and A⁶ of the chimney or stack, as shown in Fig. 2 and in the upper portion of Fig. 1. The true bond in the structure of chimney shown in Figs. 3 and 4 is, however, only made possible by the placing of the inner angular brick numbered 1 inside of the outer angular brick numbered 1, as will be readily understood in conjunction with Figs. 11 and 15, and in continuing this arrangement of angular bricks b and b' until the bricks numbered 7 are reached. As shown in Fig. 16, the brick 7 of the inner angular bricks is the smallest brick in the arrangement of this series of twenty-one bricks, and after this brick numbered 7 has been reached the brick 8 is used in conjunction with the outer angular brick 8 in regular sequence. In the present instance, however, the inner angular brick 8 is the largest in the series of twenty-one bricks of constantly-decreasing size, and this difference in the relative sizes of the inner and outer angular bricks numbered 8 is necessary, because the brick numbered 7 is as small as can be used, for the reason that the face b^{10} of the inner angular brick is reduced to zero by the regular decrease in size in the series, as clearly shown in Fig. 19. In Fig. 20 is shown the next course—that is, where No. 8 of the angular

bricks are used. Instead of using angular bricks in sets of three courses of the same number or size, as shown in Fig. 1, sets of any other number of courses of angular bricks may be used. This arrangement of bricks depends upon the taper of the stack desired.

In order to construct the flue B in the chimney or stack A of a size differing from that shown in Fig. 1 or of varying sizes, it is necessary to commence with an angular brick intermediate of the Nos. 1 to 21. When No. 21, however, has been reached, the next course of superposed corner or angle bricks in series commences with No. 1 in regular sequence until the desired height of the chimney has been obtained. In order to decrease the weight of the angular as well as the rectangular bricks, the same may be indented, as shown in Figs. 5 to 10, inclusive, or may be perforated, as shown in Fig. 18.

Having thus described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A chimney or stack composed of angular brick, each brick slightly less in size than the preceding one to form the corners of the chimney or stack and taper therein, rectangular brick to form the sides of the chimney or stack, and said angular brick and rectangular brick arranged in courses adapted to provide a true bond throughout of the structure.

2. A chimney or stack composed of angular brick in series, each brick in series slightly less than the preceding one to form the corners of the chimney or stack and taper therein, rectangular brick of two fixed sizes to form the sides of the chimney or stack and said angular brick and the two types of rectangular brick arranged in courses adapted to provide a true bond throughout of the structure.

3. A chimney or stack, composed of two types of brick, one type consisting of rectangular brick and the other consisting of angular brick, the angular brick adapted to form the inner and outer corners and the rectangular brick in conjunction with the angular brick adapted to form the sides of the chimney and by the courses of brick formed to provide a true plumb bond throughout of the structure.

4. A chimney or stack, composed of two types of brick, one type consisting of angular bricks and the other consisting of rectangular brick, the angular bricks in series superposed adapted to form the external and internal corners or angles and taper of the stack, and the rectangular brick in conjunction with the angular bricks adapted to form the sides of the stack and by the courses of brick formed to provide a true plumb bond throughout of the structure.

5. A chimney or stack, composed of two types of brick, one type consisting of angular bricks and the other consisting of two differ-

ent size rectangular bricks, the angular bricks in series superposed adapted to form the external and internal corners or angles and taper of the stack, and the rectangular bricks adapted to form intermediate of said angular corner-bricks and in conjunction therewith the sides of the stack, and by the courses of bricks formed to provide a true plumb bond throughout of the structure.

6. A chimney or stack, composed of two types of brick, one type consisting of angular bricks and the other consisting of two different size rectangular bricks, the angular bricks superposed and each brick of slightly less size than the preceding one adapted to form the external and internal angles or corners and taper of the stack, and the rectangular bricks adapted to form intermediate of said angular bricks and in conjunction therewith the sides of the stack, and by the courses of bricks formed to provide a true lateral and plumb bond throughout of the structure.

7. A chimney or stack, composed of two types of brick, one type consisting of two different size angular bricks and the other consisting of two different size rectangular bricks, the angular bricks adapted to form the external and internal corners or angles of the chimney and the rectangular bricks intermediate of said angular corner-bricks and at the point of junction with the same adapted to form courses of brick to provide a true lateral and plumb bond throughout of the structure.

8. A chimney or stack, composed of two types of brick, one type consisting of two different size angular bricks and the other type consisting of two different size rectangular bricks, the angular bricks in series adapted to form the external and internal corners or angles of the chimney and the rectangular bricks to form intermediate of the angular corner-bricks and at the point of junction therewith courses whereby is provided a true lateral and plumb bond throughout of the structure.

9. A chimney or stack, composed of two types of brick, one type consisting of two different size angular bricks and the other type consisting of two different size rectangular bricks, the angular bricks, in series superposed, and each brick in the series of slightly less size than the preceding one adapted to form the external and internal corners of the stack and the taper thereof and the rectangular bricks adapted to form intermediate of the angular bricks and at the point of junction with the same, courses, whereby is provided a true lateral and plumb bond throughout of the structure.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

GEORGE H. THIRSK.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.