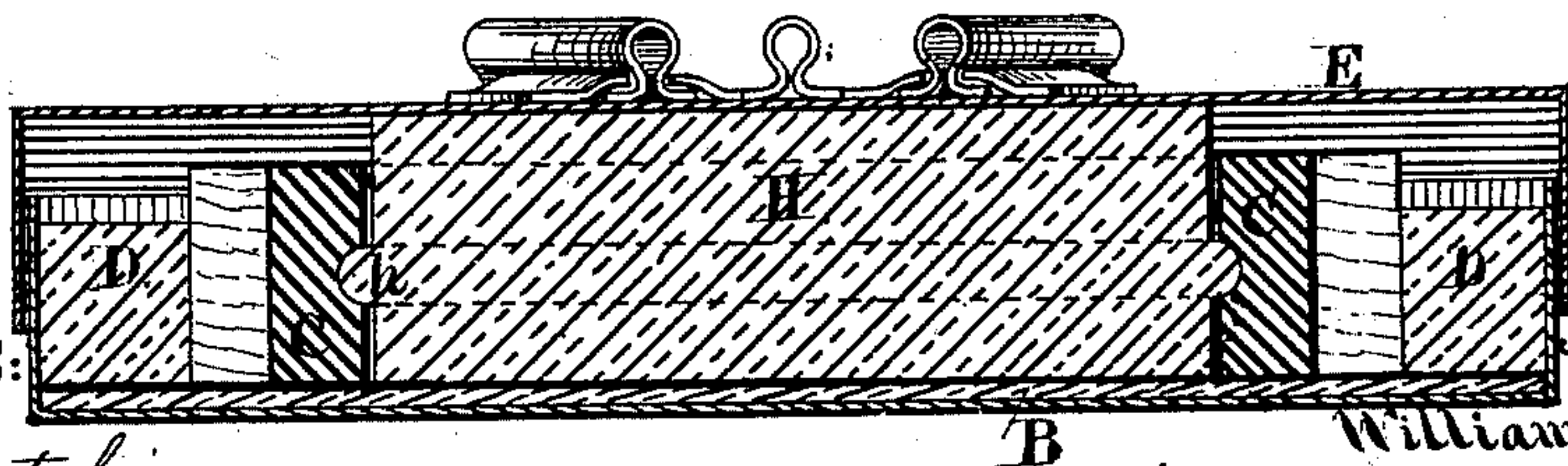
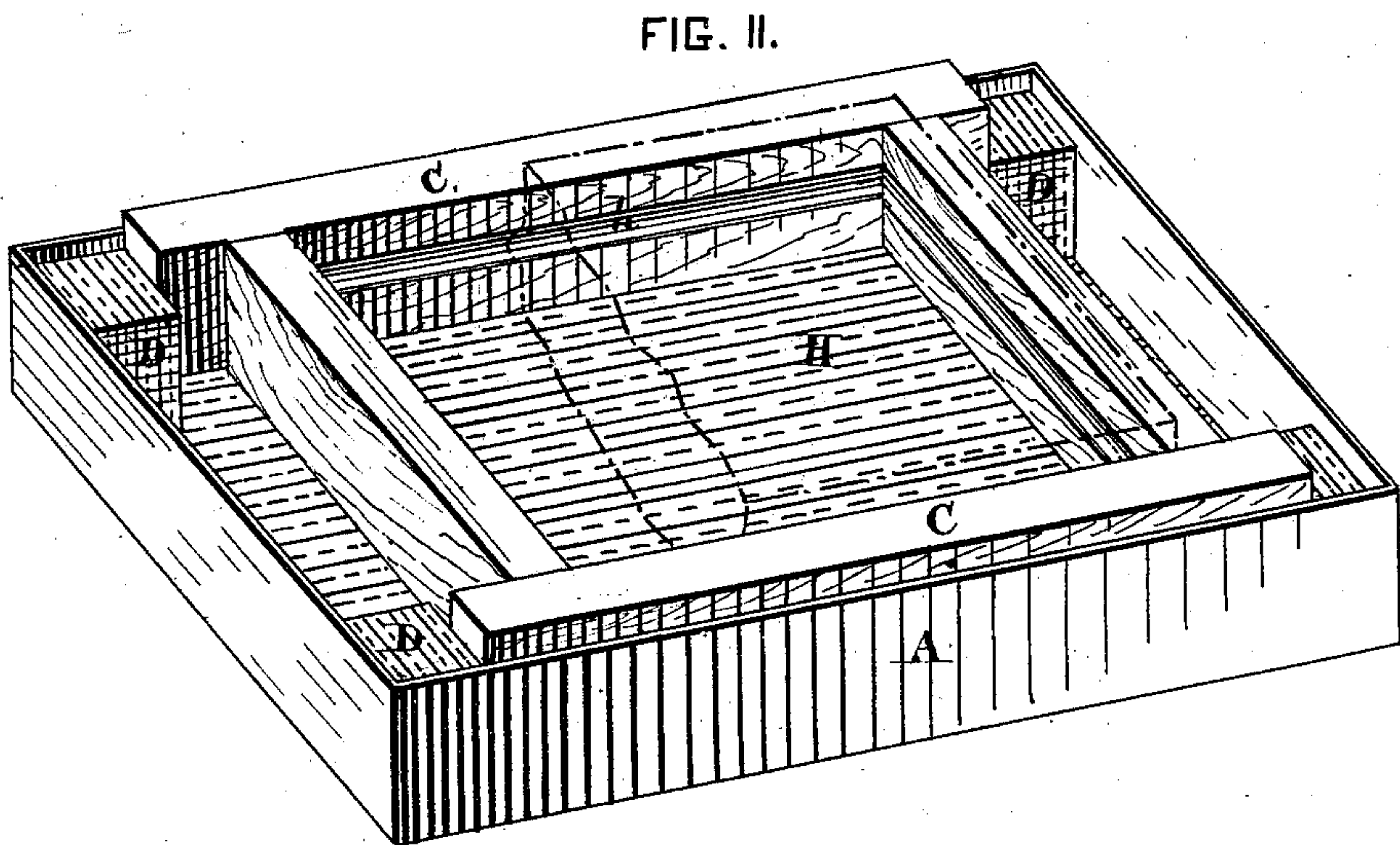
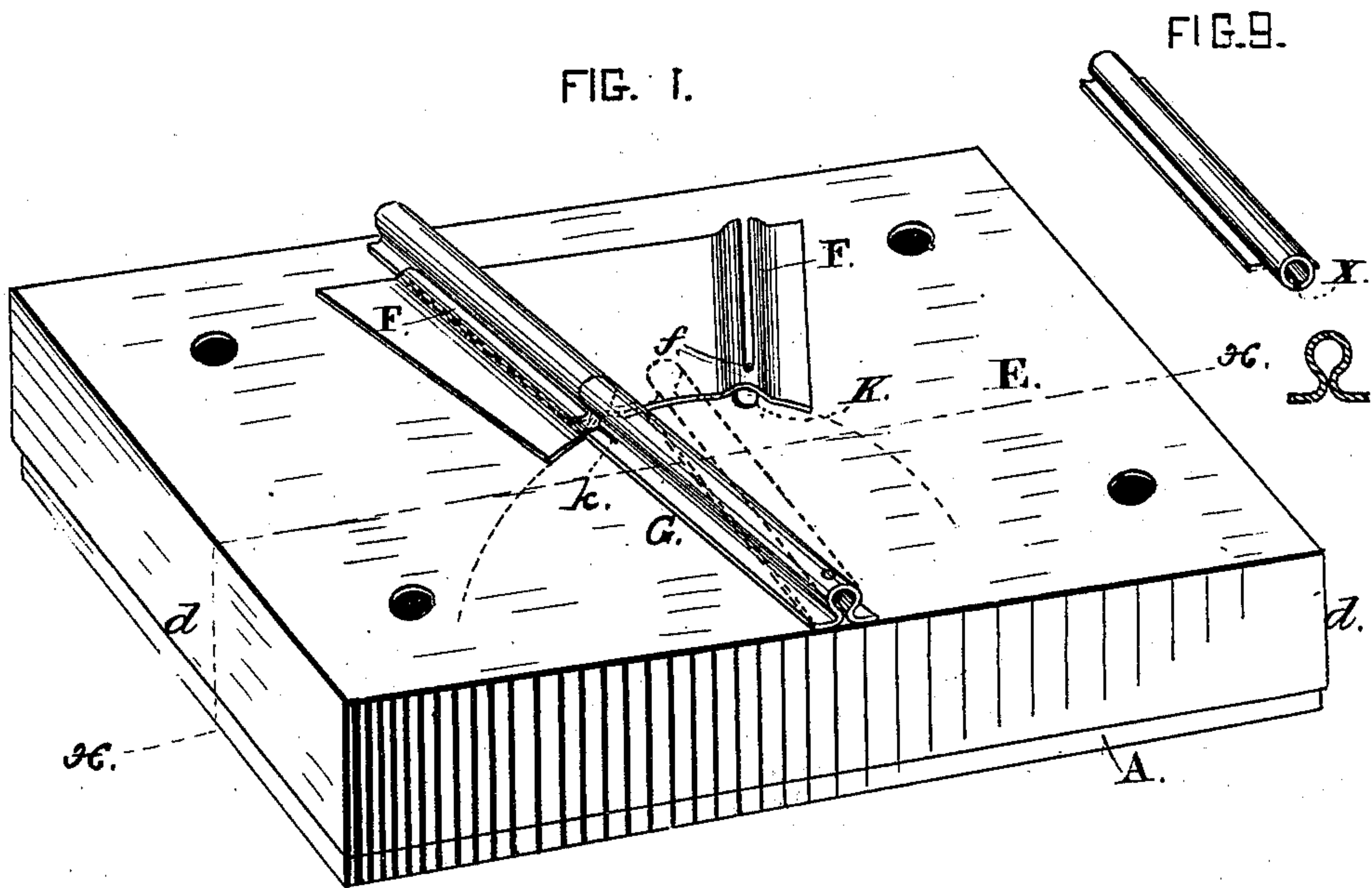


W. C. HURD.  
Switch Rail-Chair.

No. 223,591.

Patented Jan. 13, 1880.



WITNESSES:

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 Albert H. Norris.*

INVENTOR:

*William C. Hurd,  
 By James L. Norris,  
 Attorney.*



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FIG. IV.

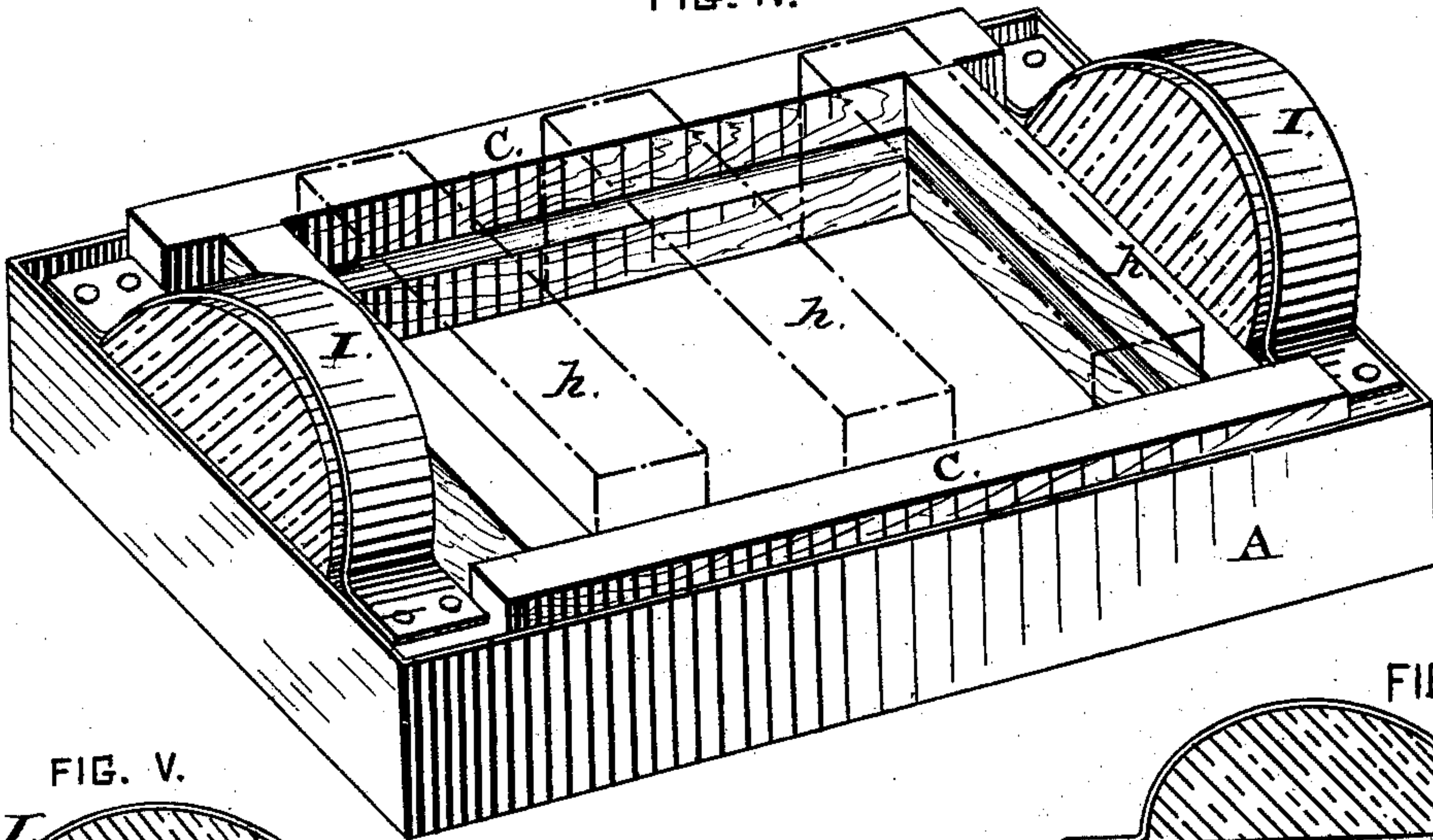


FIG. V.

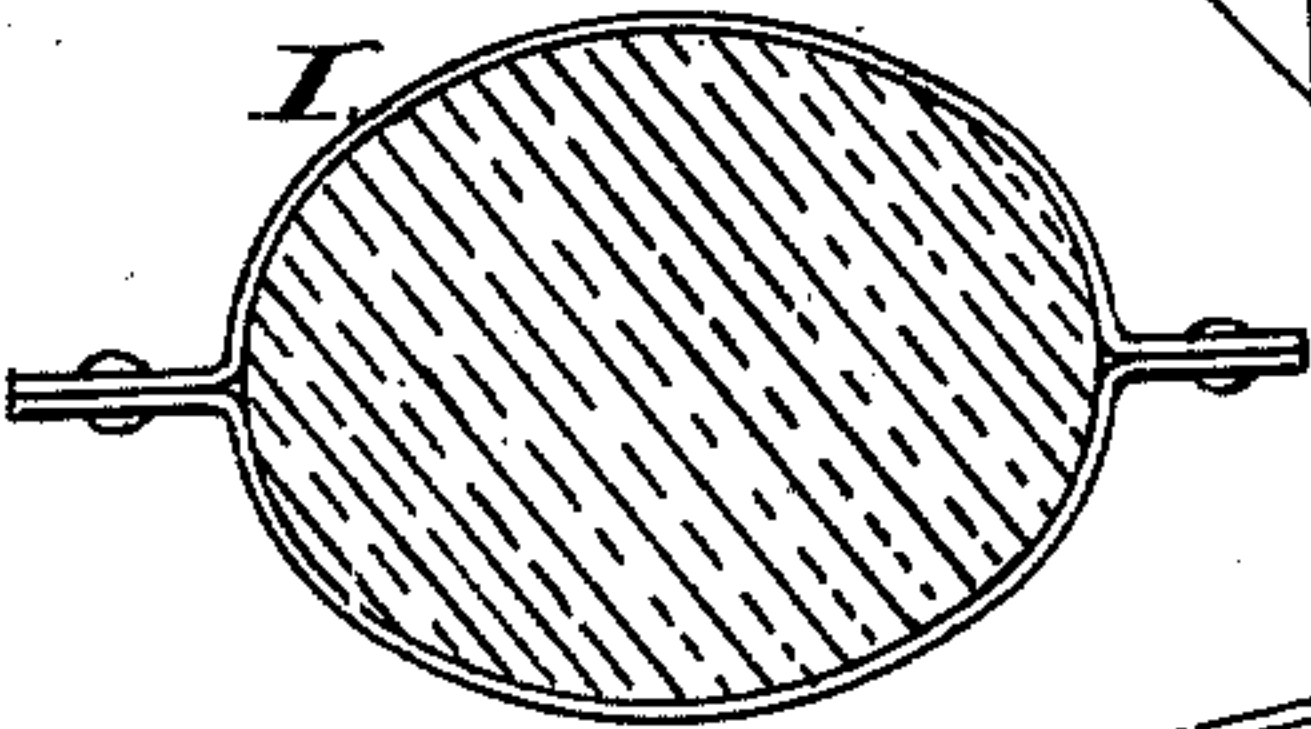


FIG. VI.

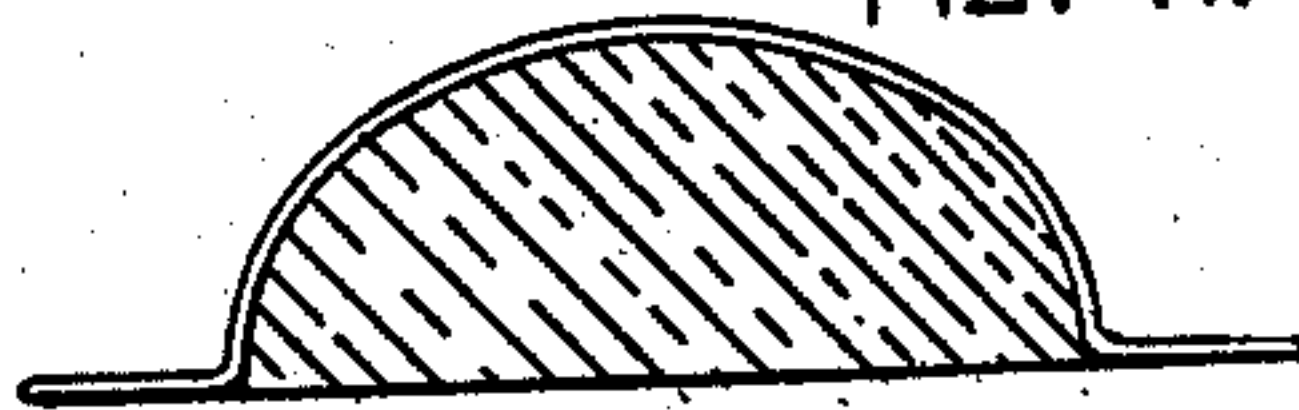


FIG. VII.

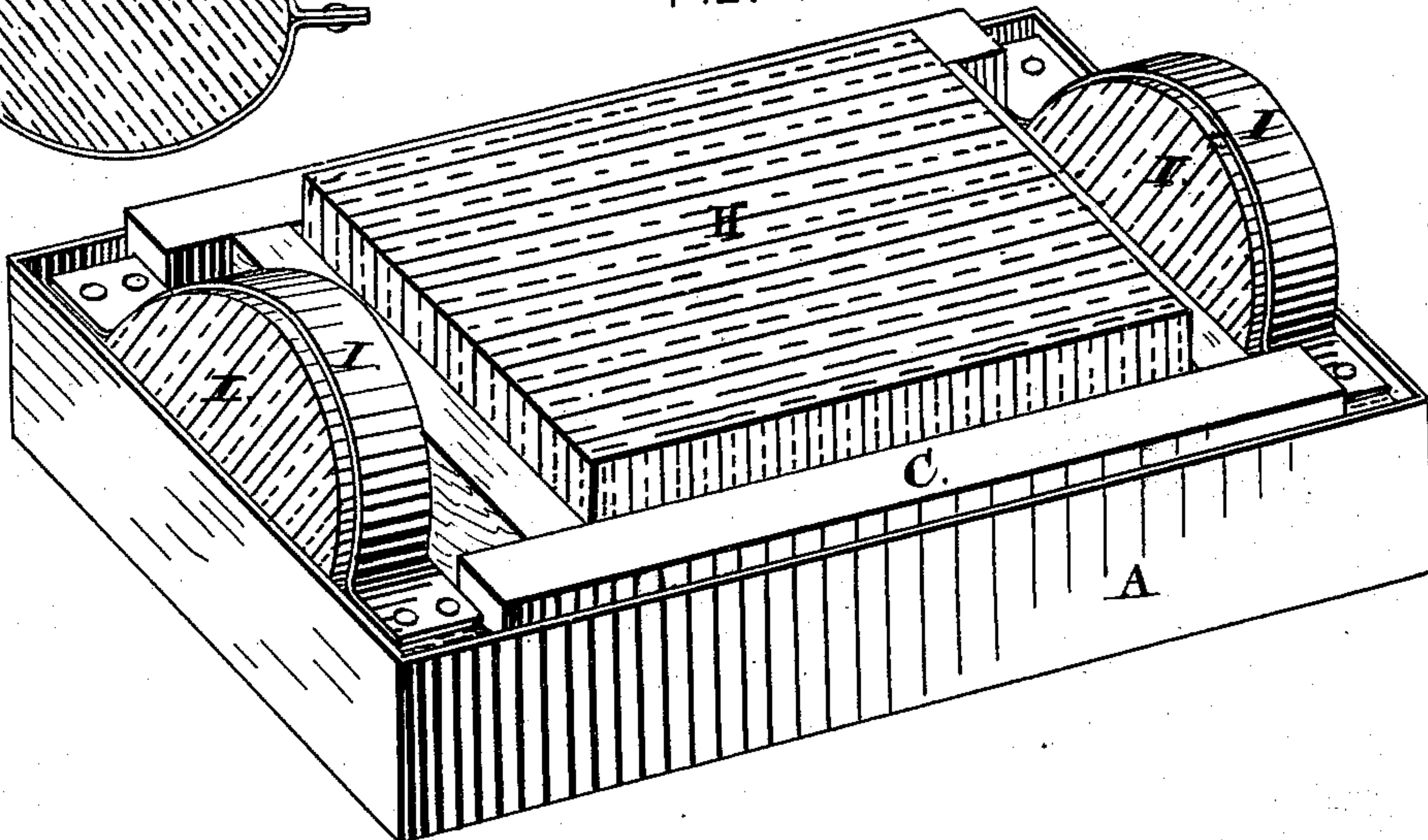
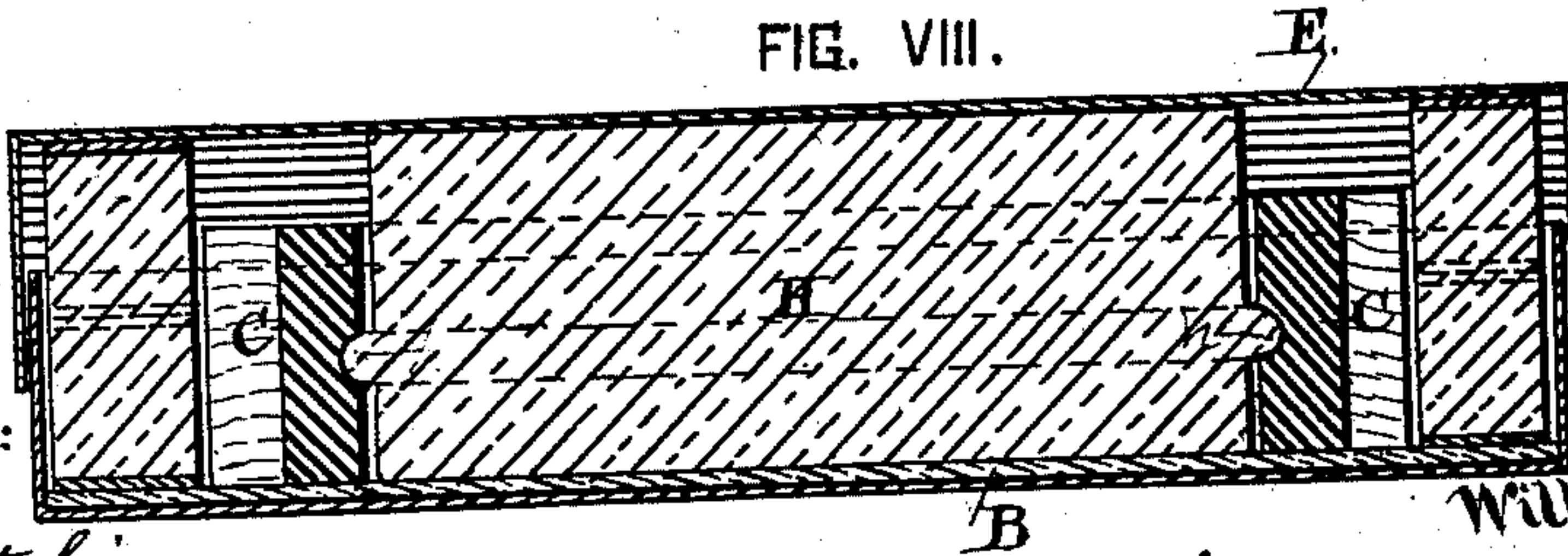


FIG. VIII.



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*James L. Norris,*  
Attorney.



# UNITED STATES PATENT OFFICE.

WILLIAM C. HURD, OF NEW YORK, N. Y.

## SWITCH-RAIL CHAIR.

SPECIFICATION forming part of Letters Patent No. 223,591, dated January 13, 1880.

Application filed December 18, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM C. HURD, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Switch-Rail Chairs, of which the following is a specification.

My invention relates to an elastic foundation for railway-switch chairs, its object being to relieve the said chairs of the jarring from passing trains, to prevent the battering and undue wearing away of the meeting ends of the switch-rails by concussive action of the car-wheels in passing from the end of one rail upon the adjacent end of another.

My invention consists in the combination, in a switch-rail chair, of an inclosing box or chamber having upon the inner side of its bottom a cushion, upon which rests a frame of wood or similar yielding material having a height somewhat greater than the walls of said box or chamber, and a chair-plate resting upon said frame and having its upper surface provided with chairs for the main-track and siding or branch rails to meet the end of a throw-rail which swings over the said plate. By this construction of the elastic foundation the jar of the chairs and the thumping noise which has heretofore occurred when trains pass switches are prevented.

My invention further consists in the combination, with the inclosing-box, the foundation-cushion, and wooden frame, of a chair plate or cover having its upper surface provided with two or more elongated chairs having their inner ends terminating at different points on the arc of a circle and on said plate, having the inner ends of their rail slots closed to form stops for the rails, and adapted to receive rails having their lower portions cut away, and only their heads left projecting to extend beyond said stops and stand flush with the inner ends of the chairs, so as to meet and form a close joint with a throw-rail so pivoted that its swinging end will traverse the arc upon which the inner ends of the chairs are arranged, each thus forming a close joint with said throw-rail when brought into coincidence therewith, thus preventing the battering and wearing away of the ends of the meeting rails by the car-wheels, as when said rails are separated by a space, as heretofore.

The invention also consists in certain combinations, with the box, foundation-cushion, wooden frame, and chair or cover plate, of auxiliary cushions or springs, as will be hereinafter particularly described.

In the accompanying drawings, Figure 1 is a perspective view of my improved elastic foundation for switch-chair. Fig. 2 is a similar view of the same with the top or chair plate removed. Fig. 3 is a section on line *xx*, Fig. 1. Fig. 4 is a perspective view, illustrating the application of auxiliary springs and a series of interior cushions; Figs. 5 and 6, detached views of auxiliary elliptical springs. Fig. 7 is a view of the box with cover removed, showing the arrangement of the several parts. Fig. 8 is a longitudinal section of the elastic foundation, as shown in Fig. 7, with the cover on the box. Fig. 9, Sheet 1, is a perspective of a rail having its head projecting to fit over the chair-stops.

The letter A designates the inclosing box or chamber, which I prefer to form of malleable iron. Upon the inner side of the bottom of this chamber is arranged a flat plate of vulcanized india-rubber, B, which forms a cushion-foundation for the wooden block or open wooden frame C, which fits within the walls of the box. I sometimes form this frame somewhat shorter than the box, and between the ends of the frame and the end walls of the box I interpose rubber cushions D.

Upon the top of the frame C rests a plate, E, which is the chair-plate. This plate may be provided with a lip, *d*, to fit around the box, to prevent horizontal movement of said plate; or this lip may be omitted and the chair-plate held in position by bolts passing through it, the foundation-cushion, and the bottom of the box, said bolts having their nuts arranged to permit of vertical movement of the plate. The top of the plate E is provided with two chairs, F F', having their inner ends inclined obliquely toward each other, and the slots in the tops of these chairs are closed at their inner ends by stops *f*, the object of which is to fix the point to which the rails may be inserted in the chair, the lower portion of the rails being cut away to leave their heads projecting, as shown in Fig. 9, over the stops *f* and flush with the inner ends of the chairs. The inner ends of the chairs are arranged upon the arc



of a circle, and upon the top of the plate E swings the end of a switch-rail, G, which may be brought into coincidence with the rail in either of the chairs.

5 By having the inward movement of the rails in the chairs limited by the stops *f*, and having the heads of the rails projecting over and lying upon said stops, I am enabled to form a snug joint between the swinging switch-rail  
10 and the converging rails, so that the ends of the respective rails will not be exposed to blows from passing car-wheels, and thus battered and worn away, as in the case when there is a wide space between the meeting  
15 ends of the rails.

When the box is placed in position to support the rails in the ordinary position of switch-rails of a railway-track, the ends of the meeting rails and the chairs are, on account of the  
20 yielding of the cushion B under the frame and chair-plate, relieved of that jarring experienced by chairs resting upon solid ties or other rigid foundations.

In Fig. 2 I have shown a cushion, H, of rubber sitting within the frame C and resting  
25 upon the foundation-cushion B. This cushion H is somewhat higher than the frame, and directly supports the chair-plate, so that the first pressure upon the chair-plate is taken up by the central cushion, H, and as the plate descends it then strikes easily upon the frame C,  
30 through which pressure is communicated to the foundation-cushion B, this giving a very easy yielding movement of the chair-plate, and obviating all jar and liability to break the  
35 chairs or car-wheels.

I prefer to form the cushion H with a rib or tongue, *h*, projecting from each of its edges, and fitting snugly within grooves formed in  
40 the walls of the frame C, to form a joint which will prevent the passage of dust to the foundation-cushion.

Instead of the single cushion H, a series of smaller cushions, *h'*, may be used, either separated by transverse partitions of the frame or  
45 not, as shown in Fig. 4; and said cushions may be secured by ribs and grooves, as is cushion H, and I may substitute elliptical or semi-elliptical springs for the rubber cushions, as  
50 shown in sectional view, Figs. 5 and 6; and in addition to the cushion or springs within the frame, I may locate elliptical springs I, as shown in Fig. 7, between the ends of the  
55 frame C and the end walls of the box, the ends of said elliptical springs being supported by blocks of yielding material, D, upon which said springs rest.

In order that the tops of the permanent converging rails may be always maintained  
60 at a level with the top of the throw-rail, I may slit the end of said throw-rail transversely just above its base, as shown at *k*, Fig. 1, and in front of the adjacent ends of the chairs is firmly fixed a guide-plate, K, which coincides  
65 in position with the slit in the throw-rail and takes into said slit when the throw-rail is

brought into coincidence with one of the permanent rails, the slits and guides having such relative positions that when they are together the tips of the throw-rail and its coincident  
70 permanent rail will be on a perfect level.

Having fully described my invention, what I claim is—

1. The combination, in an elastic foundation for switch-head chairs, of an inclosing  
75 box or chamber having upon the inner side of its bottom a cushion upon which rests a frame or block of wood or similar yielding material having a height somewhat greater than the  
80 walls of said box or chamber, and a chair plate or cover resting upon said frame and having its upper surface provided with chairs for the main-track and siding rails, substantially as described.

2. The combination, with the inclosing-box,  
85 foundation-cushion, and wooden frame, of the chair-plate having its upper surface provided with the converging chairs having the inner ends of their rail-slots closed by stops, and adapted to receive the rails having heads for  
90 projecting over said stops to meet a throw-rail and form a close joint therewith, substantially as and for the purpose set forth.

3. The combination, with the inclosing-box, the foundation-cushion, the open wooden  
95 frame resting upon said foundation-cushion, and one or more cushions or springs of any suitable material sitting within the frame and extending above the same, of the chair plate or cover resting upon said cushion or springs,  
100 substantially as and for the purpose set forth.

4. The combination, with the frame C, having the grooves in the inner surfaces of its walls, of one or more rubber blocks or cushions fitting within said frame and provided  
105 with ribs extending from their edges and fitting in said grooves, substantially as and for the purpose set forth.

5. The combination, with the box, the foundation-cushion, and the wooden frame inclosed  
110 by the box, of the cushion or spring, one or more, sitting within the frame and projecting above the same, the elliptical springs arranged between the ends of the wooden frame and the  
115 walls of the box, and the chair plate or cover resting upon said elliptical springs and the cushion or spring within the wooden frame, substantially as described.

6. The combination, with the converging chairs having the guide-plates K projecting  
120 from their inner ends, of the throw-rail having in its swinging end the slit *k*, coinciding in position with and adapted to embrace said plates, substantially as and for the purpose set forth.  
125

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

WILLIAM C. HURD.

Witnesses:

JAMES L. NORRIS,

JAMES A. RUTHERFORD.