

No. 607,847.

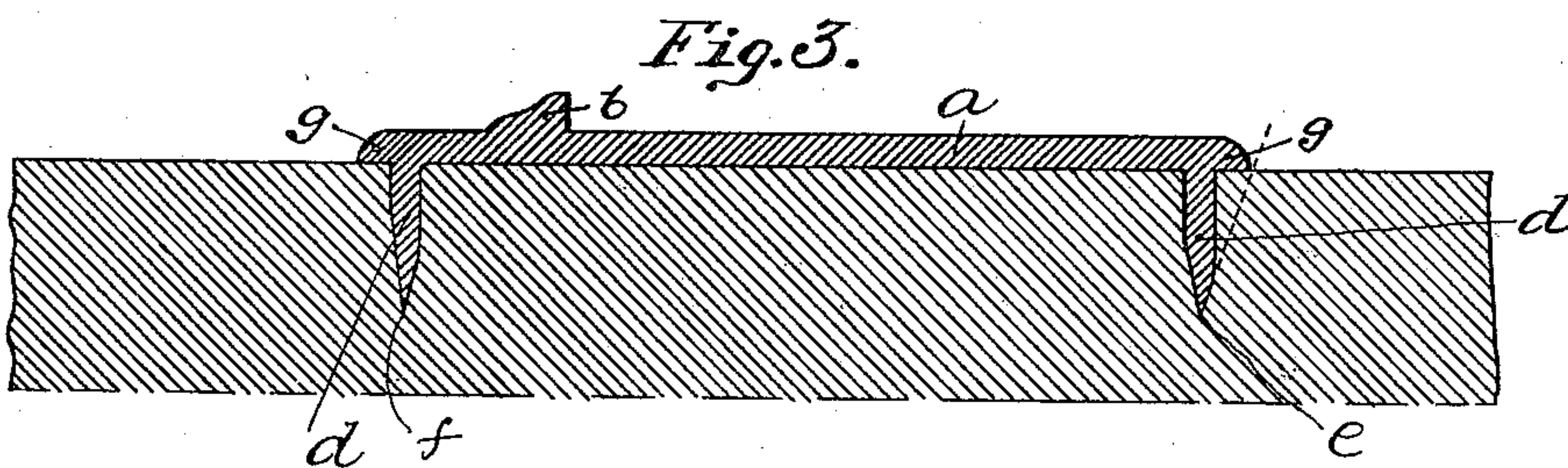
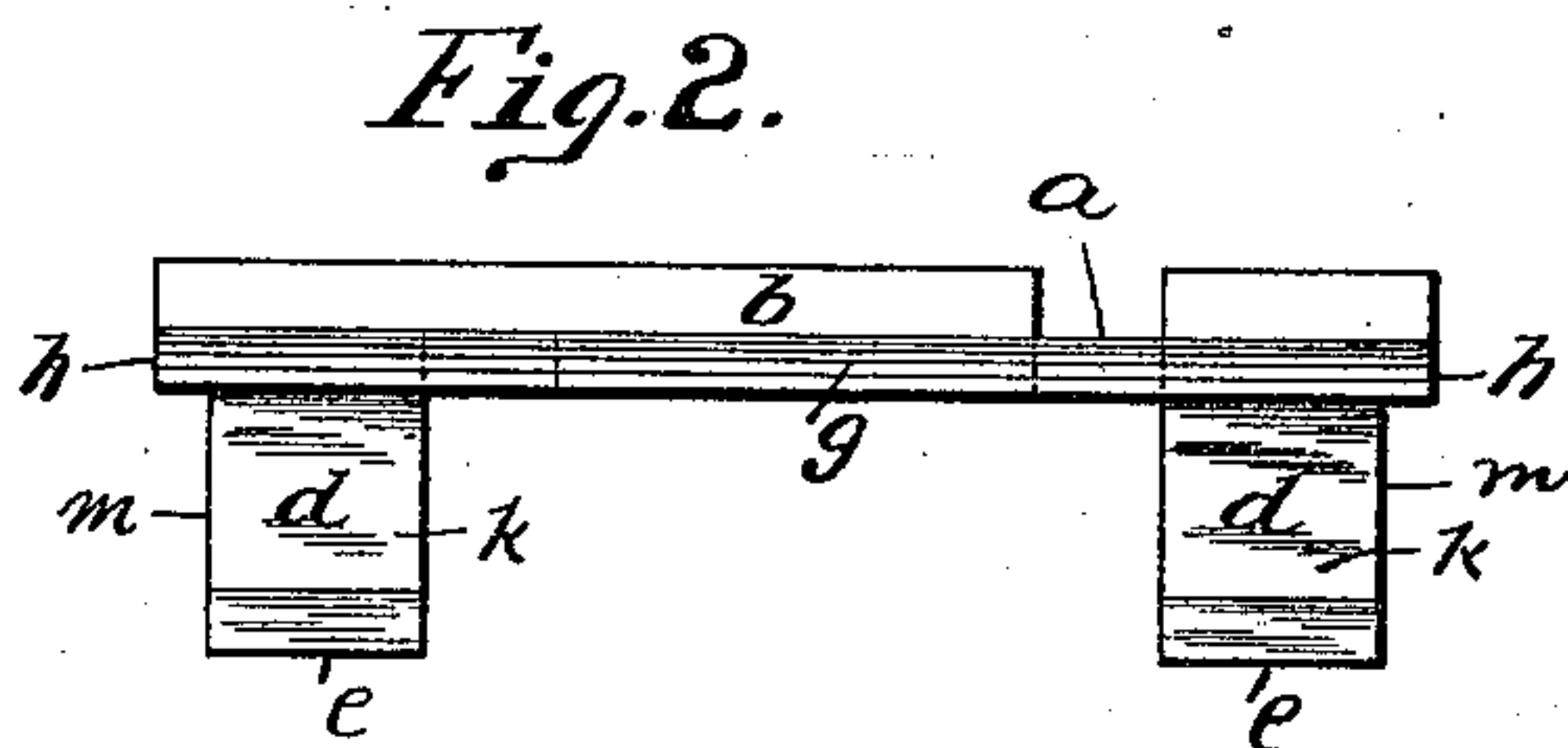
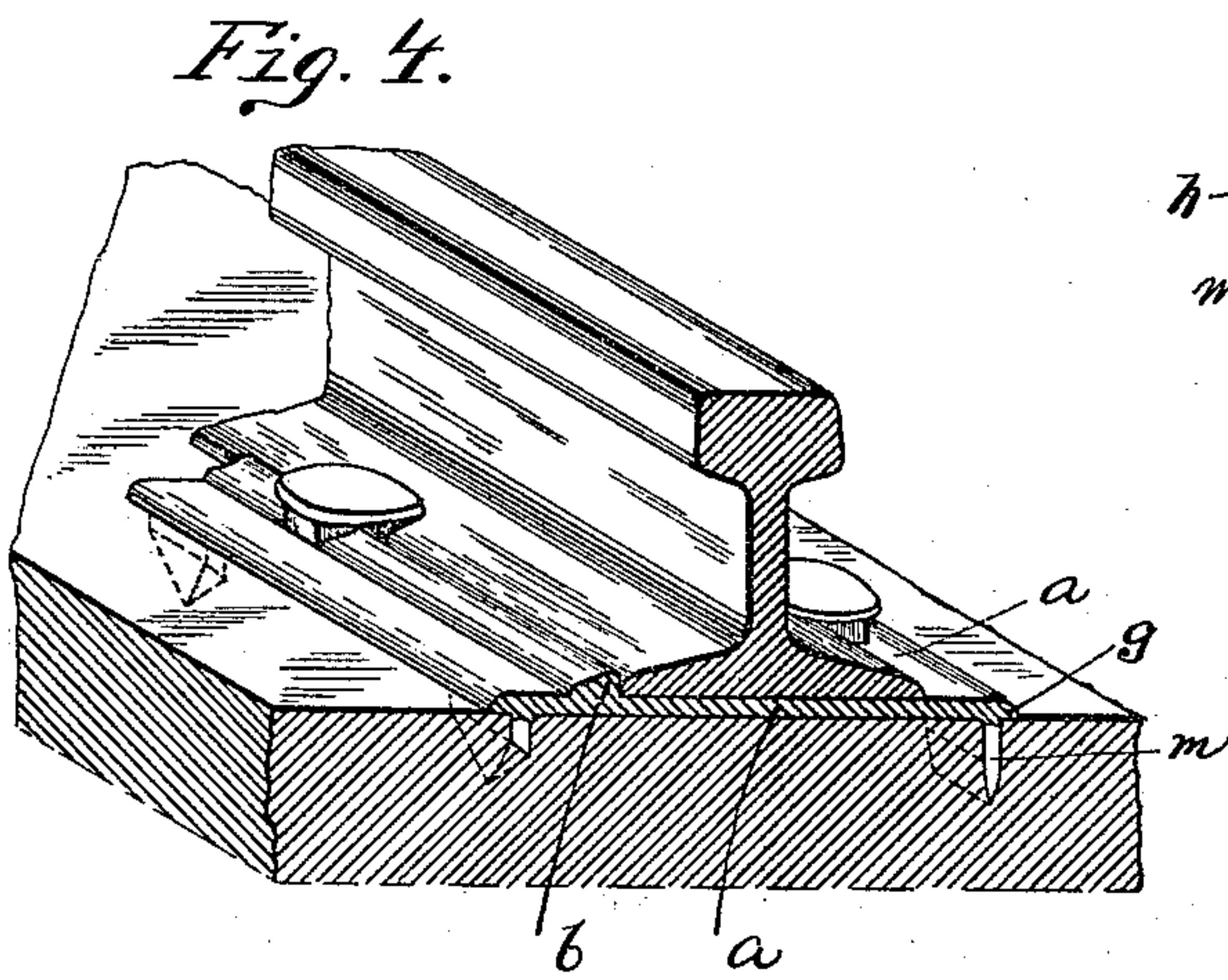
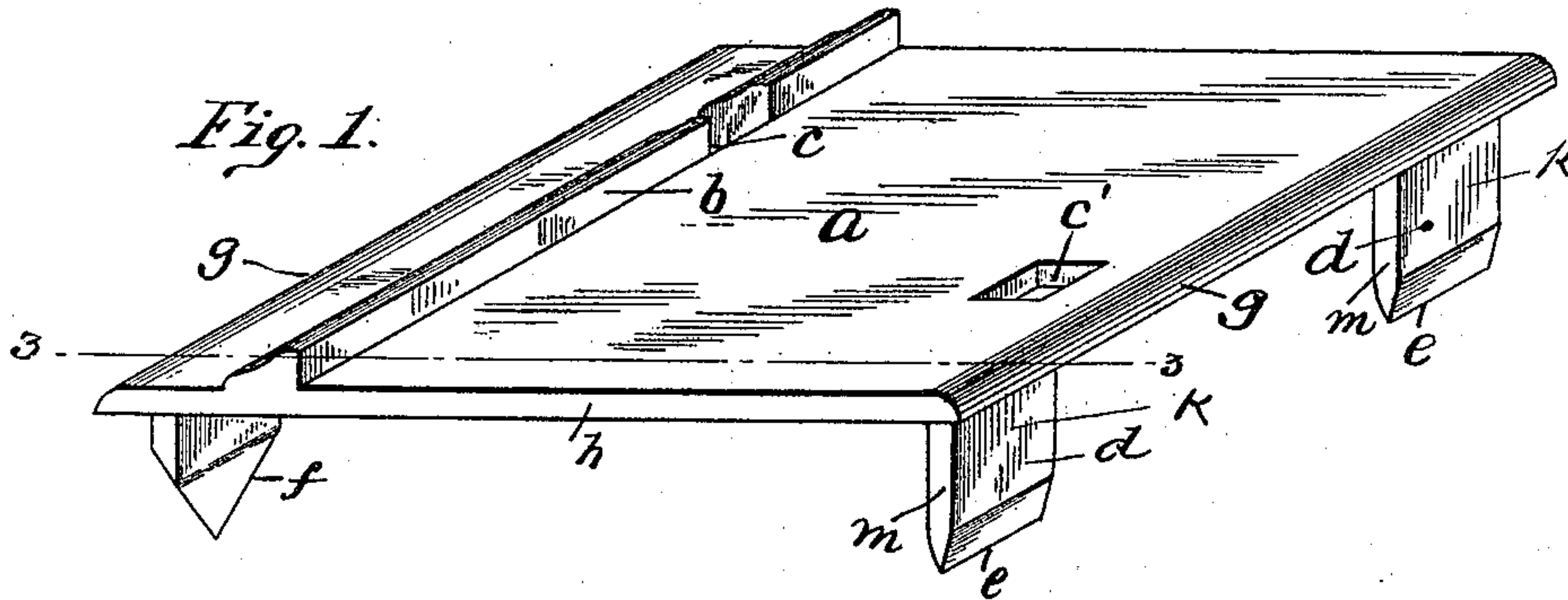
Patented July 26, 1898.

W. GOLDIE.

RAIL SUSTAINING BAR OR TIE PLATE.

(Application filed Feb. 4, 1898.)

(No Model.)



Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM GOLDIE, OF WILKINSBURG, PENNSYLVANIA.

## RAIL-SUSTAINING BAR OR TIE-PLATE.

SPECIFICATION forming part of Letters Patent No. 607,847, dated July 26, 1898.

Application filed February 4, 1898. Serial No. 669,141. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GOLDIE, a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rail-Sustaining Bars or Tie-Plates; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to tie-plates, and is, generally speaking, an improvement upon Letters Patent No. 540,356, granted to me June 4, 1895. In the use of these tie-plates as the weight of the cars—that is, the load sustained—and the speed of trains have increased the lateral strains on the tie-plates have correspondingly increased, and as a result of this it has been considered advisable to increase the length of the prongs entering the tie, so as to obtain a greater hold against lateral or side strains. While this class of tie-plates (illustrated in my said patent of June 4, 1895) has been recognized as very efficient, as the length of the prongs has been increased some practical difficulties have been met; and the object of the present invention is to improve the plates set forth in that patent to overcome these difficulties. The main difficulty found was that where long prongs were employed on the plates instead of depending on the weight of the train on the rail to force the plates to place in the tie it was found necessary to positively drive these plates into the tie by means of mallets or hammers, and in so doing with plates having such long prongs it was found practically impossible for the two men, each striking one side of the plate, to strike the plate at exactly the same instant, so that it would be forced down to place without one side being driven down ahead of the other, and in practice it was impossible to do otherwise than to drive down one side and then the other by what might be stated as “alternating blows.” This way of driving had a tendency with plates having such long prongs to loosen the fiber on the outside of the prong, as such fiber was cut through by the prong, because the driving strain was not and could not be absolutely vertical, but must have some side pressure, which loosened the fiber and rendered it somewhat liable to spring upwardly during driving and to work upwardly along the outer face of the prong

after the plate was driven to place. After creating this tendency for the fiber to rise there was no means for holding it down when the plate was in use, and under the extremely heavy strains brought on the plate and the vibratory blows caused by the wheels striking on the rails at high speed, which strains and blows were imparted through the rail to the plate, it has been found that this fiber on the outer face of the prongs was liable in some cases to ride up along the same to rise above the normal face of the tie, exposing the cut grain to the action of the weather. When so exposed, the grain would be gradually softened and would be liable to yield against the heavy strains brought upon the plate, the effect of which would lead to some slight spreading of the gage, but was principally objectionable in destroying the adhesion of the plate to the tie. In case the adhesion of the plate was lost from these causes the plate would, of course, lose many of its valuable functions pertaining to a tie-plate, and while it still had strong adhesion on account of the length of the prongs it permitted some vibration and a slight lifting of the plate, in which case sand might work underneath it and imperceptibly though inevitably lift the plate somewhat from the tie.

The object of the present invention is to overcome these difficulties with this class of plates having long downwardly-projecting sharpened claws or prongs at its edges and extending parallel with the rail and cutting across the grain, so that the advantages of the long prongs can be obtained while the fiber along the outer edges of the prongs shall be held down, and this difficulty of the riding of the fiber up along such edge after the plate is driven to place will be overcome.

To these ends it consists in a tie-plate having a body portion provided with long downwardly-projecting sharpened claws or prongs and narrow overhanging lips at such edges extending out a short distance beyond the prongs to hold down the fiber at the outer face of each prong which is cut transversely by the prong on entering the wood. It also consists in certain other improvements which will be hereinafter more particularly set forth.

To enable others skilled in the art to make and use my invention, I will describe the same



more fully, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of the plate embodying the invention. Fig. 2 is a side view of the plate. Fig. 3 is a sectional view on the line 3 3, Fig. 1, illustrating the plate as driven into the wood; and Fig. 4 is a perspective view of the plate, showing the rail resting on the same and the plate driven into the tie.

Like letters indicate like parts in each of the figures.

The general construction of the plate illustrated in Fig. 1 is the same as that shown in my said patent, the plate having the body portion *a* and having on the upper surface thereof the rib *b*, against which the rail-flange is seated and having the spike-holes *c c'*. At the edges of the plate are the long prongs *d d*, having sharpened lower ends, these prongs either terminating in straight or chisel edges, as shown at *e*, or having diagonal cutting edges, as shown at *f*, according to the wood into which the plate is to be driven, it being found that diagonal cutting edges suit better for soft wood, while the chisel edges suit better for hard wood. The prongs or claws *d* are formed at the edges of the plates, while projecting a short distance beyond the edges are the narrow overhanging lips *g*, such lips in the ordinary plate extending out about one quarter of an inch, while the prongs themselves are made generally at least an inch and a quarter or an inch and a half in length. It is preferred that the end portions of the plate shall project in like manner practically for the same distance over the ends of the prongs, as shown at *h*, Fig. 2, so that when the plate is in use and has been driven to place the overhanging lips *g* will extend out over the fiber cut by the prong as it is driven to place and hold down the wood fitting against the outer face of the prong, so preventing the rising or riding or gradual upward movement of any of the fiber cut through by the prong as it enters the tie, while at the same time where the prongs are also set back a short distance from the ends of the plate, leaving like overhanging lips *h* at the ends, such lip preventing the exposure of any portion of the mortise or socket receiving the prong, and therefore prevents the entrance of water into the same.

When the tie-plate is in use, as it is driven to place by the workman, even though it may have some side movement and throw some side strain upon the wood fiber as it enters the same, yet as soon as the plate is driven home or into direct contact with the tie the overhanging lip *g*, by pressing on the fiber, holds it down to place, holding it down, even though there is the tendency to rise above described.

It will of course be understood that the inner face and edge of the prong are covered by the body of the plate, while its outer face *k* is covered by the narrow lip *g* and its outer

edge *m* is covered by the narrow lip *h*, so that the entire mortise into which the long prong enters is protected from direct entrance of water, and at the same time the cut portions of the fiber are positively held down and cannot rise or move upwardly any more than the fiber along the inner face of the prong. In this way the peculiar advantages of the long sharpened prongs located at the outer edges of the plate and adapted to pass some distance into the tie itself and so obtain strong adhesion, with the sharpened ends thereof to cut the fiber instead of crushing the same, which have given the special advantages to this patented tie-plate, are combined with positive protection to the tie, both against the natural riding or springing up of the cut fiber and the entrance of water into the mortise formed by the prong.

It will be noticed that the lower faces of the overhanging lips *g* are straight and that they have square corner edges. It is believed to be important to so construct the overhanging lips in order that they may obtain a better and firmer hold on the fiber, as compared with a mere rounding or bulging of the metal, which might permit the fiber to rise past the same or lead to the water being carried by the capillary action along such rounding surface into the mortises receiving the prongs.

In the production of plates of this character, while it is found necessary in order to obtain long prongs to roll the ribs from which such prongs are formed close to the edge or directly at the edge of the plate, I have found it practicable to roll the same and subsequently to bend outwardly the metal to form this overhanging projecting lip, and I find it practicable by making the overhanging lip narrow not only to bend it down into place in the final steps of rolling the metal blank from which the tie-plate is formed, but also subsequently to sharpen the prongs by the necessary shearing without interference of the overhanging lip with such operation.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A tie-plate having a body portion provided with long downwardly-projecting sharpened claws or prongs at its edges extending parallel with the rail, and narrow overhanging lips at such edges extending out a short distance beyond the faces of the prongs to hold down the fiber which is cut transversely by the prong in entering the wood, substantially as set forth.

2. A tie-plate or bar having a body portion provided with long downwardly-projecting sharpened claws or prongs at its edges extending parallel with the rail, and narrow overhanging lips at such edges extending out a short distance beyond the faces of the prongs and having square lower corner edges to hold down the fiber cut transversely by the prongs entering the wood, substantially as set forth.

3. A tie-plate or bar having a body portion provided with long downwardly-projecting



sharpened prongs or claws at its edges extending parallel with the rail, and narrow overhanging lips *h* extending a short distance beyond the end portions of the prongs, substantially as and for the purposes set forth.

5 4. A tie-plate or bar having a body portion provided with long downwardly-projecting sharpened claws or prongs at its edges extending parallel with the rail, and narrow overhanging lips *g* at such edges extending out a

short distance beyond the faces of the prongs and like narrow overhanging lips *h* extending out beyond the end portions of the prongs, substantially as and for the purposes set forth.

In testimony whereof I, the said WILLIAM GOLDIE, have hereunto set my hand.

WILLIAM GOLDIE.

Witnesses:

ROBERT C. TOTTEN,  
GRACE C. RAYMOND.