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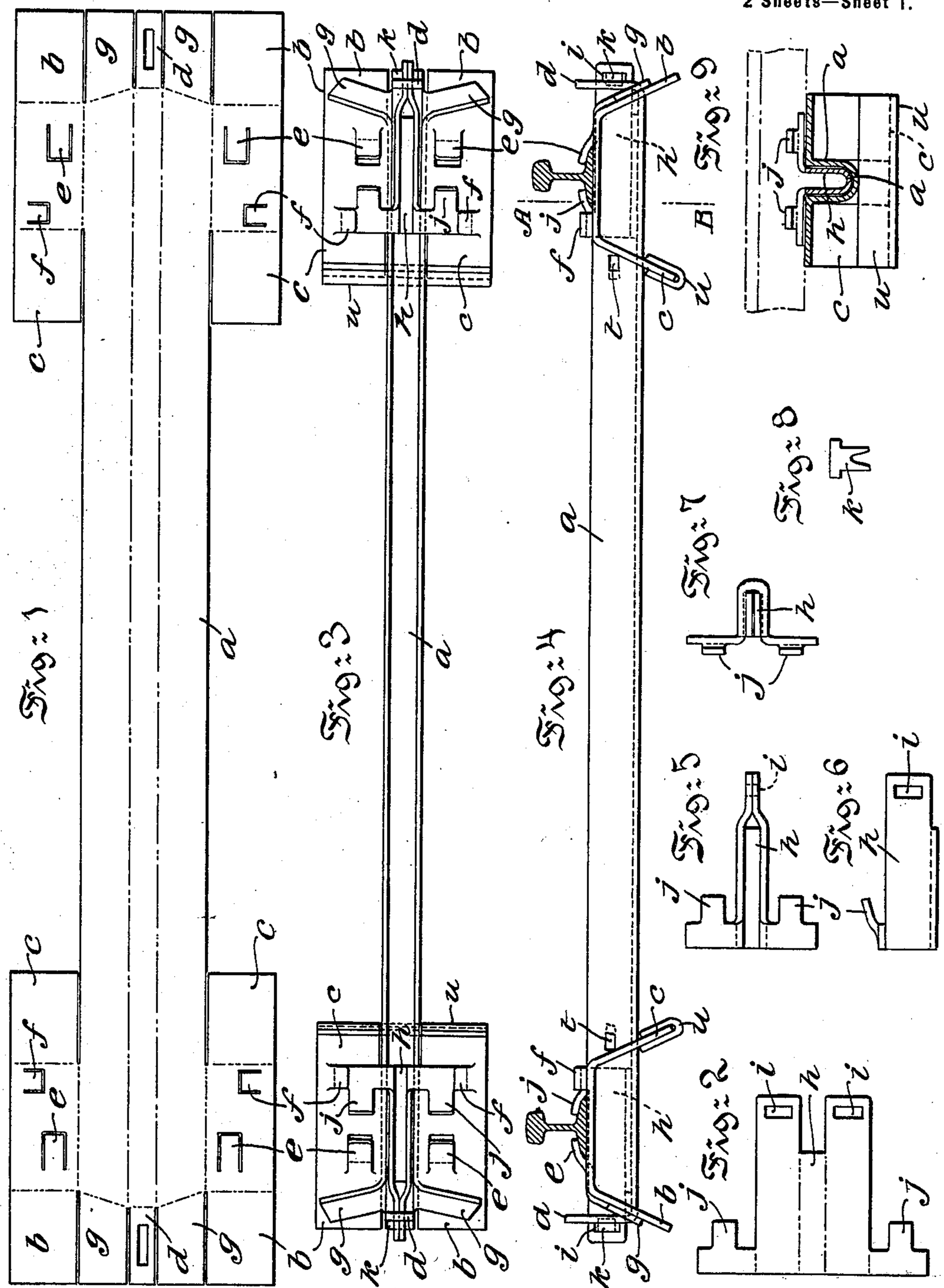
C. J. GADD & D. MARTYN.

METALLIC RAILWAY TIE.

(Application filed Feb. 3, 1900. Renewed Oct. 12, 1900.)

(No Model.) 2 Sheets—Sheet 1.



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UNITED STATES PATENT OFFICE.

CHARLES J. GADD AND DAVID MARTYN, OF PHILADELPHIA, PENNSYLVANIA.

METALLIC RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 668,795, dated February 26, 1901.

Application filed February 3, 1900. Renewed October 12, 1900. Serial No. 32,895. (No model.)

To all whom it may concern:

Be it known that we, CHARLES J. GADD and DAVID MARTYN, subjects of the Queen of Great Britain, and residents of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Metallic Railway-Ties, of which the following is a specification.

Our invention relates to improvements in metallic railway-ties; and the objects of our invention are to furnish a metal tie which will be simple and inexpensive to manufacture, which will have but very few parts, which will have, with increased strength, less weight than similar ties heretofore constructed, which will have improved means for fastening the rail which cannot be loosened by vibration, which may be easily and conveniently tamped, from which the rail may be removed without interfering with the ballast or moving the tie, which will enable an absolute gage to be maintained, which will prevent the creeping of the track, which will not move off lengthwise on curves, and in which repairs to broken fasteners may be expeditiously and conveniently made.

Our tie proper is made from a single piece of metal and has formed integrally with it upwardly-projecting fasteners which engage one side of the base of the rail. Upon the other side the base of the rail is engaged and held by fasteners which are formed integrally with a movable locking-piece which itself is held to the top of the tie by upwardly-projecting fasteners engaging its top and by a key which at the same time secures it to the end of the tie and draws and holds it against the rail.

In the accompanying drawings, forming part of this specification, and in which similar letters of reference indicate similar parts throughout the several views, Figure 1 is a plan of blank from which our tie is formed; Fig. 2, a plan of blank from which locking-pieces are formed; Fig. 3, a plan of the tie after being bent to shape, the locking-pieces being shown in place; Fig. 4, a side elevation of Fig. 3, the rails being shown in place; Fig. 5, a plan of the locking-piece after being bent to shape; Fig. 6, a side elevation of Fig. 5; Fig. 7, an end elevation of Fig. 5; Fig. 8, a plan of key for securing end of locking-piece to end of tie; Fig. 9, a section of Fig. 4 on line A B; Fig. 10, a plan of one end of the tie, showing the rails in place, the fish-plates being notched out so as to be engaged by the fasteners to prevent creeping; Fig. 11, a section of Fig. 10 on line C D, the lower ends of the transverse channels of the tie being engaged by stay-pieces to prevent their spreading; Fig. 12, a plan of blank from which the stay-piece, Fig. 11, is formed; Fig. 13, a plan of one end of tie, showing an arrangement for taking the place of the outside fasteners should they be broken off; Fig. 14, a perspective view of the arrangement for taking the place of the outside fasteners.

Our tie is constructed from a flat piece of metal, which is formed first, by dies preferably, into the shape shown in Fig. 1. In this figure, *a* is the body of the tie; *b*, outside wings forming part of the body of the tie; *c*, inside wings, also forming part of the body of the tie; *d*, slotted end pieces; *e*, fasteners for the outside of the base of the rail; *f*, fasteners for the upper inner ends of the key-piece.

To complete the tie, the blank *a* is bent down longitudinally along its center, as best shown in Figs. 3, 4, and 9, forming a U-shaped channel. The wings *b c* are bent downward, as shown in Figs. 3 and 4, forming inverted-U-shaped channels at each end of the tie at right angles to the longitudinal channel. The slotted end pieces *d* are bent upward, and the tongues formed between the slotted end pieces *d* and the wings *b* are bent outwardly, so as to lie against and strengthen the bent-down wings, as shown in Figs. 3 and 4. The fasteners *e* and *f* having been bent up, as shown in Figs. 3 and 4, the tie proper is completed.

The device for locking the rail to the tie is formed from a blank *h*, Fig. 2, which is bent down along its longitudinal center, as shown in Figs. 5 and 7, its outer ends perforated, as at *i*, and pinched together, as shown, and its inner ends furnished with fasteners *j*, which are adapted to engage the inner side of the rail-base, as shown in Fig. 4.

The ties having been placed on the road-bed, the rails are laid upon them, the fasteners *e*, which, as before stated, are formed integrally with the ties, engaging the outer

lower bases of the rail. The locking device is now put in place, its body resting in the channel formed longitudinally in the tie, its forward end passing through the hole in the upturned piece *d*, its outer end or top resting upon the top of the tie, the outer ends of its top passing under the fasteners *f*, carried by the tie, and the fasteners *j* engaging and holding the inner side of the rail, as shown in Fig. 4. The locking device having been put in place in the tie is secured thereto, first, by the fasteners *f* engaging its upper outer ends, and, second, by a wedge or key *k*, Figs. 3, 4, and 8, which is driven through the slot *i* in the locking device and which bears against the outer side of the piece *d* and serves not only to prevent lateral movement of the locking device, but also to draw the fasteners carried by this device against the rail and to force the rail against the fasteners *e*, carried by the tie.

In Fig. 10 a plan of one end of the tie and its attachments is shown. In this figure the ends of two rails abutting together are shown and the fish-plates *l* are notched out, as shown at *m*. The fasteners *e f*, passing into these notches, serve as stops to prevent creeping of the rails. The same result can be accomplished by notching out the base of the rails and having these notches engaged by the fasteners.

The locking-piece *h* may be readily replaced if any accident happen to it or any of its parts. In case of breakage of the fasteners *e* on the tie repair may be effected by means of the device best illustrated in place in Fig. 13 and in perspective in Fig. 14. This device consists of a piece of metal *n*, folded along its longitudinal axis and furnished at one end with arms *o*, carrying fasteners *p*. The longitudinal body of this device is adapted to be placed within the locking-piece *h*, its arms *o* resting on top of the tie and its fasteners *p* adapted to engage the outer base of the rail, as did the fasteners *e*, which they replace. The inner end of the body of the device is furnished with a slot *r*, Fig. 14, through which a key *s*, Fig. 13, is adapted to pass, this key also passing through holes *t*, Fig. 11, cut in the longitudinal channel *a* of the tie.

In order to prevent the wings *b c* from spreading at the bottom, which might happen if the tamping were not properly done, we may use a stay-piece *t*, the ends of which are bent up so as to clasp the bottoms of the wings, as best shown in Fig. 11. The blank from which this stay-piece is formed is shown in Fig. 12. In some cases the stay-pieces would only be placed over the lower ends of the wings *c*, as indicated in Fig. 4 at *u*, the wings *b* being sufficiently stiffened by the bent-over tongues *g*. In all cases the upper ends of the stay-pieces should engage the lower side of the tie, as shown, in order to thoroughly stiffen the wings to which they are attached.

The tie may be readily tamped. When in place, it is prevented from longitudinal movements by the wings *b c*, which engage the ballast, and from transverse movements not only by these wings, but by the body of the tie, which is engaged upon both sides by the ballast. The rails can be removed or replaced by simply knocking out key *k* and removing the locking-pieces *h* without in any way disturbing the tie proper. The fasteners *e* upon opposite ends of the tie determine the gage. Hence there is no difficulty in forming and maintaining an absolute gage at any point of the track. The greatest strength of the tie is at its ends, where the greatest load is concentrated. All fastenings are on the outside and not in plain view only, but easy of access. The channel form of the tie forms culverts, which facilitates drainage. Repairs can be effected at any time with trifling expense.

Having thus described our invention, we claim—

1. A metallic railway-tie consisting of a longitudinal U-shaped channel open along its top and having at its ends transverse inverted-U-shaped chairs at right angles to and on the outer sides of said first channel.

2. A metallic railway-tie consisting of a longitudinal U-shaped channel open along its top and having at its ends inverted-U-shaped chairs at right angles to and on the outer sides of said first channel, said tie being formed from a single piece of metal.

3. A metallic railway-tie formed from a single piece of metal bent down longitudinally to form a channel, furnished at each end with a pair of outer and a pair of inner wings adapted to be bent downwardly, and having at its inner ends slotted end pieces adapted to be bent upwardly.

4. A blank for a metallic railway-tie consisting of a body portion *a* adapted to be bent down along its central longitudinal axis to form a channel, wings *b*, *c* adapted to be bent down to form channels at right angles to said first channel, slotted end pieces *d* adapted to be bent upwardly, the tops of said blank, between the wings *b*, *c*, being adapted to be cut out to form fasteners for the rail and for a locking device.

5. A metallic railway-tie consisting, in combination, of a main portion bent down longitudinally to form a channel and furnished at its ends with wings bent down alongside the channel portion and with perforated end pieces bent upwardly and having on its top fasteners to engage one side of the rail and the top of a locking device, a locking device the body of which is adapted to lie in the channel in the tie and the inner end of which is adapted to rest on the top of the tie and to be engaged by the fasteners on said tie and which carries fasteners adapted to engage the side of the rail opposite to that engaged by the rail-fasteners on said tie, and the outer end of which is slotted and adapted to pass

through the bent-up portion of said tie, and a key or wedge adapted to be driven into said slot in said forward end of said fastener.

6. In combination, a metallic railway-tie consisting of a longitudinal U-shaped channel open along its top and having at its ends inverted-U-shaped chairs at right angles to and on the outer sides of said first channel, a fastener adapted to engage and hold one side of the rail, the body of said fastener being U-shaped and adapted to lie in the longitudinal U-shaped channel of the tie, a fastener adapted to engage the opposite side of the rail, the body of said fastener being adapted to lie in the U-shaped body of said first fastener, and means for securing said fasteners to the tie.

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