

(No Model.)

M. HUBBELL.
METAL RAILWAY TIE.

No. 438,583.

Patented Oct. 14, 1890.

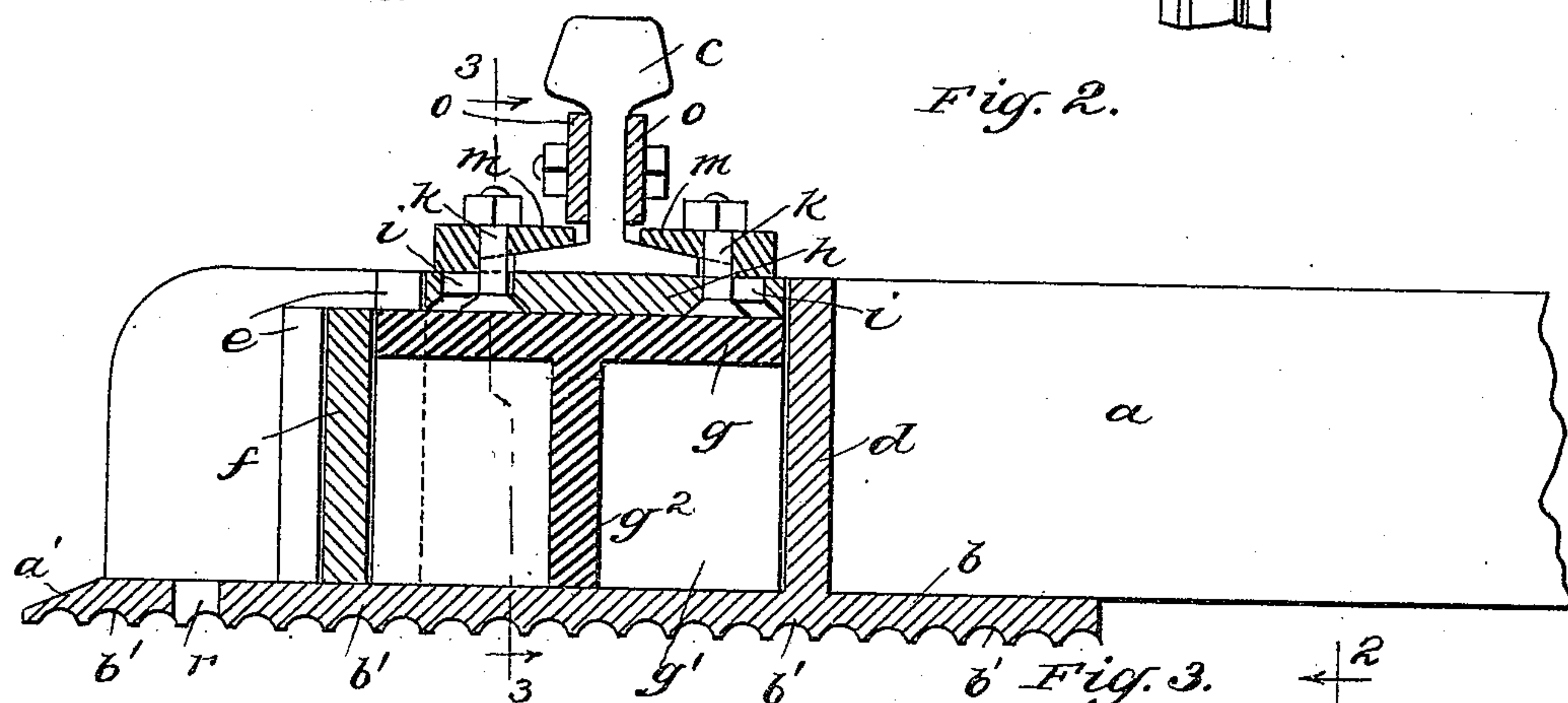
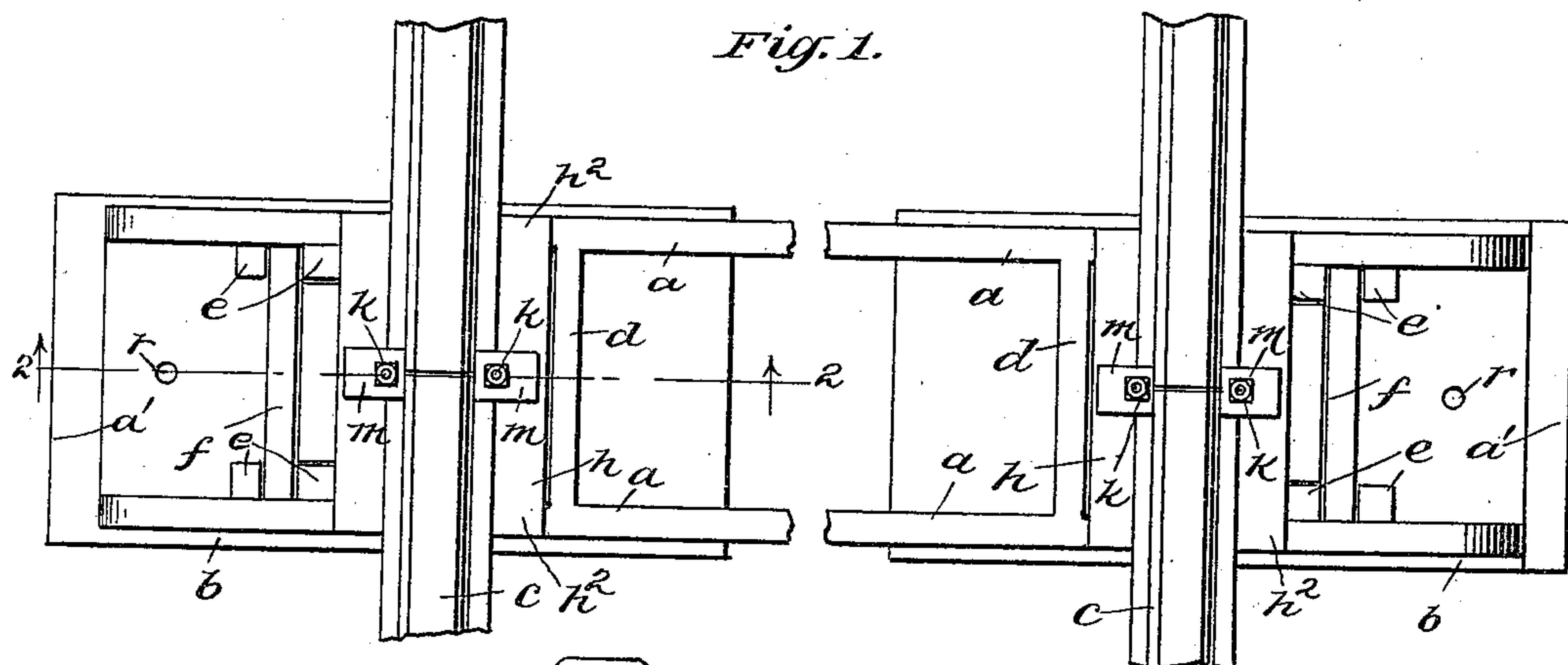


Fig. 4.

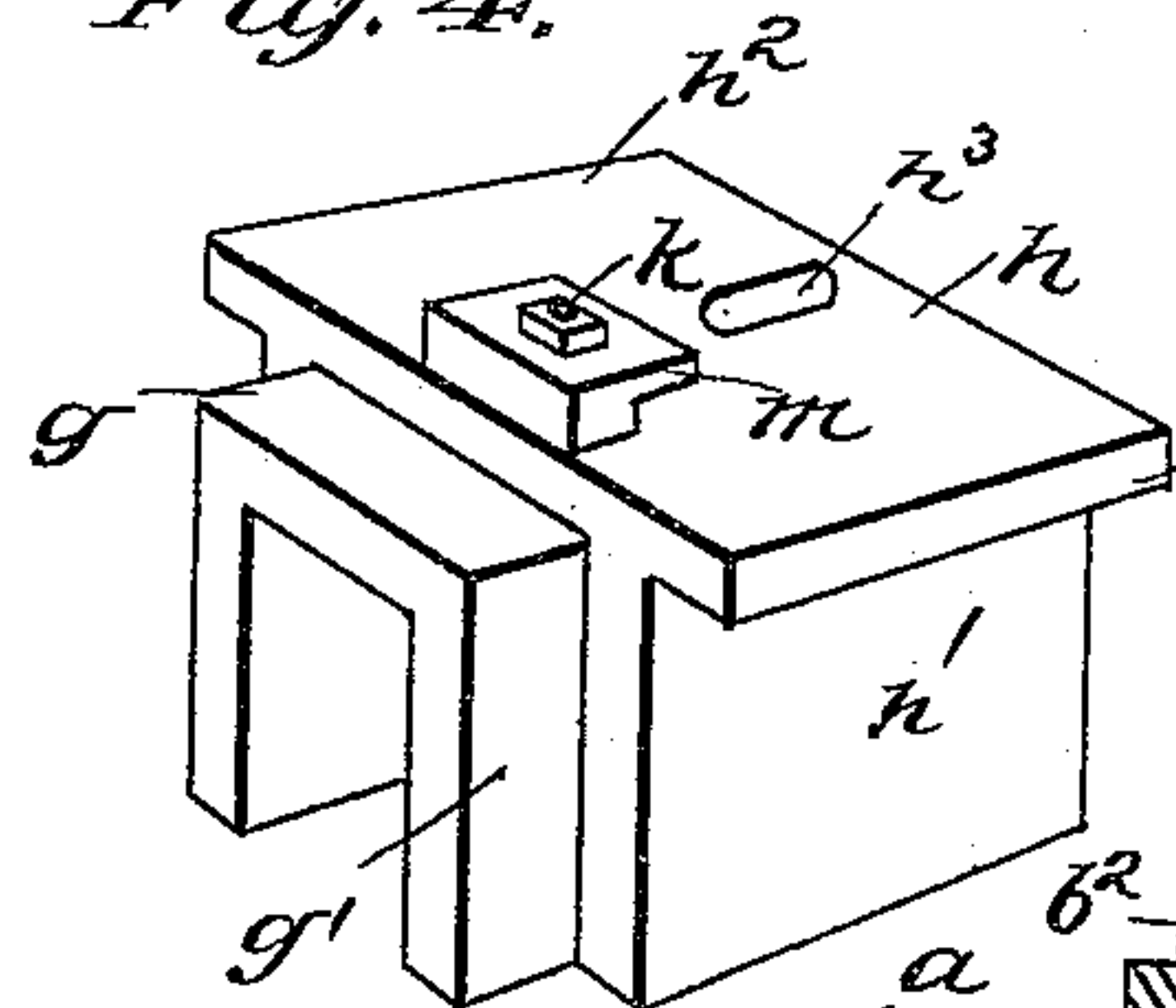
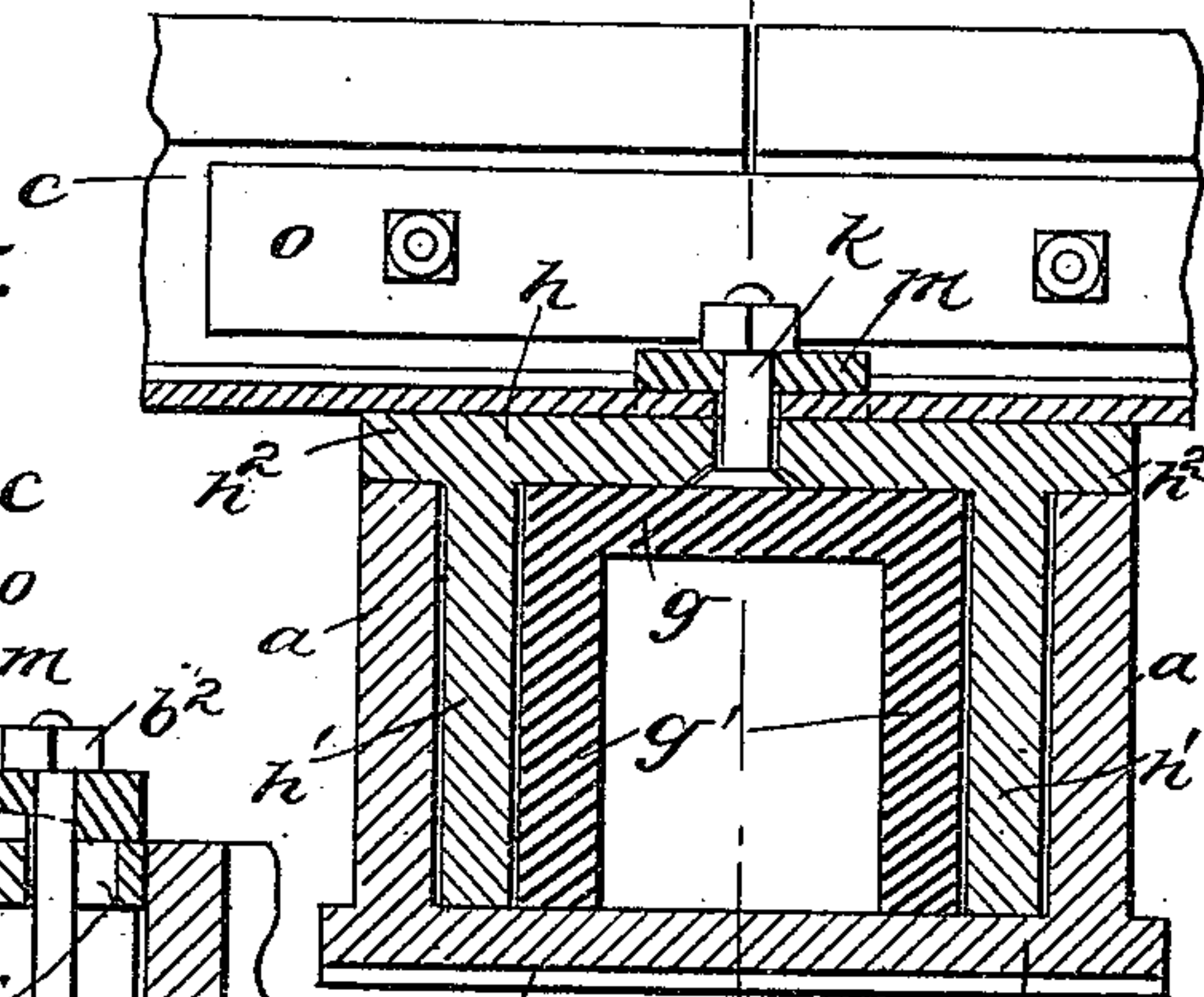


Fig. 5.



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METAL RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 438,583, dated October 14, 1890.

Application filed March 6, 1890. Serial No. 342,877. (No model.)

To all whom it may concern:

Be it known that I, MARTIN HUBBELL, of Mount Kisco, in the county of Westchester and State of New York, have invented a new and useful Metal Railway-Tie, of which the following is a full, clear, and exact description.

This invention relates to improvements in railroad cross-ties made from metal, and has for its object to produce a tie of simple, durable construction, which will be capable of indicating variations from the alignment of the track, considered vertically, and afford means for correction of such deviations without removal of the tie or loosening any portion of the same or attached parts.

A further object is to provide means whereby lateral adjustment of the track-rails may be quickly and reliably effected upon each cross-tie.

A further object is to afford an interlocking bearing-surface to the lower face of the cross-tie, whereby longitudinal and lateral displacement of the tie will be prevented.

To these ends my invention consists in certain features of construction and combinations of parts, as is hereinafter described, and indicated in the claims.

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

Figure 1 is a plan view of the tie broken near its center and with portions of track-rails thereon. Fig. 2 is a longitudinal sectional elevation of the tie taken on the line 2 2 in Figs. 1 and 3, with a track-rail secured thereon. Fig. 3 is a transverse section of the tie, taken on the line 3 3 in Fig. 2. Fig. 4 represents important parts of the device detached from the tie-body; and Fig. 5 is a transverse section of the tie and connected parts, showing a modified form of construction of the rail-supports and the means for securing the rails to the tie.

The tie-body is preferably made of cast metal, although wrought plates may be utilized in its formation. It consists, essentially, of two parallel walls *a*, held spaced apart sufficiently to afford a proper breadth to the tie by base-plates *b*, which extend toward each other from the ends of the body of a length

to provide adequate bearing-surfaces to said base-plates for support of rails *c*, as will be further explained.

At an appropriate and preferably equal distance from each terminal *a'* of the tie-body transverse webs *d* are formed with or secured upon the side walls *a*, thus providing abutments for soil or ballast, which will be introduced between the side walls and webs when the cross-tie is in position on a road-bed. Between the webs *d* and the tie ends *a'* opposite pairs of vertical ledges *e* are formed with or secured upon the walls *a*, said pairs being spaced and parallel, so as to receive and retain the loose cross-walls *f*, which are slid into place between the ledges, as shown in Fig. 1, the distance between the webs *d* and adjacent cross-walls *f* being such that room will be afforded for the introduction between them and within the open pocket formations thus produced of rail-supports.

The stools *g*, one being shown removed from its seat in Fig. 4, are designed to rest in the pockets mentioned and have their ends engaged loosely with the webs *d* and cross-walls *f*, these stools consisting each of a rectangular flat metal slab having depending parallel and opposite legs *g'*, which are simply flanges extended an equal depth from the side edges of the slab portion. The height of the stools *g* is so proportioned to that of the side walls *a* that their top faces will serve as a support for the transversely-located and similarly-shaped chairs *h*, the depending legs *h'* of which are located between the legs *g'* of the stools *g* and the inner faces of the side walls *a* of the tie-body, said stools *g* having cross plates or webs *g²* formed between their legs *g'* to stiffen them. Preferably the walls *a* are cut away on their upper edges of a length and depth to receive the thickness of the projecting flanges *h²*, which are in effect lateral extensions of the top plates of the chairs *h*, said flanges seating in the depressions formed in the side walls *a* when the cross-tie body is correctly bedded to support track-rails in alignment with each other in conformity to the grade of the road-bed.

It should here be explained that the forming of recesses in the edges of the side walls *a* is not essential to the operation of the de-

vice, as the chairs *h* may rest with their flanges upon the upper surface of these walls and afford good results, the provision of recesses being adopted from the fact that the parts are thereby rendered more compact and a smooth surface is afforded to the top of the tie when the chairs are in normal position thereon. The chairs *h* are of such proportionate length that the ends of their legs *h'* will have sliding contact with the webs *d* and walls *f*, looseness being avoided.

At about the longitudinal centers of the chairs *h* transversely-elongated bolt-holes *i* are formed, which are beveled on their lower edges sufficiently to form countersinks for the reception of correspondingly-shaped heads formed on the bolts *k*, which when in place rest on the stools *g* and project above the chairs they penetrate of a length to receive the clamping-plates *m*, that are perforated for such an engagement.

It is intended when a cross-tie is located where the track-rails *c* join their ends, as represented in Figs. 1, 2, and 3, that suitable corner notches will be cut from the ends of the base-flanges of said rails, so that the bodies of the bolts *k* may be introduced between the rails ends and hold them slightly separated, and to this end the elongated bolt-slots are provided, as on other ties. Intermediate of the rail ends the bolts *k* and clamping-plates *m* are moved outwardly, no notches being made in the rail at points between the ends unless it should be necessary on sharp curves in the track.

The usual fish-plates *o* are provided for securing the track-rails *c* against lateral displacement, and with the clamping-plates *m* prevent the rails from yielding to lateral strain, while proper compensation for expansion and contraction due to alterations of temperature is afforded.

Upon the lower surface of the independent base-plates *b* the transverse corrugations *b'* are produced, which are adapted to engage the road-bed and serve to hold the ties from longitudinal movement or "creeping" from their proper position.

When from any cause a cross-tie is depressed below its proper position with regard to general alignment of the top surface of the rails, such a sinking of the tie-body at one or both ends will not drag the rails down with it, as owing to the construction of the chairs *h* and stools *g* the chairs which are clamped by the plates *m* to the track-rails *c* will rise with them when the rails are free to assume a normal condition or level on their top faces. As the stools are not secured to the rails *c*, they will rest on the base-plates *b* of the tie-body, so that an opening between the top surfaces of the stools and chairs will appear when a tie is sunken, which opening will represent the degree of depression of the tie-body below a proper level. This may be corrected either by filling tamping material below the tie until a proper height is secured, or a temporary

wedge or liner may be inserted between the chairs *h* and stools *g* if the proper repair to the road cannot be made at the time the depression of one or both ends of a tie is noticed.

As a single bolt *k* is used to clamp each plate *m* upon the ends of the rail-flanges, it is evident that the rails may be given different positions upon the level surfaces of the chairs *h*, which may be at right angles to the body of the tie or inclined laterally therefrom, and the clamping-plates *m* be adjusted to align with the edges of the rail-flanges they clamp upon.

In Fig. 5 a modified form of the device is illustrated, and varies from the preferred form shown in the other figures in that it affords a means of securing the rail *c* and chair *h* to the body of the tie, which is effected by the use of the long bolts *p* that extend through orifices in the base-plate *a* upwardly, and then through the chairs *h* and clamps *m*, the lower ends of the bolts having hook-shaped heads *p'* that engage the corrugations of the base-plate on its lower surface, and nuts *b²* on said bolts by their adjustment hold the chair firmly on the base-plate.

If desired, there may be blocks of wood inserted between the lower surface of the chair top plate and the base-plate *a*, raising the chair-legs slightly above the surface of the base-plate, so that the bolts *p* and nuts *p²* will clamp the chair upon a slightly-elastic bed of wood, and when the tie sinks the loosening of the bolts *p* will permit the chair *h* to rise and indicate the depression of the rail caused thereby, which may be corrected by tamping material below the tie-body, or, if preferred, longer bolts and thicker wooden blocks may be substituted to restore the normal alignment of the track rail or rails.

It will be seen that the provision of the removable cross walls or plates *f* will afford means for the ready removal of the blocks of wood mentioned from the ends of the tie by first displacing these cross-walls, and in case a tie has to be entirely withdrawn from its place in making repairs to the road-bed, this may be done by the insertion of the hooked end of a bar or chain in a hole *r*, made in the base-plate *a* for that purpose near the outer end of the tie, when by manual force the tie can be pulled from beneath the rails and restored by a similar engagement with the other end of the tie, where another hole *r* is provided.

It is claimed for this tie that all conditions of efficient service are embodied and adequate provision made for ascertaining the exact degree of depression of a tie below its normal position with regard to general track-surface, as well as means for the temporary or permanent correction of the defect.

If desired, longer clamping-plates may be used than are here shown; and, furthermore, in case it is desired, a projecting integral lug may be formed on the lower surface of each clamping-plate that will enter the notches

formed at the ends of the rails *c*, so as to take the place of the bolts *k* or *p*, which bolts are then located farther toward the outer edges of the clamping-plates in the holes or slots *h*³, made for their reception in the top plates of the chairs *h*.

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

10 1. A cross-tie having parallel vertical side walls, base-plates having pockets above them formed by integral transverse webs and movable cross-walls, and a vertically-adjustable device within each pocket whereon a track-
15 rail or the abutting ends of two rails may be clamped, substantially as set forth.

20 2. The combination, with a cross-tie body made up of side plates joined by transverse webs and base-plates, and removable cross-walls coacting with the side walls and base-plates and webs forming an open rectangular pocket at each end of the body, of a stool for each pocket and a chair above the stool in each pocket, substantially as set forth.

25 3. The combination, with a cross-tie body

having vertical walls, base-plates near the ends of the body, and integral webs and an open space between said webs, of removable cross-walls, which, with the side walls, base-plates, and integral webs, produce an open
30 rectangular pocket at each end of the tie-body, stools which fit within the pockets, and chairs the legs of which embrace the sides of the stools, substantially as set forth.

4. The combination, with a cross-tie body
35 having vertical parallel side walls, base-plates near the ends of the body having corrugated lower surfaces, integral transverse webs between the side walls of the tie-body, and adjustable end walls engaging ledges of the side
40 walls, of stools having dependent legs located in pockets formed by the junction of the webs and walls of the tie-body, chairs above the stools the legs of which embrace the stools, and clamping-plates held by bolts to the
45 chairs, substantially as set forth.

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Witnesses:

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