C. A. BILLINGS.

RAIL TIE AND FASTENER.

APPLICATION FILED SEPT. 21, 1912.

1,066,701.

Patented July 8, 1913.

Fig. 1.

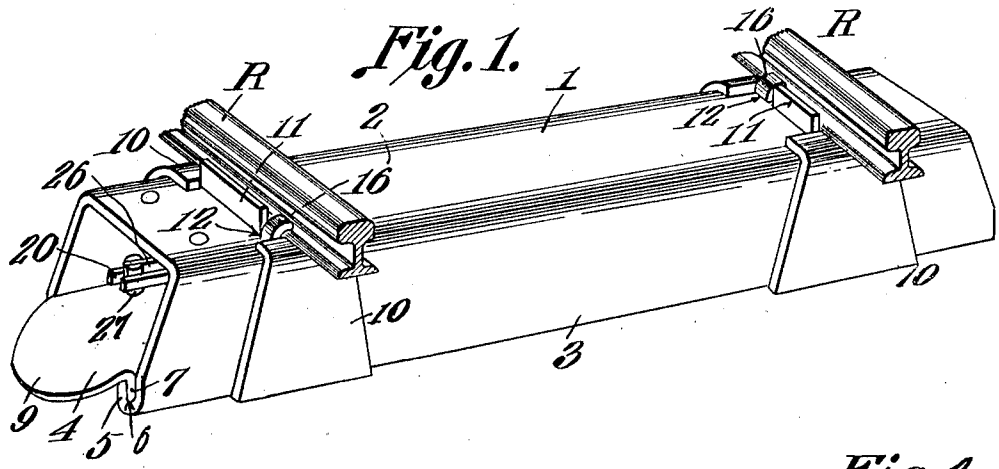



Fig. 2.

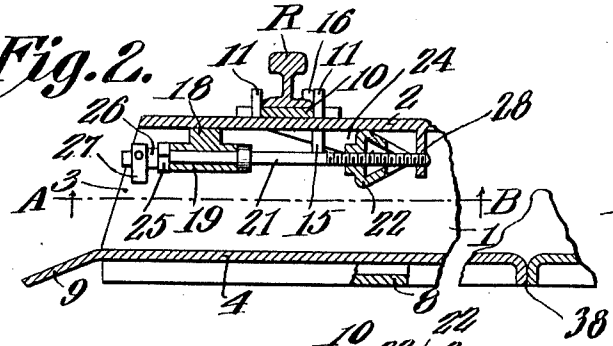
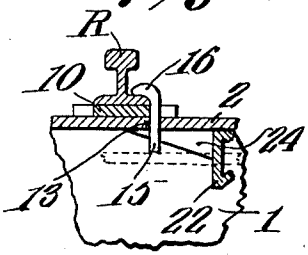



Fig. 4.



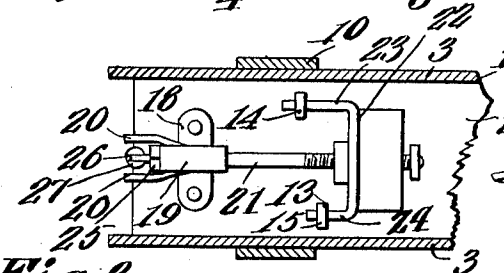




Fig. 3.

Fig. 5.

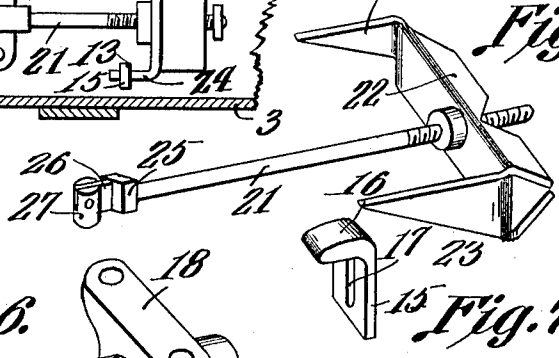



Fig. 6.

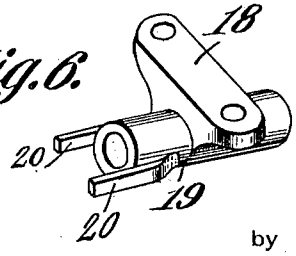



Fig. 7.

Witnesses

J. F. Lowell

L. H. Wilson.

Claud A. Billings,
Inventor

by C. A. Snow & Co.
Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

CLAUD A. BILLINGS, OF IONIA, MICHIGAN, ASSIGNOR OF ONE-HALF TO CHARLES A. IRELAND, OF IONIA, MICHIGAN.

## RAIL TIE AND FASTENER.

1,066,701. Specification of Letters Patent. Patented July 8, 1913.

Application filed September 21, 1912. Serial No. 721,645.

*To all whom it may concern:*

Be it known that I, CLAUD A. BILLINGS, a citizen of the United States, residing at Ionia, in the county of Ionia and State of Michigan, have invented a new and useful Rail Tie and Fastener, of which the following is a specification.

This invention relates to metallic railway ties and to rail fasteners for use in connection therewith.

One of the objects of the invention is to provide an all metal tie which is cheap to manufacture and which is sufficiently elastic to provide the necessary resilience.

A further object is to provide a tie of this character which will engage the road bed in such a manner as to be held against creeping.

A further object is to provide a hollow tie from which moisture will drain.

Another object is to provide means on the tie for holding the rails against spreading.

A further object is to provide rail fastening devices having means housed within the tie whereby said devices can be adjusted so as to bind firmly on the base flanges of the rails.

Another object is to provide rail fastening means which permit the use of shims under the rails.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings: Figure 1 is a perspective view of a tie having the present improvements combined therewith. Fig. 2 is a central vertical longitudinal section through one end portion of the tie, a rail being shown in section thereon. Fig. 3 is a section on line A—B Fig. 2. Fig. 4 is a section through a portion of the tie and showing a portion of the locking mechanism. Fig. 5 is a perspective view of the wedge carrying head and its adjusting screw. Fig. 6 is a perspective view of the guide used in connection with said screw. Fig. 7 is a detail view of one of the rail fastening jaws.

Referring to the figures by characters of reference 1 designates the body of the tie, the same being preferably formed of sheet metal bent to form an intermediate top portion 2, side portions 3, and a bottom plate 4. One of the side portions has its free longitudinal edge upturned, as at 5, to form a channel 6 adapted to receive a flange 7 extending longitudinally along the free longitudinal edge of the bottom plate 4. The other longitudinal edge of the bottom plate 4 merges into a rib 8 formed along the bottom of the adjacent side 3 of the tie. The ends of the bottom plate 4 are formed with tongues 9 which are inclined downwardly and adapted to engage the road bed. These tongues, as well as the rib 8 and the channeled portion 6, by engaging the road bed, serve to prevent the tie from shifting thereon.

Reinforcing straps 10 are welded or otherwise connected to the top and side portions of the tie adjacent the ends thereof, those portions of the straps upon the top of the tie being provided with upstanding oppositely disposed flanges 11 spaced apart a distance equal to the width of the base of a rail. Furthermore these straps are so located that when rails are in position thereon and between the flanges 11, they will be the proper distance apart. The flanges 11 will, obviously, prevent the rails from shifting laterally relative to each other.

An opening 12 is formed in the top portion of the tie at one end of one of the flanges 11 on each strap 10 and another opening 13 is formed at the other end of the other flange on said strap. Projecting into these openings are tongues 14 and 15 respectively each of which is provided, at its upper end, with a rail engaging jaw 16 while a longitudinal slot 17 is formed within the tongue.

A bracket 18 is secured to the lower face of the upper portion of the tie close to one end thereof and supports a guide sleeve 19 from the outer end of which extends spaced spring fingers 20. A stem 21 is mounted for rotation within the sleeve 19 and its inner end portion is screw threaded and extends through and engages the center of a cross head 22. This cross head may be made of heavy sheet metal or can be formed in a single casting. In either instance the cross

head is provided at its ends with wedge shaped wings 23 and 24 adapted to project into the slots 17. One of the wings, 23, is preferably larger than the other wing 24, so that said wing 23 can project into the slot in tongue 14 which is a greater distance from the cross head 22 than is the tongue 15, this being obvious by referring to Fig. 3 of the drawings.

That portion of the stem 21 between the fingers 20 is provided with an angular head 25 from which projects a tongue 26 having a cylindrical locking pin 27 pivotally connected to it, as shown. This locking pin normally hangs down between the fingers 20 and serves to hold the stem 21 against rotation. In this connection see Figs. 1 and 2 of the drawings.

Under normal conditions the head 22 is shifted back away from the tongues 14 and 15, this movement being effected by rotating stem 21 so as to unscrew from the head 22. For the purpose of rotating the stem it is desirable to use a special form of tool which will hold the pin 27 in alinement with the stem 21 while head 25 is engaged by the tool. Inasmuch as this tool constitutes no part of the present invention it is not deemed necessary to describe or illustrate it. After the wings 23 and 24 have thus been partly or entirely withdrawn from the slots 17, the jaws 16 are swung backwardly and the rails, indicated at R, are placed between the flanges 11. The jaws 16 are then shifted into engagement with the base flanges of the rails and the slotted tongues will thus hang within the tie and in the paths of the wings 23 and 24. Stem 21 is then rotated by placing the operating tool in engagement with head 25 and the head 22 will thus be drawn longitudinally of the stem 21, thereby forcing the wings 23 and 24 into the slots 17 and, at the same time, causing said wings to act as wedges and thus pull downwardly on the tongues 14 and 15 so as to cause the jaws 16 to bind tightly on the base flanges of the rails. After the stem 21 has been rotated sufficiently to bind the wings 23 within the slots 17, the pin 27 can be caused to gravitate between the spring fingers 20 and rotation of stem 21 is thus prevented. It will be seen, therefore, that the parts thus become securely locked and there is no danger of the rails either shifting laterally out of position between the flanges 11 or being lifted in any from between the flanges.

Importance is attached to the fact that by providing a tie and fasteners such as herein described, rails can be placed in or removed from position without disturbing the tie. Furthermore shims can be placed under the rails so as to hold them at any desired distances above the ties and this adjustment will not interfere with the use of the fastening means described inasmuch as the length of the slots 17 permits a considerable longitudinal adjustment of the tongues 14 and 15 without removing the slots from the paths of the wedge shaped wings 23 and 24. In order that the inner end of each of the stems 21 may be properly supported, a lug 28 or the like is suspended within the tie to receive the inner or free end of the stem, said end being loosely mounted in the lug. A collar 29 is also preferably mounted on the stem 21 close to its bearing or guide sleeve 19 to prevent the stem from moving in one direction when actuating the cross head 22. As shown in Fig. 2, preferably two bottom plates 4 are used, the inner ends of the plates coming together and being downturned, as at 38, so as to assist the tongues 9 in preventing the tie from creeping longitudinally.

What is claimed is:—

1. The combination with a hollow metallic tie, of a reinforcing strap secured thereto and extending across the top thereof, parallel upstanding flanges integral with the strap and adapted to receive a rail therebetween, rail fastening devices extending into the tie, means movably mounted within the tie for simultaneously engaging and shifting said devices, and an actuating device connected to said means and housed within the tie.

2. The combination with a hollow tie, of rail engaging devices extending downwardly within the tie, a head movably mounted within the tie, wedges carried thereby and engaging said devices, to shift them simultaneously in one direction, and means housed within the tie for shifting the head.

3. The combination with a hollow tie, of rail engaging devices including tongues extending downwardly within the tie, connected wedges movable within the tie and into engagement with the respective tongues, and means housed within the tie for shifting the wedges simultaneously into or out of engagement with the tongues.

4. The combination with a hollow tie, of rail fastening devices including tongues extending downwardly within the tie, connected wedges movably mounted within the tie, revoluble means for shifting said wedges simultaneously into engagement with the tongues to bind the fastening devices upon a rail.

5. The combination with a hollow tie, of rail fastening devices having longitudinally slotted tongues extending downwardly within the tie, connected wedges normally projecting into the slots and bearing against the upper portion of the tie, and means housed within the tie for shifting the wedges simultaneously to bind the fastening devices upon a rail.

6. The combination with a hollow tie,

of rail fastening devices removably mounted therein and having slotted tongues within the tie, connected wedges normally projecting into the respective tongues, and revoluble means housed within the tie for shifting said wedges simultaneously into or out of engagement with the tongues.

7. The combination with a hollow tie, of rail engaging jaws, slotted tongues depending therefrom and within the tie, a head movable within the tie, wedges extending therefrom and projecting into the tongues, a fixed support within the tie, a stem mounted for rotation therein and threaded into the head, a head upon the stem, a locking device pivotally mounted on the stem, and means extending from the support and coöperating with the device for holding the stem against rotation.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CLAUD A. BILLINGS.

Witnesses:
A. J. HEMINGWAY,
M. DEEWILSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."