(No Model.) 2 Sheets—Sheet 1.

D. F. VAUGHAN.

RAILWAY FROG.

No. 526,548. Patented Sept. 25, 1894.

Fig. 1.

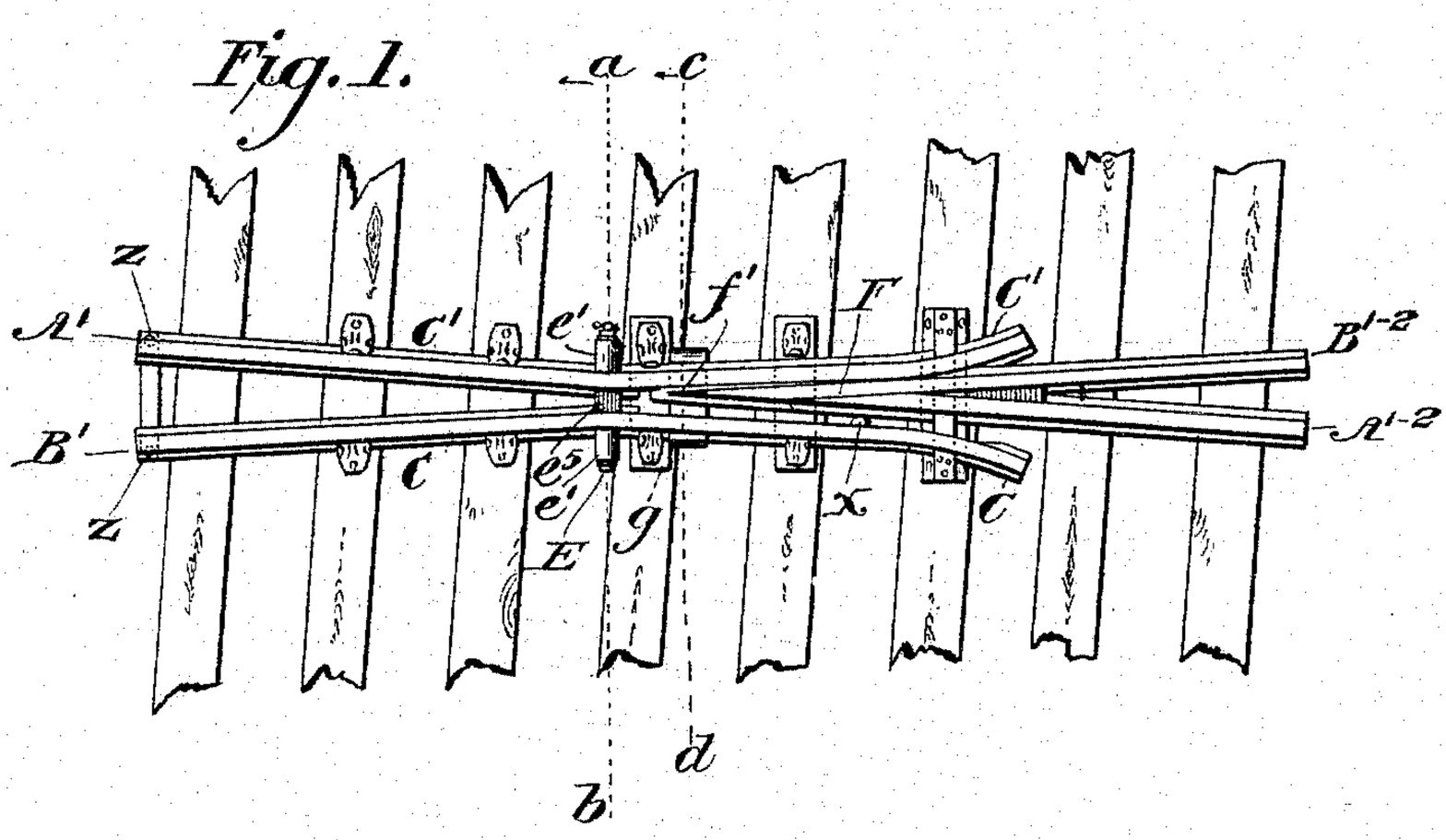


Fig. 2.

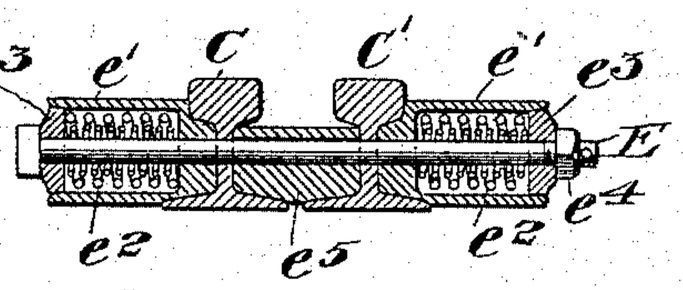


Fig. 3.

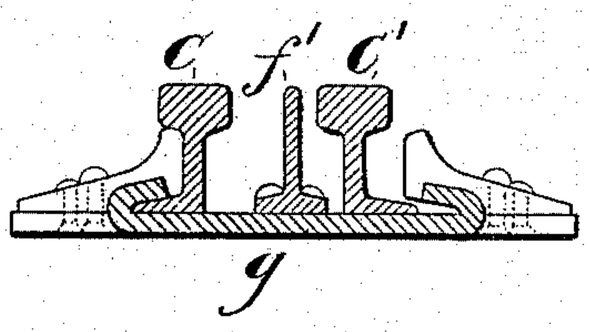
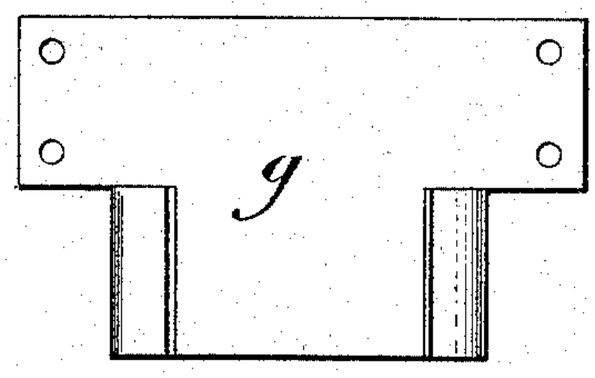


Fig. 4.



Witnesses.

John F. Nolan,

Walter C Pusey

Inventor.

David F. Vaughan,

per Joshua Pusey,

Attorney.

(No Model.)

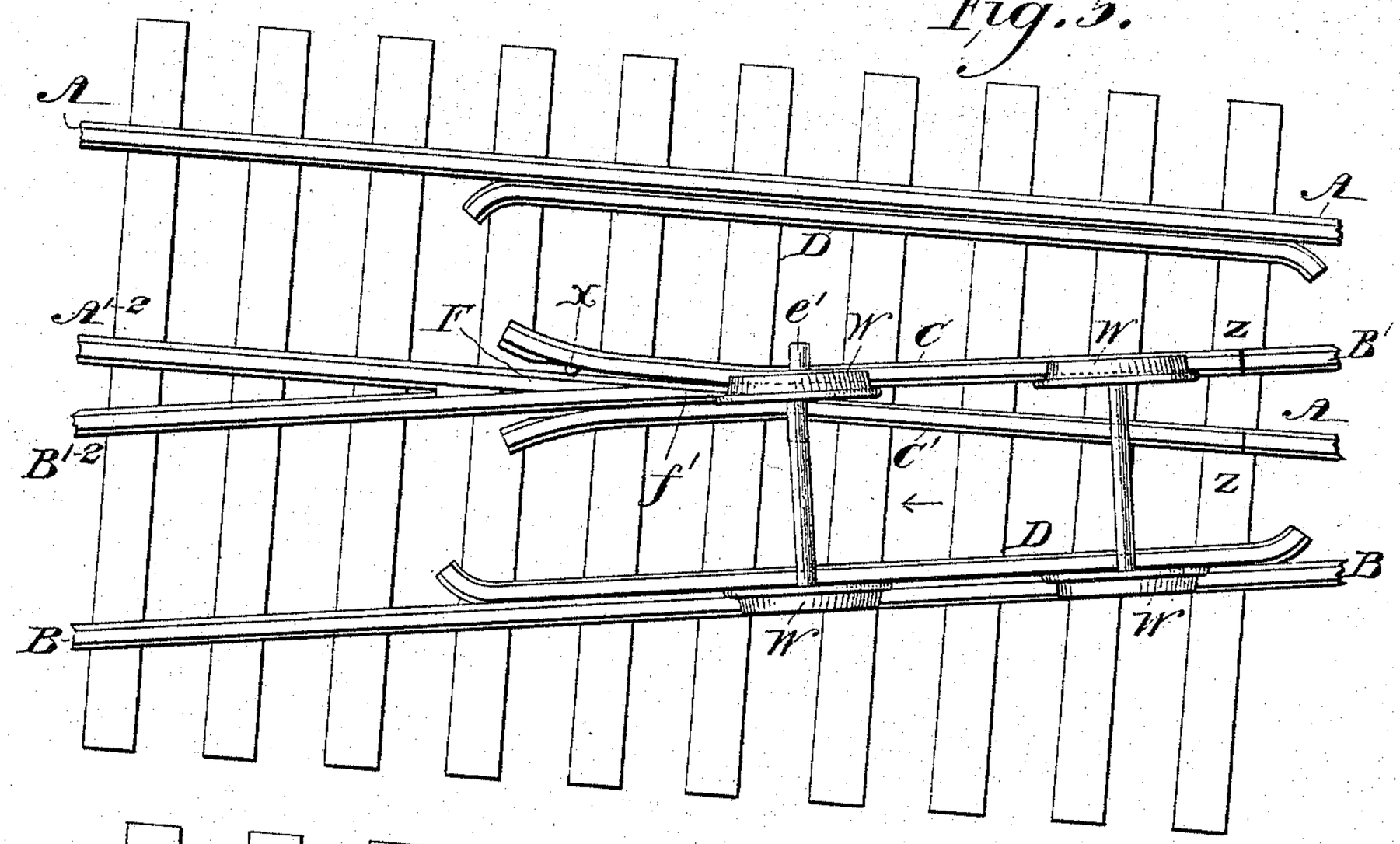
2 Sheets—Sheet 2.

D. F. VAUGHAN.

RAILWAY FROG.

No. 526,548. Patented Sept. 25, 1894.

Fig. 5.



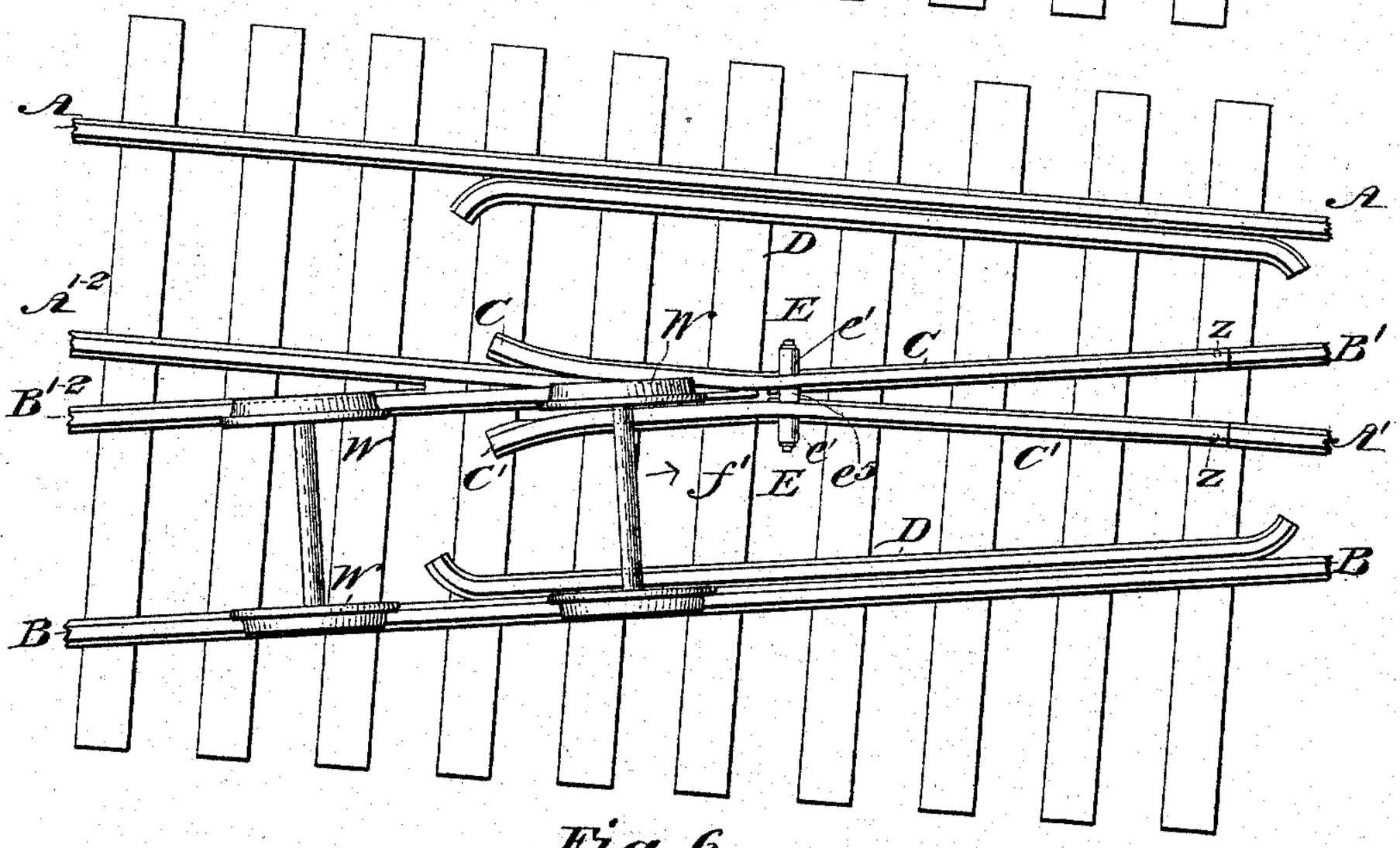


Fig. 6.

Witnesses.

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UNITED STATES PATENT OFFICE.

DAVID F. VAUGHAN, OF HADDONFIELD, NEW JERSEY.

RAILWAY-FROG.

SPECIFICATION forming part of Letters Patent No. 526,548, dated September 25, 1894.

Application filed August 1, 1894. Serial No. 519,180. (No model.)

To all whom it may concern:

Be it known that I, DAVID F. VAUGHAN, a citizen of the United States, residing at Haddonfield, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Railway-Frogs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1, Sheet 1, is a plan view; Fig. 2, a section, enlarged, on line *a—b*, Fig. 1; Fig. 3, a section on line *c—d;* Fig. 4, a plan of clamp-plate, detached, for limiting the throw of wing rails; Fig. 5, Sheet 2, a plan view of intersecting rails, guard rails and frog, with the wheels of a car-truck as moving toward and passing the point of the frog; Fig. 6, a similar view, the wheels having passed the frog.

This invention relates to movable-wing railroad frogs, and is specifically an improvement upon that kind of frog described in Letters Patent of the United States No. 38,098, granted to George Douglass, April 7, 1863, to which reference may be had.

In the frog of the said patent, the point is fixed and the side or wing-rails of the frog are laterally movable with relation to the point; being connected by a bolt with an intermediate collar thereon, in order to secure and define the interval requisite for the free passage of the flanges of car-wheels; the two rails being held against the ends of said collar by means of powerful springs which are made to act in concert. The object of these springs, when used, as stated in the patent—they not being positively essential, however, to the efficient working of the frog—is to obviate all jar or shock when the flanges of the car-wheels come into contact with the vibrating rails, and afford security against the damage which would attend a concussive stroke. It is further stated in said patent that when a train is running toward the point of the frog, the flange of the first wheel being kept in alignment with the side of the frog point by the guard rail, will draw with it the combined vibrating rails of the frog.

The only essential difference between the construction of my improved frog and that of the said patented one, consists in substituting for the powerful springs of the latter of such strength that the two rails are made practically integral so that they will vibrate as one, springs of a certain relative weakness, whereby important advantages of safety and durability are secured which cannot obtain in frogs of the character described in the aforesaid patent.

Referring to the drawings hereunto annexed, A, A′, and B, B′, are the fixed rails of intersecting tracks. Rails A′ and B′ are connected or, so to say, continued, by two laterally movable side or wing-rails, C, C′, which are respectively pivoted at *z*, adjacent to the abutting fixed rails. The free extremities of these wing rails are turned outwardly as shown.

F is the frog, of usual construction, with the rails $A\frac{1}{2}$, and $B\frac{1}{2}$, corresponding respectively with rails A′ and B′.

f′ is the point of the frog.

D, D, Figs. 5 and 6, are the usual guard rails.

The wing-rails are connected about midway of their length, in advance of the frog point, by a transverse bolt, E, Fig. 2, extending through the rails and casings, *e′*, whose inner ends bear respectively against the sides of the rails. A helical spring, e^2, encircles the bolt within each casing, the inner extremity of which spring bears against the bottom of the casing, and its outer extremity against a disk or washer, e^3, adapted to slide within the casing. The head of the bolt bears against one of said disks, and the other disk is maintained in place by a nut, e^4, on the free end of the bolt. A collar, e^5, upon the bolt between the wing rails serves to insure the proper spacing of the latter with relation to the frog-point.

The throw of the wing rails is limited by means of a plate, *g*, with upturned edges, upon which plate the frog-point and the said rails rest; the plate being spiked to a cross-tie.

The springs, e^2, are essentially of such moderate strength as, while permitting the wing-rails to vibrate normally as a single rail by the flange of a car-wheel striking one of the rails when a car is moving in a direction trailing the frog-point, they are of such weakness that the said rails shall not and can not move as one, or in concert, when the car-wheels, advancing in a direction toward the frog-point, are passing the latter.

In Fig. 5, W marks the wheels of a car-truck moving in the direction of the arrow on the track, B, B′; that is, toward the frog-point. As the first wheel on rail B′ nears the point of the frog, being then held over by the guard-rail acting on the wheel on the opposite end of the axle, its flange draws the inner wing rail, C′, away from the frog-point, against the stress of the spring, and thus makes a throat or passage-way for the flange between the rail and the frog. The other, or outer, wing-rail, C, upon which the wheels are now running remains stationary, as seen in Fig. 5, owing to the weight of the car upon the rail, and by reason of the yielding of the spring on the side of the rail, C′. As soon, however, as the wheels have passed on from the wing-rail, C, to the frog rail $B\frac{1}{2}$, the stress of the spring on that side brings said wing-rail against the side of the frog and thus the throat or passage-way is left open for the flanges of the following wheels of the train, as seen in Fig. 6.

Should there be, as is liable to occur, accidentally or by design, an obstruction, such as a stone, between one of the wing-rails, as C, and the frog-point, say at *x*, Figs. 1 and 5, such obstruction would not interfere with the proper working of the frog, as the wing-rail on the opposite side, C′, would still be shifted against the stress of the spring by each succeeding wheel of the train.

By the described construction, liability to derailment by the wheels striking the frog-point, is avoided. If, however, the wing-rails were obliged to move in concert as a single rail, as in the absence of springs, or when powerful springs are employed, as heretofore, which render the rails practically a unit, then there would be a very great strain upon the wing-rails and upon the guard-rails, as, obviously, in such case, they, the wing-rails, must slide laterally and under the heavy weight of the car-wheels and cars, while the wheels on that side are bearing upon the outer wing-rail. Thus great danger would follow from the wheels striking the frog-point, especially when the severe strain upon the guard-rail loosens the latter, or it becomes worn away from the attrition of numerous cars passing the frog. Further, in case of an obstruction between the wing-rail and the side of the frog, such as before mentioned, the derailment of the train would, obviously, surely occur if the wing-rails were so connected that they must move together as one.

In case the wheels are moving in the opposite direction, that is, trailing the frog-point, on the tracks, B, $B\frac{1}{2}$ and an obstruction at *x* be between the open wing-rail, C, and the frog, then the flange of each wheel would push aside the wing-rail that is close against the side of the frog-point, and pass on without accident; but if the rails were constructed to move in concert, the wheels, not being able to open the closed wing-rail, by reason of the obstruction, would fly the track and so derail the car.

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

In a railroad frog of the class described, the combination with the frog-point of the vibrating wing-rails, the connecting bolt, the intervening collar, and the springs adapted to allow said rails to move normally as a unit when the wheels of a car are moving in the direction trailing the frog-point, and of such moderate stress as to permit one of said rails to move independently of the other under the circumstances recited, substantially as and for the purpose specified.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

DAVID F. VAUGHAN.

Witnesses:
JOHN R. NOLAN,
WALTER C. PUSEY.