

(No Model.)

2 Sheets—Sheet 1.

R. T. WHITE.
STREET RAILWAY CONSTRUCTION.

No. 443,027.

Patented Dec. 16, 1890.

Fig. 1.

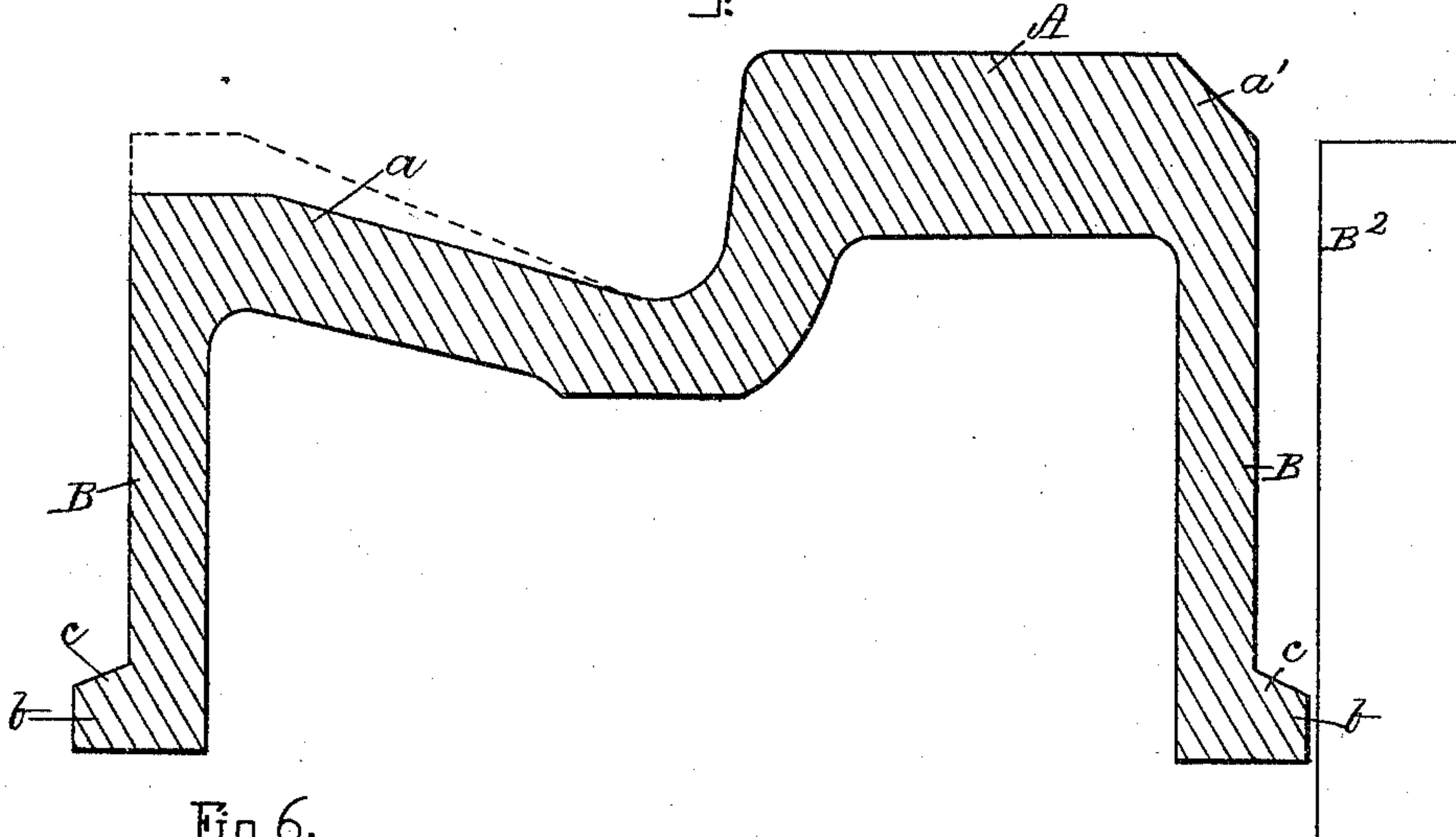


Fig. 6.

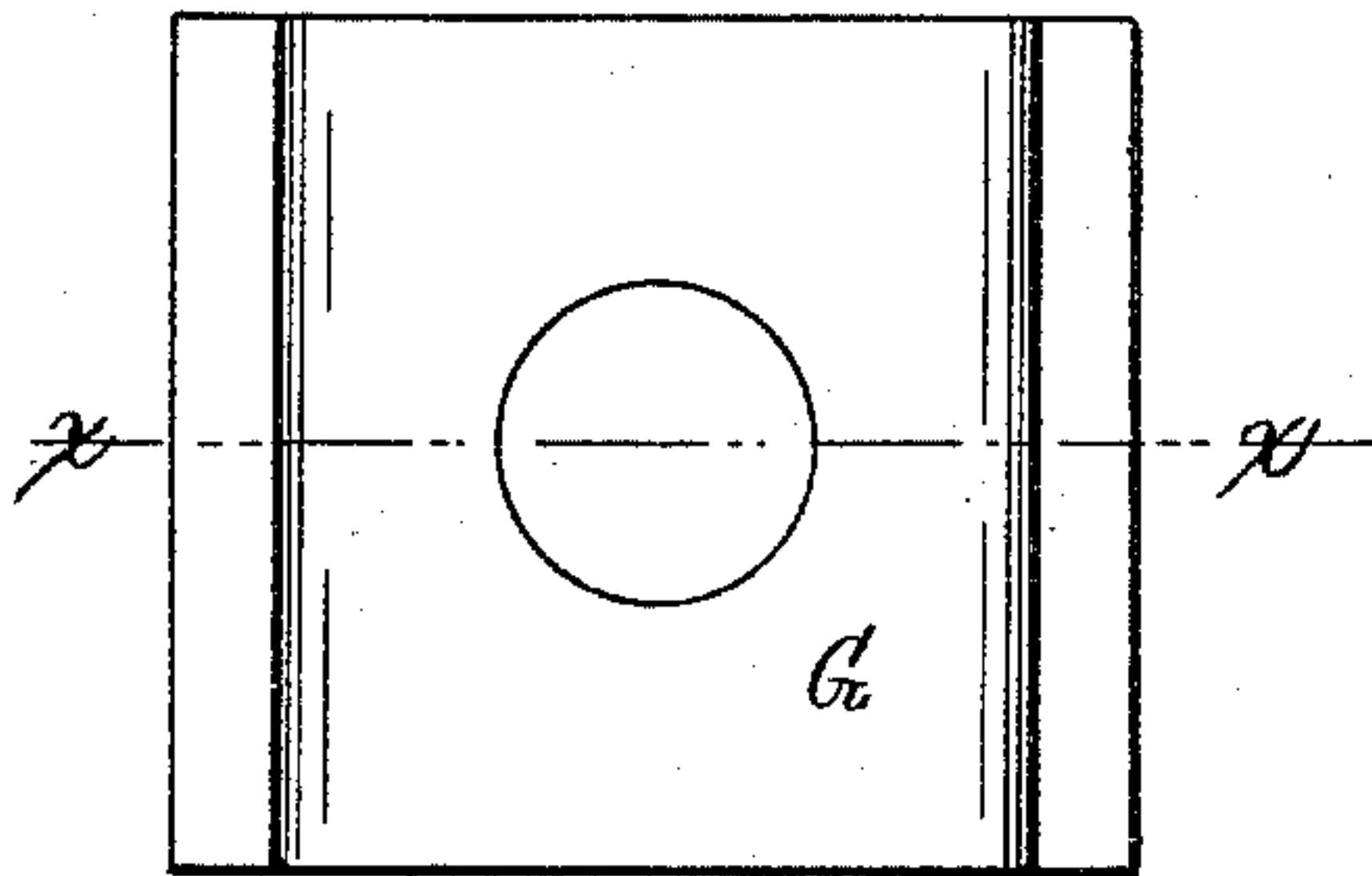


Fig. 2.

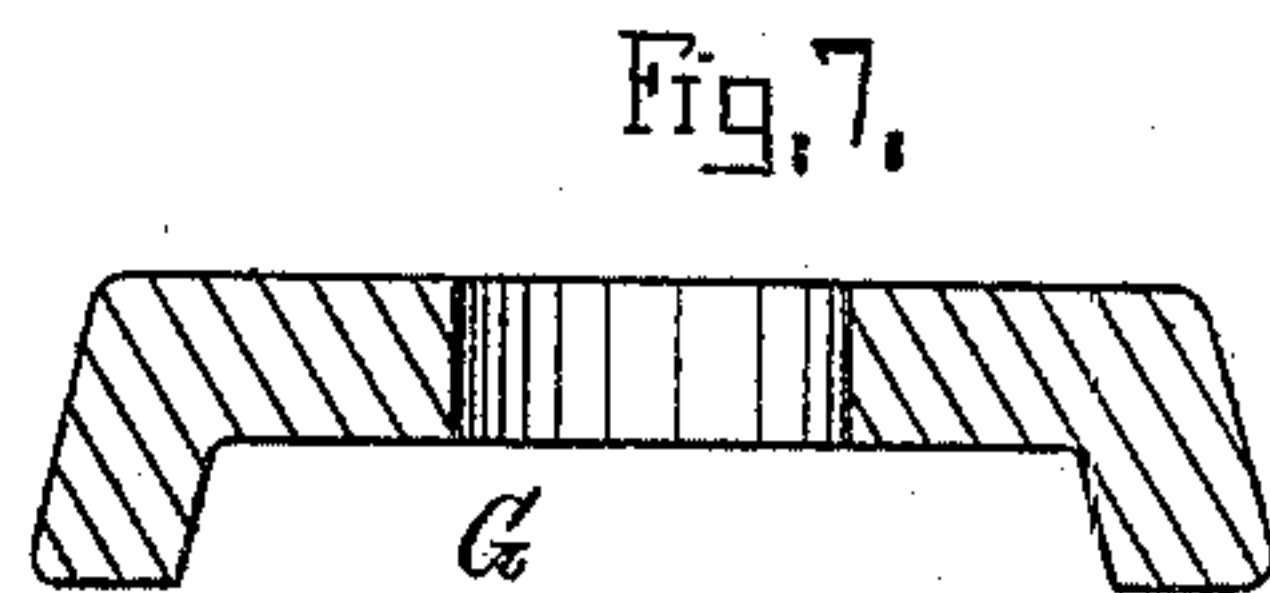


Fig. 7.

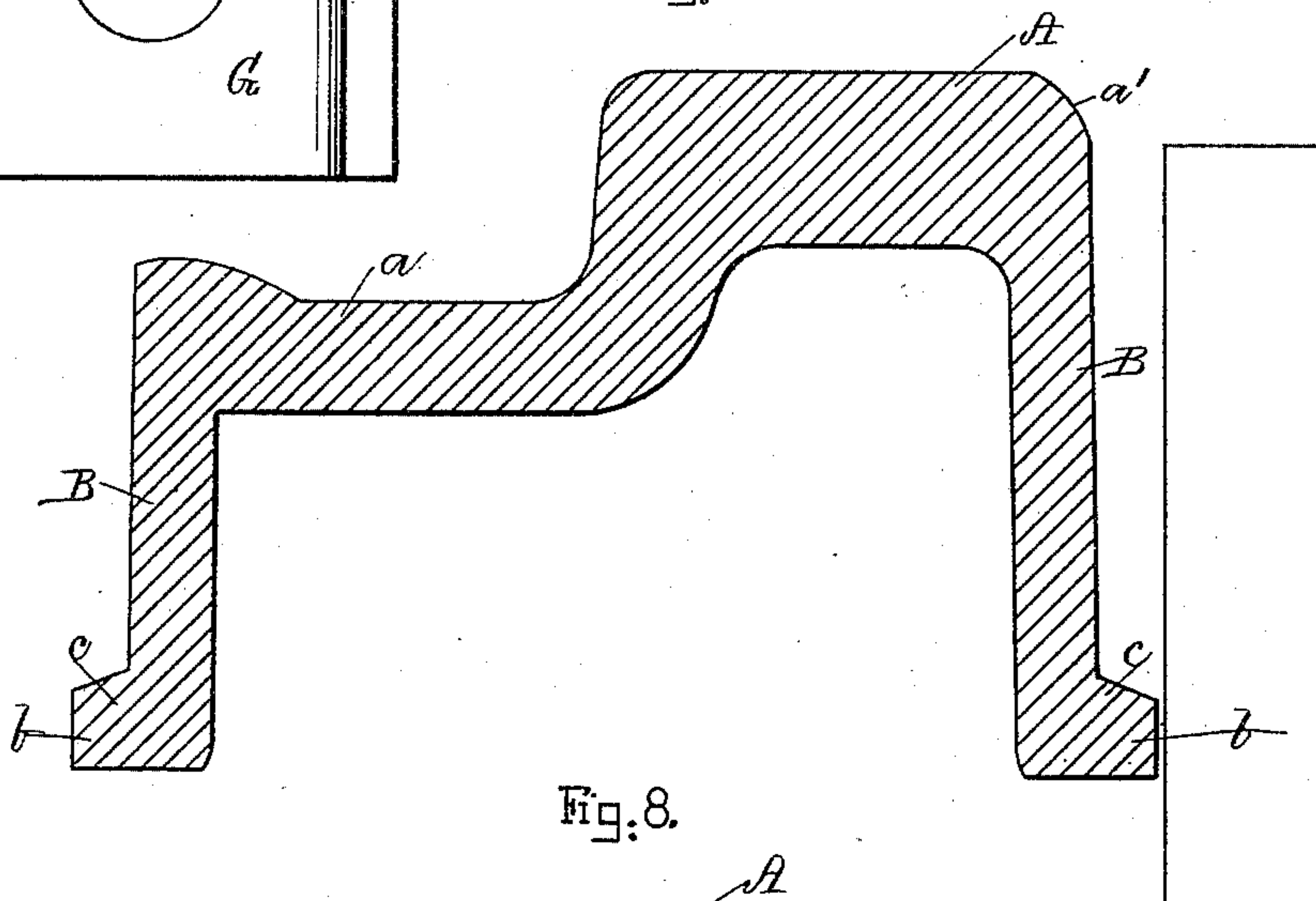
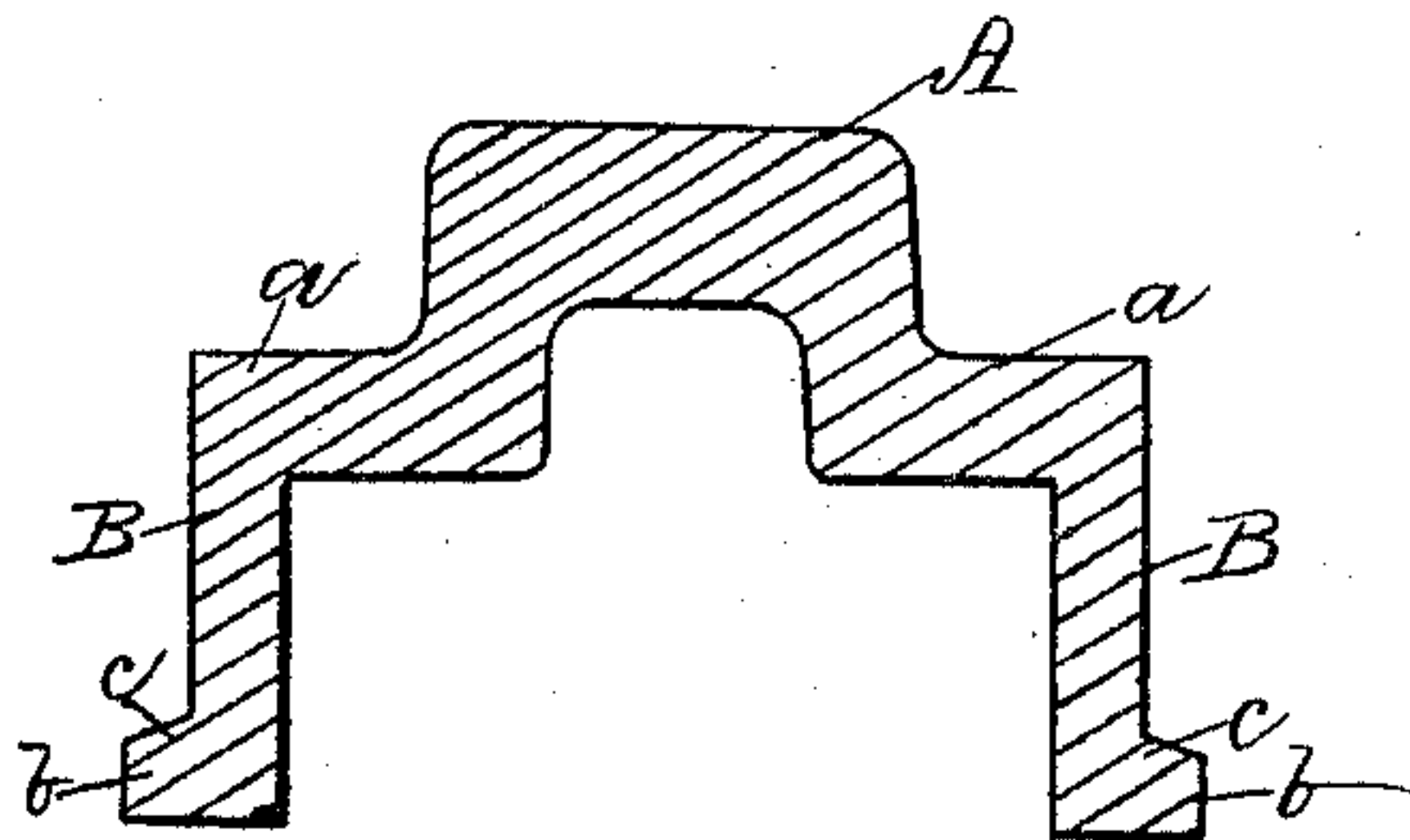


Fig. 8.



Witnesses.

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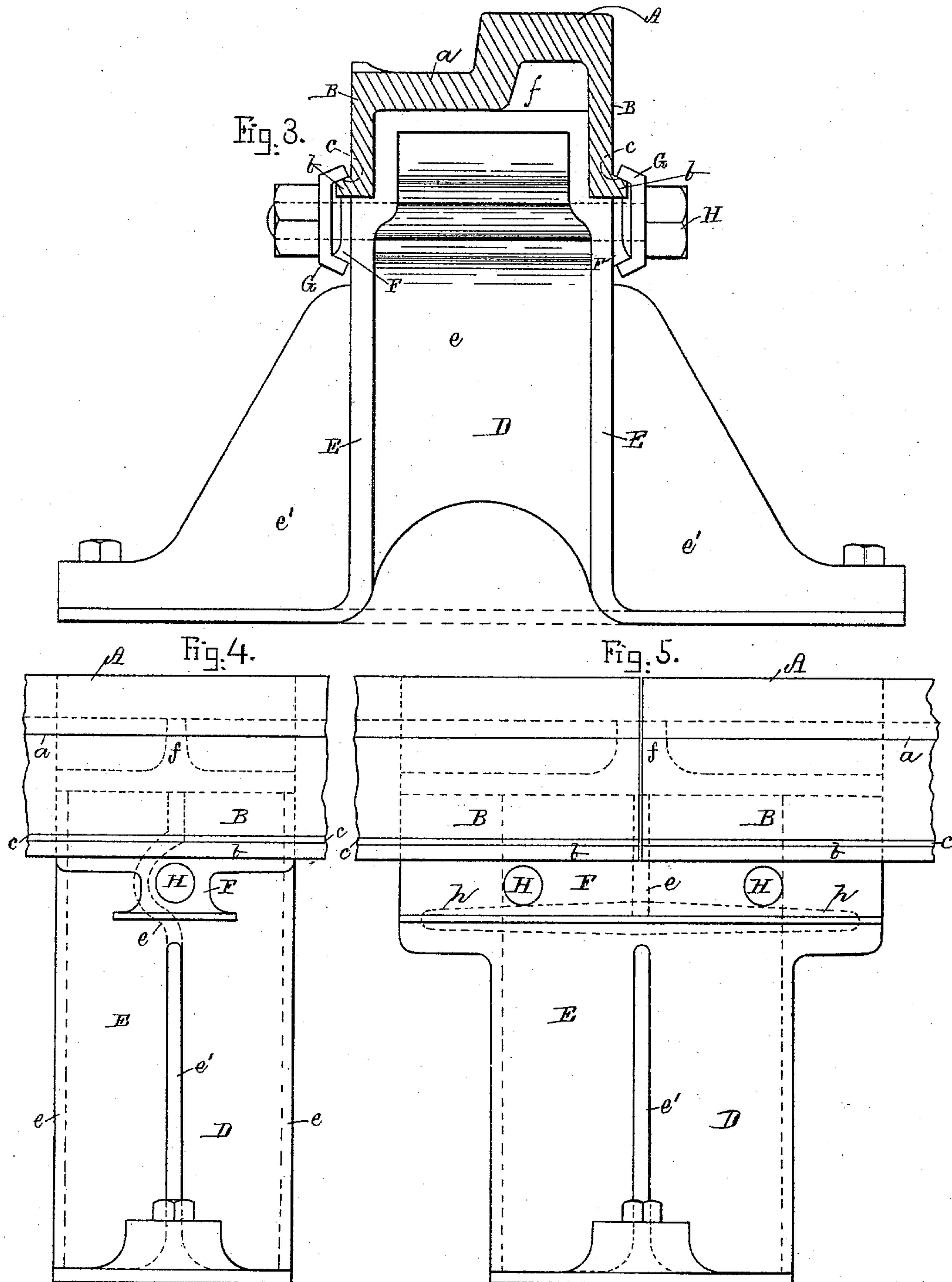
Inventor

Reynolds
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Witnesses.

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Inventor

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UNITED STATES PATENT OFFICE.

REYNOLDS T. WHITE, OF BOSTON, MASSACHUSETTS.

STREET-RAILWAY CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 443,027, dated December 16, 1890.

Application filed September 30, 1889. Serial No. 325,604. (No model.)

To all whom it may concern:

Be it known that I, REYNOLDS T. WHITE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Construction of Street-Railways, of which the following is a specification.

The object of my invention is to produce a substantial street-railway track that can be easily laid and repaired; and the invention consists in the peculiar form of the rails and chairs and means of securing the rails to the chairs without holes in the rails, as herein-
after fully described, and pointed out in the claims.

Referring to the accompanying drawings, Figures 1 and 2 represent vertical cross-sections of rails embodying my invention. Fig. 3 is a vertical cross-section of a rail and an end view of a chair and means for securing the rails to the chairs. Fig. 4 is a side view of a single or intermediate chair which supports the rail between joints with clamp removed. Fig. 5 is a side elevation of a double or joint chair with clamps removed. Fig. 6 is a plan view of a clamp for a single chair. Fig. 7 is a cross-section of same, taken on line *xx* of Fig. 6. Fig. 8 represents a vertical cross-section of a center bearing-rail.

A represents the tread of the rail, which may be beveled or rounded on the outside of the head, as shown at *a'*.

B² is a paving-block slightly below the head of the rail, and *a* the flange or wagon-tread of the rail, which may be made of any desired form.

B B are pendent sides rolled integral with the tread *A* and flange *a*.

b b are projections rolled on the lower outside edges of the pendent sides *B B* with their upper edges *c c* beveled to any suitable angle or curve.

D are chairs made of iron of suitable size, composed of standards *E*, running longitudinally with the rails *A* and carried up around under the head of the rail *A* with a web *e* between them and brackets *e'* on their outside at right angles to standards *E*, thus making a very substantial chair. A small lug *f* is formed on the top of the chair *D* to fit un-

der the head of the rail above the chair. Upon the standards *E* near their upper ends I make an offset, so as to form a seat for the lower edge of the rail to rest upon.

F is a boss with its lower edges formed to correspond with projections *b* and angles *c c* on the lower edges of the pendent sides *B B* of rails *A*.

G G are clamps, made of the form shown, of suitable size, with their ends formed so as to fit over the upper edges of projection *b* on the lower edges of the rail and the lower edges of bosses *F* on the sides of the chair.

H is a bolt that passes through the clamps *G* and chair *D*, so that when the bolt *H* is screwed up tight it forces the beveled ends of the clamps *G G* onto the corresponding beveled surfaces on lower edges of the boss *F* on the chair *D* and the beveled surface *c* on the lower edges of the pendent sides *B B* of the rail *A*, thus drawing down and holding the sides of the rail very solidly to the chair.

In Fig. 5 I show two adjacent rails supported on one chair to form a connecting-joint, space being left between the ends of the rails to allow for expansion and contraction.

This chair is made of sufficient length to insure a solid bearing for the ends of the rails, and is of the same form as shown in Fig. 3, with addition of strengthening-ribs *h* between standards *E E*, as shown by dotted lines. In Figs. 4 and 5 the clamps are omitted so as to show the construction of the chair.

In single chairs the clamps would be about the size shown in Figs. 6 and 7, and the clamps for double chairs for securing the ends of the rails would preferably be made the length of the chair and with as many bolts as necessary to hold the ends of the rails secure. The chairs shown are made to rest upon wooden sleepers, but the base of them may be enlarged so as to be set in concrete or be tamped in the ground. If tamped in the ground, bolts *H* may be made in the form of tie-rods, so as to keep the rails to proper gage. I have shown the chairs made with web *e* about in the center of the chair. This web may be dispensed with by carrying the standards *E* across the ends of the chairs, as shown in dotted lines in Figs. 4 and 5, thus making

the standard of box form and open at the bottom and of greater strength and stability than when made with only the central web.

Although I have shown the chairs made of
5 cast metal, they may be made of wrought
metal or of wrought and cast metal. The
rails may be made of the side or central bear-
ing type, as shown, or any other form, and for
10 electric roads, where it is necessary to keep
the head of the rails clean to insure perfect
traction, I propose to cut off the outside cor-
ner of the head of the rails, as shown, and
have the paving B² come up to the lower edge
15 of the incline, thus giving carriages but little
obstruction in crossing the tracks and leaving
the tread of the rail above the paving, there-
by decreasing the liability of dirt collecting on
the head of the rails. Some of the advantages
20 of this construction are that the rails are se-
cured to the chairs without having bolt-holes
in the rails. Excavations need not be made
so accurately for the sleepers. A great sav-
ing in handling and laying the rails and a
stronger rail is obtained. Rails are easier
25 laid and removed. In fact, this form of con-
struction overcomes all previous objections
to girder-rails, as the pavement on settling
cannot drop under the tread and flange of the
rail, and this method of fastening holds the
30 rails solidly down on the chairs, as well as
holding the sides of the rails close to the sides
of the chairs, thereby preventing the rails
from working loose, which cannot be done
with fastenings that only hold the rails to the
35 chairs one way, and the projections on the
lower edges of the pendent sides increase the
strength of the rail.

I disclaim the following combination,
namely: a girder-rail having a top of an ap-
40 proved section and depending web along each
edge provided at bottom with laterally-pro-
jecting flanges, in combination with a chair
having a seat portion fitted to the back of
said top of the rail and provided immedi-
45 ately below the lower edges of the rail-webs
with a transverse boltway and with lateral
projections having faces matching those of
the rail-flanges, a pair of clamp-plates hav-
ing flanges or projections opposed to said
50 faces and having central bolt-holes, and a

clamping-bolt passing through said boltway
from side to side, substantially as hereinbe-
fore specified.

Having thus described my invention, what
I claim is—

1. Rails for street-railways, having pendent
sides without bolt-holes, but having a projec-
tion on each of its sides at or near their lower
edges, in combination with chairs fitting be-
tween said sides and extending up under the
60 head of the rail and having a seat for the
lower edges of said pendent sides to rest upon,
the rail and chair being secured together by
clamps engaging projections on sides of rail
and chair by a bolt or bolts passing through
65 the clamps and chair below the rail, substan-
tially as shown.

2. A street-railway track constructed of
double girder or channel iron form of rails
without bolt-holes, but having suitable fillets
70 on their outer sides at or near their lower
edges, and a metal chair properly ribbed and
having a seat for the lower edge of said pend-
ent sides to rest upon, said rails and chairs
being held together by clamps and bolts, sub-
75 stantially as shown.

3. In the within-described system of con-
structing street-railways, the combination of
rails made with pendent sides with a projec-
80 tion on or near the lower edges of said pend-
ent sides on their outside, with chairs placed
at suitable intervals under the rails and fit-
ting up close under the head and flange and
between the sides of the rail, and having pro-
jections on their sides which form a seat for
85 said pendent sides to rest upon, said projec-
tions also forming a stop by which a clamp
of the form shown engages the projections on
the sides of the rails and chairs, whereby the
rail and chair are secured together by a bolt
90 or bolts passing through the clamps and chairs
below the rail, substantially as shown and de-
scribed.

In testimony whereof I have signed my
name to this specification in the presence of
95 two subscribing witnesses.

REYNOLDS T. WHITE.

Witnesses:

H. L. NORCROSS,

FRANK A. FISHER.