

(No Model.)

J. E. CLIFTON.  
SPRING RAIL FROG FOR RAILWAYS.

No. 335,341.

Patented Feb. 2, 1886.

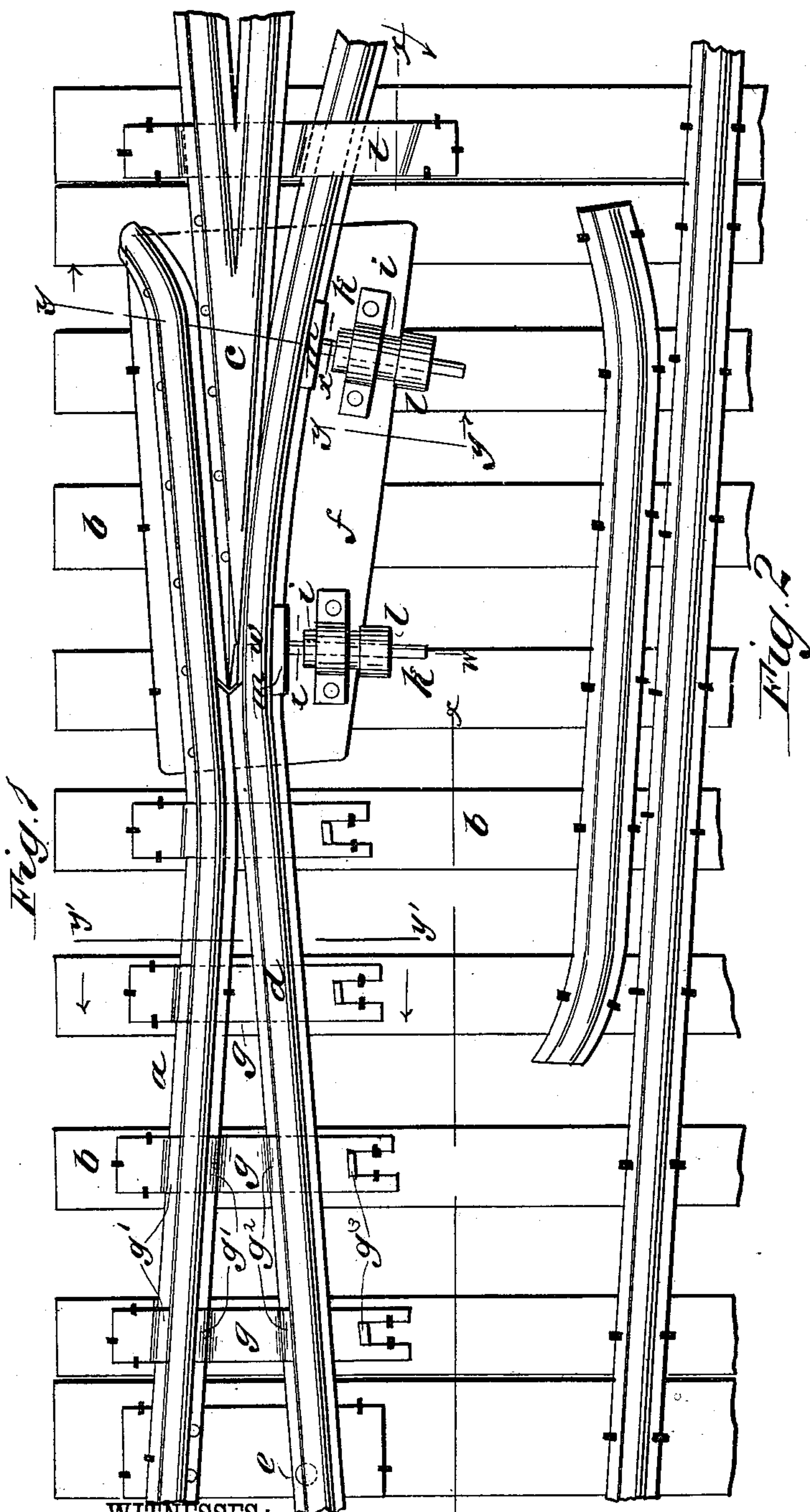


Fig. 1

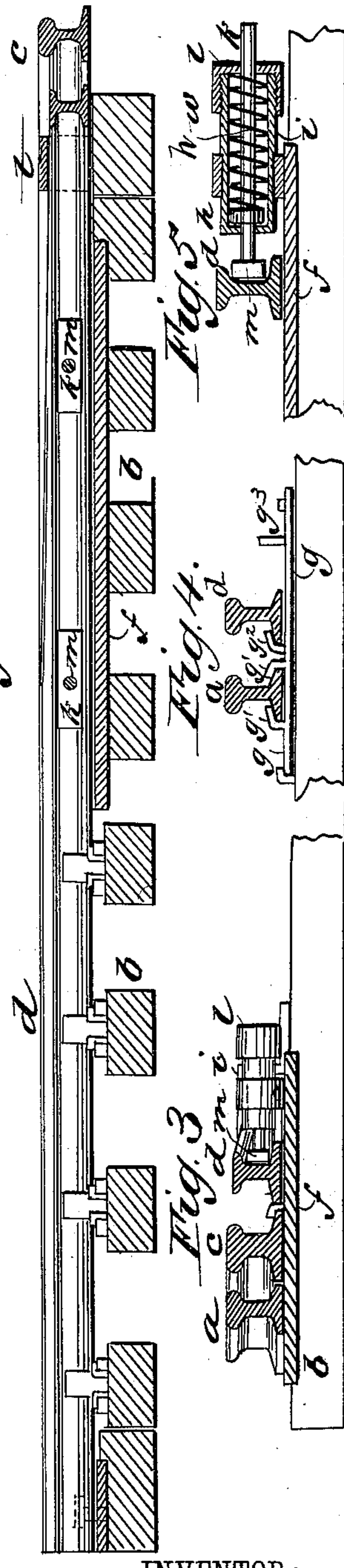


Fig. 2

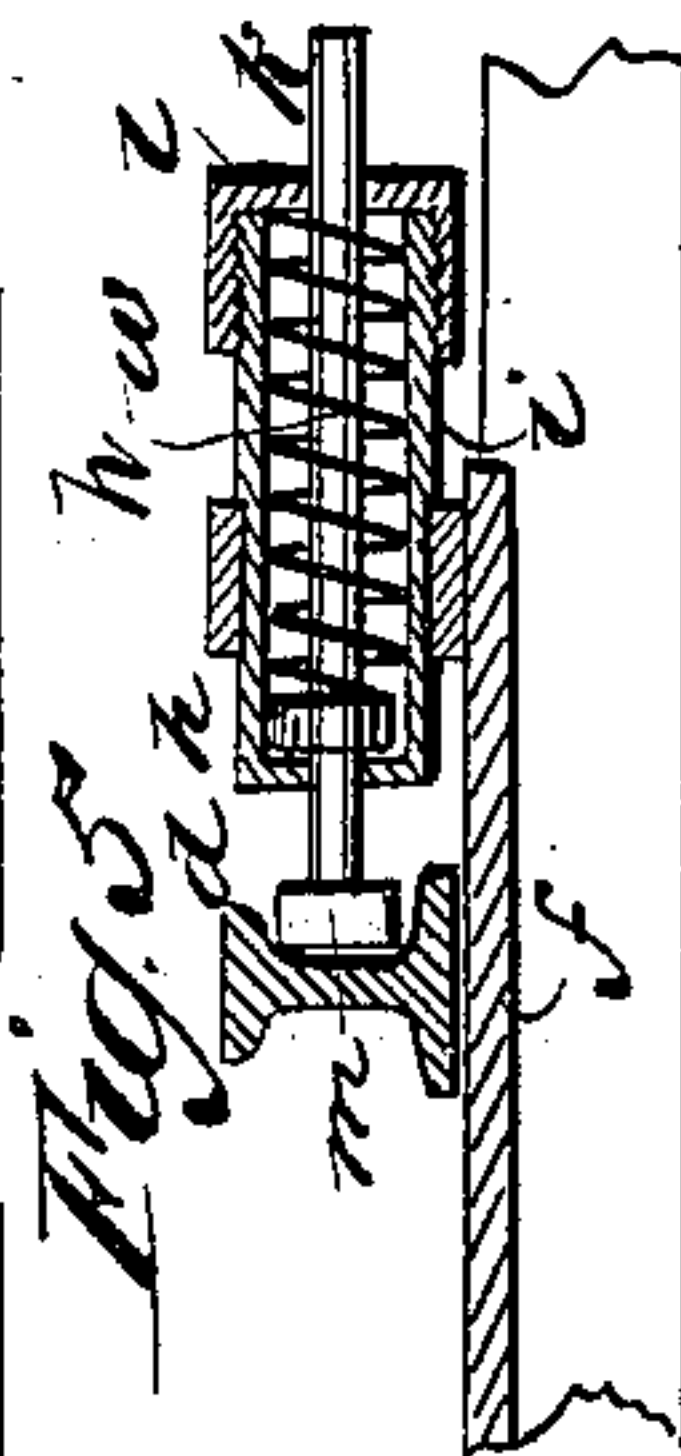


Fig. 3

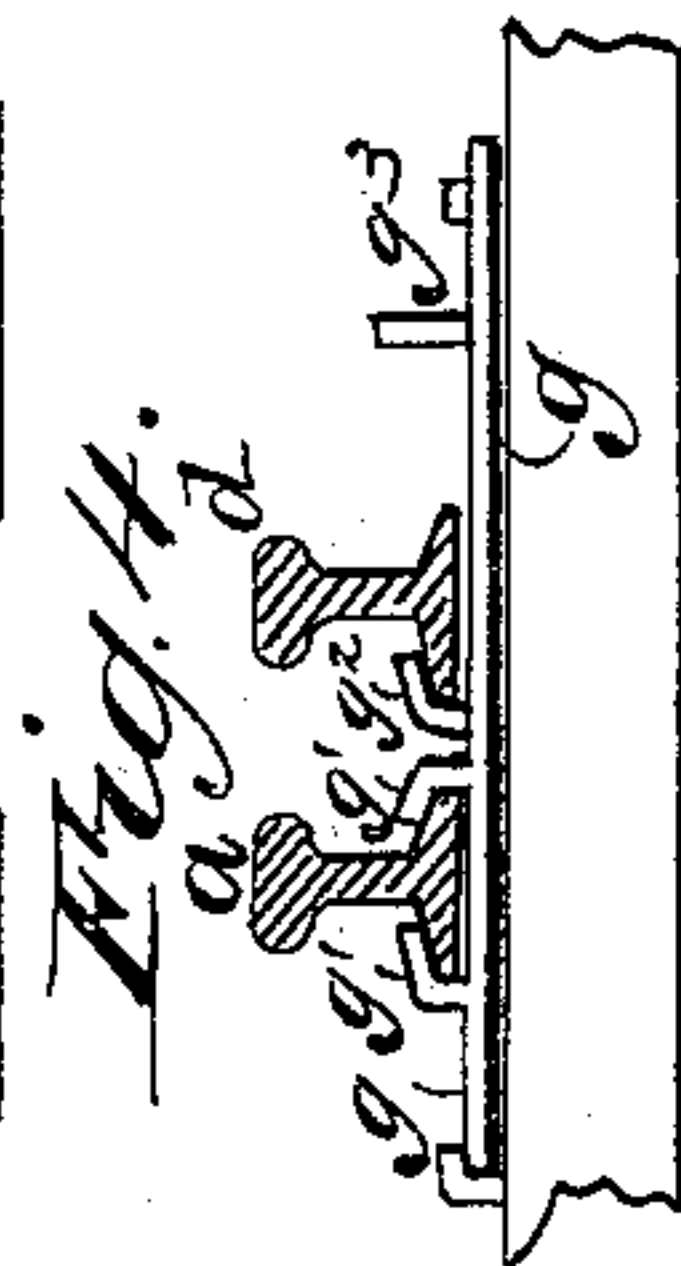


Fig. 4

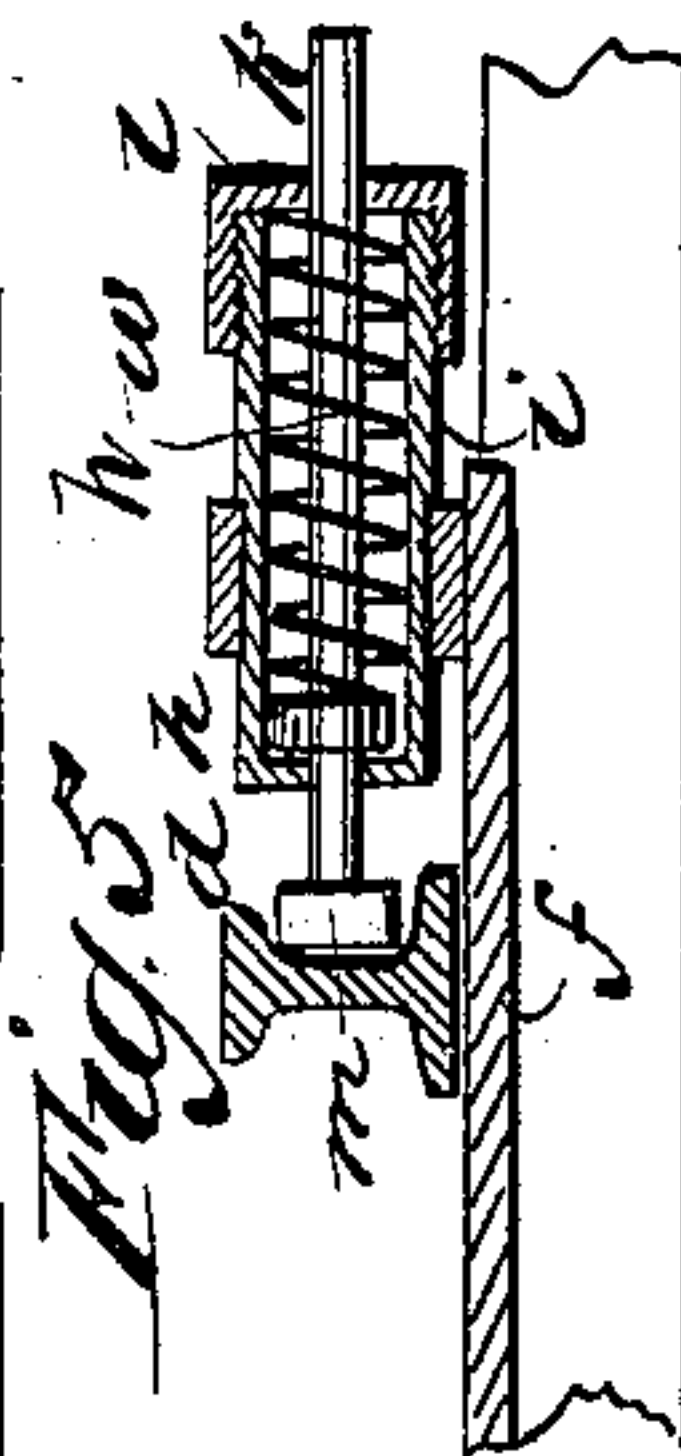


Fig. 5

WITNESSES:

Francis M. Ande.  
C. Sedgwick

INVENTOR:

J. E. Clifton  
BY *Mum & Co.*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JOSEPH E. CLIFTON, OF GENESEO, ILLINOIS.

## SPRING-RAIL FROG FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 335,341, dated February 2, 1886.

Application filed May 8, 1884. Serial No. 130,756. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH E. CLIFTON, of Geneseo, Henry county, Illinois, have invented a new and Improved Spring-Rail Frog for  
5 Railways, of which the following is a full, clear, and exact description.

The advantages of frogs having spring-rails that give way to the passage of the wheel over the ordinary rigid frog in respect to durability are well known; but there has heretofore  
10 been objection to spring-rail frogs, because, for several reasons, they have not been perfectly safe.

The object of my invention is to obviate the defects in that class of frogs, so that they shall  
15 be perfectly safe; and the invention consists in certain features of construction which I have found by practical experience to be necessary, and which are hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

25 Figure 1 is a plan view of a spring-rail frog of my improved construction. Fig. 2 is a sectional side view on the line  $xx$  of Fig. 1. Fig. 3 is a vertical cross-section on the line  $yy$  of Fig. 1. Fig. 4 is a cross-section on line  $y'y'$ ,  
30 and Fig. 5 a section on the line  $ww$ .

$a$  is the outer rail of the frog, spiked fast to the ties  $b$ .  $c$  is the frog-point, and  $d$  is the inner or spring rail, fastened in the usual manner to the rigid rail in the main track, so as to  
35 swing to and from the frog-point. The frog is supported upon a plate,  $f$ , that is firmly secured to the ties, so that the plate prevents any depression of the frog, and the rail  $d$  is free to slide on the plate. The spring-rail  
40 also rests on plates  $g$ , that are secured each to a tie, with their outer ends passing beneath the rigid rail  $a$ . The plates  $g$  have raised lugs or clips,  $g'$ , which clasp the flanges of rail  $a$ , and similar clips  $g''$ , which cover the flanges  
45 of rails  $d$  when the rail is at its inward position. There are also flanges  $g^3$  on plates  $g$ , which serve as stops to limit the outward movement of the spring-rail.

By the devices just described the parts of  
50 the frog are held securely down upon the ties. To prevent the moving end of the spring-rail from rising, it has been usual to slot the neck

of the rail and fit a bar or rod through the slot, the rail sliding on this bar. The rail is not only weakened by this construction, 55 but the bar is liable to become bent or broken by the weight of the rail, and thereby the frog made unsafe. I make use of a guard,  $t$ , consisting of a plate secured beneath the frog-point, with its outer end bent over the flange 60 of the point-rails and its inner end bent over the spring-rail  $d$  and spiked down to the tie. This prevents the rail from rising and serves, also, to limit the outward movement of the rail, and at the same time the necessity of drilling 65 or punching the rail is avoided.

I have found one cause of derailment from spring-rail frogs to result from the outer edge of worn wheels taking against the inner side of the spring-rails. To absolutely prevent 70 that contact, I depress the head or top of the rail  $d$ , adjacent to the point  $c$ , from where a wheel would begin to take a bearing to the end, and I prefer to do this by depressing the head, rather than cutting it down, so as not to 75 weaken the rail. By this depression the top of the spring-rail is made enough lower to prevent any contact by the outer edges of a wheel, and the wheel will cover the rail before it takes a bearing. 80

My construction of springs and the manner in which they are made to act on the rails are designed to protect the springs from effects of weather, and also to save weakening of the spring-rail. The springs  $h$  are contained in 85 barrels or cylinders  $i$ , that are clamped rigidly to the supporting-plate  $f$ . The barrels have solid heads at one end and screw-cap  $l$  at the outer ends, and through these the rods or pistons  $k$  pass. The spiral springs  $h$  are 90 around the rods between followers thereon and the cap  $l$ , so that the springs exert their force to press the rods endwise, and the force can be adjusted by screwing the caps on more or less. On the inner ends of rods  $k$  are 95 blocks  $m$ , constructed to fit the concave or side of the spring-rail, against which they are forced by the springs. The rods being guided and held by passing through the heads of the barrels, the force of the springs is exerted in 100 straight lines on the rails, and as the blocks  $m$  take over the flanges of the moving rail they assist in preventing upward movement. This construction saves drilling of the rail,



and the spiral spring is much superior to the rubber springs heretofore used. The barrels, being firmly secured to the supporting-plate, serve as a solid resistance against the rail, to prevent its moving too far, either by accident or from maliciousness. If the spring-rail should be forced fully open and wedged, the result would only be a rigid frog, as usual. By these novel features of construction I produce a spring-rail frog that is not liable to be injured and made unsafe for passing trains, and thus I remove the serious objections generally entertained against this class of frogs.

I am aware that rails of frogs have been held closed by coiled springs surrounding rods, and I therefore do not claim such invention.

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

1. In a spring-rail frog, the tie-plates *g*, provided with clips *g'* *g''*, combined with the moving rail *d* and fixed outer rail, *a*, substantially as described.

2. In a spring-rail frog, the guard *t*, combined with the moving rail, substantially as shown and described.

3. The combination of the barrels *i*, screw-caps *l*, spring *h*, and pistons *k*, with the supporting-plate *f* and moving rail *d* of a railway-frog, substantially as described.

4. The combination, with the yielding rail of a railroad-frog, of a fixed bearing at one side of the rail, a plunger working in the same, and a spring for actuating the plunger, as set forth.

5. In a spring railroad-frog, the combination, with the movable rail, of the spring-actuated piston *k*, provided with the head *m*, constructed to fit the side of the rail, to prevent upward movement of said rail, substantially as herein shown and described.

J. E. CLIFTON.

Witnesses:

F. BURNETT,  
W. S. WOOD.