

No. 703,119.

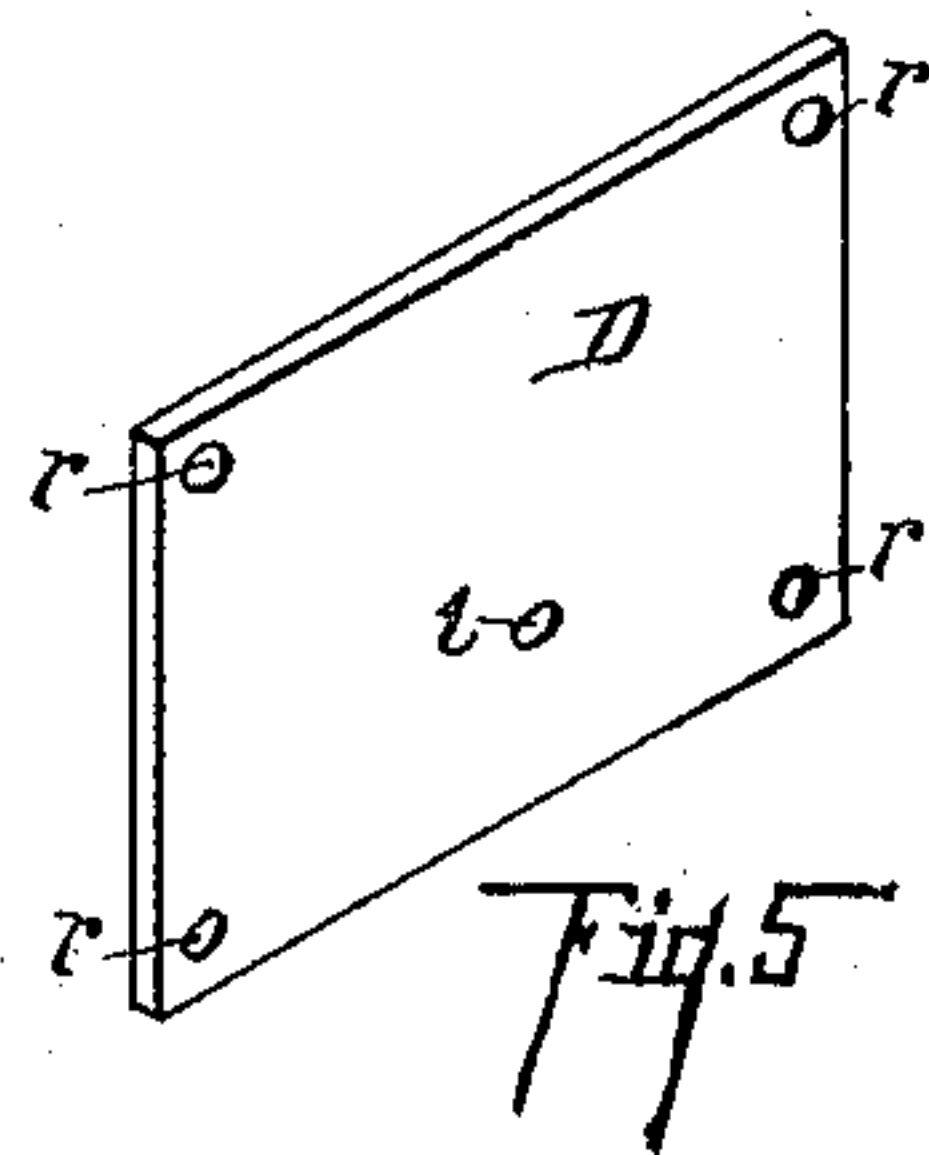
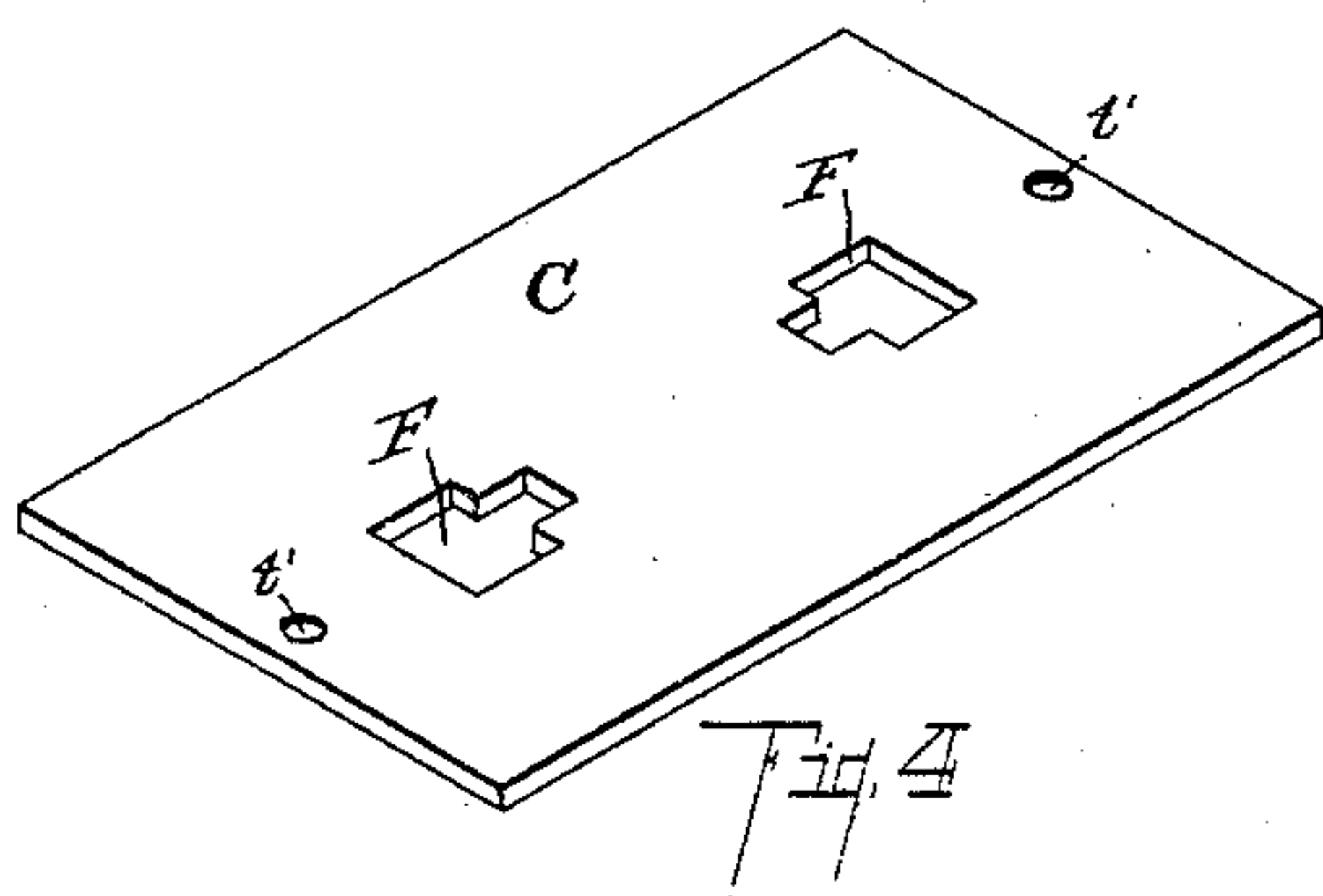
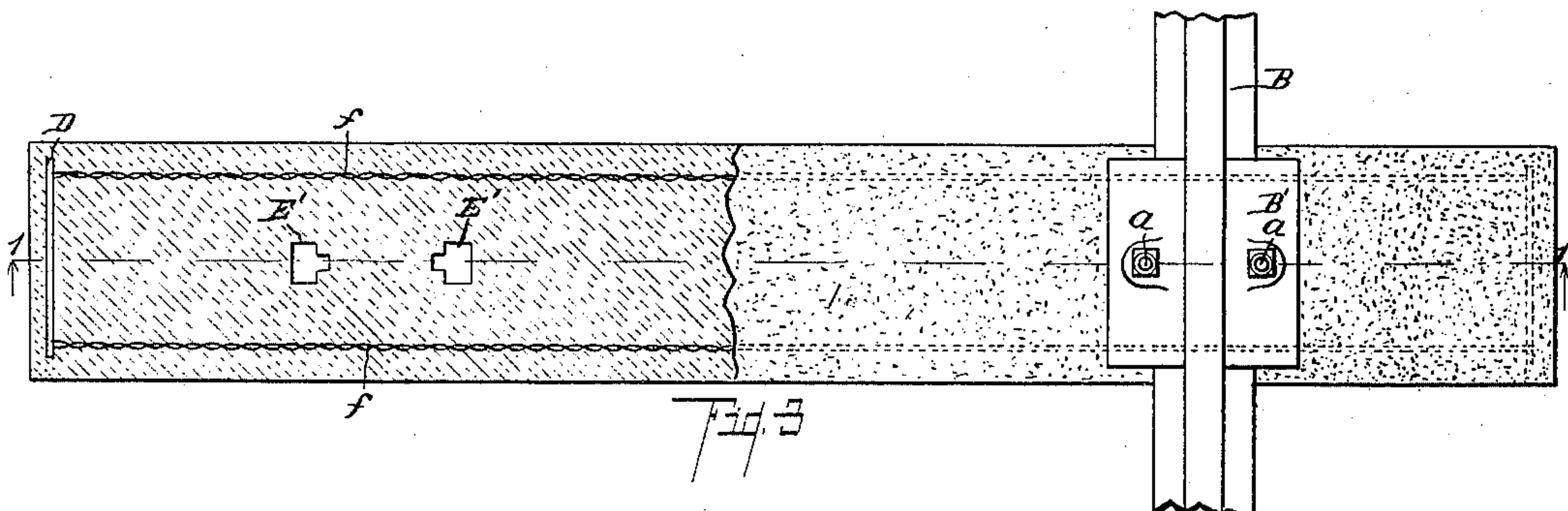
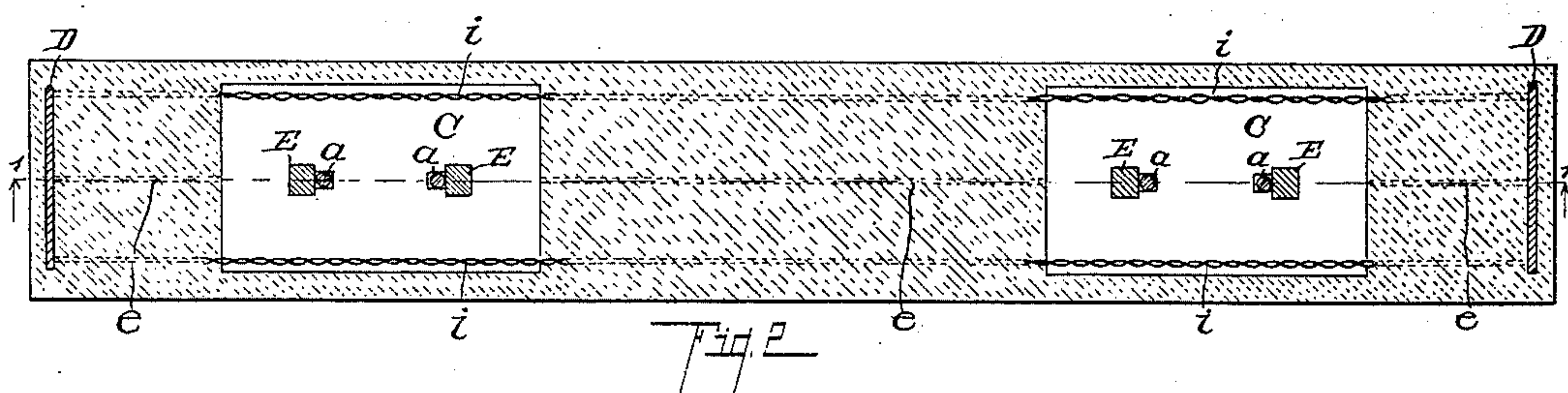
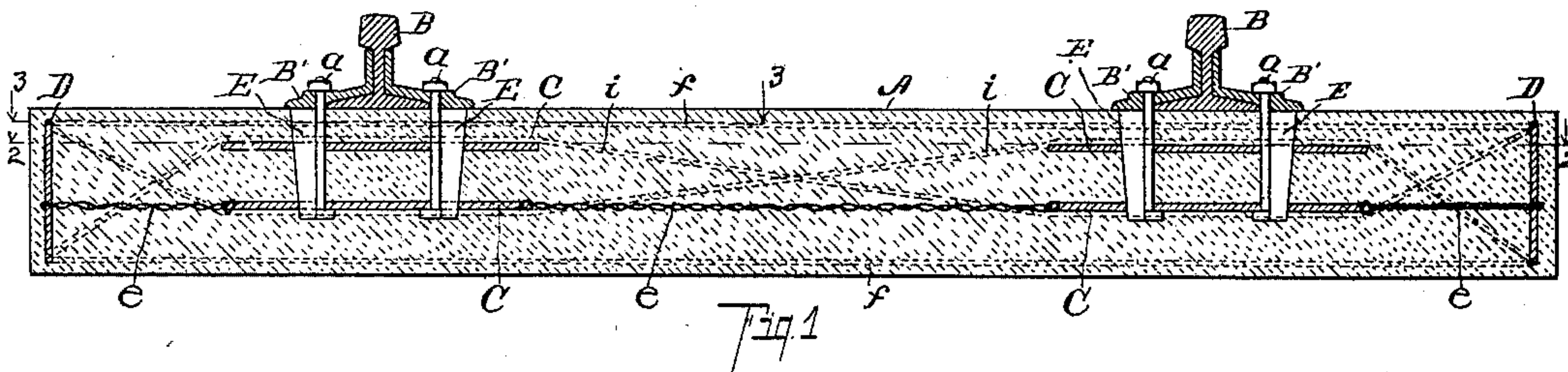
Patented June 24, 1902.

A. F. CROTHER.

RAILWAY TIE.

(Application filed Feb. 1, 1902.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

ALLEN F. CROTSER, OF FULTON, MICHIGAN.

RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 703,119, dated June 24, 1902.

Application filed February 1, 1902. Serial No. 92,103. (No model.)

To all whom it may concern:

Be it known that I, ALLEN F. CROTSER, a citizen of the United States, residing at the village of Fulton, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Railway-Ties, of which the following is a specification.

This invention relates to improvements in cement or composition sleepers or ties for railways. The use of cement or composition sleepers or ties for railroads has been found impracticable, for the reason that they have been found to crumble under the heavy jarring action of trains passing over them, and, further, in the difficulty of securing the rails thereto in a satisfactory manner.

The objects of this invention are, first, to provide an improved cement or composition tie or sleeper; second, to provide an improved means of securing the rail in position on the tie, whereby the jar of the train in passing over the tie is to a great extent removed; third, to provide an improved cement or composition tie to which the rail may be easily and quickly secured in position after the tie is placed in position in the road-bed and from which it may be readily removed; fourth, to provide a tie embodying the above features which shall be simple in its construction and convenient to use and of great durability and comparatively light in its structure.

Further objects will definitely appear in the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in this specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail longitudinal sectional view of a structure embodying the features of my invention, taken on line 1 1 of Fig. 2, the embedded trusses being indicated by dotted lines. Fig. 2 is a detail longitudinal sectional view of the same, taken on line 2 2 of Fig. 1. Fig. 3 is a top plan view of the same, illustrated, with a section of rail secured in

position and detailed on a line corresponding to line 3 3 of Fig. 1 to show the details of construction. Fig. 4 is a detail perspective view of one of the plates C of the fastening device. Fig. 5 is a detail perspective view of one of the plates D, to which the trusses are secured.

In the drawings all of the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, A represents the body portion of the tie, which is preferably a Portland cement, composition, or suitable concrete.

B B are the rails of the track.

C represents plates, preferably four in number, in each tie, having keyhole-slots F. These plates are embedded in the body portion in positions, as illustrated in Fig. 1, and the body portion formed around them, so as to leave an opening, as at E', which registers with the keyhole-slots F of the plates C. Four of these plates are preferred by me, although I have found two entirely satisfactory. The rail B may then be placed in position on the tie and the bolts *a* inserted in the openings E' and moved inwardly to engage the narrowed portion of the slots F and a suitable wedge-block E inserted to retain them in position. Rail-plates B' of the usual construction are then secured in position by the bolts *a*, and these plates preferably extend outwardly far enough to cover the block E. While these wedges or blocks are preferably a moderately-snug fit, they permit a slight vibration of the bolts *a*, and thus relieve the tie of this motion, which is so destructive to a tie formed of artificial stone or concrete. Further, they may be of a resilient material; but that is not found necessary.

The plates C are bound together by cables *e*, so that they serve a double purpose of fastening-plates and as binders. These plates are also secured to the end plates D, which are arranged toward each of the ties in a vertical position, perforations *t t'* being provided in the plates as a convenient means of attachment. The structure is also further bound

together by the truss-cables *f* and *i*. The truss-cables *f* pass from the corners of the plates D entirely through the tie to the end plate, to which they are secured. The truss cables or rods *i* are arranged in the following manner: One end of a cable is, for instance, secured to the lower corner of one of the plates D, as at *r*. It is then passed upwardly over the upper plate C at that end, thence downwardly under the lower plates C at the opposite end, thence upwardly to the top of the plate D on the opposite end.

From the above it will be noted that all of the parts of the tie are firmly and securely bound together and that should any breakage occur it must be a very serious one in order to affect the utility of the tie.

A tie constructed in this manner is found to be strong and very durable and can be formed of a moderate size and still be effective for the purpose. The construction of the fastening device, as before stated, relieves the body portion of a large amount of the vibration, and thus greatly adds to the durability of the tie. The fastener also provides a convenient means whereby the rail can be attached or removed or replaced without in any wise injuring the structure. It also provides a very convenient attaching means, one which is readily used by inexperienced workmen.

I have described my improved railroad-tie in the form I believe to be the most desirable. I am aware, however, that it can be considerably varied in its structural details without departing from my invention.

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

1. In a composition railway-tie, the combination of a body portion A; fastening-plates C having keyhole-slots F therein; end plates D arranged in a vertical position, toward the ends of the said body portion; cables *e* securing said fastening and end plates together; truss-cables *f* securing said end plates together; truss-cables *i* secured toward the upper edge of one of said end plates, and passing under the fastening-plate nearest it, and over the fastening-plate on the opposite end, and secured to the lower edge of the opposite end plate, all embedded in said body portion; openings E' in said body portion which register with the openings F in the fastening-plates C; bolts *a* adapted to be inserted in said openings and engage said plates C, and project above the face of said body portion, to secure the rail in position; and a wedge-block E to retain said bolts in position, all coacting for the purpose specified.

2. In a composition railway-tie, the combination of a body portion A; fastening-plates C having keyhole-slots F therein; end plates D arranged in a vertical position, toward the ends of the said body portion; cables *e* securing said fastening and end plates together;

truss-cables *i* secured toward the upper edge of one of said end plates and passing under the fastening-plate nearest it, and over the fastening-plate on the opposite end, and secured to the lower edge of the opposite end plate, all embedded in said body portion; openings E' in said body portion which register with the openings F in the fastening-plates C; bolts *a* adapted to be inserted in said openings and engage said plates C, and project above the face of said body portion, to secure the rail in position; and a wedge-block E to retain said bolts in position, all coacting for the purpose specified.

3. In a composition railway-tie, the combination of a body portion A; fastening-plates C having keyhole-slots F therein; end plates D arranged in a vertical position, toward the ends of the said body portion; cables *e* securing said fastening and end plates together; truss-cables *f* securing said end plates together; all embedded in said body portion; openings E' in said body portion which register with the openings F in the fastening-plates C; bolts *a* adapted to be inserted in said openings and engage said plates C, and project above the face of said body portion, to secure the rail in position; and a wedge-block E to retain said bolts in position, all coacting for the purpose specified.

4. In a composition railway-tie, the combination of a body portion A; fastening-plates C having keyhole-slots F therein; cables *e* securing said fastening and end plates together, all embedded in said body portion; openings E' in said body portion which register with the openings F in the fastening-plates C; bolts *a* adapted to be inserted in said openings and engage said plates C, and project above the face of said body portion, to secure the rail in position; and a wedge-block E to retain said bolts in position, all coacting for the purpose specified.

5. In a composition railway-tie, the combination of a body portion A; fastening-plates C having keyhole-slots F therein; all embedded in said body portion; openings E' in said body portion which register with the openings F in the fastening-plates C; bolts *a* adapted to be inserted in said openings and engage said plates C, and project above the face of said body portion, to secure the rail in position; and a wedge-block E to retain said bolts in position, all coacting for the purpose specified.

6. In a composition railway-tie, the combination of a body portion A; fastening-plates having keyhole-slots embedded therein; cables securing said plates together; openings in said body portion which register with slots in said fastening-plates; bolts adapted to be inserted in said openings and engage said plates and project above the face of said body portion to secure the rail in position and a wedge-piece to retain said bolts in position for the purpose specified.

7. In a composition railway-tie, the combination of a body portion A; fastening-plates having keyhole-slots embedded therein; openings in said body portion which register with
5 slots in said fastening-plates; bolts adapted to be inserted in said openings and engage said plates and project above the face of said body portion to secure the rail in position;

and a wedge-piece to retain said bolts in position, for the purpose specified. 10

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

ALLEN F. CROTSER. [L. S.]

Witnesses:

D. W. COOK,

JOHN G. WOODS.