

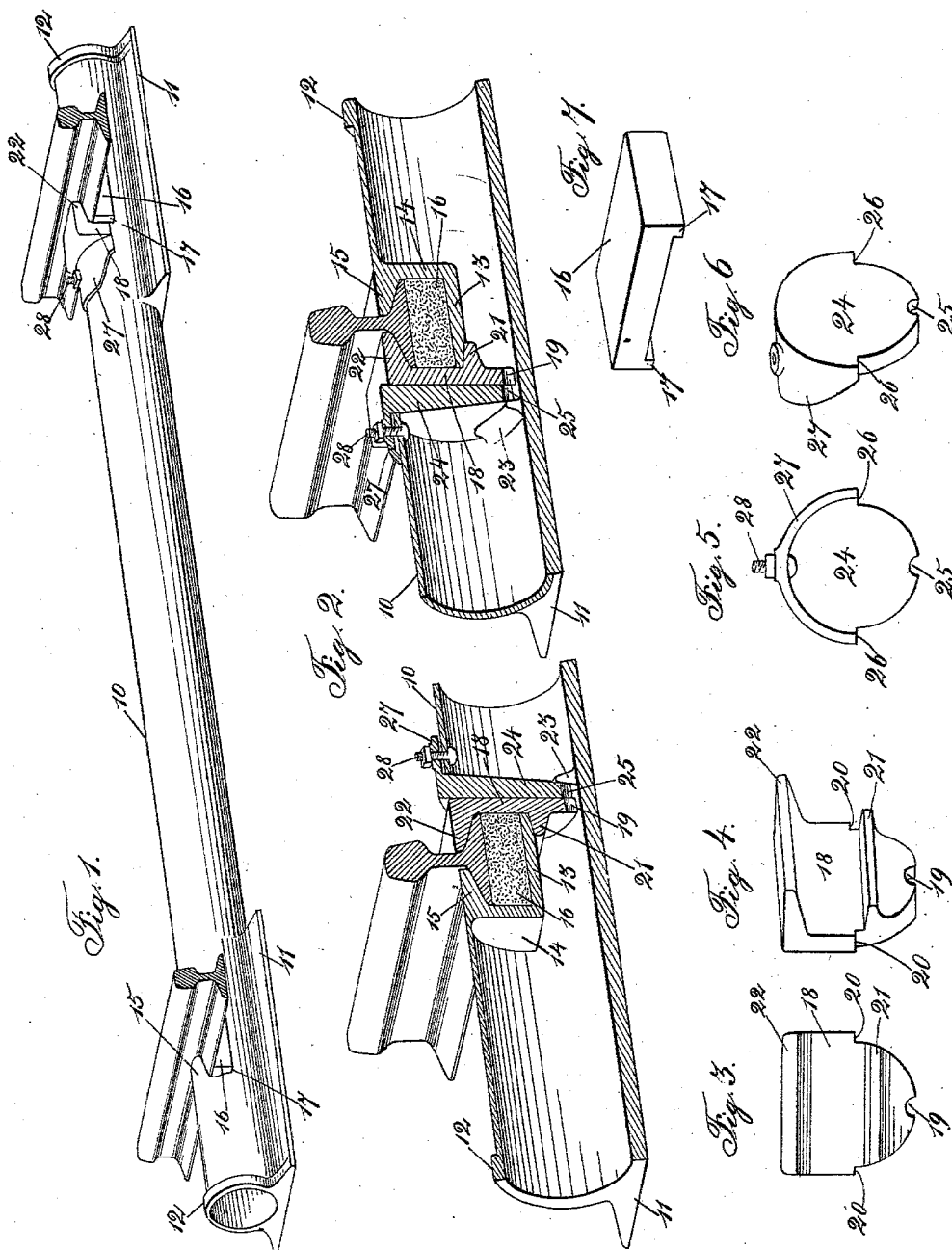
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H. K. J. MANGER.
METAL RAILWAY TIE.

APPLICATION FILED JUNE 13, 1902. RENEWED APR. 21, 1903.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

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METAL RAILWAY-TIE.

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To all whom it may concern:

Be it known that I, HENRY K. J. MANGER, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Metal Railway-Ties, of which the following is a specification.

My objects are, first, to provide a metal railway-tie that may be cast in which a maximum of strength in resisting strains to which a tie may be subjected is combined with a minimum amount of metal in its construction.

A further object is to provide a tubular hollow tie with simple, strong, and durable means for supporting railway-rails near its ends and with simple, durable, and easily-applied means for locking the railway-rails in position on the ties.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows in perspective a complete tie with portions of two rails in position thereon as required in use. Fig. 2 shows a vertical longitudinal perspective view of a complete tie with two railway-rails supported therein and with part of the central portion of the tie removed. Fig. 3 shows a face view of one of the detachable rail-locking members. Fig. 4 shows a perspective view of same. Fig. 5 shows a face view of one of the disk-shaped wedges for holding the rail-lock in position. Fig. 6 shows a perspective view of same, and Fig. 7 shows a perspective view of one of the rail-cushions.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate the body portion of the tie. This body portion is tubular and straight and is provided on its end portions with the integral bases 11 and at its end with the reinforcing-ribs 12. Obviously the integral bases 11 provide means whereby the ties may be firmly positioned in the ballast of a railway road-bed, and by omitting the bases from the central portion of the tie the tie may be more

firmly seated and held against longitudinal tilting movements than would be possible if the base extended throughout the entire length of the tie.

In the following description of the rail supporting and locking means I shall describe only the rail support and lock at one end of the tie, it being understood that the similar parts on the opposite end are the same.

The numeral 13 indicates a horizontal cushion-support extended transversely of the rail at about the horizontal center of the rail. At the outer end of the part 13 is a vertical part 14, which also extends transversely of the rail, and at the top of the part 14 is an integral rail-locking member 15 to overlap the flange of a rail and engage the top surface of the rail-flange.

The numeral 16 indicates a rail-cushion substantially rectangular in outline and having downwardly-projecting flanges 17 at its ends. This cushion is preferably made of yielding material and is placed upon the cushion-supporting platform 13 with its flanges 17 overlapping the outer surfaces of the tie, as clearly illustrated in Fig. 1. One edge of the cushion 16 engages the parts 14 and the other edge projects as far as the opposite edge of the cushion-support 13.

The cushion-support 13 and the parts 14 and 15 are all formed integral with the tubular tie and obviously by means of these integral braces 13 and 14 extending transversely of the tie. The tie at this point is greatly strengthened, so that the impact upon the rail will be resisted by means of these parts. Furthermore, by placing the cushion-supports beneath the rail I provide a construction by which a maximum of strength is obtained with a minimum of material.

The detachable rail-locking member illustrated in Figs. 3 and 4 comprises a plate 18, the lower portion of which is substantially semicircular in shape and of a size substantially to fit the interior of the hollow tie. A notch is formed at 19 for purposes hereinafter made clear. Two shoulders 20 are formed at the sides of the plate 18 to overlap the sides of the tie at the point where the plate is inserted, and on one face of the plate 18 is a horizontal rib 21 to project over the

cushion-support 13. The top edge of this plate is inclined downwardly, and a short distance above the rib 21 is a rail-locking rib 22, its under surface being inclined, and said rib 22 is designed to overlap the top of a rail-flange resting upon the cushion 16. Obviously a movement of the plate 18 toward the cushion will force the rail downwardly against the cushion on account of the inclined surfaces of the ribs 21 and 22, and the shoulders 20 will limit the downward movement of the plate 18. I have formed on the interior of the tie an integral lug 23, said lug being located a short distance from the lower end of the plate 18 in a direction toward the central portion of the tie.

The wedge-shaped disk for holding the detachable rail-locking member in position is indicated by the reference numeral 24. At its lower end is a notch 25 for purposes hereinafter made clear, and at its sides are the shoulders 26. At its upper end is a segmental collar 27 to extend over the top of the tie toward the central portion of the tie, and this part 27 is provided with an opening to receive a bolt 28. The part 24 is tapered from a maximum at its top to a minimum at its lower end, as clearly shown in Fig. 2, and its lower end is designed to engage the lug 23 when in position, its outer face at the same time engaging the detachable rail-locking member. The said notches 19 and 25 are provided for the purpose of permitting the passage of dust or water, so that neither will accumulate within the tie or will prevent the upward movements of the parts in which the notches are formed.

In practical use it is obvious, first, that the tie may be cast complete in one piece and that it is strong and durable. When it is desired to place the tie in position, the ballast on the road-bed is firmly tamped about the bases 11, and the central portion of the tie is preferably arranged above the ballast, so that the tie will not be supported at its central portion by the ballast and so that danger of breaking the tie by placing weight on its ends while its central portion is resting on a firm support is thereby avoided, and by tamping the road-ballast firmly about the bases 11 longitudinal movements of the tie are prevented. When the ties are in position on the road-bed, the cushions 16 are first placed in position, with the flanges 17 overlapping the sides of the tie, thus preventing longitudinal movements of the cushion. Then the rails are placed in position, with their bases resting on the cushion and the outer flanges of the rails under the integral rail-locking member 15. When this is done, the detachable rail-locking members 18 are placed in position, with the flanges 21 thereof engaging the under surfaces of the cushion-supports 13 and with their upper ribs 22 overlapping the inner flanges of the rails. Then the wedge-shaped disks 24 are placed in position, with their outer faces engaging the inner faces of the detachable rail-locking disks and with

their lower ends engaging the lugs 23 and with the collars 27 at their tops overlapping the tops of the ties. Then the portion 28 is placed in position, and obviously by adjusting the nuts on said portion the wedge-shaped disks 24 will be forced downwardly far enough to cause the rail-locking ribs 22 to firmly engage the inner flanges of the rails.

In use the impact of the train passing over the rails will fall directly upon the cushions and will thereby be greatly lessened. However, by means of my peculiar construction the essential feature of it is the bracing of the rail-supporting cross-pieces at or above the horizontal center of the tie. The ties themselves will be able to resist a great amount of strains caused by heavy trains passing over the rails, and if any of the parts should become loosened by wear they may all be readily and quickly adjusted, so that the parts will tightly fit by an adjustment of the nuts on the bolts 28.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States therefor, is—

1. In a metallic railway-tie, a hollow tubular body portion, integral rail-supports extended transversely of the tie at or near the horizontal center thereof, an integral rail-locking member to engage the outer flange of a rail, and a detachable rail-locking member to engage the top surface of the inner flange of a rail, for the purposes stated.

2. An improved metallic railway-tie comprising a straight tubular body portion, integral bases at the ends of said tubular body portion, integral rail-supports extending transversely of the tubular body portion above said base portions and below the top of the body portion, integral rail-locking members to engage the outer flanges of the rails, and detachable rail-locking members to engage the inner flanges of the rails.

3. An improved metallic railway-tie comprising in combination a tubular body portion, an integral transverse horizontal rail-support near each end of the tie at about its horizontal center, an integral vertical cross-piece at the outer end of each rail-support, an integral rail-locking member at the top of each of said cross-pieces, and a detachable rail-locking member for each end of the rail comprising a plate having a rib near its lower end to pass under the rail-support, and a rib near its upper end to engage the inner flange of a rail, and means for securing the detachable rail-lock in position.

4. An improved metallic railway-tie comprising in combination a tubular body portion, integral rail-supports 13 near each end of the tie at about the horizontal center thereof, cross-pieces 14 integral with the sides of the tie and with the rail-supports 13, integral rail-locking members 15 yielding cushions 16 to rest on the rail-supports 13, detachable rail-locking members comprising plates 18 having the ribs 21 and 22 to engage respec-

tively the under surface of the cross-piece 13 and the inner flange of a rail, and the wedge-shaped disks 24 having the segmental collars 27, and means for securing said collars to the
5 tie, for the purposes stated.

5. An improved metal railway-tie, comprising in combination a hollow tubular body portion, integral bases 11 at the ends thereof, integral transverse rail-supports 13 at the
10 end portions of the ties at about the horizontal center thereof, integral cross-pieces 14, an integral rail-locking member 15 cushions 16 having downwardly-projecting flanges 17 at their ends, detachable rail-locking members
15 18 having shoulders 20 and the inclined ribs

21 and 22, the former engaging the under surface of the rail-support 13 and engaging the inner flanges of the rails 11, integral lugs 23 on the interior of the tie, wedge-shaped disks 24 having the shoulders 26 at their sides 20 and the integral collars 27 at their upper ends, and bolts passed upwardly through the tie and through said collars, and having nuts at their other end, arranged and combined substantially in the manner set forth and for 25 the purposes stated.

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Witnesses:

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