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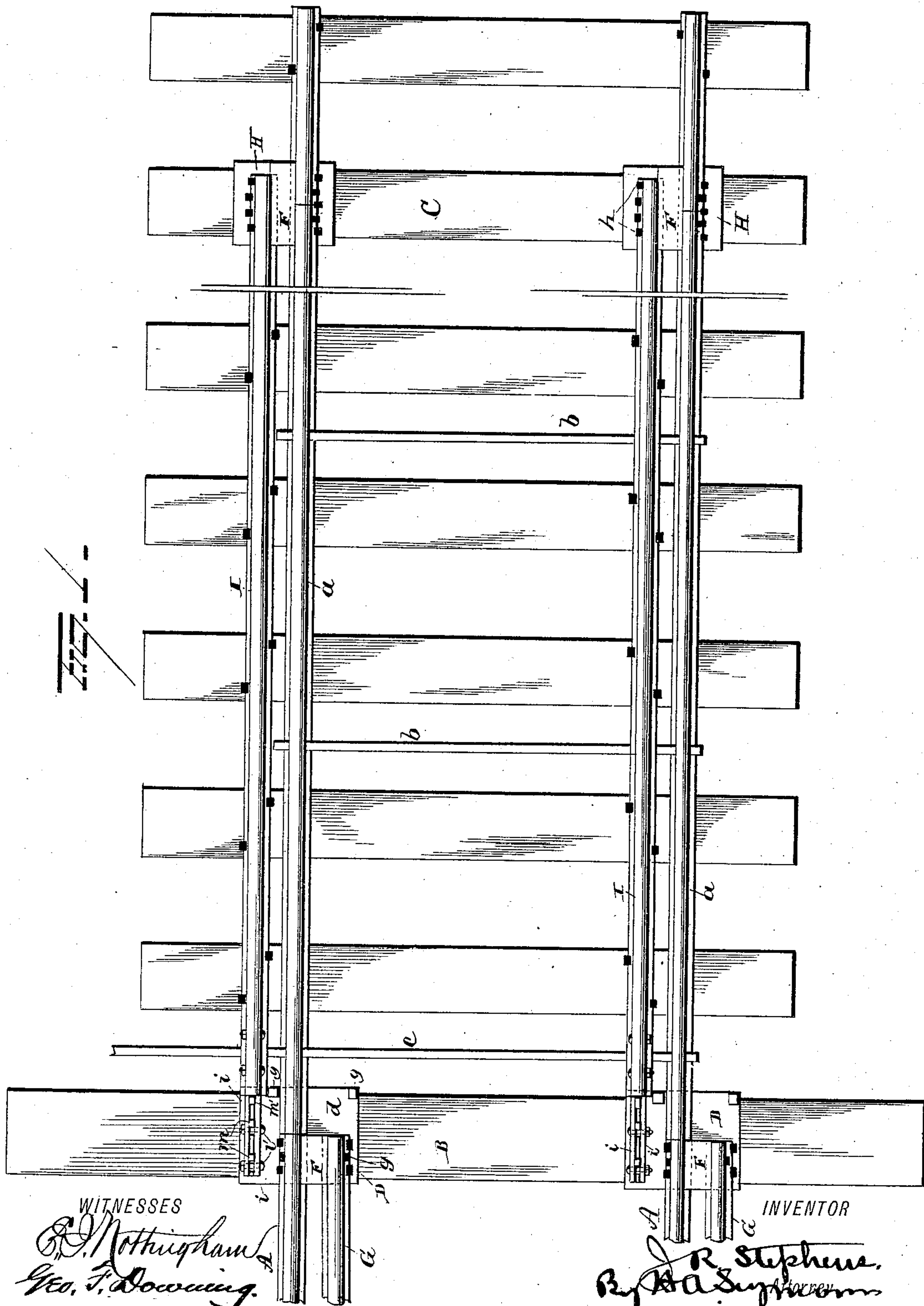
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J. R. STEPHENS.

RAILROAD SWITCH.

No. 320,982.

Patented June 30, 1885.





(No Model.)

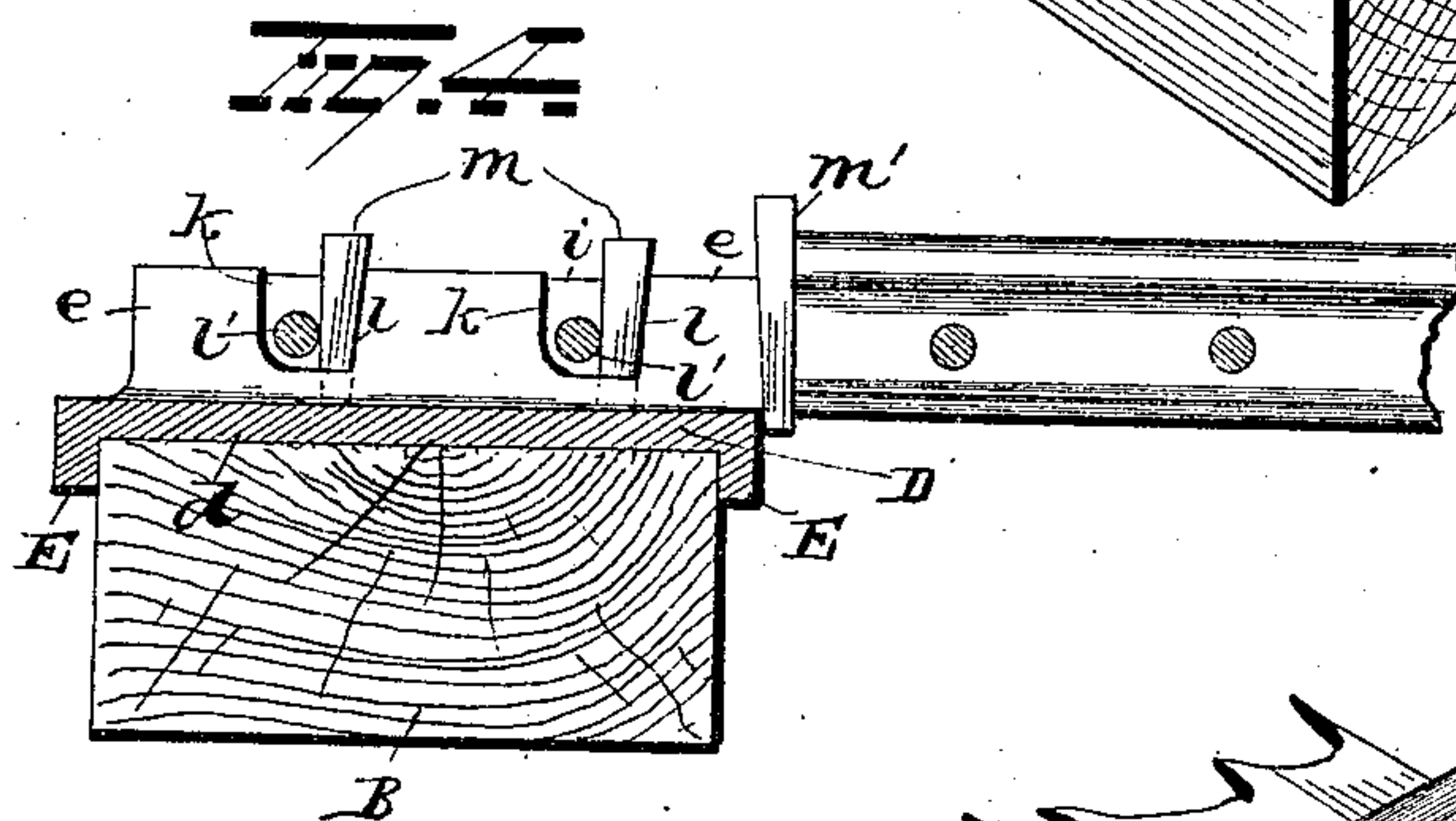
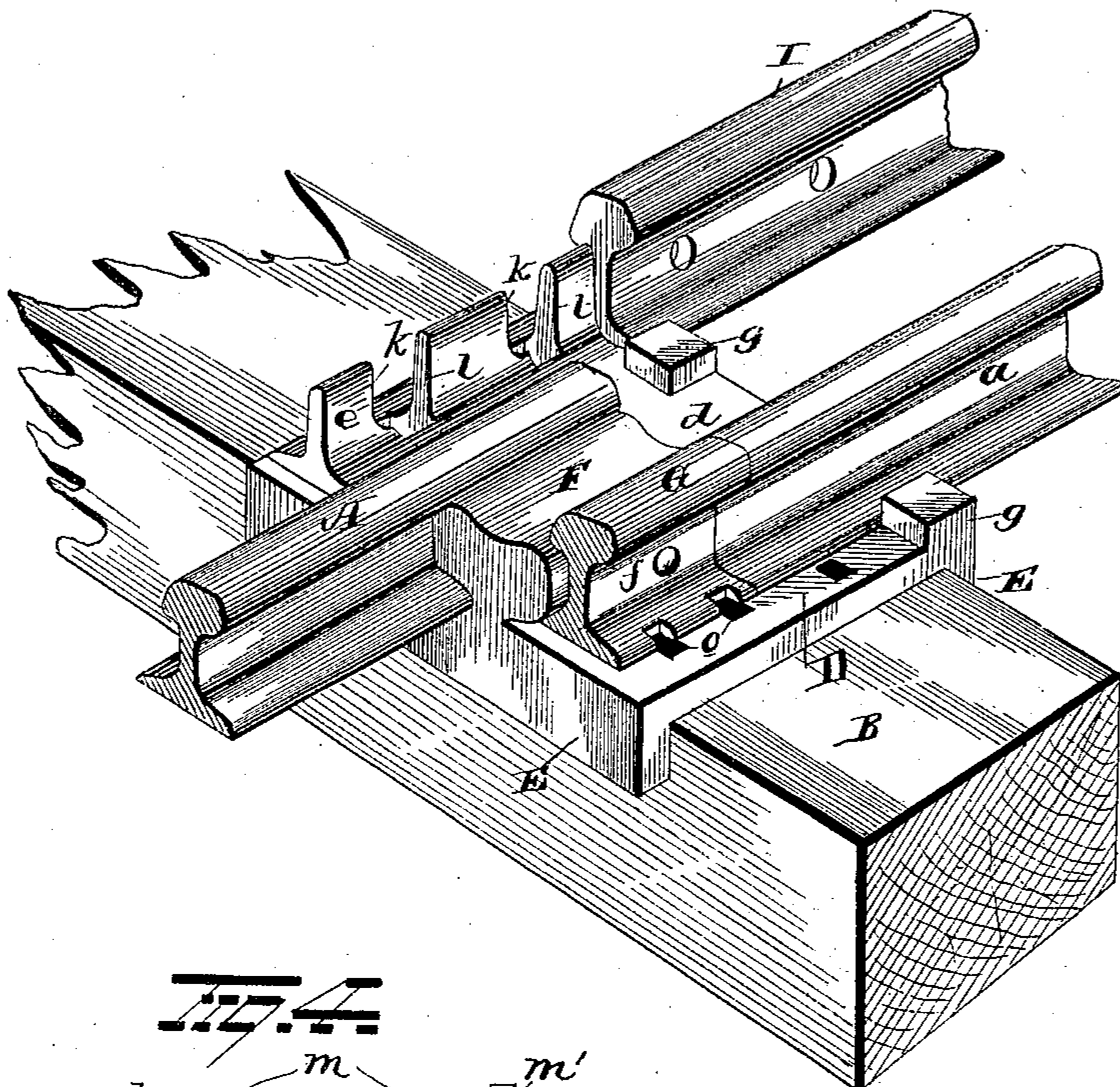
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J. R. STEPHENS.

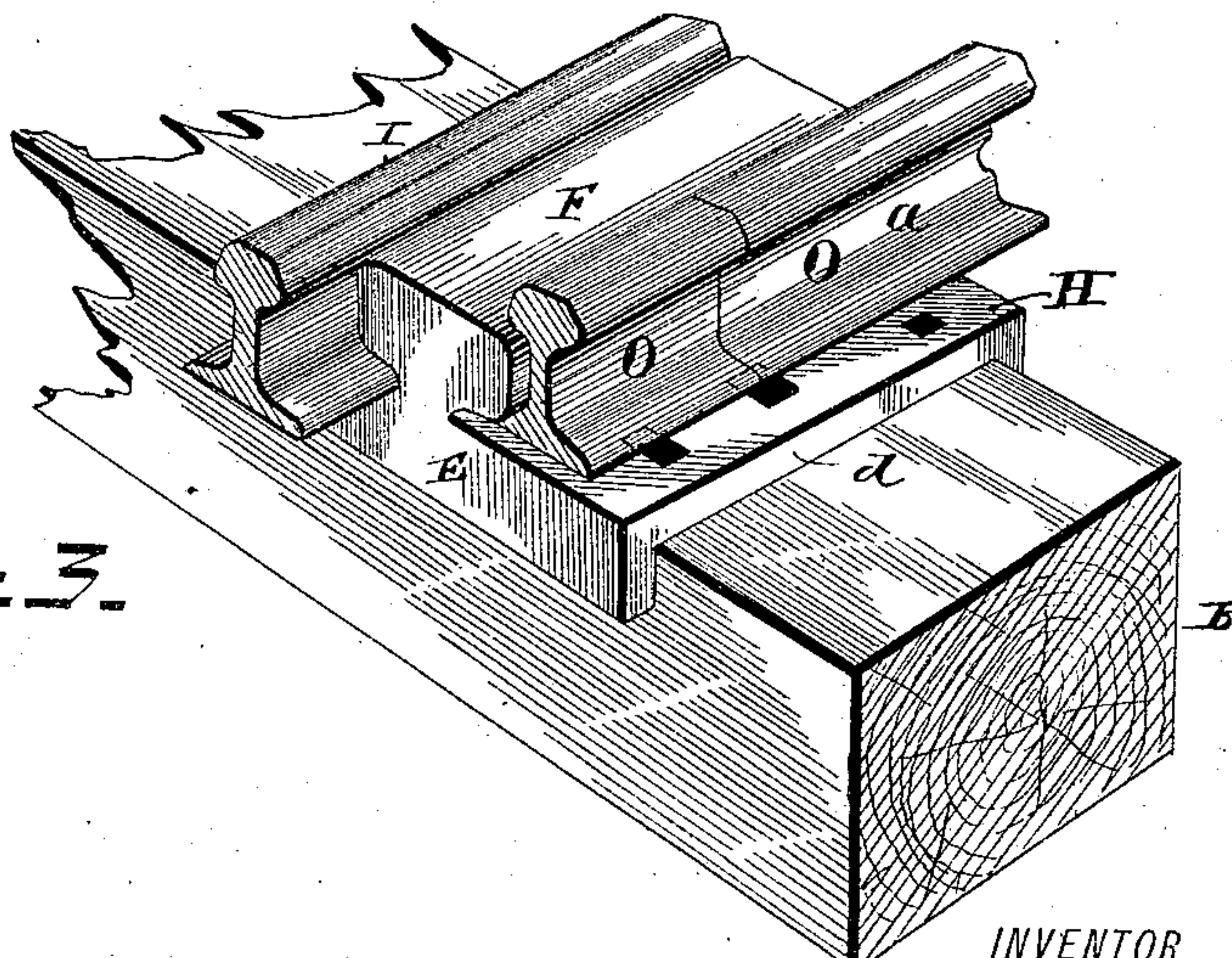
RAILROAD SWITCH.

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WITNESSES

WITNESSES  
 E. Nottingham  
 Geo. F. Downing.

INVENTOR

J. R. Stephens.  
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# UNITED STATES PATENT OFFICE.

JOHN RITTENHOUSE STEPHENS, OF PORTLAND, OREGON.

## RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 320,982, dated June 30, 1885.

Application filed January 22, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. STEPHENS, of Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Railroad-Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in railroad-switches.

The joints between the ends of the switch-rails and the ends of the main and turn-out rails are liable to open by the creeping away of the main and turn-out rails, or to close and compress the switch-rails, causing them to "buckle," by the action of heat and cold. To relieve the switch-rails of the pressure thus exerted, and to prevent the opening of the joint, and the consequent battering of the ends of the rails, has hitherto been deemed of sufficient importance to occupy the attention of several inventors, who have made attempts to overcome the difficulty in various ways. One of the most successful of these attempts is that in which the head and foot chairs have been bound together by bars or rods, the ends of which have been bolted to the chairs.

The object of my present invention is to provide improved means for binding the ends of the main and turn-out rails at the head of the switch and the fixed rails at the foot thereof together, whereby they may remain constantly the length of the switch-rail apart, a further object being to provide head and foot chairs of novel construction, whereby the ends of the several rails may be locked in a convenient and secure manner against both lateral and longitudinal displacement, and to further provide switch and check rails of the same length, and means for compensating for expansion and contraction; and with these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a switch embodying my im-

provement. Fig. 2 is an enlarged detached view of one of the head-chairs and rails located thereon. Fig. 3 is a similar view of one of the foot-chairs; and Fig. 4 is a view in side elevation, partly in section, showing the manner of securing the check-rails to the head-chairs.

A represents the main track; B, the head-block, and C the foot-block, of the switch.

*a a* represent the switch-rails connected by the bridles *b*, and operated by the connecting-rod *c* in the ordinary manner.

The head-chairs D are similar in construction, (excepting where the check-rails are both located on the outside,) and consist of a base-plate, *d*, provided with depending flanges or lugs E, adapted to lip over the edges of the head-block B, and thereby prevent the chair from displacement thereon in the direction of the length of the rail. The plates *d* of the head-chairs D are provided with upwardly-extending elongated lugs or abutments *e*, adapted to conform to the shape of one of the rails below the tread, are further provided with the upwardly-extending lugs F, which extend about one-half across the plates, and are shaped on their sides to conform to the curve of the rails A and G, the ends of which are secured snugly to the lugs F on opposite sides thereof by the draw-bolts *f*. They are also provided with upwardly-extending lugs *g*, adapted to determine the outward and inward thrust of the switch-rails *a*. The chairs D with their upwardly and downwardly extending lugs are cast integral.

The foot-chairs H are similar to the head-chairs D above described, with the exception of the upwardly-extending lugs *e* and *g*. The lugs F on the foot-chairs, however, extend entirely across the plate, and serve, by means of draw-bolts *h*, to bind the adjacent ends of the switch and main rails, which lie snugly in contact with one side thereof, to the check-rail or girder I. The check-rails or girders I are of equal length with the switch-rails, and are located on the outside of the switch-rails, or one on the outside and one on the inside, with one end resting on the plate *d* and abutting against the end of the lugs *e*, to which



they are secured by fish-plates *i*. Constructing the switch and check rails of equal length obviates cutting, drilling, and hacking when putting in the switch. The opposite ends of the rails *I* are secured to the lugs *F* on the foot-chairs, as before observed. The rails *I* are spiked to the cross-ties throughout their entire length, to prevent them from buckling in case of great compression. The check-rails or girders *I*, thus secured to the chairs, form rigid connections which will not admit of an opening between the ends of the switch-rails and main rails, and, what is more important, will not admit of the creeping together of the main rails, and thereby binding the switch-rails and rendering the switch inoperative. This latter movement of the main rails is particularly guarded against by constructing the check-rails and chairs in such a manner that the check-rails shall abut against rigid portions of the chairs, as has been explained. Thus any expansion or contraction of the switch-rails tending to lengthen or shorten the same is accompanied by a corresponding expansion or contraction of the check-rails, and the expansion or contraction of the main rails is forced to exert itself in directions away from the switch-rails.

To compensate for any inequalities in the length of the rails, or any errors in fitting, and for the expansion or contraction of the switch-rails, I provide the lug *e* with vertical slots *k*, adjoining the elongated perforations *l*, in which wedges *m* are inserted and bear against the bolts *l'*, which connect the fish-plates *i*. A wedge, *m'*, is also inserted between the end of the lug *e* and the end of the check-rail *I*. The wedges *m* tend to draw the check-rail up to the head-chair, while the wedge *m'* tends to force it away. These wedges should be made somewhat wider than the web of the lug *e*, so that the inner faces of the fish-plates will bear against them, and when the bolts *l'* are drawn up will hold the wedges in the desired vertical adjustment.

The head and foot chairs *D* and *H* are also provided with oblong perforations *o*, beneath the edges of the stationary rails, so that if the flanges of the rails are not notched a single spike may be employed, and in cases where severe strain is required the rail may be notched, and a double spike or two spikes may be driven in the same hole.

The chairs, check-rails, and switch-rails, constructed and arranged as set forth above, form a convenient, safe, and economical combination, well adapted to all the ordinary purposes of a railroad-switch.

The foot-chairs may be constructed with a lug corresponding to the lug *e* on the head-chairs to form a more perfect stop for the foot of the check-rail, and, in climates where the changes of temperature are great, this construction may be the more advisable one; hence I do not wish to be understood as lim-

iting myself strictly to the construction herein set forth, but reserve the privilege of making such changes as fairly fall within the spirit and scope of my invention.

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

1. In a railway-switch, the combination, with head and foot chairs, the former provided with lugs *e*, of check-rails or girders rigidly secured to the foot-chairs and to the lugs of the head-chairs, substantially as set forth.

2. In a railway-switch, the combination, with head-chairs provided with lugs for securing the main and turn-out rails rigidly thereto, and further provided with elongated abutments, and foot-chairs provided with lugs for securing the main and switch rails thereto, of check-rails firmly secured to the foot-chairs and to the abutment of the head-chairs, substantially as set forth.

3. In a railway-switch, the combination, with head and foot chairs provided with depending flanges adapted to engage the sides of the head and foot blocks, and further provided with lugs for securing the main rails, turn-out and switch rails thereto, of check-rails abutting against portions of the chairs and secured to the chairs, whereby the distance between the head and foot chairs is invariably in the same ratio to the length of the switch-rails, substantially as set forth.

4. In a railway-switch, a head-chair consisting, essentially, of a flat plate provided with an elongated slotted abutment or lug for connecting a check-rail thereto, with an upwardly-extending lug for connecting the main rail and turn-out thereto, and with stops for determining the outward and inward thrusts of the switch-rail, substantially as set forth.

5. In a railway-switch, a chair consisting of a flat metal plate provided with depending flanges or lugs adapted to embrace the edges of the head-block, and with upwardly-extending lugs and an abutment, *e*, constructed in the manner and for the purpose substantially as set forth.

6. In a railway-switch, the combination, with head and foot chairs, the former having elongated slotted abutments thereon, and means for connecting the switch-rails to said chairs, of check-rails of equal length with the switch-rails, and adapted to abut against and be secured to the abutments on the head-chairs, and be rigidly secured to the foot-chairs, substantially as set forth.

7. In a railway-switch, the combination, with the head and foot chairs, switch-rails, and check-rails, of lugs formed on the head-chairs or head and foot chairs, adapted to form abutments for the check-rails, fish-plates or their equivalent connecting the lugs and check-rails, and wedges inserted in slots or recesses formed in the lugs for adjusting the relative

positions of the check-rails and chairs, substantially as set forth.

5 8. In a railway-switch, a chair provided with seats for the main switch and check rails, and further provided with oblong perforations for receiving one or two spikes, as the strain may require, substantially as set forth.

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

JOHN RITTENHOUSE STEPHENS.

Witnesses:

W. T. HUME,  
N. D. SUMON.