(No Model.)

G. C. LUCAS.

FILLING FOR RAILROAD FROGS.

No. 315,951. Patented Apr. 14, 1885.

Fig. 1.

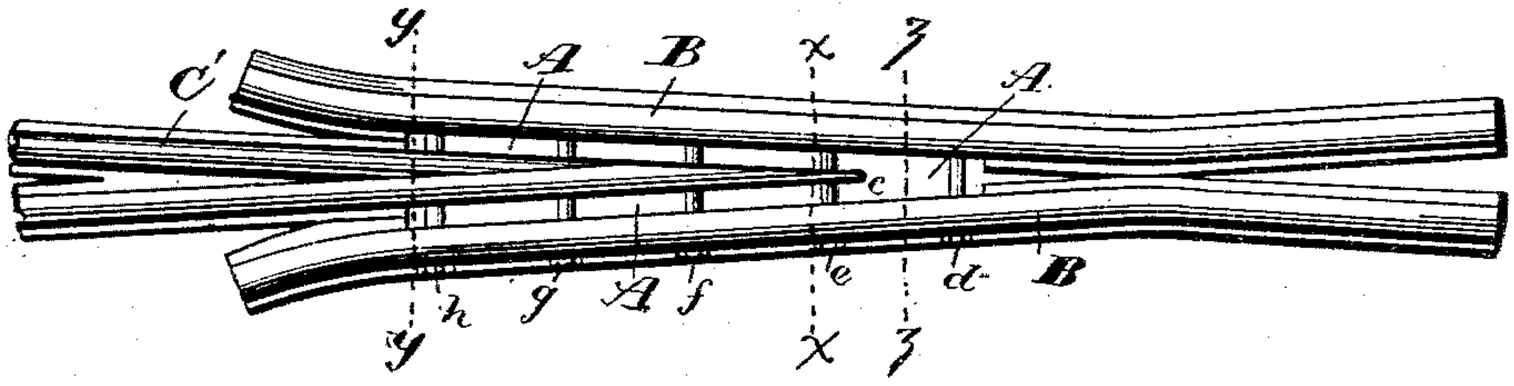


Fig. 2.

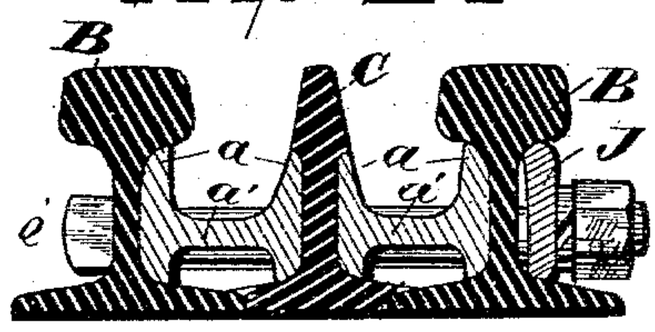


Fig. 5.

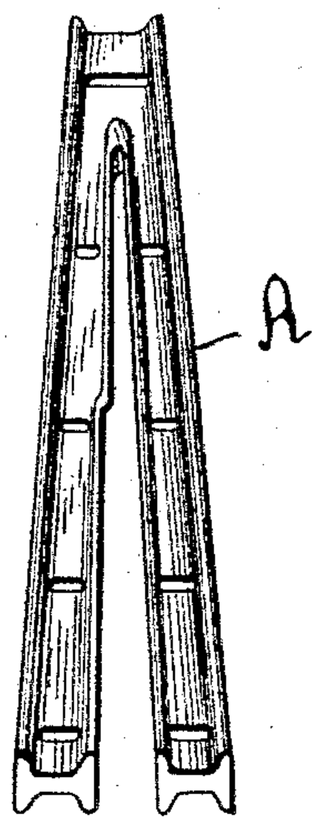


Fig. 6.

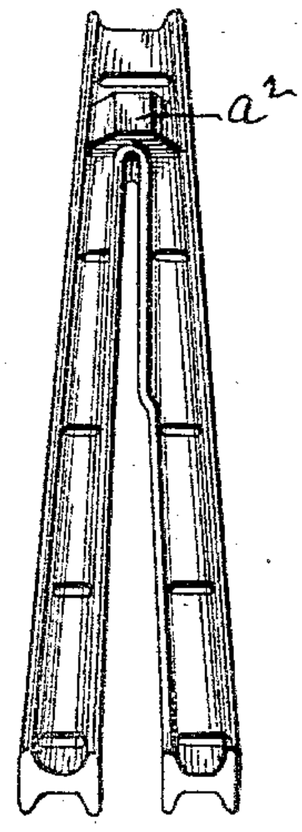


Fig. 3.

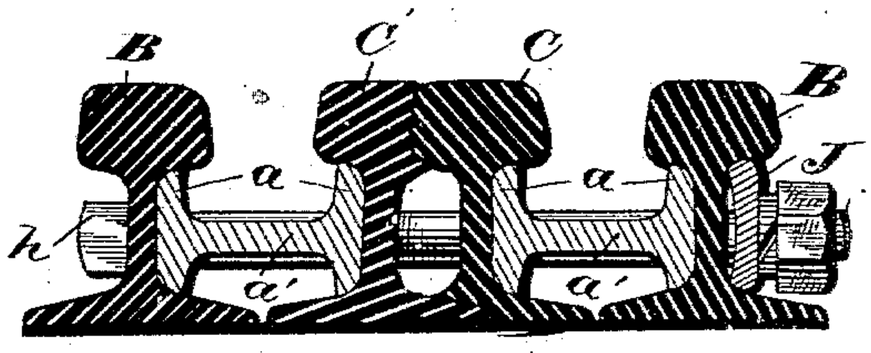
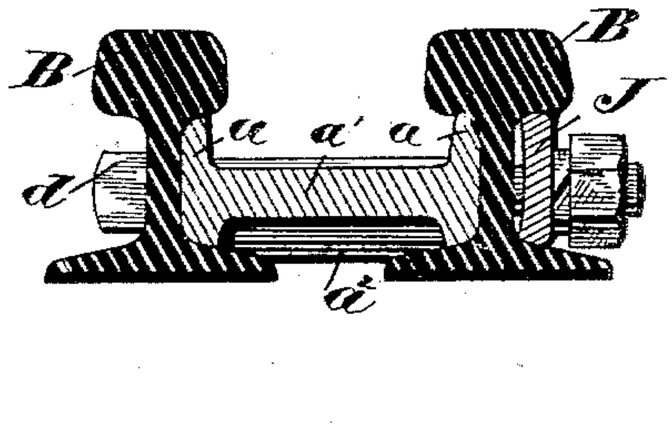


Fig. 4.



WITNESSES

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GEORGE C. LUCAS, OF CLEVELAND, OHIO.

FILLING FOR RAILROAD-FROGS.

SPECIFICATION forming part of Letters Patent No. 315,951, dated April 14, 1885.

Application filed December 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. LUCAS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Filling for Railroad-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 pertains to make and use the same.

My invention relates to improvements in filling for railroad-frogs, the object being to provide a light, strong, and elastic steel filling cast in one piece and of suitable shape, and cored for the necessary bolts, so that no fitting whatever is required.

A further object is to provide the filling on the under side just forward of the point-rail with a rib or blocking having a broad support on the flanges of the wing-rails to hold the rails rigid and inflexible at this part of the frog.

With these objects in view my invention consists in certain features of construction and in combination of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a railroad-frog with my improved filling in position. Fig. 2 is a transverse vertical section of the frog on the line of *x x*, Fig. 1. Fig. 3 is a transverse vertical section of the frog on the line of *y y*, Fig. 1. Fig. 4 is a transverse vertical section of the frog on the line of *z z*, Fig. 1; and Figs. 5 and 6 are top and bottom views, respectively, of my improved filling.

The desirable features of a filling for a railroad-frog are, first, that the filling be of such form and strength as will, by the aid of suitable bolts, hold the wing-rails and point-rails in their proper relative position; second, that the filling be sufficiently elastic to conform somewhat to the road-bed, and thereby avoid breaking the bolts; third, the filling should be cheap in initial cost and durable. Cast-iron fillings in a single piece have been used; but these, when made sufficiently strong to prevent their breaking, were unyielding, and if the road-bed settled at one point, for instance, a wing-rail would have no support from the ties at the depressed part of the bed, and would be held only by the bolts, which would of course be broken by passing trains. For this reason, and on account also of the great weight, the cast-iron filling is not considered a success. Various wrought-iron fillings are in use; but these are very expensive, and have usually a joint at or in front of the point-rail, where it is desirable to have the filling and the rails rigid. In view of these difficulties I have invented a filling of cast-steel in one piece, with flanges to fit the concaved sides of the respective rails, and with a web depressed so as to be out of the way of the car-wheels, connecting the flange and made thin, by means of which the filling is rendered sufficiently elastic, and with a lateral rib on the under side of the filling, just in front of the point-rail, that serves as a blocking, and rigidly secures the parts at this point.

A represents the filling; B, the wing-rails; C, the point-rail proper, and C′ the auxiliary point-rail, joining the rail C some distance from the point *c*, as shown. The filling is provided with flanges *a*, that fit the concaved sides of the respective rails, and with thin webs *a′*, that connect the said flanges, and, as shown in Fig. 1, are in one piece. Holes are cored for the bolts *d*, *e*, *f*, *g*, and *h* through the flanges *a* and openings for the same through the webs that, being thin, are cut away where the bolts pass. In the vicinity of the point *c* these rails should be held rigidly together, so that if one is depressed they will all be depressed alike, and the top surface of the rails kept in line laterally where the car-wheels pass from the wing-rail to the point, and vice versa. For this purpose I have provided a heavy depending rib, a^2, integral with the filling, and that rests upon the lower flanges, *b*, of the wing-rail, that just in front of the point *c* come near each other, as shown in Fig. 4. The relative position of this rib to the point *c* is shown in dotted lines in Fig. 1, and should be as close to the point *c* as is possible. The point-rail, as shown in Fig. 2, is supported by the flanges of the filling to within a short distance of the point *c*—say about two inches, more or less—and by means of the rib a^2 resting, as aforesaid, on the full width of the flanges *b*, the parts are kept in line, and if one is depressed they are all depressed together. As the rails diverge at the rear of the point *c*, the frog becomes too wide to admit of

holding the parts thus rigidly, and as the wheel at the broad part is on one rail, it is not desirable to do so, and the flexibility of the filling allows the rail that the wheel may be upon to be depressed slightly, if necessary, to receive support from a tie that may be slightly depressed.

An elastic washer, J, will release the bolts a trifle, and the result is that but little extra strain is brought on the bolts by a depression of one of the rails.

The cast-steel, of which the filling is made, is as flexible as wrought-iron, and more elastic, by reason of which the filling is not injured by the torsion and bending to which it is subjected. The cast-steel filling, on account of its great strength, may be made even lighter than the wrought-iron filling, and has a further advantage of having no joint in front of the point *c* and of the solid bearing formed by the rib a^2, as aforesaid, and as no drilling or fitting of any kind is required the filling can be made at a small initial cost.

The filling is preferably made of what is known as "open-hearth steel."

The road-bed, in the main, is kept level, so that the rails have a firm bearing on the ties, and when it is found that one or more ties are depressed, they are leveled up so as to again support the rails. Brass and some other cast metals, although too expensive for this purpose, would have the required flexibility for a frog filling, but for want of sufficient elasticity would become bent when depressed, so that the ties could not be raised to level the track. At the present state of the art cast-steel seems to be the only metal that meets all the requirements and of which a cheap and desirable frog-filling can be made.

Short bolts extending through the respective rails and contiguous flanges of the filler may be used, if preferred, and in such cases a suitable recess for the nut or head of the bolt should be cored in the webs.

What I claim is—

A filling for railroad-frogs made of cast-steel and in one piece, with flanges to fit the concaved sides of the respective rails, and a thin web connecting the flanges, and the filler provided with the rib or lateral blocking integral with the filler and located near the end of the point-rail to form a rigid union of the rails at this part, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 15th day of December, 1884.

GEORGE C. LUCAS.

Witnesses:

ALBERT E. LYNCH,

CHAS. H. DORER.