

J. COCHRANE.  
RAILWAY CHAIR.

No. 49,722.

Patented Sept. 5, 1865.

Fig. 1.

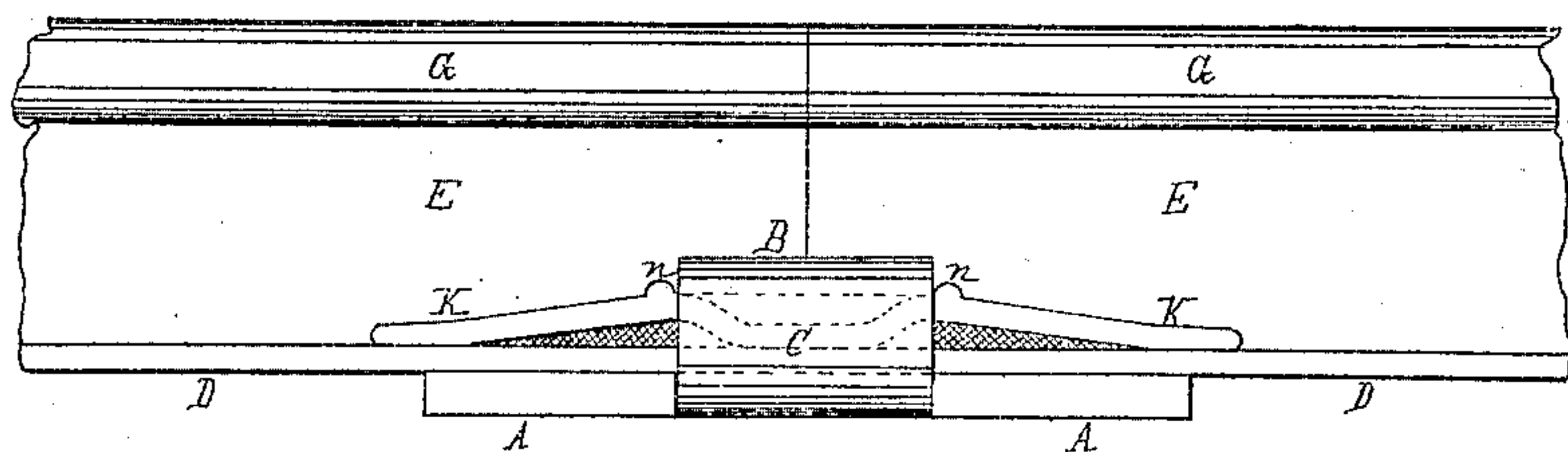


Fig. 2.

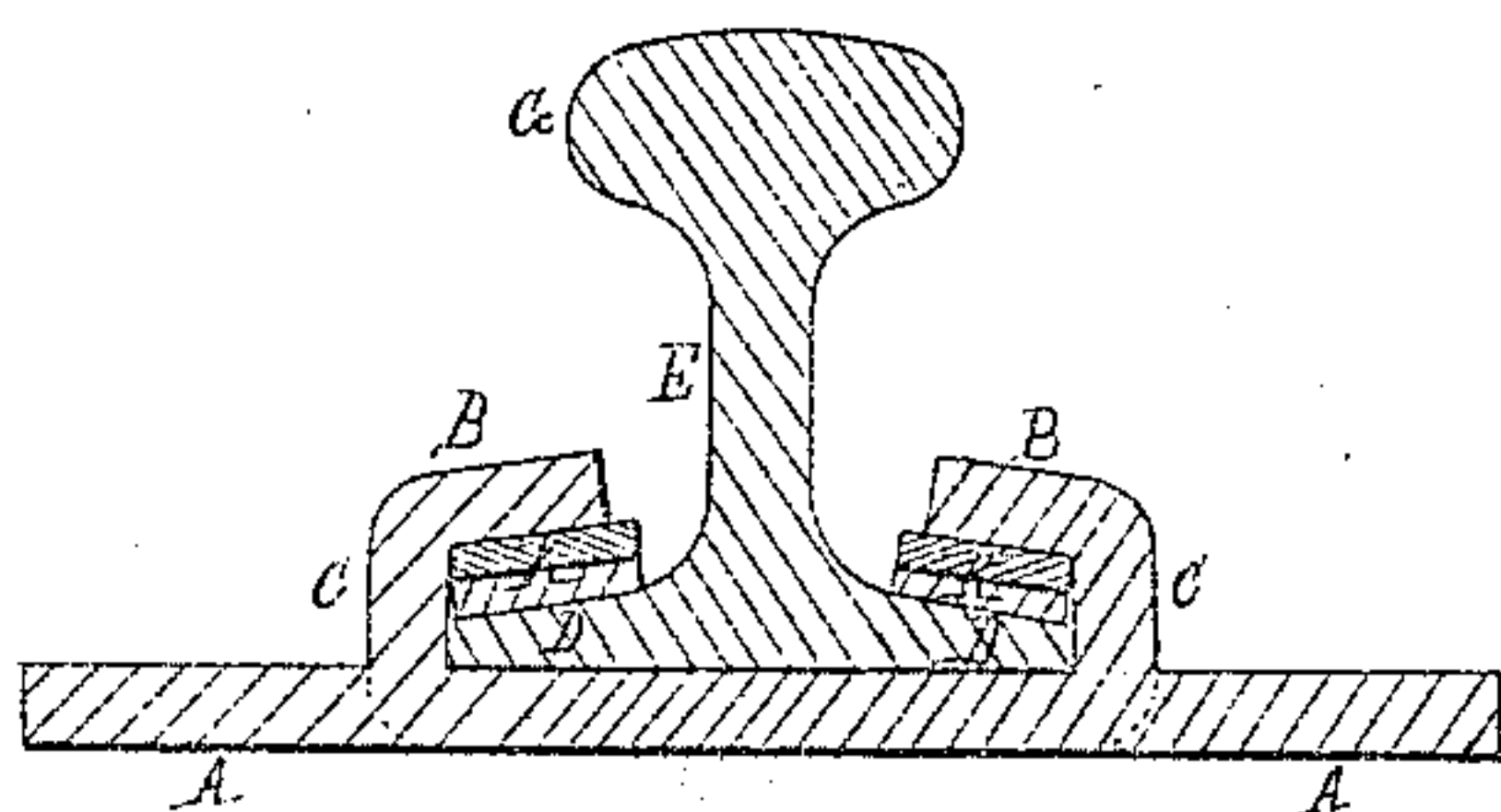


Fig. 3.

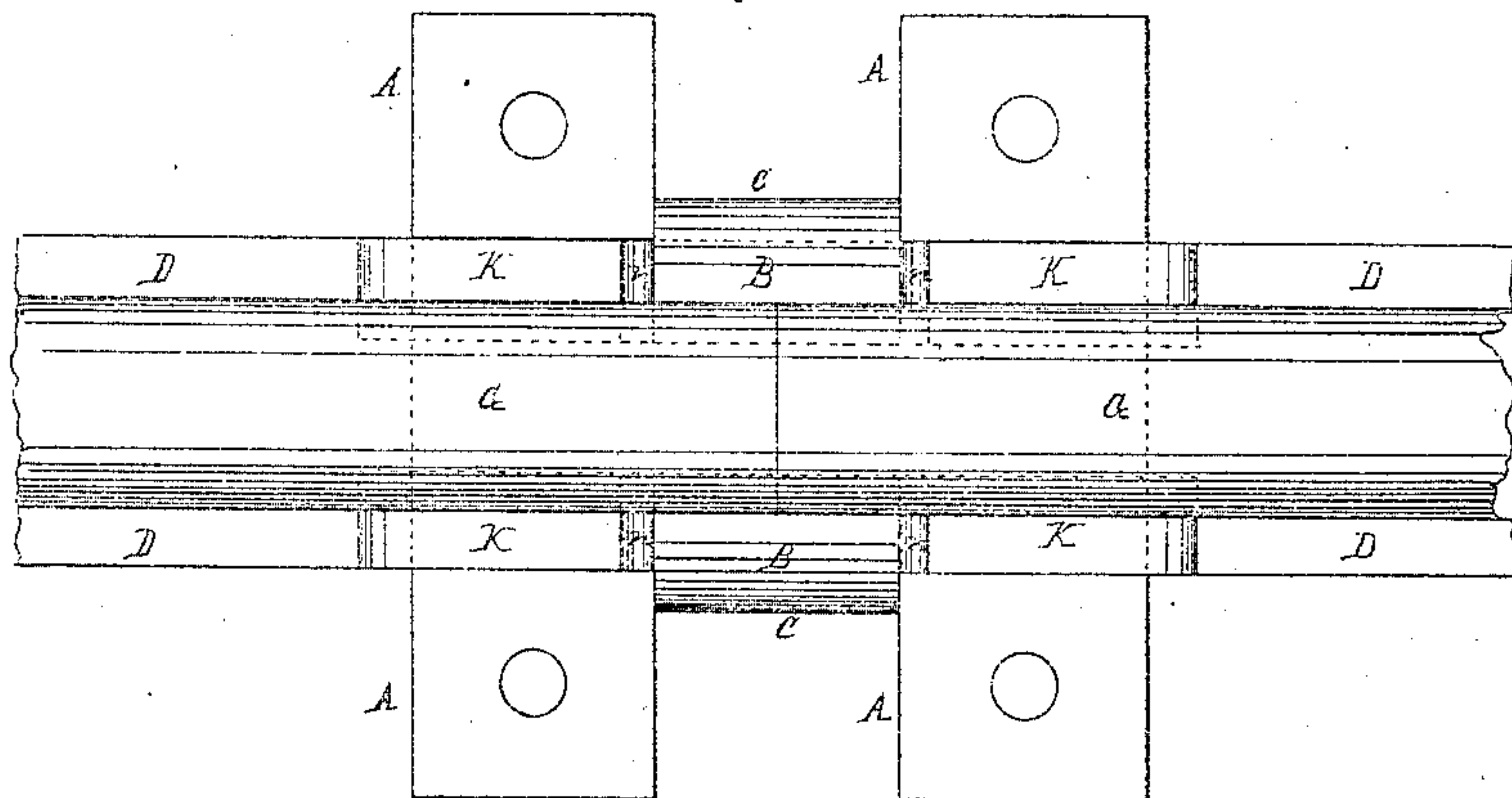
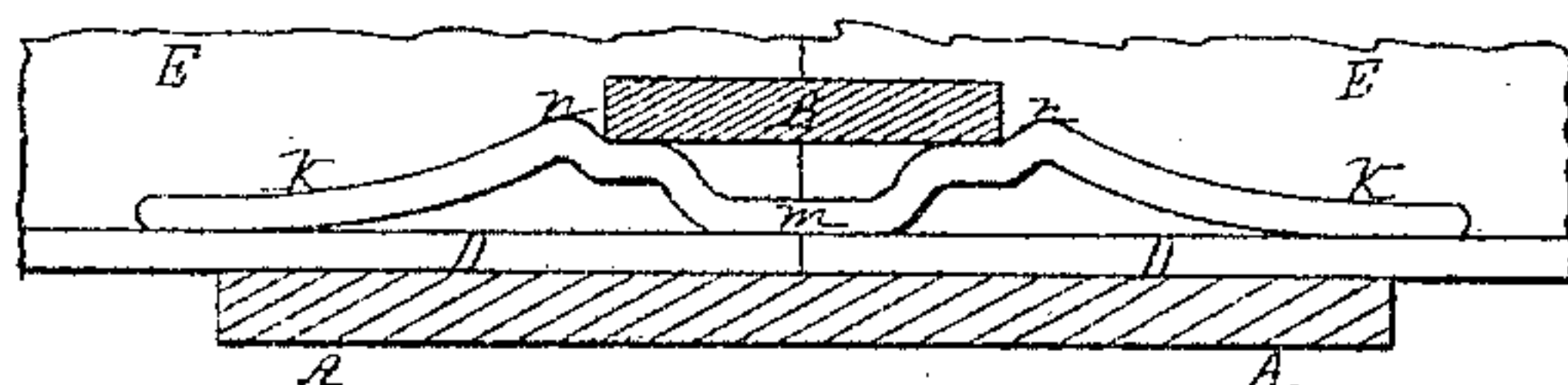


Fig. 4.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JOHN COCHRANE, OF WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY.

## IMPROVEMENT IN RAILWAY-CHAIRS.

Specification forming part of Letters Patent No. 49,722, dated September 5, 1865.

*To all whom it may concern:*

Be it known that I, JOHN COCHRANE, of the township of Wall, county of Monmouth, and State of New Jersey, have invented a new and useful Improvement in Railroad-Joint Chairs or Couplings; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure 1 is a side elevation of a joint-chair having this improvement; Fig. 2, an end elevation; Fig. 3, a top view or plan; and Fig. 4, a detached view of one of the springs in position.

The same parts are designated by the same letters in all the figures.

The nature of my invention consists in causing the ends of the rails to be securely pressed downward by an elastic force against the bed-plate of the chair or coupling, so as to prevent looseness at the joints of the rails and vibration of the rails in the chair or coupling by the motion of the wheels of passing trains over them.

For the purposes of this improvement I prefer to use the wrought-iron chair of H form, in which the middle portion of the plate is turned over from each side toward the center, so as to embrace the flange of the rail, as shown in Figs. 1, 2, and 3, A A being the flanges of the chair, in which are punched the holes for the spikes or screws by which to fasten it to the cross-tie; B B, the lips to embrace the flange of the rail; and C C the risers which unite the lips B B with the flange-plate A A.

In Figs. 1 and 3 the adjacent ends of two rails are shown in position, D D being the flange of the rails, E the vertical rib, and G the head.

Between the lips B B of the chair and the flanges D D of the rails I place the springs K K, as shown edgewise in Fig. 1 and flatwise in Fig. 3. It is made with a slight curve lengthwise, and is placed in the chair with the concave side down, as shown in Figs. 1 and 4, thus causing the ends of the springs to bear upon the flanges of the rails, while the convex or back part of the spring bears upward against the lips B of the chair. These springs should also be so formed as to bear upon the flange of the rail at their middle part, as shown at *n*, Fig. 4, to prevent the rising of the ends of

the rails under the spring, which might possibly occur if not thus prevented. The springs should also be provided with some means for retaining them in place longitudinally. For this purpose a small rib, *n*, is formed at each side of the lip B, (Figs. 1 and 3,) or the spring may be made with a sharp bend at each of said places, so as to answer this purpose, as shown at *n*, Fig. 4, or they may be secured in any other convenient manner. These springs should be made of steel and be properly tempered and have sufficient elasticity to compensate, under all circumstances, for wear and strain, and to have sufficient stiffness to hold the rail firmly down upon the chair against the disturbing action of passing trains.

The destruction of the ends of railroad-bars by abrasion is a source of great expense to railway companies, not only from the actual cost of repairing or renewing such rails, but in consequence, also, of the very great injury to the rolling-stock of the road, from the almost innumerable concussions transmitted by such defective joints to the wheels and axles of the cars and machinery of the locomotives. In addition to which, the constant jarring and noise resulting from such concussions are a most objectionable annoyance to passengers; and this jarring of the cars is well known to be particularly injurious to live stock. Numerous plans have accordingly been devised for so forming the joints of the rails as to prevent this abrasion of the ends; but all such plans, thus far, have utterly failed in practice, merely answering a useful purpose as long as the parts of such joints continued to fit each other with accuracy, and which, at best, has only been for a short time. The heavy grinding, tremulous motion occasioned by the rapidly-passing trains, together with the dust and sand so plentifully supplied by the road-bed, soon causes all such fitting to become loose and out of shape, thereby permitting the ends of the rails to vibrate vertically under the passing wheels, alternately impinging the wheels or being impinged by them; and when it is considered that the weight on each wheel is about three thousand five hundred pounds, and its velocity from thirty to fifty feet per second, it will readily be perceived that all rail-joints in which there are no self-operating means for compensating for wear must quickly become



loose, and, also, that any degree of looseness in the joints must lead to their rapid destruction. The mode of construction herein described, however, having in constant action a positive means for compensating for wear, will effectually prevent all looseness in the joints, and consequently the free vibration of the rails in the chair thereby preserving the joints and ends of the rails in shape, and the unity of the whole series of bars as a single rail.

In this description I have referred to my improvement as embodied in a joint-chair, and have described and figured the said chair with flanges by which to fasten it to the cross-ties, as that mode of construction is in very general use; but some engineers prefer to place the joint-coupling between the cross-ties, in which case flanges are unnecessary and may be dispensed with; and in such case, also, the spring or springs may be placed below the rail, or between the flanges of the rails and the bottom of the coupling, and the same result be attained as herein shown, where the spring was applied between the top of the flange and the lip of the chair.

I do not therefore limit myself to any particular location or form of the chair or joint coupling, but claim the right to adopt any

form and place of application that will enable me to employ the principle of my invention to the best advantage, or according to the peculiar views of the parties requiring it.

It is not pretended that this method of combining the rails of a railroad into a continuous bar will make bad rails equal to good ones; but it is claimed for this improvement that it will relieve the track of a railroad from the various evils that result from loose joints, as herein explained, and thus materially diminish the cost of keeping up the repairs of the rails and rolling-stock of a railroad.

Having thus described the nature, construction, and operation of my improvements in railroad-joint chairs or couplings, what I claim therein as my own invention, and desire to secure by Letters Patent, is—

The combination of a spring or springs with the rails and chair or coupling, so as to prevent looseness of the joints, substantially as herein described.

JOHN COCHRANE.

Witnesses:

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