

(No Model.)

J. T. RICHARDSON.
RAILROAD FROG.

No. 417,506.

Patented Dec. 17, 1889.

Fig. 1.

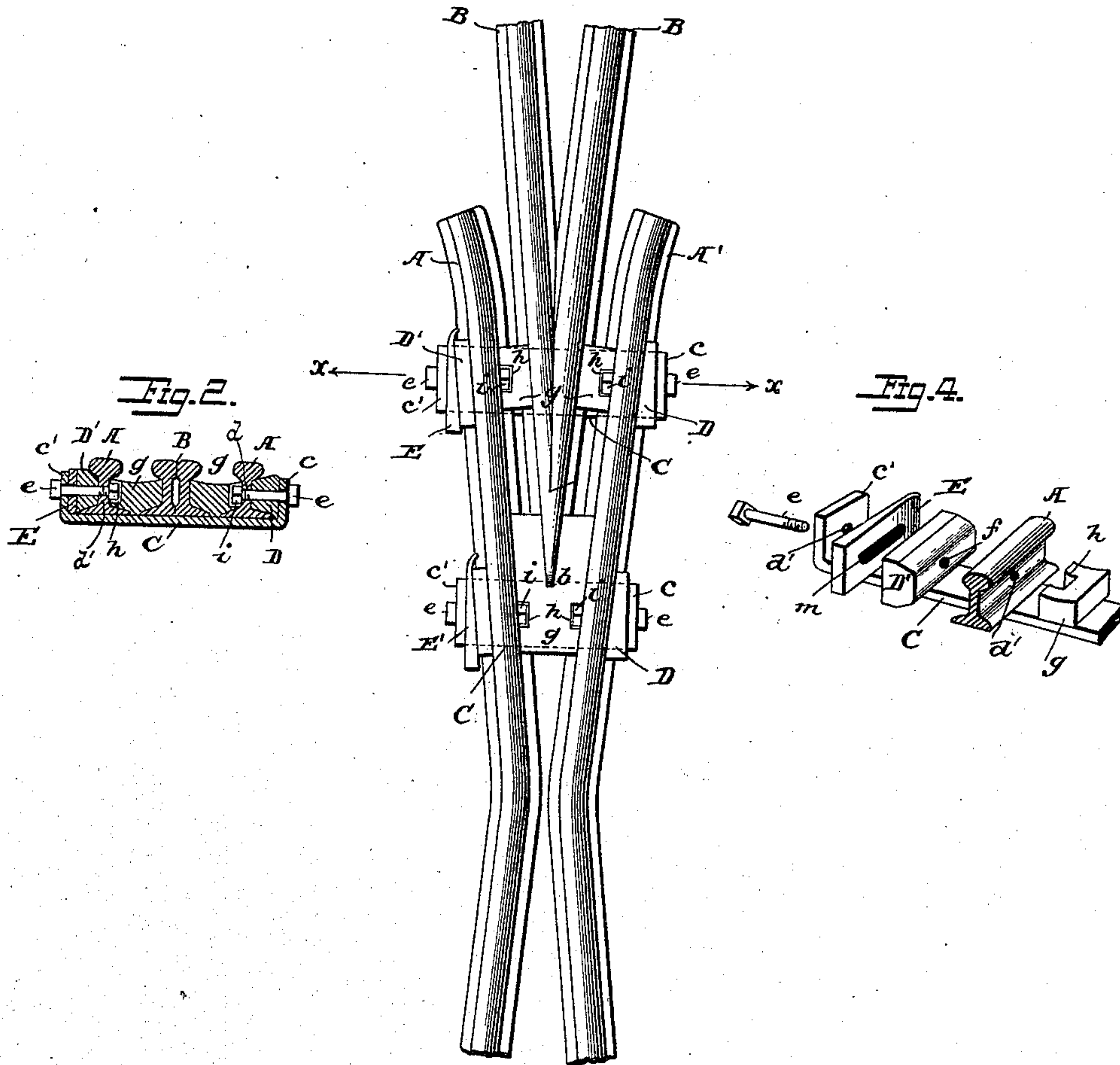


Fig. 2.

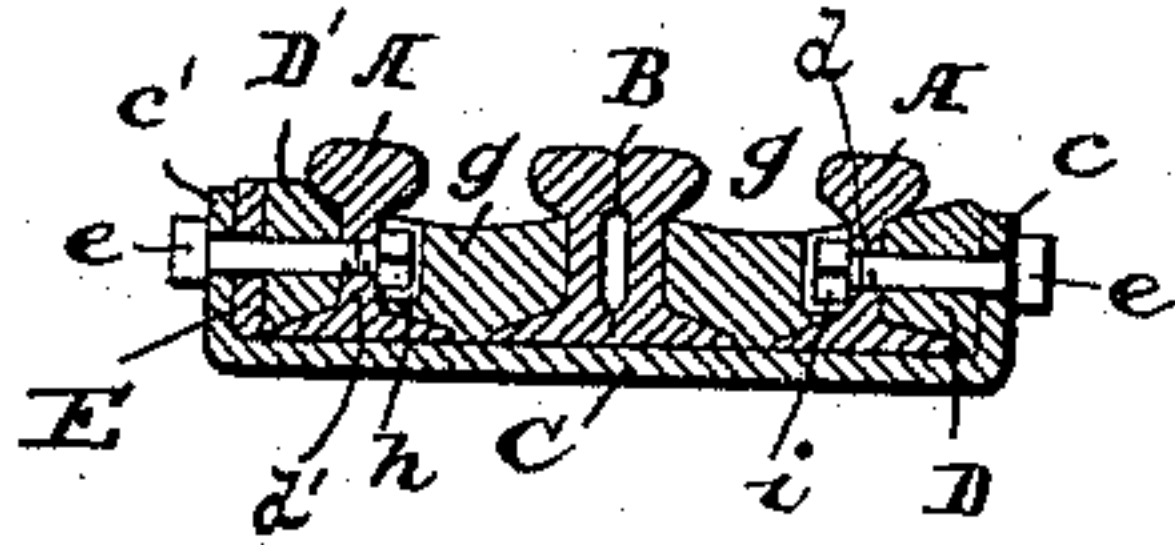


Fig. 4.

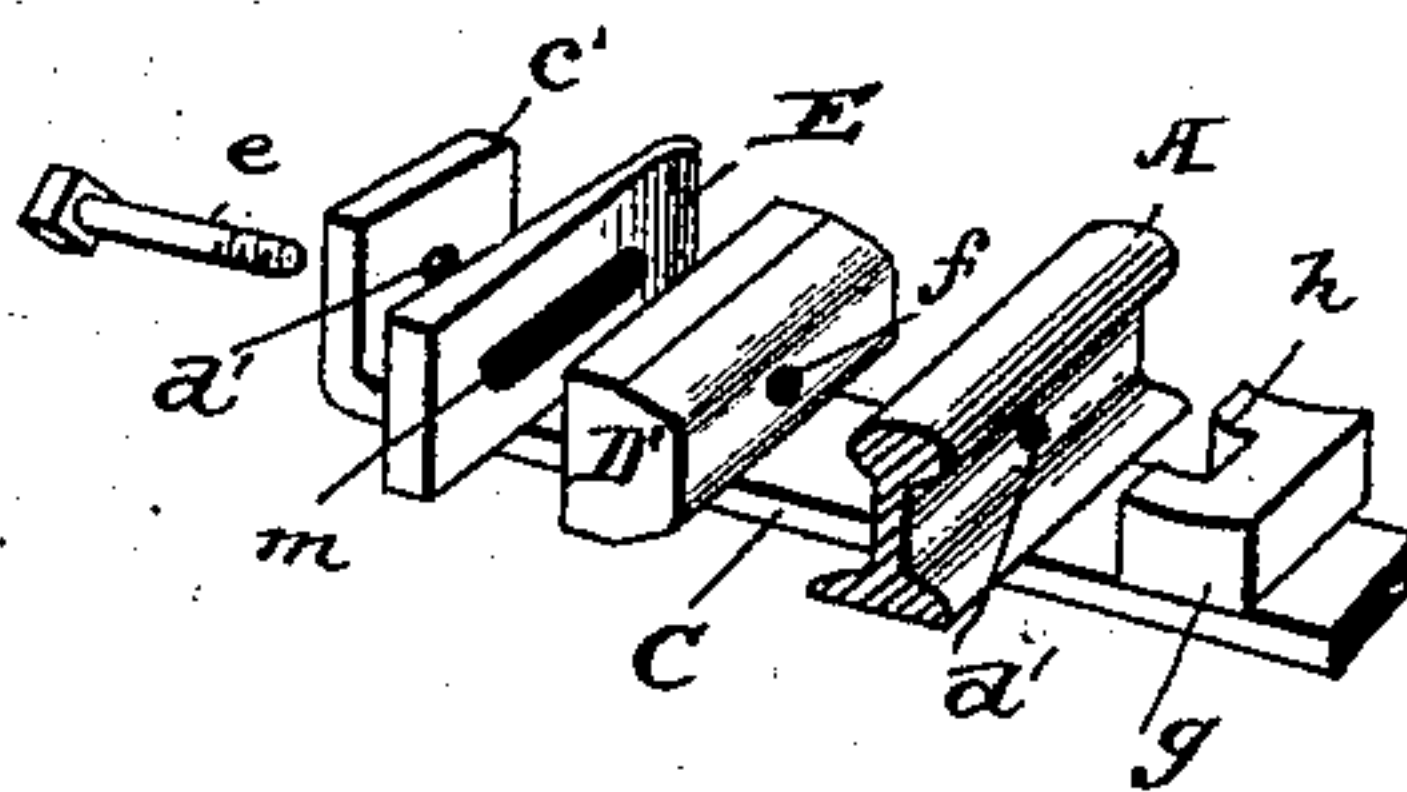
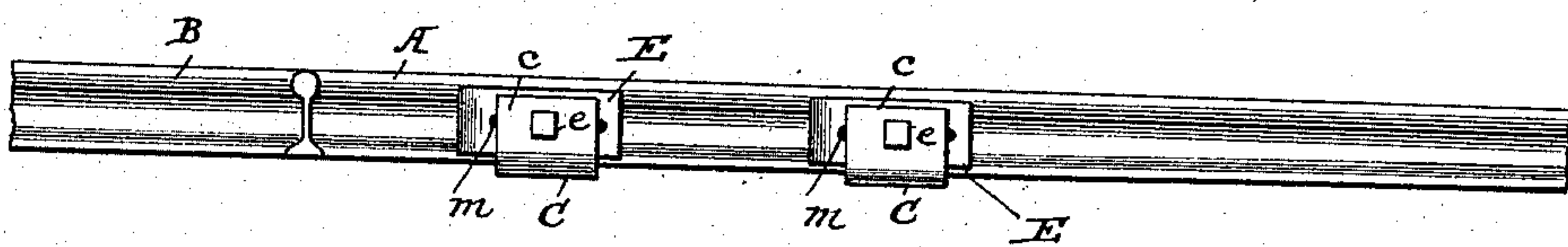


Fig. 3.



Witnesses
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JOHN T. RICHARDSON, OF HARRISBURG, ASSIGNOR OF ONE-HALF TO ALEXANDER H. EGE, OF MECHANICSBURG, PENNSYLVANIA.

RAILROAD-FROG.

SPECIFICATION forming part of Letters Patent No. 417,506, dated December 17, 1889.

Application filed December 14, 1888. Serial No. 293,587. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. RICHARDSON, a citizen of the United States, and a resident of Harrisburg, county of Dauphin, and State of Pennsylvania, have invented certain new and useful Improvements in Railway-Frogs, of which the following is a specification.

The object of my invention is to construct a frog that shall combine simplicity and flexibility of structure with durability and efficiency in the performance of its required functions—an end that I attain by the use of clamping-bars, distance or filling blocks, side supports, wedges or keys, and bolts, as hereinafter described, and illustrated in the accompanying drawings.

In referring to the drawings, Figure 1 shows a plan view of my improved frog. Fig. 2 is a transverse section on the line *xx* of Fig. 1, taken longitudinally through the longest clamp. Fig. 3 is a side view of a portion of the frog. Fig. 4 is a view of the locking parts enlarged or separated.

A A' are the outer curved or wing rails of the frog, and *B B* the inner rails converging to and terminating in the point or tongue *b* of the frog. The rails constituting the frog rest upon clamping-bars *C*, of which at least two are used in each structure. Said clamping-bars terminate in flanges *cc*. One terminal flange at least of each clamp is perforated at a point about equidistant from the angle of the base to the end of the flange for the reception of a binding-bolt *e*, as herein-
after more fully set forth. Plano-convex side supporting-blocks *D D D' D'* are interposed between the webs *d* on the one side and the upturned flange *c* of the said clamp *C* and between the web *d'* and the clamping wedge or key or keys *E E'* on the other side of the frog. A clamping key or keys *E E'*, of a general wedge shape and slotted about centrally on their longitudinal inclined faces for a distance preferably of more than one-half of the length of the same, are inserted between said flanges *cc* of the clamp *C* and the side supporting-blocks *D' D'*, and the said keys when driven home tend to bind the said parts into such supporting relations as will hereinafter be more fully described, and for reasons hereinafter set forth. In line with the perfora-

tions in the clamp-flanges *cc* the webs of the wing-rails *A* are also perforated for the reception of the binding-bolts *ee*; also, in line with and upon the vertical faces of the filling-blocks *g g*, that are interposed between the outer and inner rails of the frog, depressions or rabbeted seats *h h* are wrought, and into these seats the nuts *ii* rest when the binding-bolts *ee* are in place, and are prevented thereby from revolving either under vibration or normal motion of the bolts. To bind the co-operating parts of the frog together, the side supporting-blocks *D D D' D'* are first placed in position upon the outer sides of the wing-rails and in close lateral contact with the webs thereof. The binding bar or clamp *C* is then brought into position from below, the one flange *c* being brought into close lateral contact with the blocks *D D* and the other flange *c'* separated by a narrow interval from its supporting-blocks *D' D'* for the reception of the binding-keys *E E'*. Said binding-keys *E E'* having been inserted into said intervals from the acute ends, the binding-bolts having been inserted through the circular perforations *d' d'* of the flanges *cc*, the slotted longitudinal perforation *m* of the binding-keys *E E'* and through the circular opening *ff'* of the side blocks *D D D' D'*, and thence through the contiguous perforations of the wing-rails *A A* and terminating in the nuts *ii*, the said binding-keys *E E'* are driven home by sledge blows until the entire frog structure is made a compact and rigid whole. The angular ends of said keys, being made, preferably, of wrought-iron, are then bent laterally and thus locked against any reverse movement, and thus prevent the loosening of the parts of the frog under the vibration of passing trains of cars. In considering, further, the functions of the binding-bolts *ee*, it is evident that in being made to pass through the flanges of the clamping-bars and the webs of the wing-rails and held thereto by means of the terminal nuts *ii* said bolts not only prevent the slipping forward or backward of the clamping-bars, wedges, and side supporting-blocks, but they also perform in addition the very important function of preventing the flanges of the clamping-bars being bent outward under the excessive blows of the sledge-hammer

in driving forward the keys that may subsequently become necessary to take up the slack that arises in use from the friction of the constituent parts in contact.

5 In a former invention for an improvement in railway-frogs, for which Letters Patent were granted me and numbered 328,810, while I constructed my keys of general wedge shape and slotted more or less longitudinally, they
10 were necessarily of a heavy construction and large cross-section to fit into the depression on the side of the rail in order to perform both the function of a side supporting-block and wedge. By the use of this key, however, and
15 the absence of a locking device to retain the same in place when driven home I found the tendency under vibration was to work loose in the direction opposite to that to which they were originally driven, and therefore to
20 loosen the entire frog structure; hence I have found in practice that it is best to use a side block of sufficient cross-section to fill up the said rail-depression and perforate the same centrally with a circular hole so located
25 as to register with the similar openings in the clamp-flanges and the wing-rails, and to make the keys of an additional piece or plate of metal of a very acute angle, and of wrought-iron preferably, so as to bend the acute end
30 transversely to the longitudinal axial line for the purpose of locking the same when driven home.

I prefer to make my keys slotted, not only to admit of a forward movement when driven, but also to prevent the removal of the same
35 from place by accident or otherwise without the removal priorly of the binding-bolts.

I have shown the wedges as used upon but one side of the frog; but it might be found desirable under certain circumstances to du-
40 plicate the arrangement on the opposite side of the frog.

I claim—

The combination, with the rails and the filling-pieces of a frog, of a clamping-plate hav-
45 ing upwardly-extending perforated flanges, the side supporting-blocks interposed between the said flanges and the webs of the rails and provided with circular perforations, the wedges slotted longitudinally and interposed
50 between the said blocks and upturned flanges, the binding-bolts passing through the perforations in the said flanges and blocks, and the slots in the wedges to co-operate with the wedges in tightening all the parts of the frog, 55 substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN T. RICHARDSON.

Witnesses:

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R. H. GILMORE.