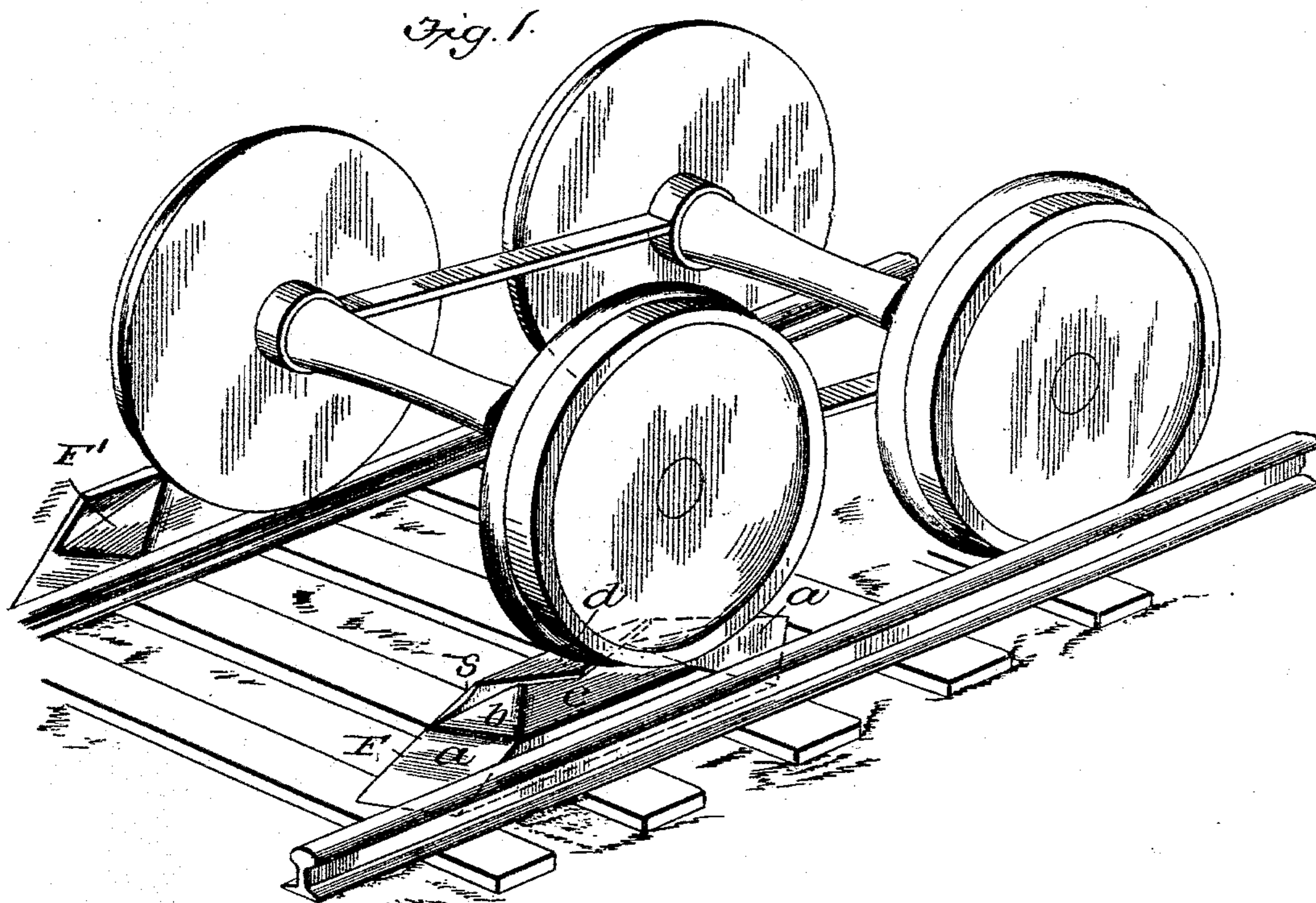


(No Model.)

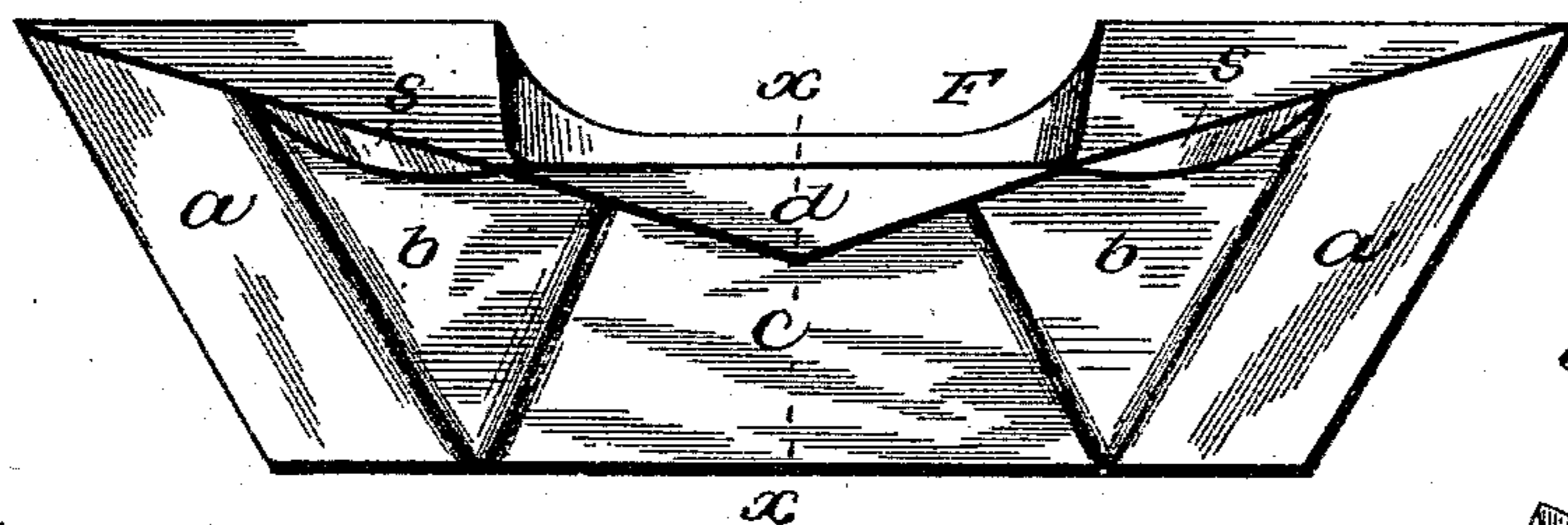
C. W. ARCHER.  
CAR REPLACER.

No. 515,946.

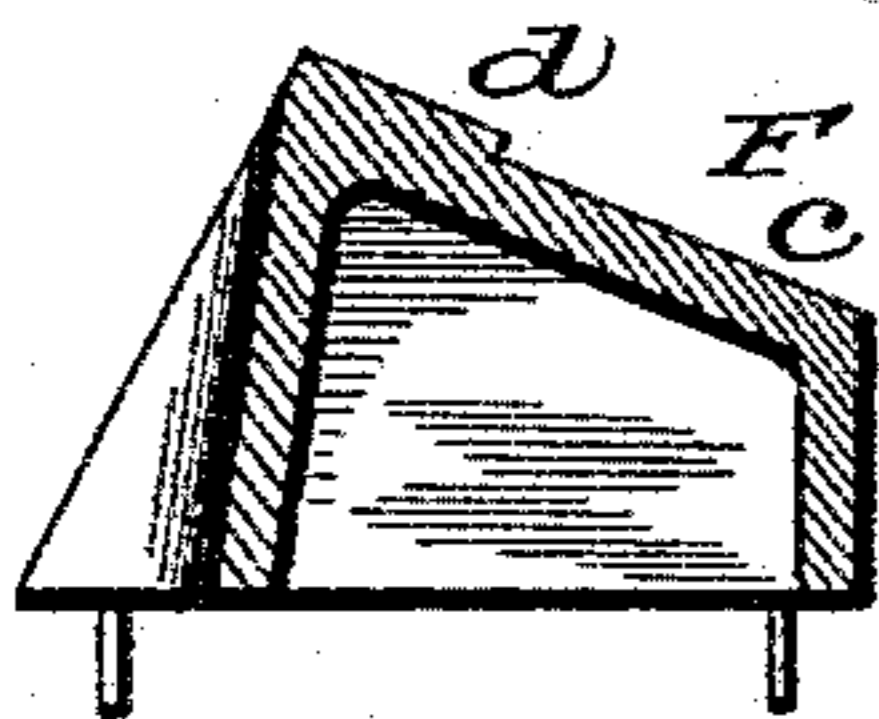
Patented Mar. 6, 1894.



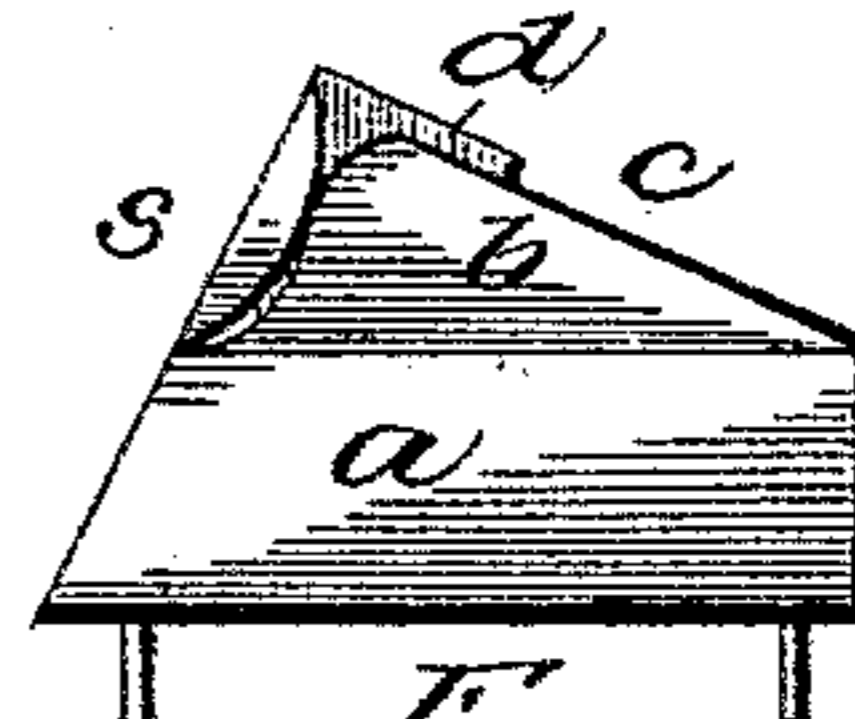
*Fig. 2.*



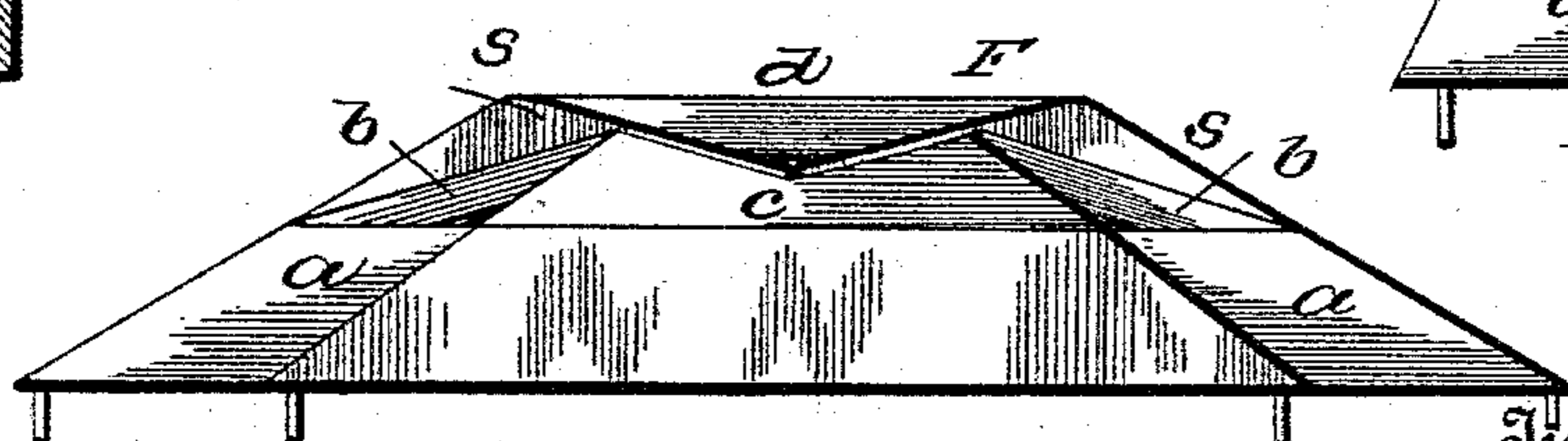
*Fig. 4.*



*Fig. 3.*



*Fig. 5.*



Witnesses  
John Irvine  
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Inventor  
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# UNITED STATES PATENT OFFICE.

CHARLES W. ARCHER, OF CLEVELAND, OHIO.

## CAR-REPLACER.

SPECIFICATION forming part of Letters Patent No. 515,946, dated March 6, 1894.

Application filed June 15, 1893. Serial No. 477,753. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. ARCHER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Car-Replacers; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to that class of car replacers for replacing upon the track derailed cars and locomotives, that are either segmental or angular blocks, commonly called "frogs," for placement oppositely beside the rails, to bridge the ascent of the displaced wheels to position upon the rails; and its object is certain improvements in the forms of such frogs whereby they are more easily and readily handled, and act, under any and all circumstances, more certainly and speedily in bringing the trucks again to place upon the rails, than do other devices now used for that purpose. I accomplish this object by the frogs hereinafter described and illustrated in the drawings, in which—

Figure 1 is a view in perspective of a section of railroad track, and a derailed car-truck in process of being replaced by the use of the frogs F and F'. Fig. 2 is a top view of my frog F. Fig. 3 is an end view of the same. Fig. 4 is a transverse section view of the same on the line  $xx$  of Fig. 2; and Fig. 5 is a view of the inner or rail contact side of the same.

Similar letters indicate similar parts throughout.

The frog F, for placement against the rail within the track and in which the novel features of my invention chiefly appear, its exterior presenting plane faces meeting in angles, and the several surfaces for a wheel way, and shoulders for guards and guides, to be described, is a hollow casting or shell, open at the bottom, its inner side, as I term the rail contact side, being vertical, and its bottom lines horizontal; its outer side, which is about one-fourth longer than the inner side, being beveled outward and downward from

the top, midway of which, and occupying about one-third of its length appears a curvilinear inward notch. The object of these forms and relative lengths of the sides and greater bottom breadth at the ends is to give brace against lateral movement, while the notch also serves to reduce weight. Another object in making the inner side much shorter than the outer side is to have the end bottom lines of the frog when in place at acute angles with the rail for a purpose that will presently appear. The bottom edges of the shell are provided with suitable dogs to seize and cling to the ties. Its greatest length is a trifle less than the common distance between the two wheels appearing on the same side of the truck, and of a breadth, by consequence of the bevel of the outer side, much greater on the bottom than the top, the top breadth, however, being something more than the breadth of the car wheel. Its inner side is something lower than the rail while its outer side is something higher in consequence of which its ends and summit surfaces, except the surfaces  $b\ b$ , for a reason that will appear, are beveled inward and downward. It will be seen that the moieties of the frog on each side of the longitudinal center represented by the line  $xx$  of Fig. 2 are identical, so that to give the configuration of one only is sufficient, it being understood that the similarity of the two portions is necessary to the use of the frog on either rail as circumstances may require.

The surfaces  $a$  and  $b$  forming a wheel way to the summit surface  $c$  and the shoulder guards and guides  $s$  and  $d$  will now be described: The surface  $a$ , appearing at the end, is in longitudinal direction an upward incline of about forty-five degrees and has a transverse bevel from the outer to the inner side about one-half as abrupt. It extends upward to the top of the inner and lower side. Between the surface  $a$  and the summit surface  $c$  appears the surface  $b$ , which continues the upward incline but less abruptly. This surface has a slight transverse bevel, and of necessity is triangular, the apex appearing at the inner edge and corner of the frog, and its base at the outer edge along which appears the lift or shoulder  $s$  to keep

the wheel on the frog, and to guide it toward the rail. The summit surface *c* is longitudinally horizontal, having the same transverse bevel that has the surface *a*. On it appears the lift or shoulder *d*, triangular in surface form, its base being coincident with the outer face of the frog while its apex appears at the longitudinal center of the frog and a little distance inward from the outer side.

To understand the useful purposes served by the several surfaces and shoulders now described, it must be borne in mind that the derailed wheel, traveling upon its flange, is liable to strike the surface *a* at any point on its breadth and that the end sought is that when the wheel, no matter how far from the rail, is so elevated upon the frog that its tread is higher than the top of the rail, the flange will locate against it. If, therefore, the wheel strikes the frog at a point remote from the rail, in passing over the surface *a*, the tendency will be to slide laterally toward the rail by reason of the transverse bevel and this is helped very considerably by the greater length of the end line at the bottom, and the effect of the end line approaching the rail at an acute angle, as I have demonstrated by experiment. This tendency, necessary to bring the wheel to position, to save grind against the rail and the consequent danger of displacing the frog, it is better to change at a proper point in the ascent, for which purpose the surface *b* has no transverse bevel. Again, if the wheel strikes the frog so near the rail that grind and tendency to frog displacement soon begin, the surface *b* soon intervenes in relief. In any case when the summit surface *c* is reached, the wheel must invariably slide laterally to place, if not by the force of gravity, then by the intervention of the shoulder *d* which must guide the wheel to place as the apex of the shoulder cannot be passed otherwise. This configuration of the wheel way surface also serves to aid the draft required to bring the truck to place by reason of the relief given by change of incline in the ascent, a result, in some circumstances, of considerable value.

I rely upon the frog *F* to accomplish car replacement, used with any companion frog, segmental or angular, that has a wheel way inclining inward and downward, and suitable to carry the wheel flange over the top of the rail. Preferably, however, I use the frog *F'*, which I have not illustrated in detail in the drawings because I base no claim upon it, although it is new in some of its minor features. It is like the frog *F* in all particulars except that it is suitably higher to carry the wheel flange over the top of the rail, gets its inward and downward wheel way incline by the inward and upward bevel of its transverse bottom lines, and that it has no curvilinear notch or shoulder *s*.

The principle and operation of my car-replacer will now be understood and its value to accomplish the object stated in the begin-

ning of this specification, the placements being as shown in the drawings, and the application of draft being understood.

I am aware, as already stated, that car replacing frogs, both segmental and angular, and having wheel ways beveled inward and downward toward the track, as well as shoulders to prevent the wheels from falling off, have been made, but I am not aware that the frog *F* having the surfaces *a a* beveled inward and downward and inclining upward with end edges extending backward at an acute angle from the track; the similar flat surfaces *b b* having upward inclines less abrupt than those of the surfaces *a a*, but no transverse bevels; the triangular surface formed shoulder *d* on the summit surface *c*, and having also, a central notch in its outer side, each in combination with the outer portions of the frog, and for the useful purposes stated, was ever known until my invention thereof.

What I claim is—

1. In car replacers, a frog for placement against the rail within the track and less in length upon its inner side, composed of a shell, open at the bottom, its exterior presenting plane faces meeting in angles, vertical upon its inner or rail side which is shorter than the outer side that is beveled outward and downward, and having similar ends on each of which appear the two surfaces *a* and *b*, forming a wheel way to the summit, the former an upward incline with an inward and downward bevel and a bottom line extending backward from the rail at an acute angle, and the latter an upward incline less abrupt, and having a slight inward and downward bevel, substantially as described and for the purpose expressed.

2. In car replacers, a frog for placement against the rail within the track, and less in height upon its inner side than the rail, composed of a shell open at the bottom, its exterior presenting plane faces meeting in angles, vertical upon its inner or rail side which is shorter than its outer side that is beveled outward and downward, and having at its summit the longitudinally horizontal surface *c*, beveled transversely to an inward and downward incline, and on which appears the lift or shoulder *d*, in horizontal form a triangle with base line coincident with the outer face of the frog, and apex appearing inward upon the same, substantially as described and for the purpose expressed.

3. The car replacer for replacing upon the track derailed railroad cars and locomotives, formed by the frog *F* in combination with any companion frog for opposite placement offering wheel way for the wheel flange to the top and over the rail, the frog *F* being an oblong shell casting its exterior presenting plane faces meeting in angles, vertical upon its inner or rail side which is shorter than the outer side that is beveled outward and downward, open at the bottom which is provided with dogs; having similar ends on each of which

appear the surfaces *a* and *b*, the former being an upward incline with an inward and downward bevel, and an end bottom line at an acute angle with the outer side, and the  
5 latter being an upward incline with a slight transverse bevel provided with the lift shoulder *s* along its outer edge; and having also, the summit surface *c* beveled downward and inward from the outer side, and on which ap-  
10 pears the lift or shoulder *d*, in horizontal form

a triangle with base line coincident with the outer face of the frog *F* and apex appearing inward upon the same, substantially as described and for the purpose expressed.

In testimony whereof I hereunto affix my 15 signature in the presence of two witnesses.

CHARLES W. ARCHER.

Witnesses:

GEO. H. CROWLEY,

G. W. TUCKER.