

(No Model.)

R. LONG, Dec'd.
J. M. JOHNSON, Administrator.
RAIL JOINT.

No. 413,622.

Patented Oct. 22, 1889.

Fig. 1.

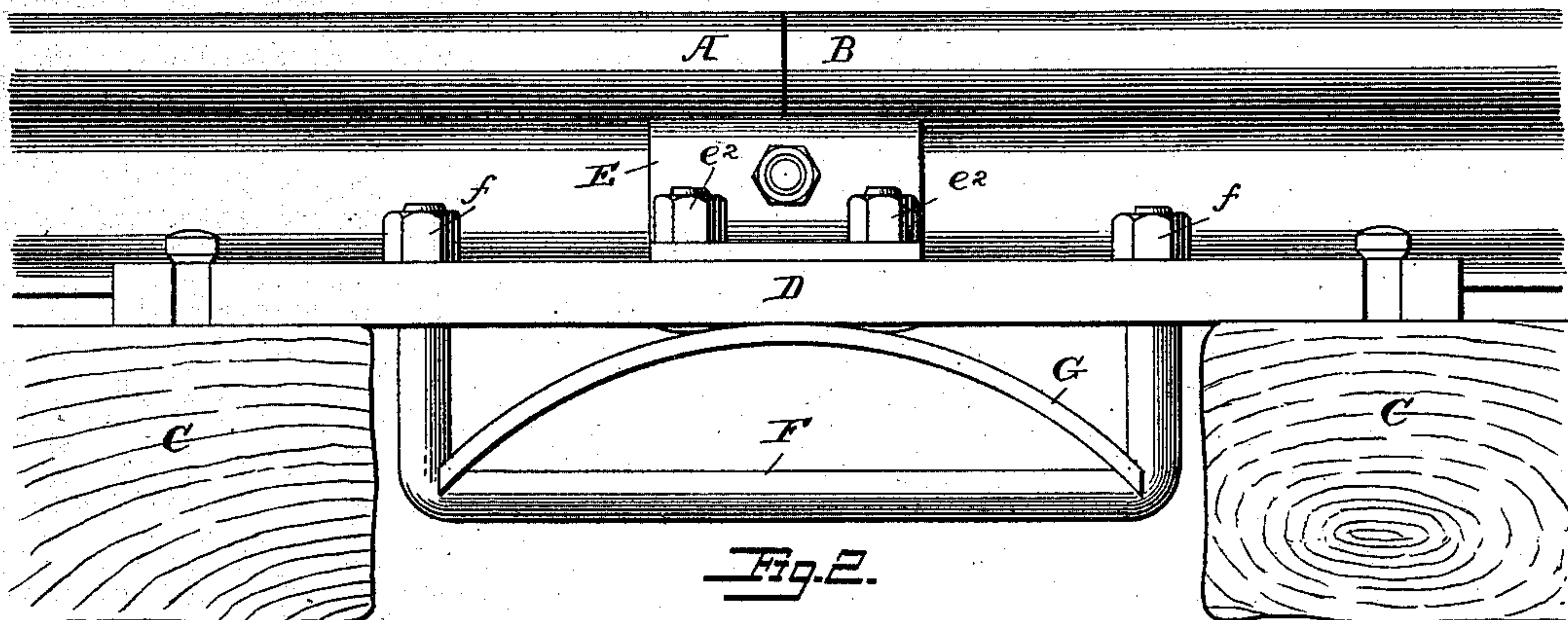


Fig. 2.

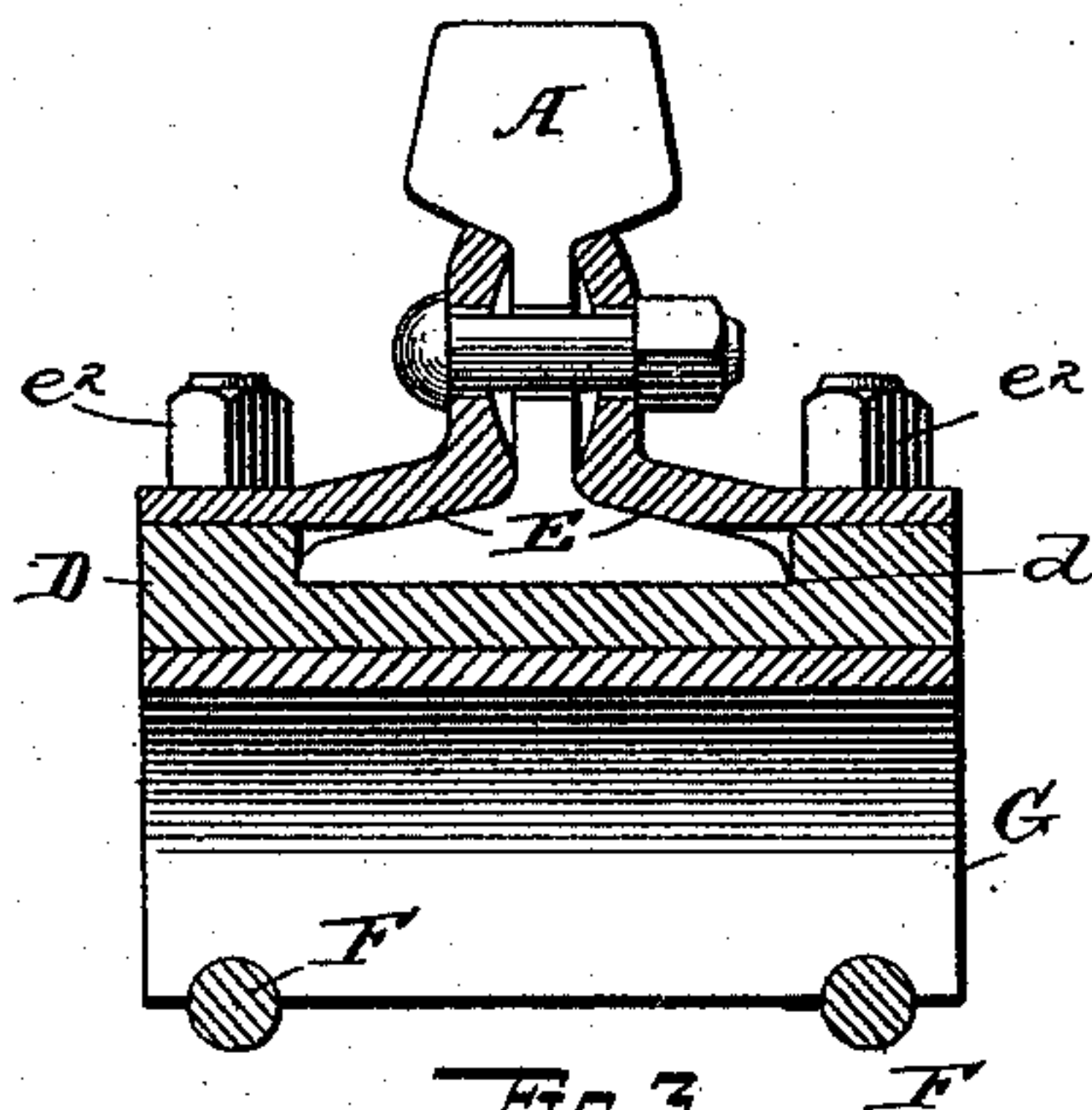
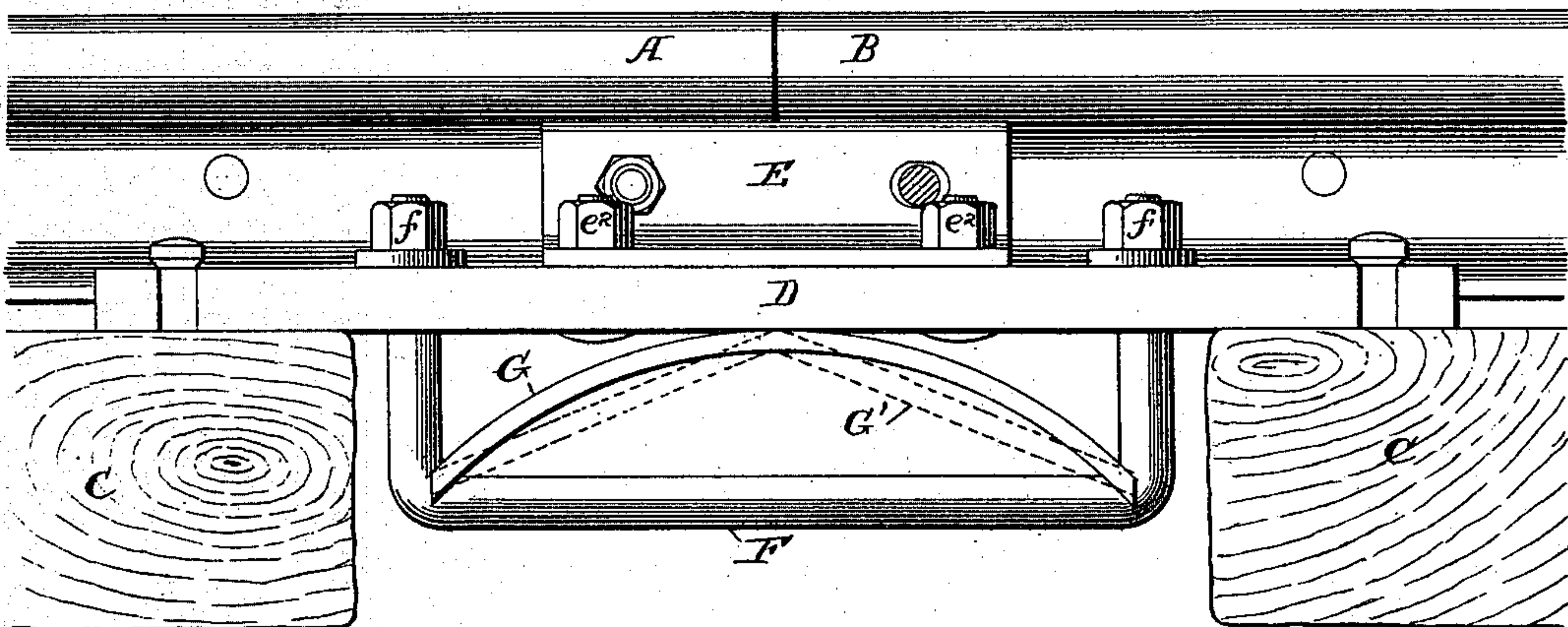


Fig. 3.



Witnesses
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Inventor
J. M. Johnson
Administrator of the Estate of Richard Long (deceased)
By his Attorneys
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UNITED STATES PATENT OFFICE.

JAMES M. JOHNSON, OF CHICAGO, ILLINOIS, ADMINISTRATOR OF RICHARD LONG, DECEASED.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 413,622, dated October 22, 1889.

Application filed May 11, 1889. Serial No. 310,453. (No model.)

To all whom it may concern:

Be it known that RICHARD LONG, late a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, deceased, did during his lifetime invent a new and useful Improvement in Rail-Joints, of which the following is a specification.

This invention relates to rail-joint supports; and it has for its object to improve the construction of such joints, and to provide a simple, cheap, and effective joint which shall not only furnish the necessary degree of strength, but the desired elasticity or flexibility to the joint; and to these ends the invention consists in a rail-joint constructed and arranged substantially as hereinafter set forth.

Referring to the accompanying drawings, Figure 1 is a side view showing one embodiment of the invention. Fig. 2 is a transverse sectional view. Fig. 3 is another side view, showing a slightly-different embodiment of the same joint.

It is well known that one of the most serious problems connected with the track or way of a railroad is to provide suitable and proper connections for the adjacent ends of the rails, and as the use of heavy steel rails increases, necessitated by the increased weight of engines and cars and rapidity of travel, the question becomes more and more difficult, and while a great deal of time, money, and ingenuity has been spent in attempts to produce a satisfactory means of connection of the rails, and many devices and arrangements have been made, they are all more or less objectionable and unsatisfactory, and fail to meet to their fullest extent the requirements of the present railroad construction. It has been considered that one of the most important features in this connection was to produce a joint or connection having great strength and rigidity, and many of the efforts made have been to improve the construction and arrangement of the joint in this direction.

The present invention is based to a certain degree upon the assumption that the perfected track should be so arranged and con-

structed that all portions thereof shall be of the same strength and rigidity and still have the same degree of elasticity and flexibility, and the nearer the construction approaches this idea the more perfect will it be. While great strength and rigidity within certain limits is absolutely necessary, it is also advantageous, and indeed necessary, that there should be a certain degree of elasticity and flexibility in the rails themselves, and one object of this invention is to produce a rail-joint which shall not only have the required degree of rigidity, but shall have the same degree of flexibility and elasticity as the body of the rail itself. While this idea may be carried out in various ways, what is considered to be the preferable form of its embodiment will now be described.

Referring to the accompanying drawings, A B represent the adjacent ends of two rails, shown to be of the usual construction, and these rest, as usual, upon the sleepers C C, the point of junction of the two rails being preferably midway between the said sleepers. Supported upon the sleeper and extending under the adjacent ends of the rails is a base-plate D, and this base-plate, while it may be variously formed and arranged, is shown as channeled or grooved at *d* throughout its length, and this groove is of a width equal to the base of the rail and a depth varying according to the circumstances of the case, it being shown in Fig. 2 of a depth about equal to the thickness of the flange of the rail at its edge. This base-plate is shown firmly spiked or secured to the ties or sleepers, and the adjacent ends of the rails are firmly held in line against lateral stress by the ribs formed on the base-plate D, thus securing on curves a joint just as truly in line as a straight track-rail. In order to secure and hold the ends of the rails on this base-plate, angle-plates E E are used, and these are shown in Fig. 1 as provided with a single bolt-hole in the upright portion, through which passes a single bolt, taking into notches formed in the ends of the webs of the rails, and this is the construction preferred in laying new tracks; but when the invention is to be applied to tracks already laid having the usual perforations in

the webs for the bolts of the ordinary fish-plate, angle-plates substantially as shown in Fig. 3 are used, each having two holes in the upright portion to correspond with the end ones in the webs of the rails. These angle-plates are made to fit the web of the rail, but do not extend up to or support the head of the rail, as is usual with the ordinary fish-plate joints, as these angle-plates are not depended upon for any vertical support to the rail, but are simply made use of for the purpose of assisting in keeping the rails in line laterally, as on curves, thus preventing "foul" or "lip" joints, and to connect the rails firmly with the base-plate, and this last feature is accomplished by means of the nuts and bolts e^2 passing through the thick part of the base-plate, and thereby all "creeping" or "slipping" of the rails is prevented, as they are firmly secured to the base-plate, and the base-plate in turn is firmly secured to the ties.

While the devices thus far described tend to prevent lateral displacement of the rails and to maintain the rail-joints in proper relations to each other, it is obvious that they do not properly support the rail vertically, and in order to do this and, as before stated, produce a sufficiently strong support, and which at the same time will allow of a certain amount of elasticity to the joint, preferably equal to the elasticity of the rail between other ties, there is provided a truss which operates to support the adjacent rails at their points of junction. While this truss may be variously constructed, what is considered to be a practical form consists of two members, one the frame F, shown in the form of a U-shaped bolt or yoke-piece, the ends of which are connected to the base-plate by screws and nuts f , by means of which the frame or yoke-piece can be adjusted. This frame serves as an abutment for the ends of the other member of the truss and operates to control the longitudinal tension thereof. The other or arched member of the truss is shown as consisting of a spring-plate G, the upper or central portion of which rests or bears upon the base-plate directly under the point of junction of the rails, and the ends of which rest or bear upon the U-frame or yoke-piece, as shown. This truss-plate is made to have a certain amount of elasticity, and the tension of the plate may be adjusted as desired by raising or lowering the truss-frame or U-bolt, so that the pressure of the spring-truss upon the base-plate will be just sufficient to render this portion of the track as elastic as the other portions, and it is evident that it may be quickly and easily adjusted to meet the different conditions of the rails at the joint. This spring truss-plate is preferably made of a low grade of steel, which will have the desired degree of elasticity without brittleness; but of course other materials may be used.

While the construction illustrated is deemed one of the best, it is evident that many modifications may be made which will embody sub-

stantially the same idea. For instance, instead of having the arched member in one continuous piece of spring material, the angular plates G' (shown in dotted lines in Fig. 3) may be used, which will be practically rigid and furnish the necessary strength, and in order to produce the desired elasticity the truss-frame may be supported upon strong spring supports or washers f' , as shown in dotted lines in Fig. 3, placed under the nuts f .

The invention is not limited to any specific construction and arrangement, the essential feature being that the adjacent ends of the rails shall be supported at or near their point of junction by a truss which shall not only afford the requisite strength and rigidity, but permit of the desired flexibility and elasticity. It will also be evident that the improved truss-support may be used either with or without the fish-plates, for, as before stated, the plates are used not for the purpose of supporting the joint against vertical stress, but simply to aid in maintaining the rails in position against lateral strain, and in applying the invention to new lines of track the drilling of the web of the rails to provide the ordinary holes for the fish-plate, which tend to weaken more or less the strength of the webs, may be saved; or when the single-bolt angle-plate is used each rail can simply be cut to a small extent for the reception of half of the bolt.

The base-plate may in some instances be dispensed with and the frame of the truss secured directly to the flanges of the rails or to the extended flanges of the angle-plates, and in that case the spring member of the truss would bear directly upon the rails themselves. This arrangement, however, is not deemed suitable for roads over which heavy and rapid trains pass.

Another important feature of the invention, especially when applied to lines already laid, lies in the fact that the truss is adjustable, so that not only can it be adjusted to maintain the required degree of strength and elasticity, but in this way a low or deflected joint may be raised and straightened and afterward maintained in proper alignment.

Other features of advantage resulting from the use of the improved truss might be stated; but they are apparent upon inspection by those skilled in the art, and it is not deemed necessary to recite them herein.

What is claimed is—

1. In a rail-joint support, a spring-truss arranged to support the ends of the rails, adjustable for regulating the tension of the truss, substantially as described.
2. In a rail-joint support, a spring-truss consisting of a spring member and a longitudinal tension member for said spring, substantially as described.
3. In a rail-joint support, a truss consisting of a spring member arranged to support the rails at their point of junction, and a supporting-frame for the spring member afford-

ing abutments united by a longitudinal member for the ends of the said spring member, substantially as described.

4. A rail-joint support consisting of a spring member supporting the rails at their point of junction, and a frame or supporting member, said supporting member being adjustable for regulating the tension of the spring member, substantially as described.

5. In a rail-joint support, a truss consisting of an arched spring member and a supporting member, said supporting member being adjustable for regulating the tension of the arched member upon the rails, substantially as described.

6. In a rail-joint support, a truss consisting of an arched member arranged directly under the point of junction of the rails, and a frame or supporting member suspended below the rails, forming abutments for the ends of the arched member, substantially as described.

7. In a rail-joint support, a truss consisting of an arched plate of spring material, a yoke or U-bolt piece supporting said arched member, and adjusting-nuts for said yoke-piece, substantially as described.

8. In a rail-joint support, the combination, with the rails, of a channeled base-piece, a

truss consisting of a spring member bearing against the base-piece, and a yoke or frame supporting the spring member and connected to the base-piece, substantially as described.

9. In a rail-joint support, the combination, with the rails, of a channeled base-piece, angle-plates secured to said base-piece and to the rails, and a truss consisting of an arched member, the center of the arched member being connected to the base-plate adjacent to the junction of the rails, and the ends of the arched member being connected to be supported by the base-plate, substantially as described.

10. In a rail-joint support, the combination, with the rails, of the channeled base-plate, the angle-plates having a central bolt passing through recesses in the adjacent webs of the rails and secured to the base-plate, and a truss for supporting the base-plate at or near the point of junction of the rails, substantially as described.

JAMES M. JOHNSON,

Administrator to collect of the estate of Richard Long, deceased.

Witnesses:

WM. S. BREWSTER,
JAMES H. SHELDON.

It is hereby certified that in Letters Patent No. 413,622, granted October 22, 1889, upon the application of James M. Johnson, of Chicago, Illinois, administrator of Richard Long, deceased, for an improvement in "Rail-Joints," were erroneously issued to said "James M. Johnson, administrator," as owner of the entire interest in the patent; that said Letters Patent should have been issued to the *Long Spring Truss Joint Company*, a corporation organized under the laws of the State of Illinois, said Long Spring Truss Joint Company being owners, by assignment, of the entire interest in said invention; and that said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 29th day of October, A. D. 1889.

[SEAL.]

CYRUS BUSSEY,
Assistant Secretary of the Interior.

Countersigned:

C. E. MITCHELL,
Commissioner of Patents.