

(No Model.)

J. W. STORRS.

RAIL JOINT.

No. 359,521.

Patented Mar. 15, 1887.

Fig. 4.

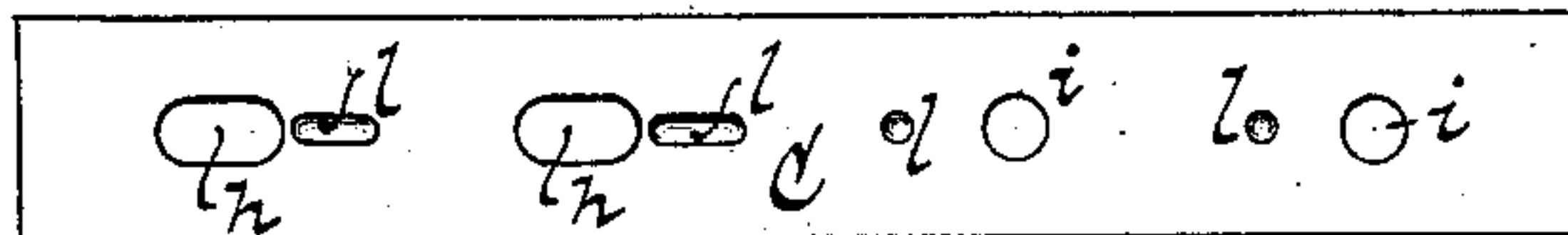


Fig. 1.

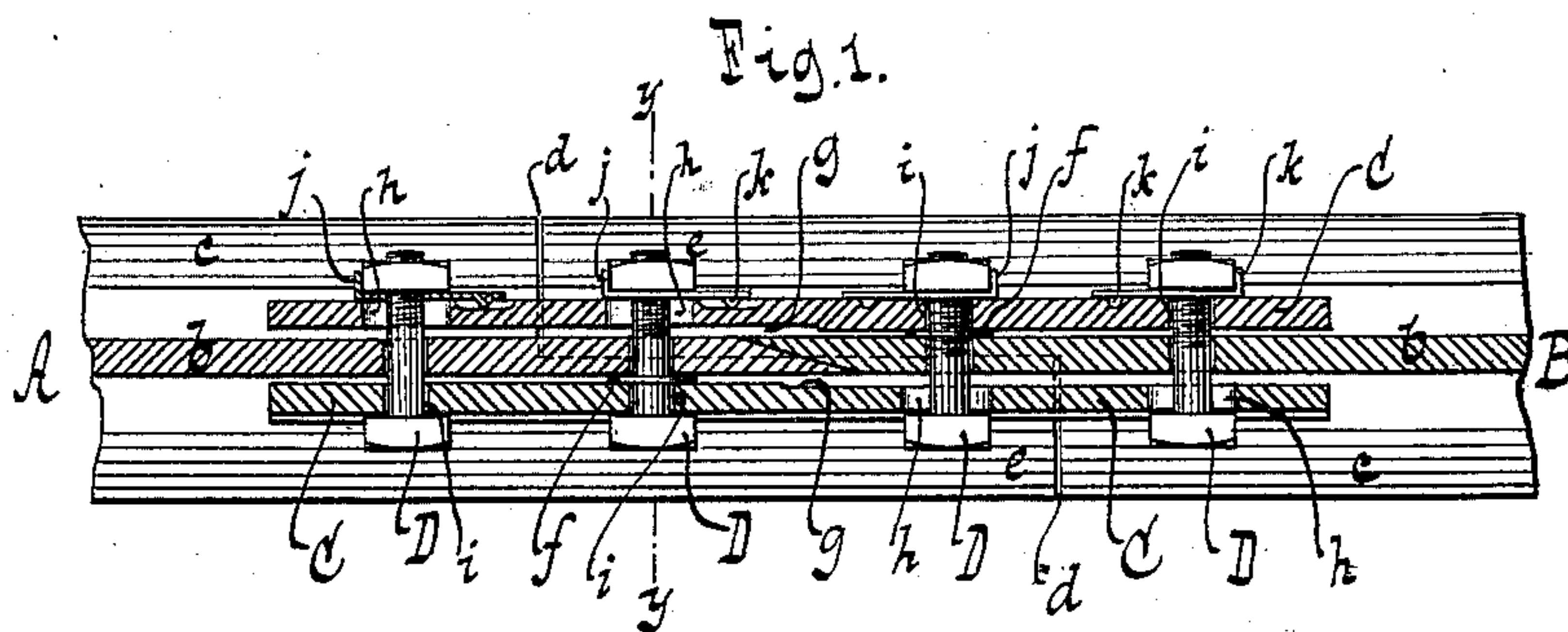


Fig. 2.

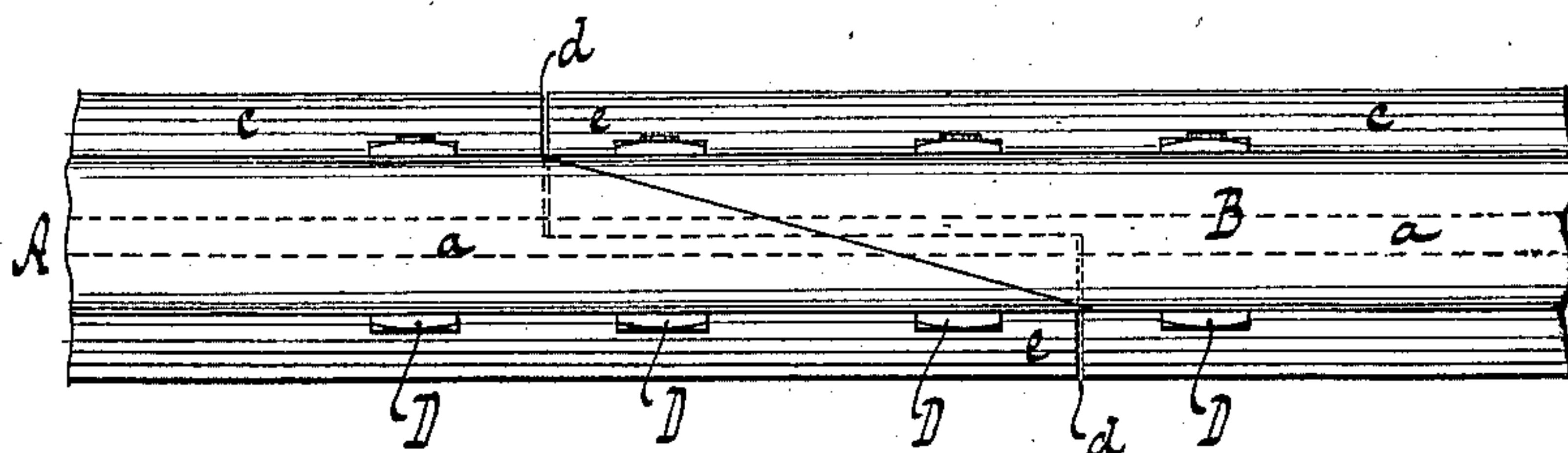


Fig. 3:

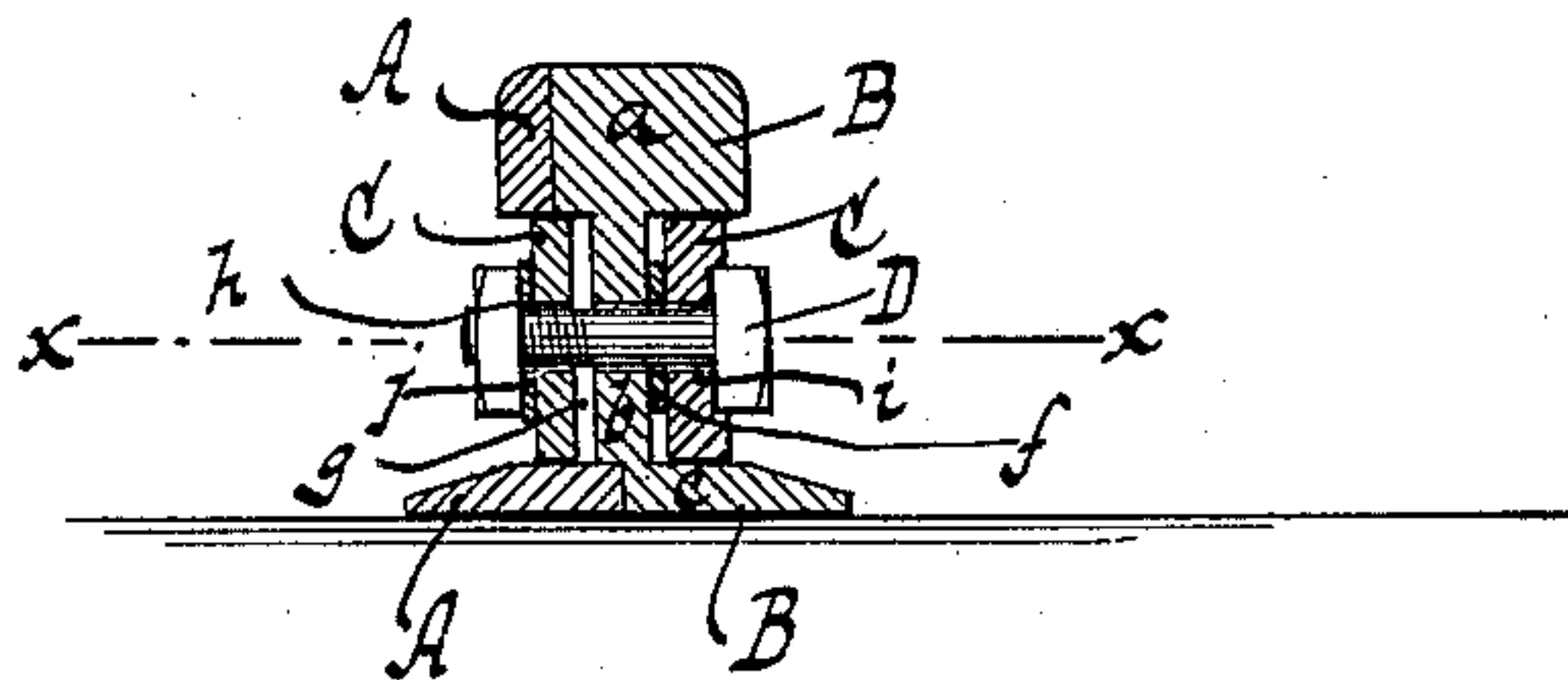
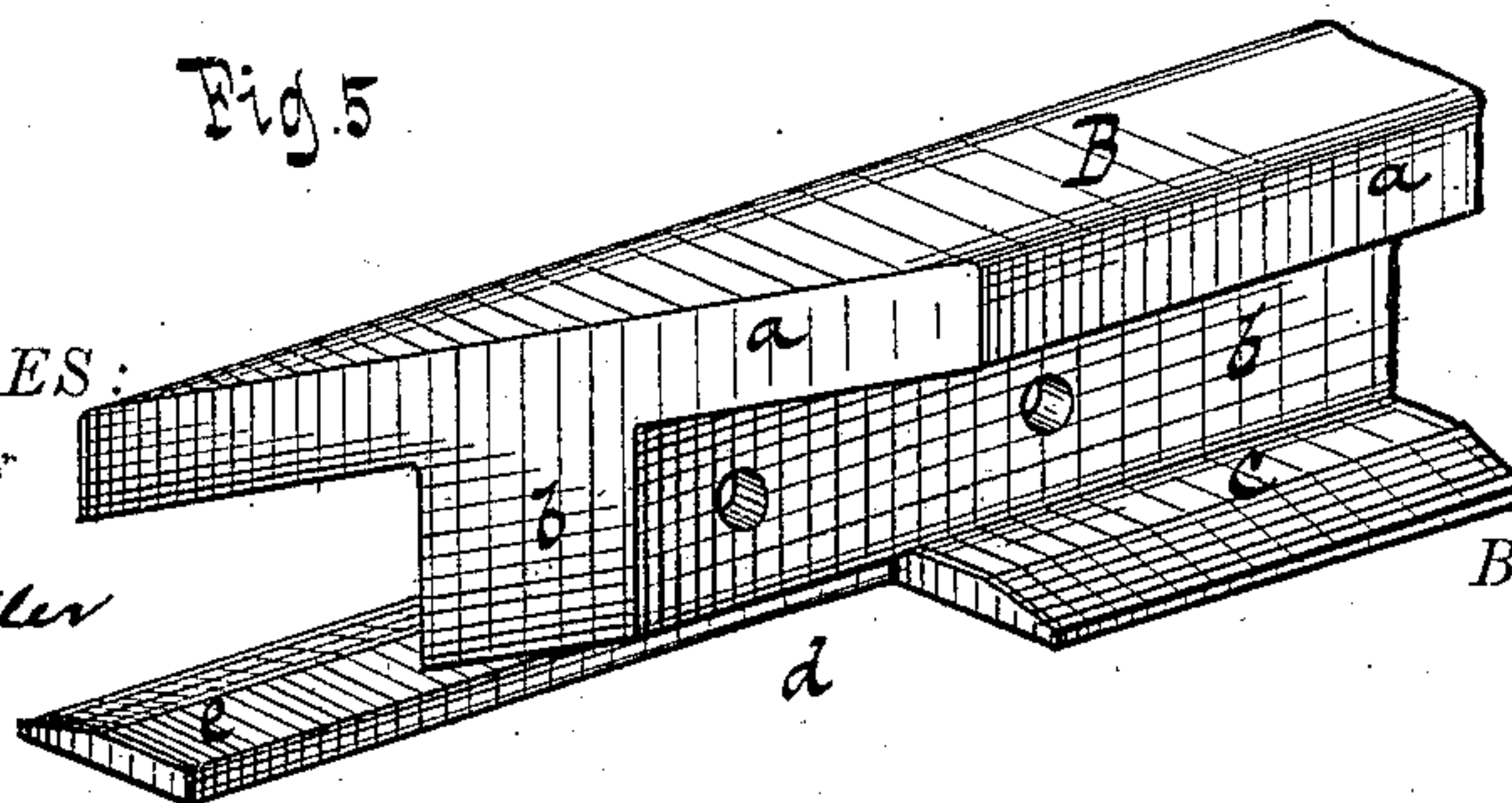


Fig. 5



WITNESSES:

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JOSEPH W. STORRS, OF NEW LONDON, CONNECTICUT.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 359,521, dated March 15, 1887.

Application filed July 10, 1886. Serial No. 207,711. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. STORRS, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented new and useful Improvements in Rail-Joints, of which the following is a specification.

This invention relates to a joint for railway-rails; and it consists in certain novel features of construction, fully pointed out in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a horizontal section of my invention on the line *x x*, Fig. 3. Fig. 2 is a plan or top view thereof. Fig. 3 is a vertical cross-section on the line *y y*, Fig. 1. Fig. 4 is a side view of one of the fish-plates. Fig. 5 is a view of an end of a rail properly shaped to form the joint shown in the other figures.

Similar letters indicate corresponding parts.

In the drawings, the letters A and B designate two rails, which are joined by means of fish-plates C and bolts D. The rails are formed, as usual, of the "head" *a*, the "web" *b*, and the "base" *c*. In the joint shown in the drawings the head and web of each rail are cut off obliquely, while the base may be cut off at right angles at the center of the oblique end of the web; or it may be divided at the center of the web and a recess, *d*, cut into one side and a projection, *e*, formed on the other side thereof, the projection on one rail being made to fit into the recess formed in the other. By making the ends of the two rails in this form a sliding joint is obtained, by means of which the bases of the two rails will always remain in contact, while the heads thereof will separate but slightly as the rails are contracted by changes of temperature. The opening thus formed between the two rails being oblique, the wheels of the car would at all times during their passage over this joint rest firmly on the surface of the rail, and their passage over this joint could be accomplished without the jolt usually felt when passing over joints formed in the old manner, particularly when the rails have been worn and the ends thereof have been forced out of shape by continued blows from the car-wheels, the force of which increases with the distance between the ends of the rails. To prevent as much as possible this

defacement of the ends of the rails, it is necessary that the heads of the two rails should be kept in close contact at all times. This I accomplish by means of the elastic fish-plates C, which are secured on each side of the web *b* by the bolts D, which pass through both of these plates and through the web. These fish-plates may either be flat elastic bars, under which the washers *f* have been placed, one on each side of the joint and on opposite sides of the rail, so as to form a fulcrum, or a recess, *g*, may be cut into one side of each of the plates and the latter so placed that the recesses come on opposite sides of the joint; or both the washer and the recess may be employed, as shown in the drawings.

To permit the contraction of the rails above mentioned, slots *h* are formed in one end of each of the fish-plates, while holes *i*, into which the bolts D fit, are cut into the other, the fish-plates being so placed that the bolts which pass through holes *i* in the fish-plate on one side of the web will pass through slots *h* in the fish-plate on the other side of the web.

From the foregoing description it will be understood that the contraction of the rails will cause an oblique opening to appear between the heads of the two rails, while their bases will always remain in contact with each other. This opening I close by "springing" the webs of the two rails sufficiently toward each other to bring their heads in contact by means of the above-described elastic fish-plates, which, when the bolts D have been properly tightened, act as springs, their point of impact being the washers *f*, which, being on opposite sides of the joint, will act equally on each rail, forming an elastic joint, which has a tendency to keep the heads of the two rails in contact. To prevent the nuts on the bolts D from turning after the fish-plates have been properly adjusted, I place under the nuts the nut-locks *j*, consisting of thin flat plates of metal provided with a projection, *k*. In the fish-plates are cavities *l*, which receive these projections and prevent the plates from turning on the bolts. When these nut-locks are applied to movable bolts, these cavities are elongated to permit the necessary movement. After the nuts on the bolts have been properly tightened, the ends of these plates are

turned over one of the edges of the nuts, Fig. 1, thereby holding them in position and preventing their being turned by accident. It is evident that any other form of nut-lock may be employed; but I prefer that here shown and described.

I do not desire to confine myself to the form given to the end of the rail in the drawings, as any other shape may be given to the lower portion of the rail, provided the oblique end of the head is retained.

When desired, the corners at the junction of the web with the base and the head of the rail may be rounded, in which case it will be necessary to round off the corners of the fish-plates to correspond.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the rails A and B, having oblique ends constructed to overlap each other, of the elastic fish-plates C and the bolts D, passing through one of the rails and through the fish-plates, substantially as described.

2. The combination, with the rails A and B, having oblique ends constructed to overlap each other, of the elastic fish-plates C, the washers f, placed between said fish-plates and the rails, and the bolts D, passing through one of the rails and through the fish-plates, substantially as described.

3. The combination, with the rails A and B, having oblique ends constructed to overlap each other, of the elastic fish-plates C, provided with the recess g, and the bolts D, passing through one of the rails and through the fish-plates, substantially as described.

4. The combination, with the rails A and B, having oblique ends constructed to overlap each other, of the fish-plates C, the bolts D, passing through one of the rails and through the fish-plates, and the nut-locks j, substantially as described.

5. The combination, with the rails A and B, having oblique ends constructed to overlap each other, of the slotted fish-plates C, the bolts D, passing through one of the rails and through the fish-plates, the plates j, forming the nut-locks, the projections k on said plates, and the oblong cavities l in the fish-plates, constructed to receive said projections, substantially as described.

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

JOSEPH W. STORRS. [L. s.]

Witnesses:

JOHN E. DARROW,
WM. H. REEVES.