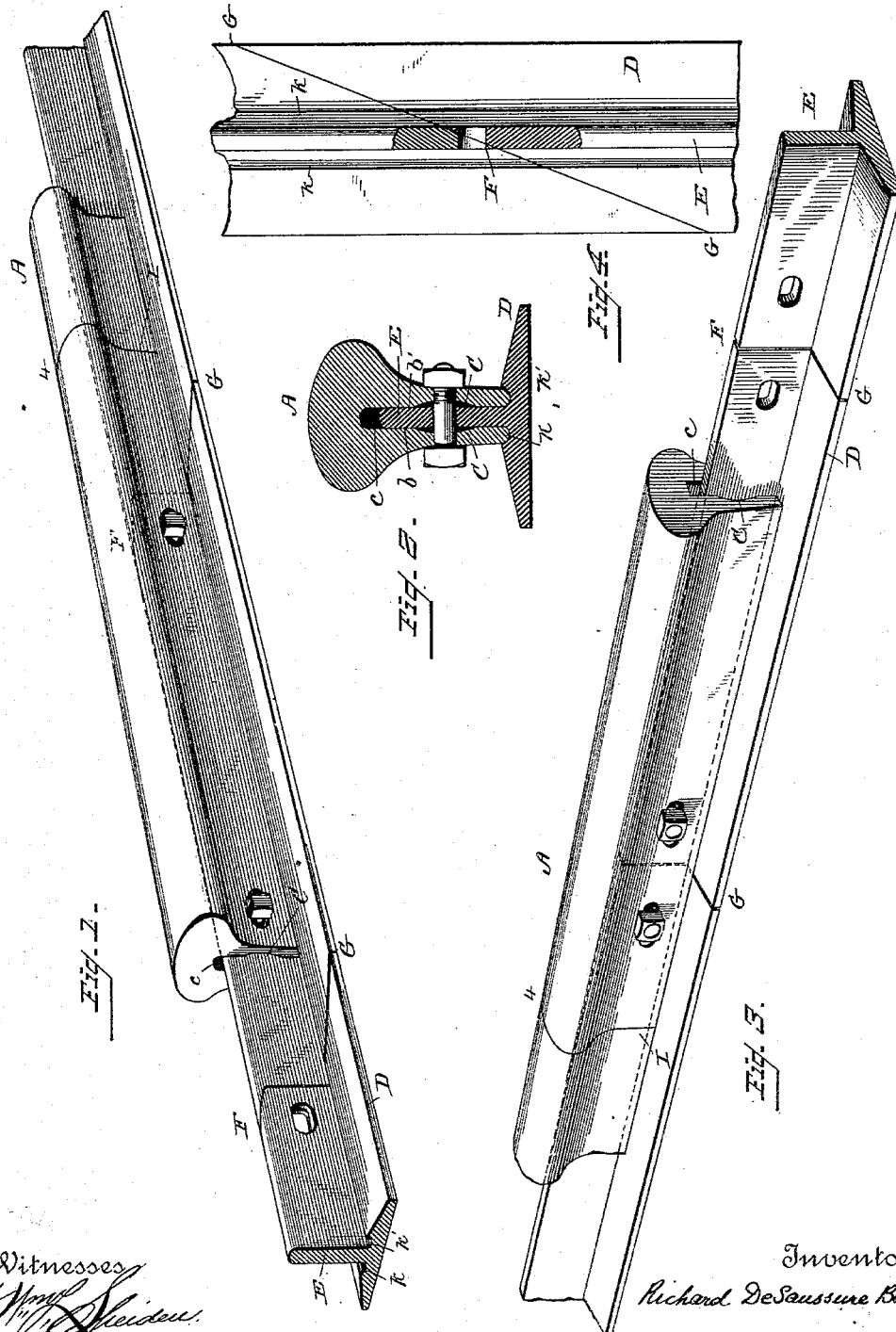


(No Model.)

R. DE S. BACOT.  
RAIL.

No. 401,107.

Patented Apr. 9, 1889.



Witnesses  
*Wm. H. Steadman*  
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# UNITED STATES PATENT OFFICE.

RICHARD DE SAUSSURE BACOT, OF COLUMBIA, SOUTH CAROLINA.

## RAIL.

SPECIFICATION forming part of Letters Patent No. 401,107, dated April 9, 1889.

Application filed December 15, 1888. Serial No. 293,678. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD DE SAUSSURE BACOT, a citizen of the United States, residing at Columbia, in the county of Richland and State of South Carolina, have invented a new and useful Improvement in Rails, of which the following is a specification.

The object of my invention is to provide an elastic rail, which greatly reduces the wear and tear on the road and rolling-stock, to provide means for connecting the joints in the laying of the rails, while protecting the abutting ends of the lower section of the rails from the wear incident to the method in general use, and to provide a cheap means of repairing the rails arising from the peculiar construction of my rail, and whereby the danger of derailment while repairs are being made is obviated.

My invention consists of a rail in two parts—viz., a flange or foot having a web or shank like that of an ordinary T-rail, which together constitutes the base of the rail, and a grooved ball which fits over the web of the base, so that the outer webs forming the walls of the groove or jaws of the ball secure the ball to the base-web and at the same time connect the successive sections of the base. The webs or jaws of the ball are concave on their inner sides in the wake of the bolts. The ends of the base-sections are cut with oblique faces, which fit against each other in order to form a continuous support for the ball.

In the accompanying drawings, which illustrate my invention, Figure 1 is a view in perspective of the rail, showing its construction. Fig. 2 is a cross-section of the same. Fig. 3 shows my invention as applied to the remodeling of an old track, and Fig. 4 is a plan view of the diagonal joint in the base.

A is the rail, in which B is the ball, having the jaws or webs  $b b'$ , forming the groove C.

D is the flange, and E is the web, forming the base-section.

F G is the joint in the base-sections, and H I the joint in the ball-sections.

$c$  is the space left between the bottom of groove C and the top of web E of the base-section.

In Figs. 1 and 2 I have shown in the flange D grooves  $k k'$  on each side of web E, in which

fit the ends of the jaws  $b b'$  of ball B. In Fig. 3 grooves  $k k'$  are dispensed with.

In the figures, the webs  $b b'$  of ball B are shown concave to a slight extent at about the center of the webs in the wake of the bolts, the shape of groove C being such that the base-web is confined at both the top and bottom. The object of this concavity in the webs is to compensate for the wearing of the rail and to prevent its working loose.

In Fig. 1 the joints of the base-sections are diagonal, as shown at F G, in which case they are held together and the ball B secured to the base by a single bolt, the joints of the ball and of the base-sections, respectively, being broken. Such a joint is shown in dotted lines in Fig. 1. In this way I obtain the increased strength resulting from the use of a single bolt in place of two in fastening the joint, because an increased number of bolt-holes has a tendency to weaken both web and jaws, and the advantage of a diagonal joint in the base offering an unbroken support to the ball without exposing the base-webs to the danger of chipping off of the feather ends formed on the base-webs at their diagonal joint beneath the ball—a common occurrence when the diagonal joint extends entirely through the rail; but joints can be made with bases having the ordinary straight ends, the ball breaking joint with the bases, as shown in Fig. 3.

In Fig. 3 the joints of the base-sections are shown as at right angles to the major axis of the rail, in which case a bolt is necessary on each side of the joint, as there shown. The bolt-holes in each instance are oblong to allow for the contraction and expansion of the rails, as is well known.

The advantage obtained by the space  $c$  in the elasticity of the rail is very great. It also allows for any slight variation in the ends of the abutting webs, arising from various well-known causes without interfering with the general surface of the rail, and these irregularities being covered by the ball all jar and shock in passing from one rail to the other is removed, thus overcoming to a great extent the expense of resurfacing that has heretofore arisen therefrom. I vary the size of this space from one-sixteenth to one-thirty-second of an inch. Thus where the rail is very heavy

and exposed to the constant passage of heavy rolling-stock, the space should not be less than one-sixteenth; but where the rails are light the minimum of one-thirty-second of an inch is sufficient.

In Figs. 1 and 2 I have shown the top of base-web E as arched, in which form I prefer to use it, and in which case I also arch the bottom of groove C; but the form shown in Fig. 3 may also be used with good results.

Among numerous advantages arising from the use of my improved rail are the following: The expense of repairing the track is greatly lessened, for since the wear of the rail is almost wholly confined to the ball all that is necessary in making repairs is to replace the latter, which can be done without disturbing the base, which remains permanently in place. Further than this, while the rail is being repaired, even after the removal of the ball, a rail is still provided, by which the wheels may traverse the section on the base-web should the necessity arise without danger of derailment. By the use of these base-sections and the breaking of the joint with the ball-sections I am also enabled to secure a better and more permanent alignment of the track on curves, because the joint of the base comes directly in the center of the ball of the rail, so that the force tending to throw the curve out of alignment is that of the curve of only one-half of the length either of the ball or base-section in place of that of the entire length of the rail, as in the usual way. I am also enabled to remodel tracks already laid by simply removing the ball of the ordinary T-rail and replacing with my ball without disturbing the old base.

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

1. In a rail, the combination of a flange and web section constituting the base and a grooved ball fitted thereto by means of webs integral with the ball and concave in the

wake of the bolts projecting from each side of the ball clamping the base section, and having a space, *c*, between the top of the web-section and the bottom of the groove, substantially as described.

2. In a rail, the combination of a flange and web section constituting a base having diagonally-cut ends for forming the joints, and a grooved ball with projecting webs or jaws fitting over the base-section, whereby, when a joint is formed, the sections are secured together and an unbroken base-section is provided for the support of the ball.

3. In a rail, the combination of a flange and web section constituting a base having a groove on each side of the web and a grooved ball fitting over the base, and having webs or jaws concave in the wake of the bolts, the extremities of which fit into the grooves on each side of the base-section, and having a space, *c*, between the top of the base-section and the bottom of the groove in the ball, as described.

4. As a new article of manufacture, a ball for a rail having a central groove and two downwardly-projecting webs or jaws integral with the ball, concave in the wake of the bolts, and adapted to be fitted over the web of a flange and web section, the groove being of sufficient depth to leave a space, *c*, when applied to the base-section, substantially as described.

5. In a rail, the combination of a flange and web section constituting the base and a grooved ball fitted thereto by means of webs integral with the ball, concave in the wake of the bolt projecting from each side of the ball and clamping the base-section.

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

RICHARD DE SAUSSURE BACOT.

Witnesses:

SCHUYLER DURYEE,  
WOODBURY LOWERY.