

No. 897,035.

PATENTED AUG. 25, 1908.

J. TUTEUR.

TENSION AND SUPPORTING MEMBER FOR CONCRETE CONSTRUCTION.

APPLICATION FILED OCT. 3, 1906.

2 SHEETS—SHEET 1.

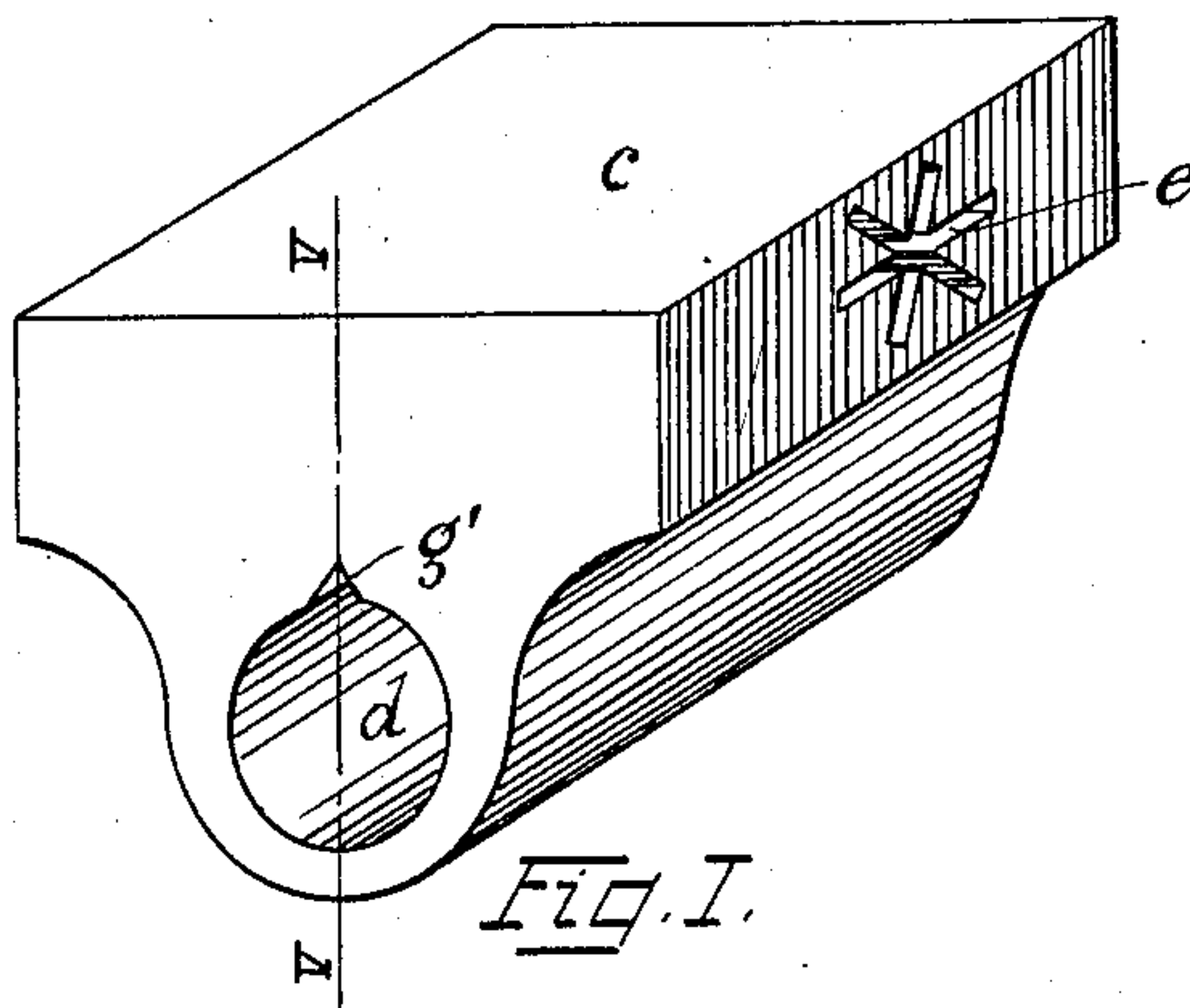


Fig. I.

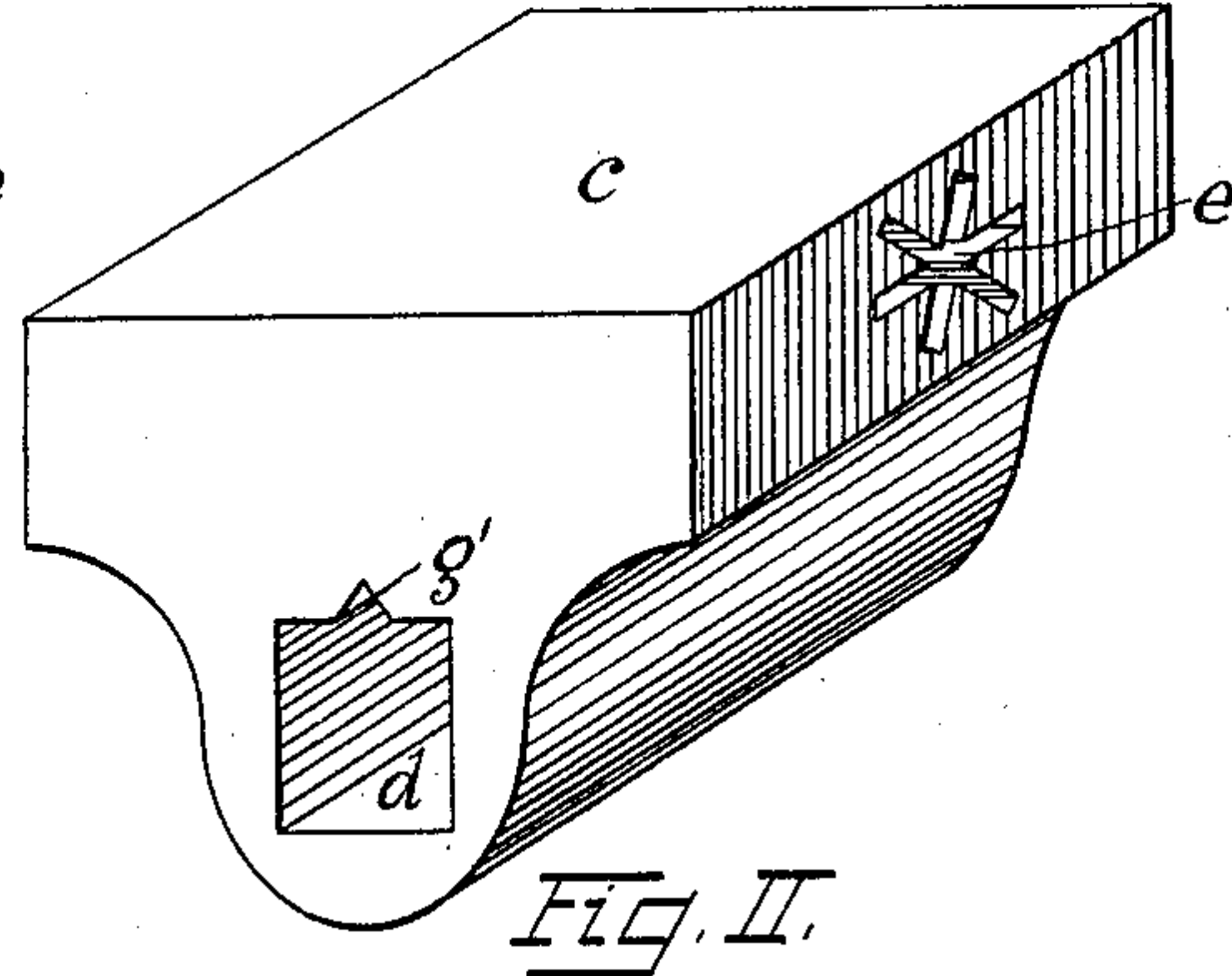


Fig. II.

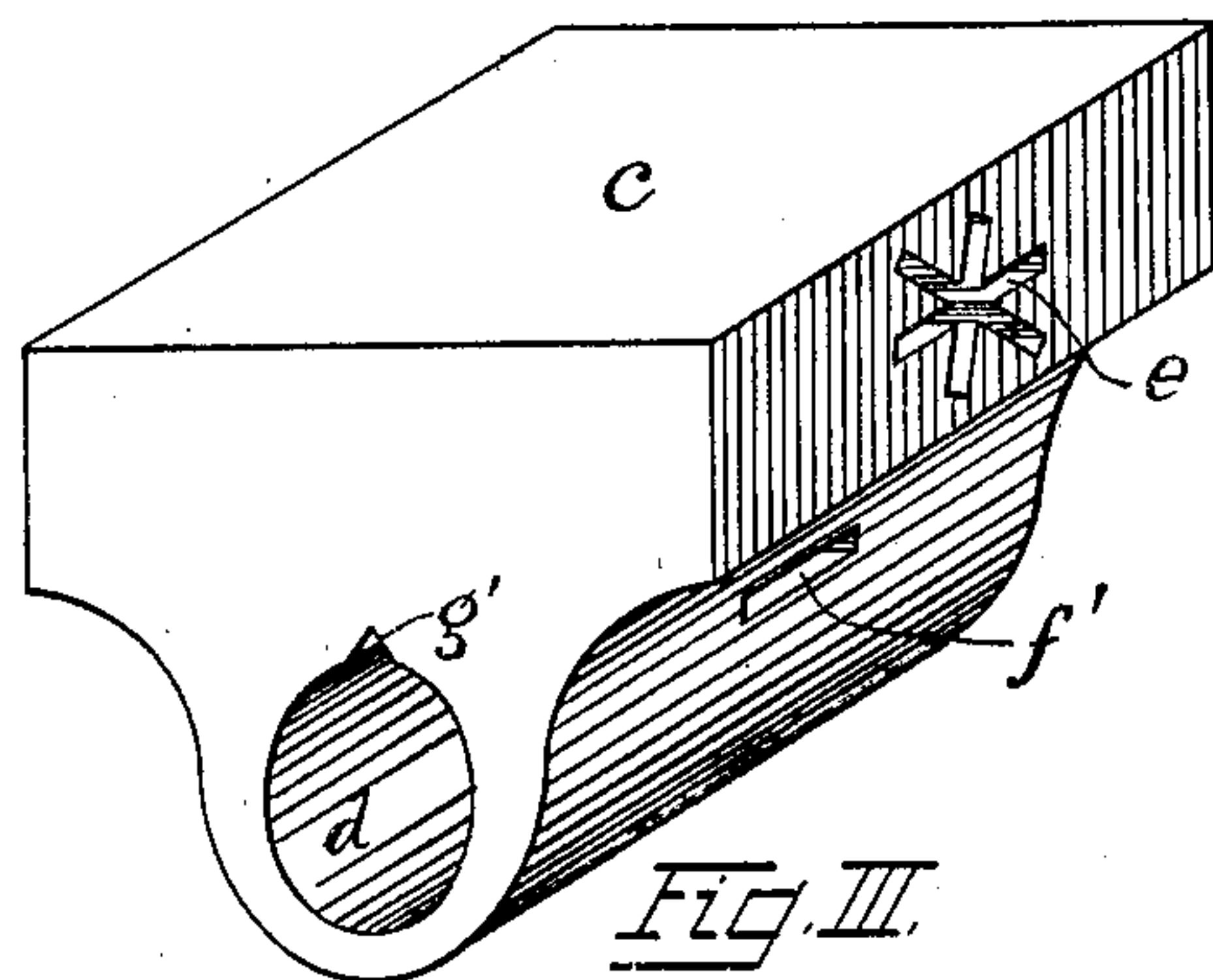


Fig. III.

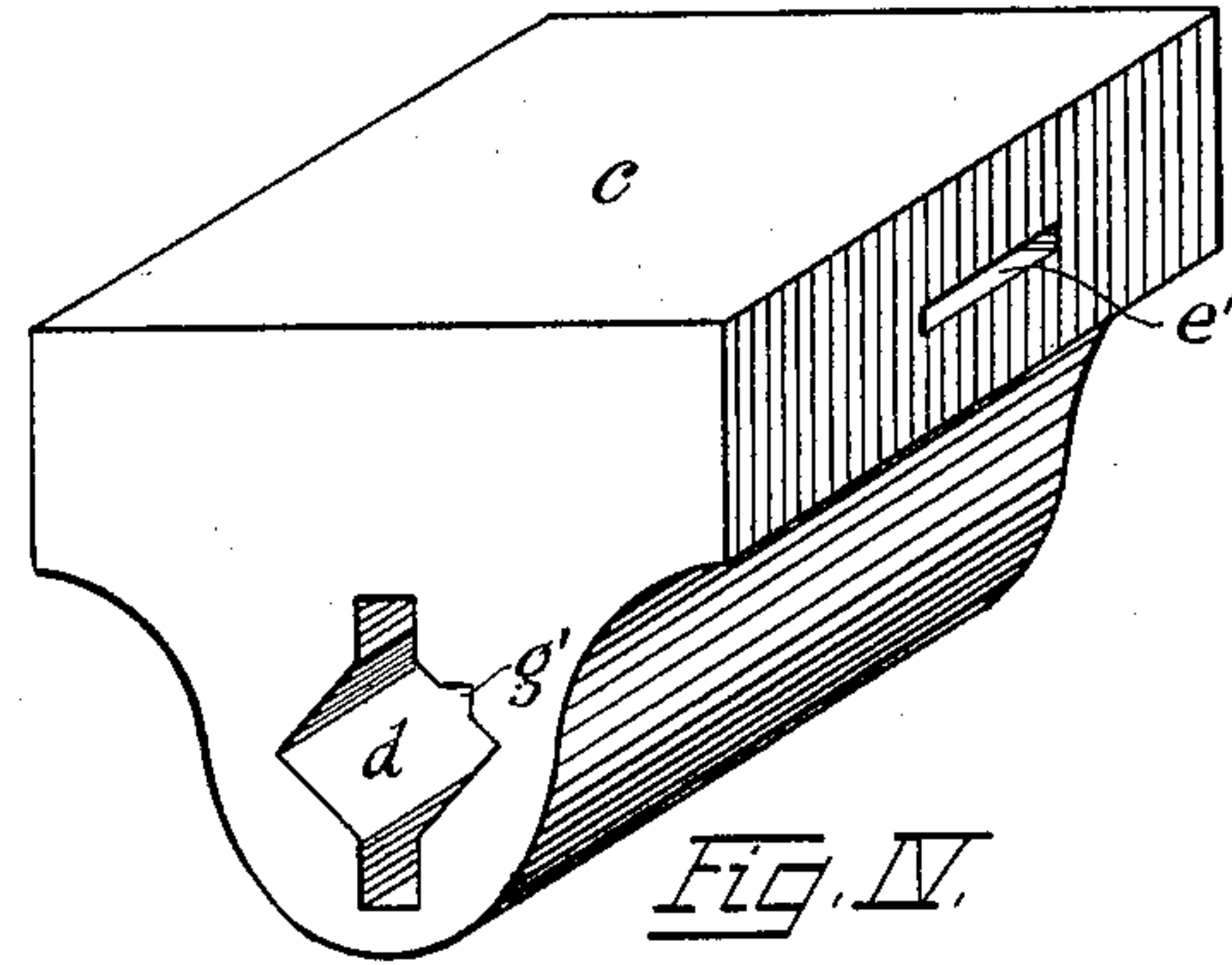


Fig. IV.

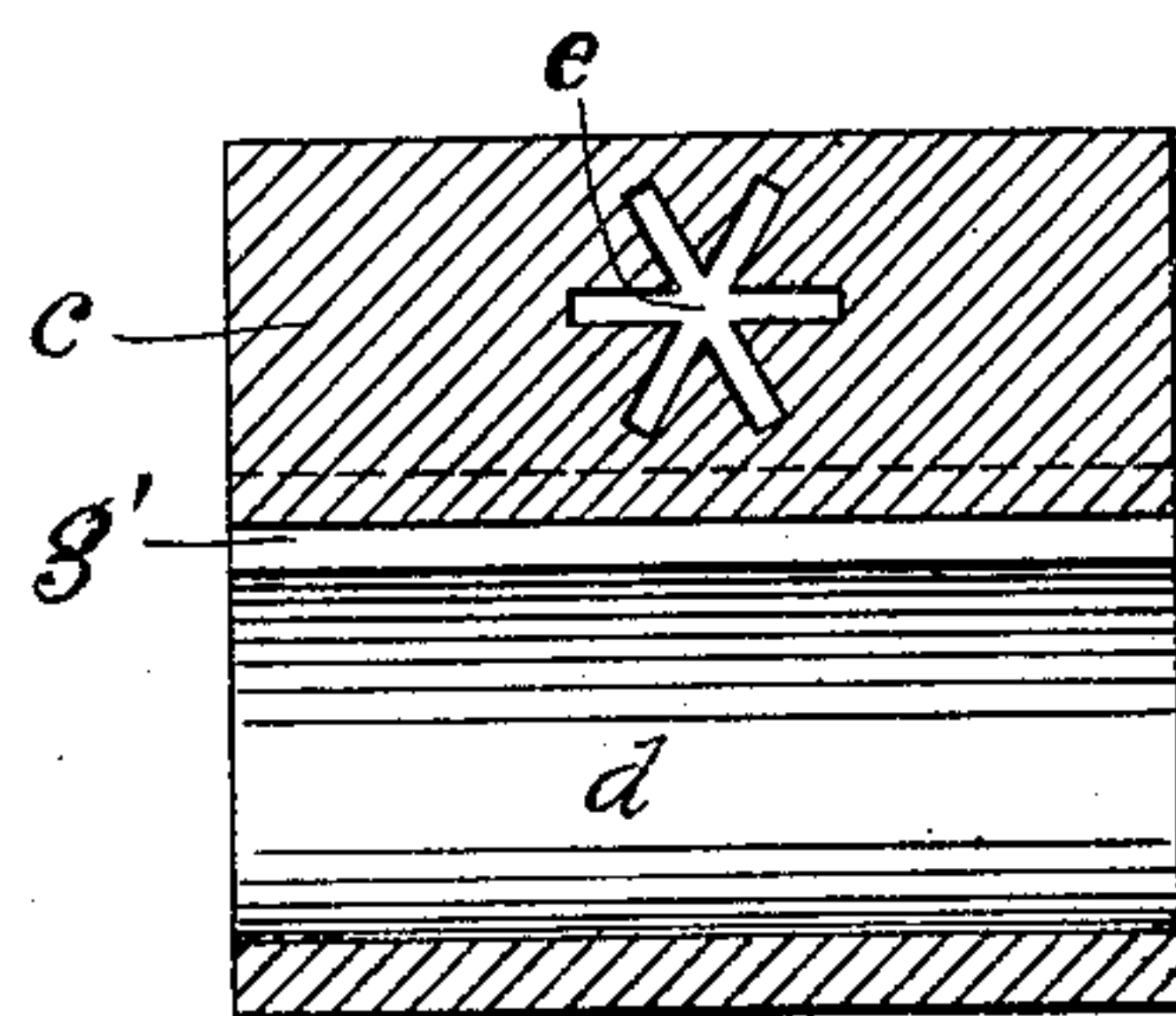


Fig. V.

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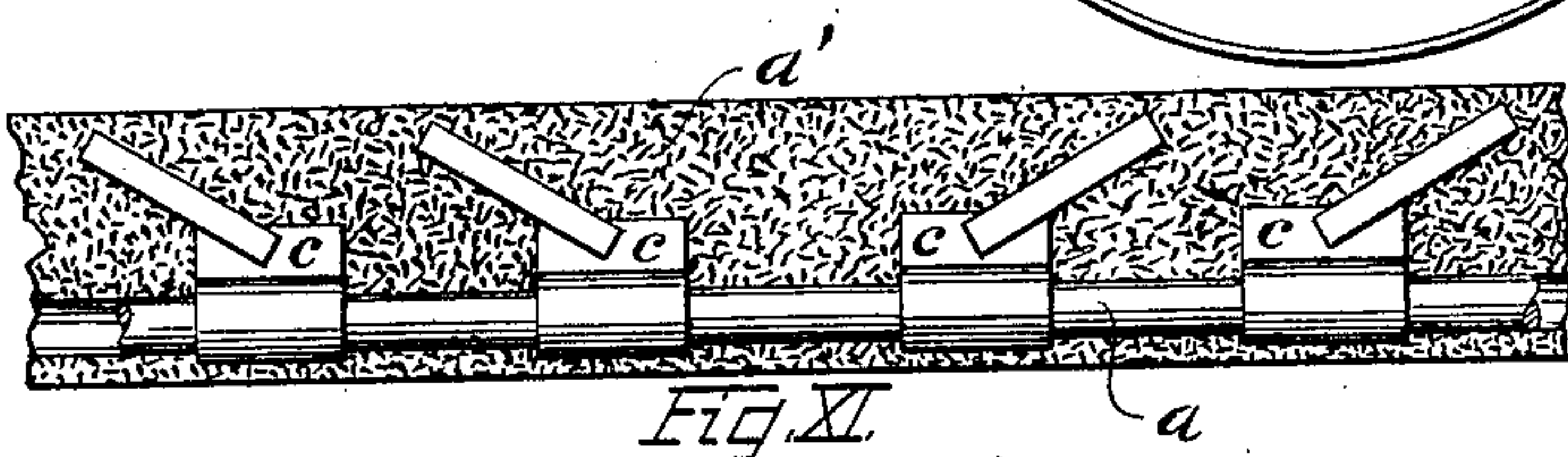
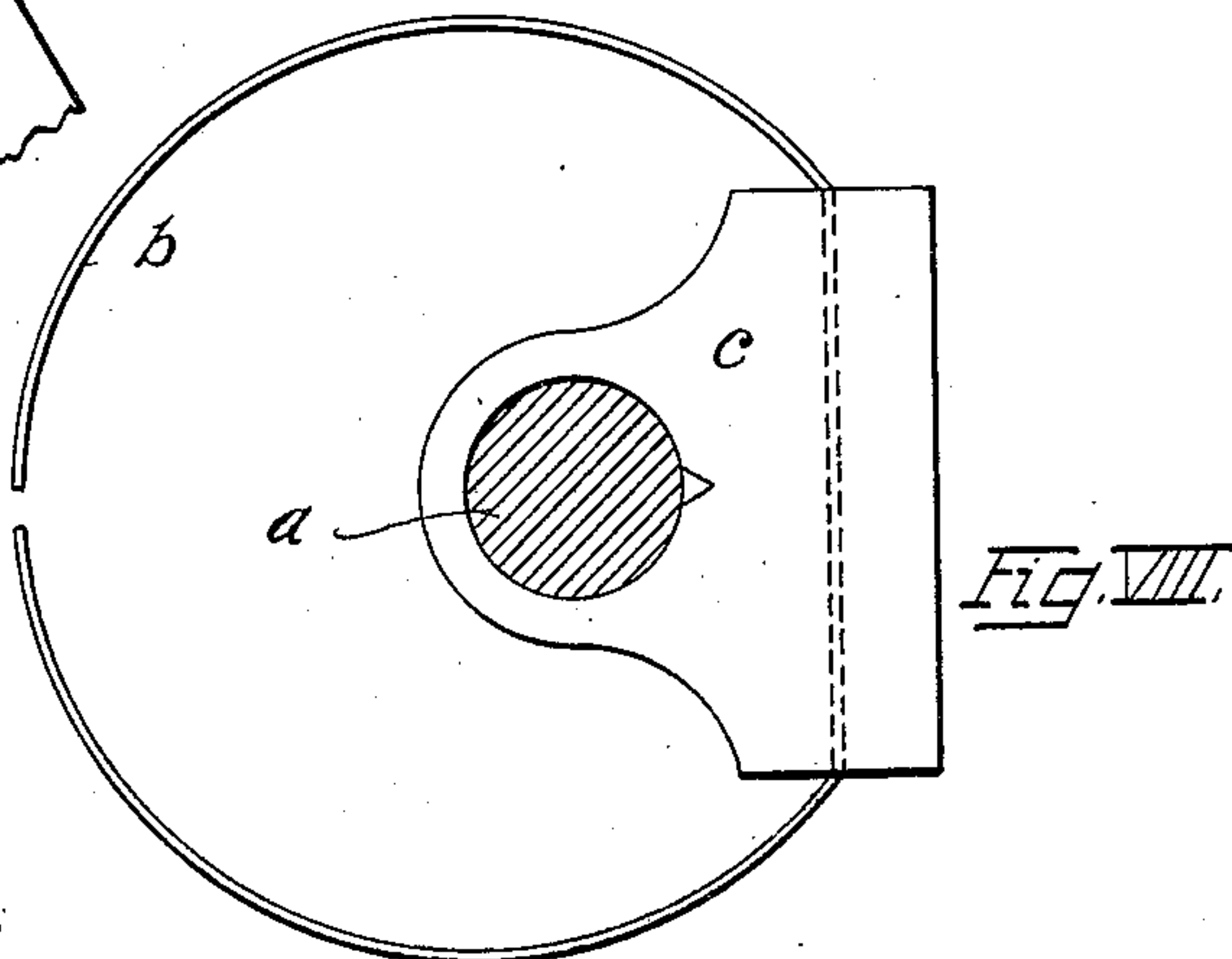
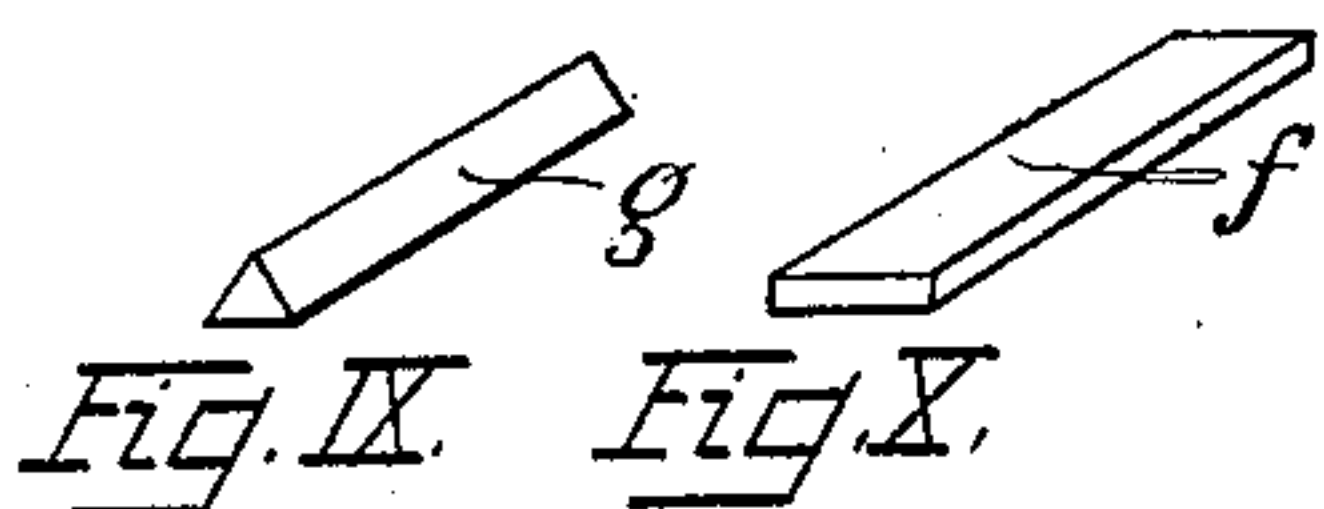
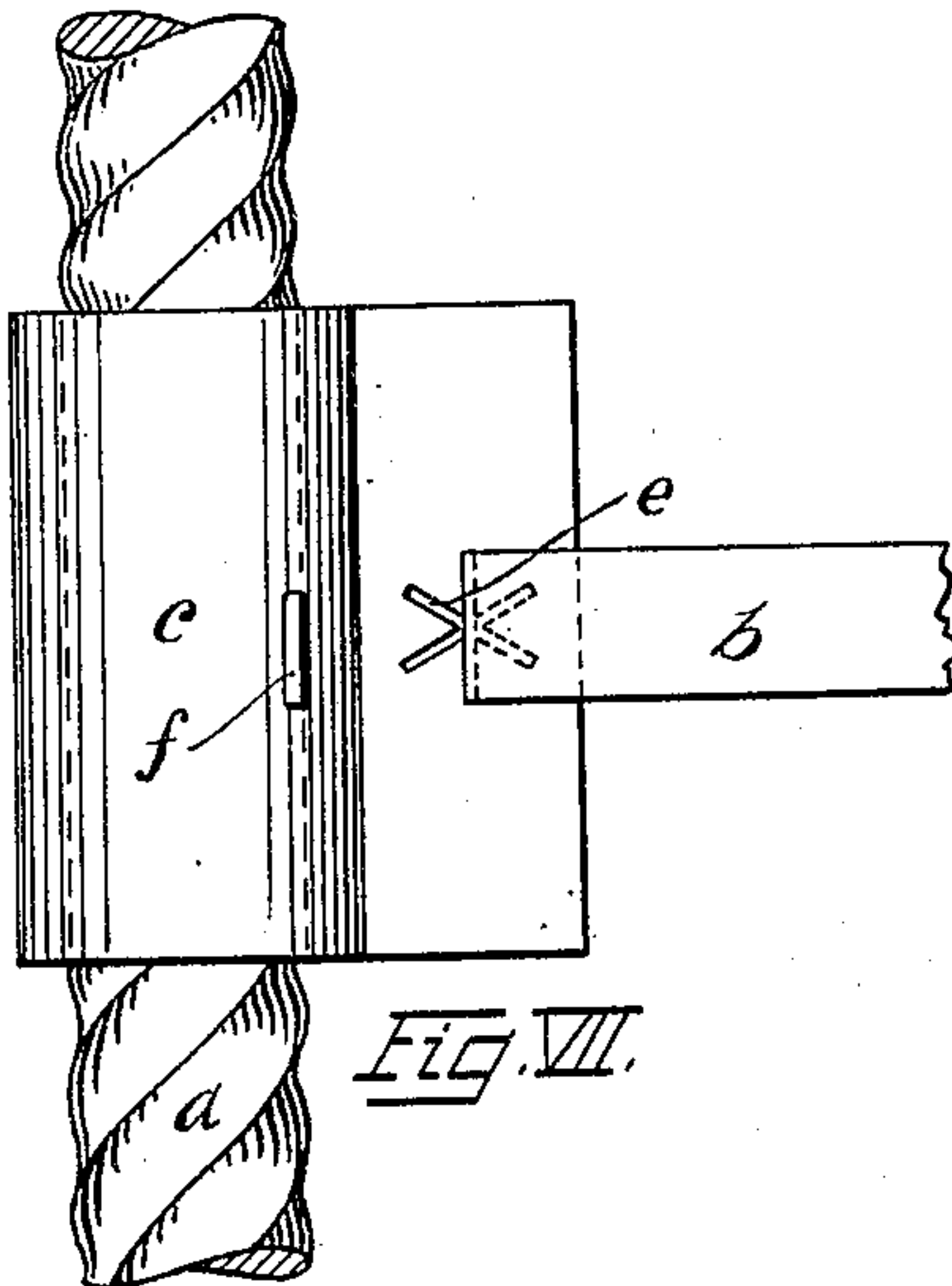
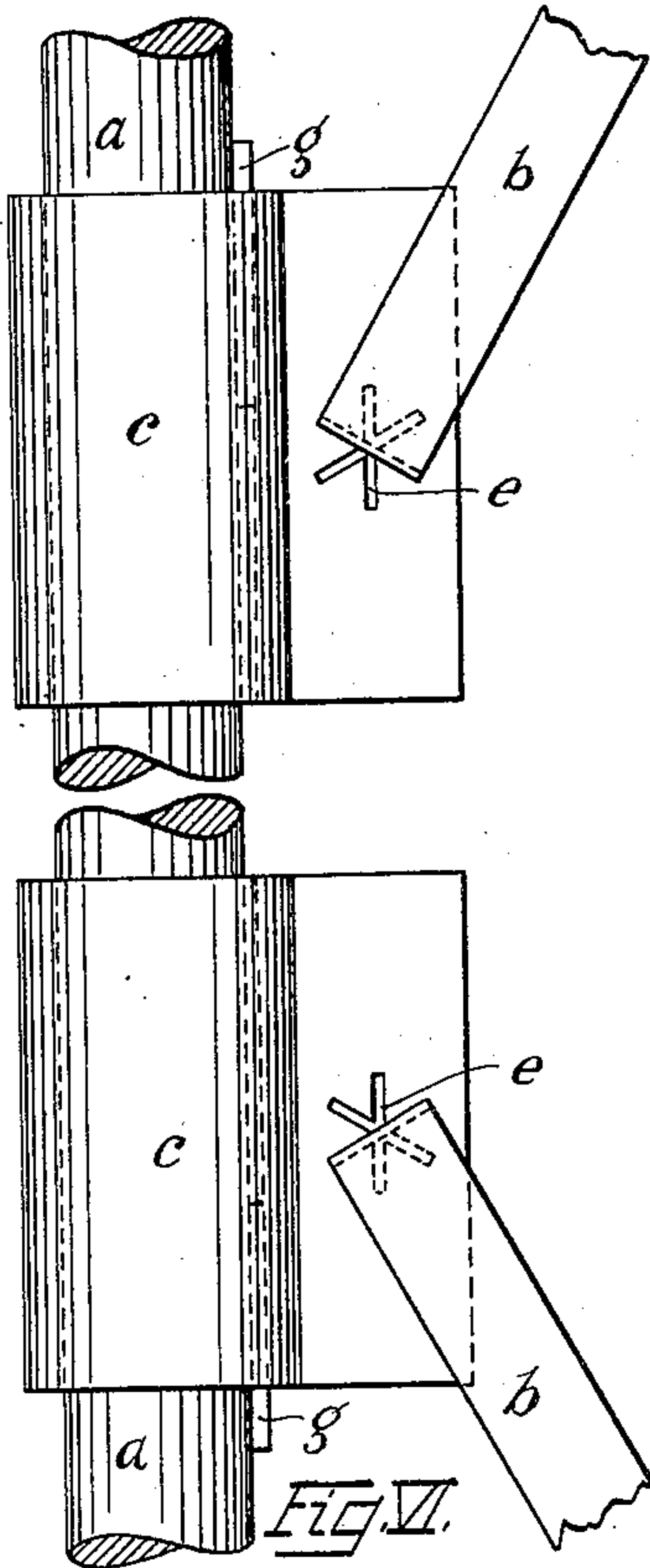
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

JULIUS TUTEUR, OF CLEVELAND, OHIO.

## TENSION AND SUPPORTING MEMBER FOR CONCRETE CONSTRUCTION.

No. 897,035.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed October 3, 1906. Serial No. 337,166.

*To all whom it may concern:*

Be it known that I, JULIUS TUTEUR, a citizen of the United States of America, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Tension and Supporting Members for Concrete Construction, of which the following is a specification.

10 My invention relates to improvements in tension and supporting members for concrete construction, and has for its object, the provision of means for strengthening such construction in the easiest and most efficient  
15 manner. The necessity of providing throughout structural members of concrete, sufficient steel or iron to take up the tensile strain, is now well recognized. Doubtless, the best method of accomplishing this, lies in provid-  
20 ing upon the principal steel structural member, numerous reinforcing parts or members angularly disposed with respect thereto, approximating the line of principal tensile stress; this composite member of course be-  
25 ing completely embedded in the concrete.

The practical embodiment of the foregoing structure now made use of in practice, comprises a rolled bar of appropriate cross section with relatively wide webs upon either  
30 side thereof. These webs are sheared from the bar at intervals, and bent at an appropriate angle therewith, to insure the proper anchorage, and carry the stress or strain from the adjacent concrete into the bar, or to  
35 the tension-member or chord thus formed. While this structure has its own advantages, it will be understood that the angular members thereof are strictly limited in number, length and cross section by the web portion  
40 of the bar, and my invention has proceeded with the thought of providing means whereby the angularly extending members may be adjusted in position upon the bar as desired, both as to the number, length and location  
45 thereof.

Briefly describing an embodiment of my invention, I may say that it comprises a bar or rod of any suitable cross section, whereon are keyed or properly secured anchorage  
50 members formed of castings suitably shaped to receive metal straps bent at an angle with the bar, to form shear members or angularly disposed stays extending into the body of the concrete.

55 Several modifications of my improvements

are shown in the annexed drawings, in connection with which I shall now further explain my invention, wherein;—

Figures I to IV. are perspective views of blocks or castings of different types adapted  
60 to be used as anchorage members. Fig. V. is a cross section of one of said castings. Fig. VI. illustrates two of such members as the same are positioned for use upon a bar or rod which is broken away. Fig. VII. illustrates  
65 another of said blocks mounted upon a twisted rod, and with the stay-members differently positioned and bent. Fig. VIII. is a plan view of still another block, with the stay-member circularly bent for use in colum-  
70 nar structures. Figs. IX and X. show keys; and, Fig. XI. depicts one of the complete structures equipped, and in use.

Throughout each of the several figures, the same character of reference has been em-  
75 ployed to indicate similar parts.

In considering the foregoing drawings, moreover, it should be understood that no full or detailed illustration or description can be given in this brief specification of the  
80 many types and applications of my invention, but I have endeavored to set forth typical examples thereof in a manner enabling any one to practice the same.

Referring first to Fig. XI. it will be seen  
85 that a bar or rod *a* of round cross section, for example, is embedded within the concrete beam *a'*, and upon it at intervals are positioned the castings *c*, with their shear mem-  
90 bers angularly bent or inclined to the vertical, in order to approximate the line of principal tensile stress therein. As is well understood, the mass of concrete itself is amply able to take care of the compressional strain,  
95 while the adhesion of the numerous shear members and anchors or castings, transmits directly to the chord or bar much of the tensile stress sustained by the entire structure. Accordingly, an arching or truss-like action  
100 is present, insuring maximum strength.

Considering now the other figures, I may explain the features of my invention more in detail. The first figures of the drawings show different types of castings *c*, which are  
105 longitudinally recessed at *d*, to accommodate bars of different cross section. A transversely extending opening or openings *e* are likewise provided for the reception of metal straps *b*, which are securely held within the  
110 casting, and may be bent to extend at the



proper angle into the concrete, as shown in Figs. VI to VIII. These castings or anchorage blocks may be placed in position upon the rods as closely together as are required, and during the progress of the work, being securely keyed thereon by means of appropriate keys *f*, *g*, inserted within the keyways *f'*, *g'*. It will be understood, of course, that the dimensions of all these members may thus be readily conformed to the nature and character of the work under way, and particularly that the shear members or angularly extending straps *b* are capable of being readily placed in any desired position, and being made lighter or heavier, and longer or shorter, as is required.

Further modifications could readily be set forth herein, but inasmuch as my invention does not concern itself with the details such as would necessarily be involved, or are herein set forth, I may conclude this explanation with the statement that I desire to reserve to myself all such modifications as may consist in change of form or require only mechanical skill.

I therefore claim the following:—

1. In a structure of the class described, the combination with a metal bar or rod, of a plurality of anchorage-blocks secured at intervals thereto, said blocks being respectively provided with transverse openings, and metal straps extending through said openings and bent at an angle with the bar or rod to form supports or stays, substantially as set forth.

2. In a tension and supporting member for concrete construction, the combination with a rod or bar, of a plurality of blocks or castings secured at intervals thereto, each being equipped with transverse openings, and metal straps extending through said openings and bent at an angle with the rod and block to form stays or supports adapted to transmit tensile stress thereto, substantially as set forth.

3. A universal tension member for concrete construction, comprising a rod of substantially uniform cross-section, a plurality of adjustable anchorage-blocks positioned thereon; the same consisting of a metallic casting having a longitudinal bore and transverse openings angularly disposed with respect to each other, keys respectively securing the blocks in place upon the rod, and shear members extending through the transverse openings in the blocks and bent at an angle therewith and with said rod, to lie within the concrete structure, substantially as set forth.

4. In a concrete structure, the combination with the body of concrete, of a tension member embedded near the lower portion thereof comprising a metal rod, castings secured to said rod and equipped with transverse openings, and metal straps retained

within the openings in said castings and bent at angles inclined to the vertical approximating the lines of principal tensile stress, substantially as set forth.

5. A universal tension member for concrete construction, comprising a rod of substantially uniform cross section, and a plurality of adjustable blocks or castings embracing said rod and advantageously secured along said rod in position to take up tensile stress from the concrete the same having transverse passages or openings, and shear members inserted within said passages in the blocks and adapted to extend within the body of concrete, substantially as set forth.

6. In an anchorage-block for concrete tension members, the combination with a casting having a longitudinal bore to receive the tension-rod, and a key-way, of transverse openings angularly disposed with respect to each other and adapted to receive metal straps or shear members, substantially as set forth.

7. In a tension member for concrete construction, the combination with a rod, of a plurality of anchorage-blocks adjustable thereon, keys securing said blocks in their requisite positions upon the rod, and shear members extending within said blocks and bent at angles to the vertical approximating the lines of principal tensile stress, substantially as set forth.

8. In a reinforced concrete structure, the combination with the body of concrete, of a tension rod of substantially uniform cross-section embedded therein, anchorage blocks thereon, said anchorage blocks having longitudinal bores for engaging the rod, and transverse passages or receptacles, keys respectively securing the blocks in any desired position upon the rod, and metal straps inserted within said transverse receptacles in the blocks, bent to extend at an angle approximating the lines of principal stress in the body of the concrete, substantially as set forth.

9. In a tension member for concrete construction, the combination with a rod having substantially uniform cross-section, of a plurality of anchorage blocks positioned thereon; the same comprising relatively massive castings having a longitudinal bore substantially the diameter of the rod, and transverse openings adjacent to the rod, keys respectively securing the blocks in position upon the rod, and shear members extending through the transverse openings in the blocks and wholly supported thereby exterior of said rod, substantially as set forth.

10. In a reinforced concrete structure, the combination with a body of concrete, of a tension rod of substantially uniform cross-section longitudinally embedded therein, a plurality of relatively massive cast anchorage blocks keyed upon said rod; the same

being provided with longitudinal bores for  
receiving the rod and transverse passages po-  
sitioned above or beyond said rod, and shear  
members inserted within said openings in the  
5 blocks and keyed to the rod solely through  
the bodies of said blocks, substantially as set  
forth.

Signed at Cleveland, this 22nd day of  
Sept. A. D. 1906, in the presence of the un-  
dersigned witnesses.

JULIUS TUTEUR.

Witnesses:

ADOLF TUTEUR,  
ALBERT LYNN LAWRENCE.