(No Model.) 3 Sheets—Sheet 1.

G. R. CAMPBELL.

RAILWAY FROG.

No. 437,977. Patented Oct. 7, 1890.

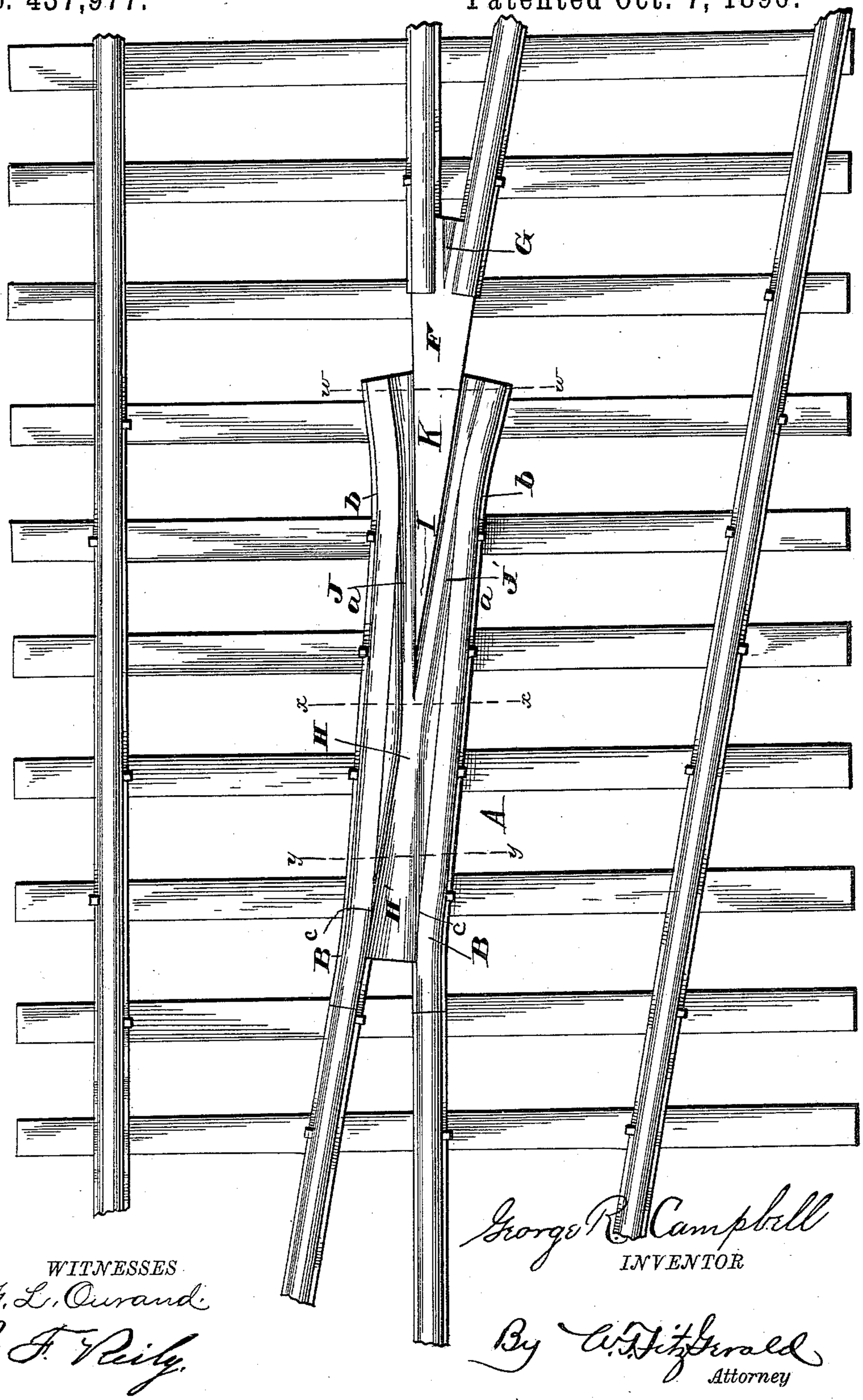

Fig. 1.

WITNESSES
F. L. Durand.
J. F. Reily.

George R. Campbell
INVENTOR

By C. F. Fitzgerald
Attorney

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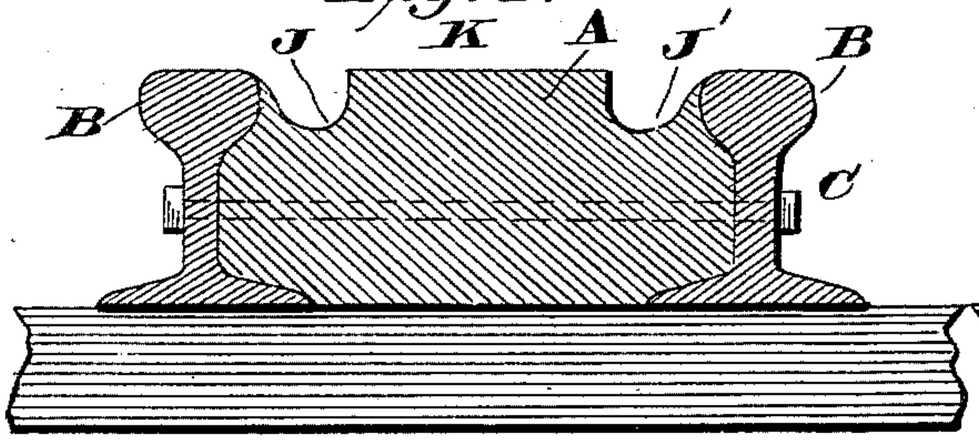
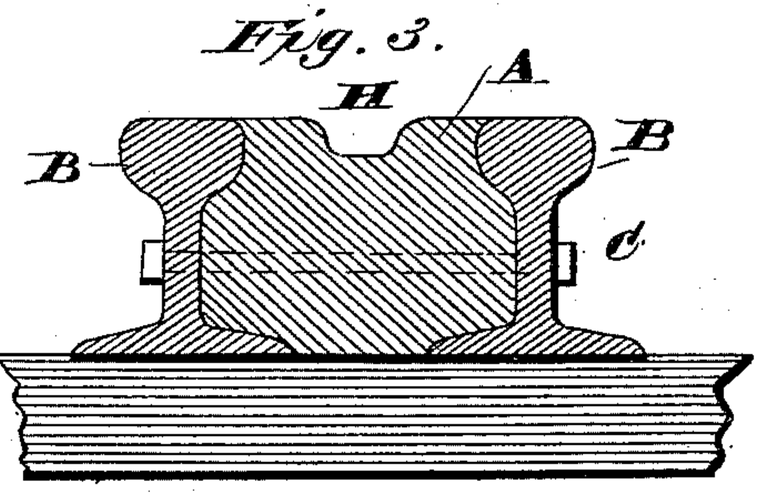
Section on the line w.w.

Fig. 2.



Section on the line x.x.

Fig. 3.



Section on the line y.y.

Fig. 4.

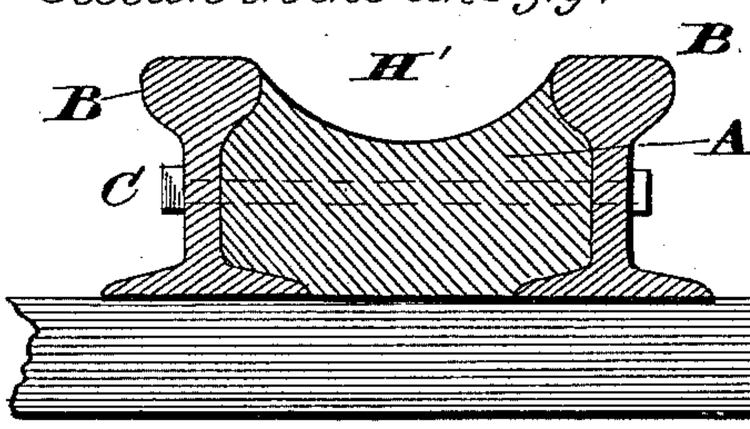
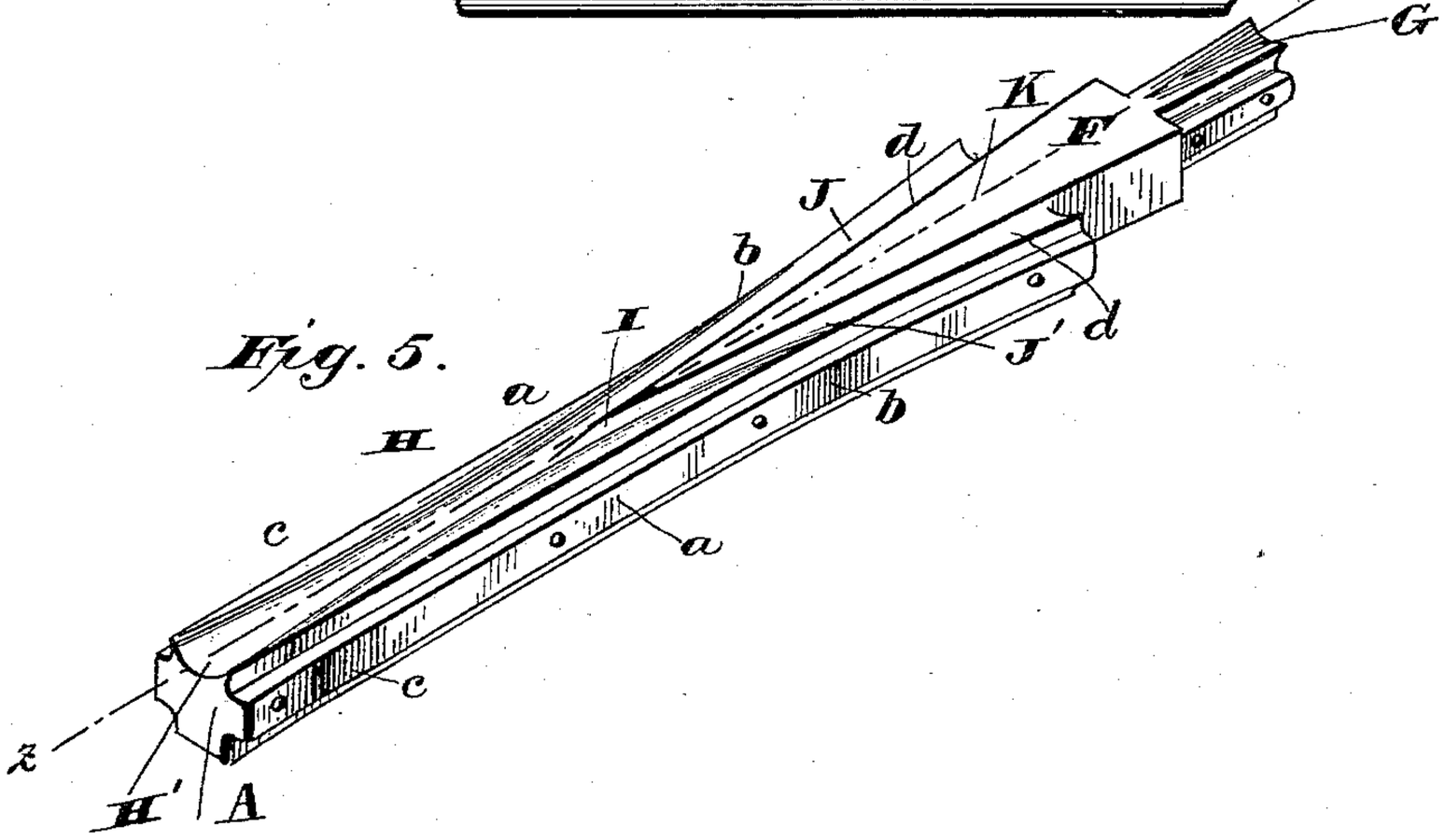


Fig. 5.



WITNESSES

F. L. Ourand.

J. F. Reily.

George R. Campbell

INVENTOR

By W. D. FitzGerald

Attorney

(No Model.) 3 Sheets—Sheet 3.

G. R. CAMPBELL.

RAILWAY FROG.

No. 437,977. Patented Oct. 7, 1890.

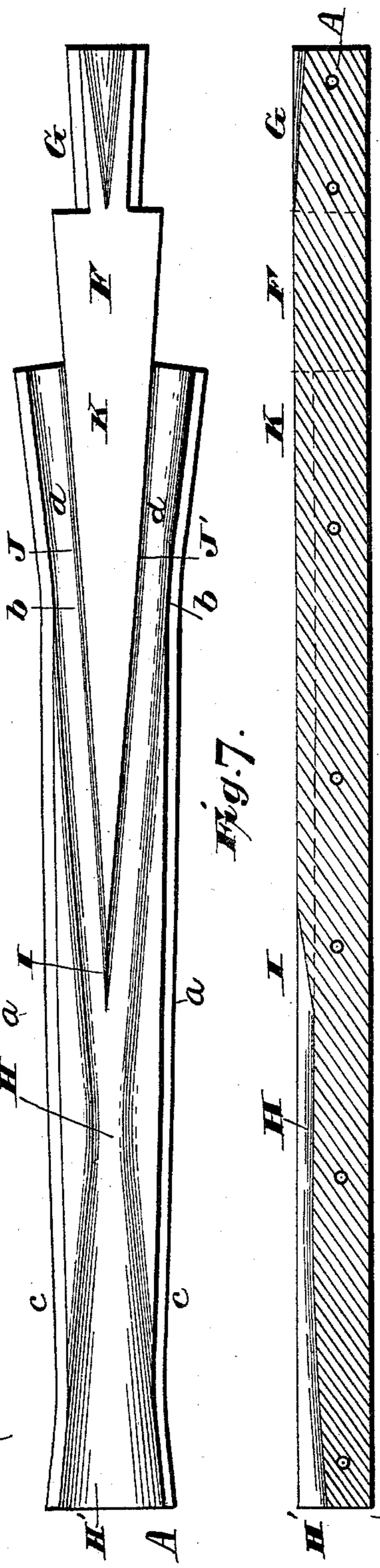


Fig. 6.

Fig. 7.

WITNESSES
F. L. Ourand.
J. F. Reily.

George R. Campbell.
INVENTOR
By W. T. Fitzgerald
Attorney

UNITED STATES PATENT OFFICE.

GEORGE R. CAMPBELL, OF BUCYRUS, OHIO.

RAILWAY-FROG.

SPECIFICATION forming part of Letters Patent No. 437,977, dated October 7, 1890.

Application filed March 29, 1890. Serial No. 345,811. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. CAMPBELL, a citizen of the United States, residing at Bucyrus, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Railway-Frogs; 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.

One of the objects of my invention is to provide a simple, efficient, cheap, compact, durable, and self-cleaning frog.

Another object is to produce in such a frog positive foot-guards at every part and without diminishing the strength or durability of the frog.

My invention consists in the form and arrangement of the parts, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a plan view of my frog combined with tracks, as in use. Fig. 2 is a transverse section on the line *w w* of Fig. 1. Fig. 3 is a similar section on the line *x x* of Fig. 1. Fig. 4 is another section on the line *y y* of Fig. 1. Fig. 5 is a perspective of the block or casting detached. Fig. 6 is a plan view of the same, and Fig. 7 is a longitudinal transverse section of Fig. 6.

Referring to the letters on the drawings, A indicates a block or central portion of the frog. It is preferably made of solid steel. The outer sides are formed so as to fit the grooves of ordinary rails B.

C indicates bolts passing transversely through the block and the rails on each side and adapted to secure the parts together. The contour of the outer sides of the block constitutes a valuable feature of my invention and may be described as follows: The middle portions of these sides, marked *a*, extend parallel to each other the greater part of the block. Near the heel of the frog at *b* upon each side the sides diverge at an angle, and at the point *c*, near the toe of the frog, an angle of corresponding divergence is formed. The object of this particular form is to provide for the transposition of the wing or side rails B upon the block. The blocks may be made of different sizes and numbered and each size made to conform to a fixed standard. The wing-rails are made accordingly and may be shipped, by number, to any frog of the same number. There is no danger of their failing to fit, on account of being made for the wrong side, because, by reason of the form just described, they are reversible—that is, the wing-rail adapted to be used on one side may be used upon the other by turning it end for end. This is of importance in practical use, especially where repairs are to be made upon the track, as it tends to avoid mistakes.

The toe is extended between the wing-rails until the distance between the two is such as to prevent the possibility of catching a foot. This insures a durable and positive foot-guard, which is very desirable.

The heel F extends beyond the end of the wing-rails and is provided with a tongue G, which on its part extends between the rails so far as to form a perfect foot-guard at this end. The rails are adapted to be bolted to the tongue G, thereby affording the necessary strength and rigidity at this part.

The face of the block A is grooved to receive the flange of a car-wheel. The narrowest part H of the groove is located near the center of the block, a little nearer the toe than the heel. From H the sides of the groove diverge toward the toe, and the groove gradually deepens in the same direction from this point. The bottom is of curved form in cross-section, so that from the point H toward the toe there is formed a single groove H′, having a curved slanting bottom. From the same point in the opposite direction a groove sets out, but is split in two by the tongue I. The tongue I rises gradually from a point near the part H to the level of the face of the block. The outer sides of the branch grooves J J′ run nearly parallel with the sides of the tongue I until they reach the point *d*, from which they rapidly separate from them.

The bottoms of the grooves J J′ are curved in cross-section; but each side of the tongue I, which forms one side of each of the grooves, is nearly perpendicular, so that the flange of a car-wheel passing through the frog runs evenly, as upon an ordinary track. These grooves also deepen from the point H toward the heel. At the ends K the wing-rails and the blocks are cut off square. The grooves J J′ at this end, as above suggested, are very

wide, the sides next the wing-rails being sloped at an angle of about forty-five degrees, while the side next to the tongue I is nearly perpendicular. By means of these flaring ends of the grooves J J′, I am able to dispense with the spring-wing rails which it has heretofore been necessary to adopt in practice where it was desired to secure a positive foot-guard on a frog of this kind. By avoiding this I am able to employ in practice the reversible wing-rails above described.

A frog made as mine of a central casting combined with side rails is firmer and more solid than one made of a single independent casting and requires very little attention; but any frog having a solid flat bottom is better and cheaper than an all-rail frog—that is, one which is seated upon separate rails—because it does not cut into the cross-ties and work loose, as the other does.

It will be observed from the foregoing that provision is made against catching a foot at the ends of the frogs and that the grooves in the face of the frog, being all narrowed toward the bottom, cannot catch the sole of the boot or the hoof of an animal. It will be noticed, also, that the grooves slope from the part H toward either end, so that the frog will not become clogged with dirt and will not hold water to become frozen in the grooves.

What I claim is—

1. A railway-frog consisting of the combination, with a main casting adapted to fit into the grooves of two opposite rails, having the middle portion of its outer side substantially parallel and its opposite ends divergent upon equal angles, of outside rails formed to correspond in shape with the main casting and adapted, in combination with it alone, to form a frog in which the outside rails may be reversed in use, substantially as set forth.

2. In a railway-frog, the combination, with outside rails, of a central casting adapted to fit therein and provided with grooves H′ and J J′, the outer ends of the grooves J J′ being flaring, each groove having one side perpendicular nearly its entire depth and the other side sloping at an angle, substantially as described.

3. In a railway-frog, a central block or casting provided with grooves in its face, said grooves being inclined downwardly from a central point toward the end, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEO. R. CAMPBELL.

Witnesses:

ISAAC CAHILL,

D. C. CAHILL.