No. 704,394. Patented July 8, 1902.

B. H. SMITH.

RAILROAD TIE.

(Application filed Feb. 5, 1902.)

(No Model.)

Fig. 1.

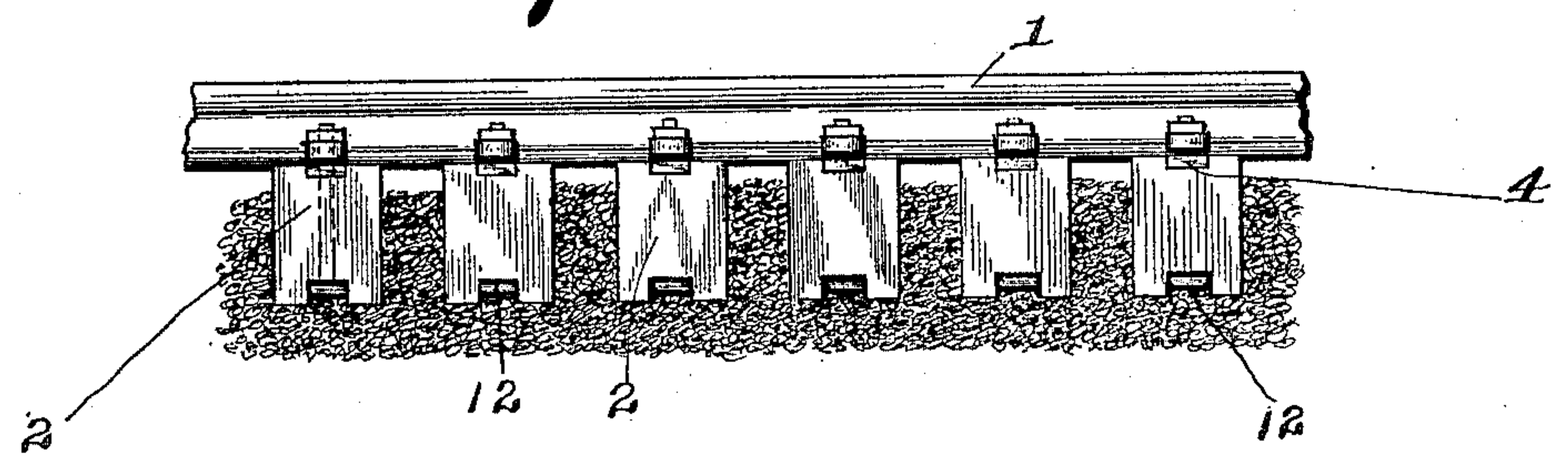


Fig. 2.

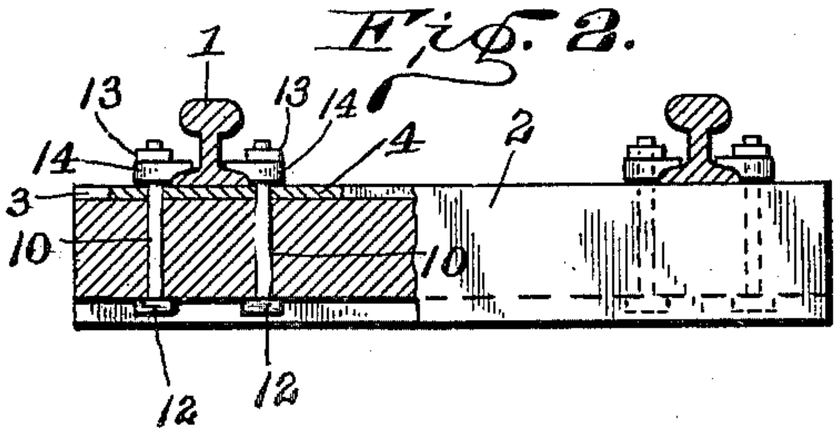


Fig. 3.

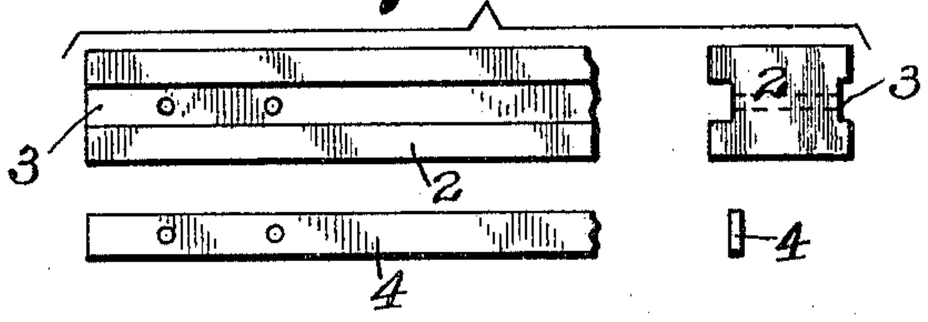


Fig. 4.

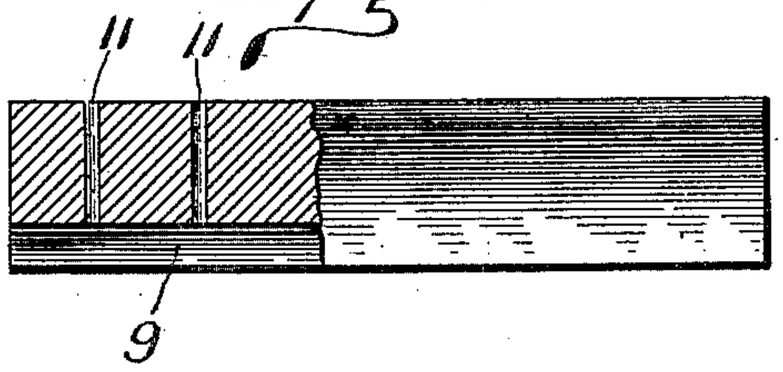


Fig. 5.

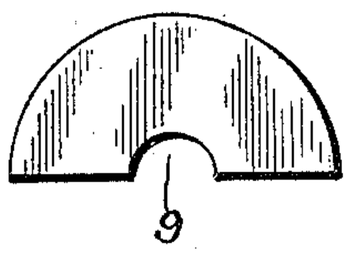


Fig. 6.

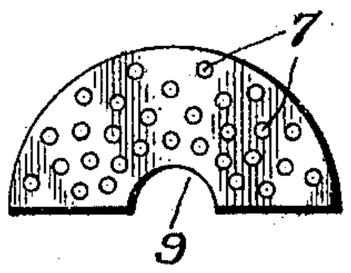


Fig. 7.

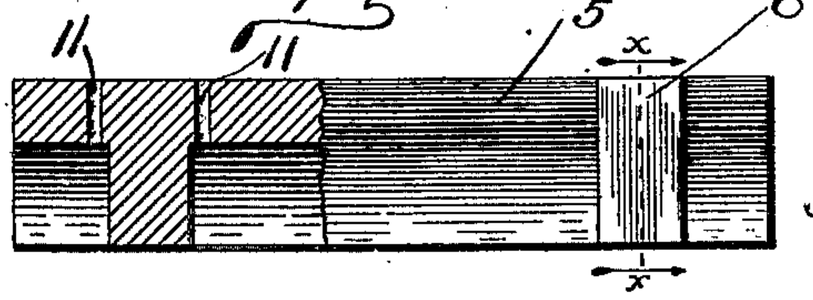


Fig. 8.

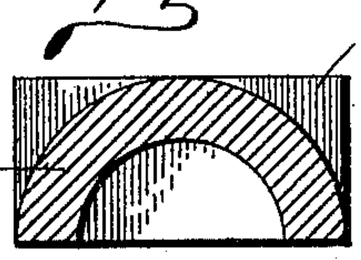


Fig. 9.

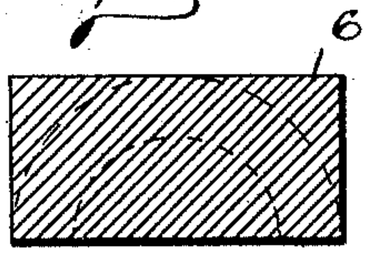


Fig. 10.

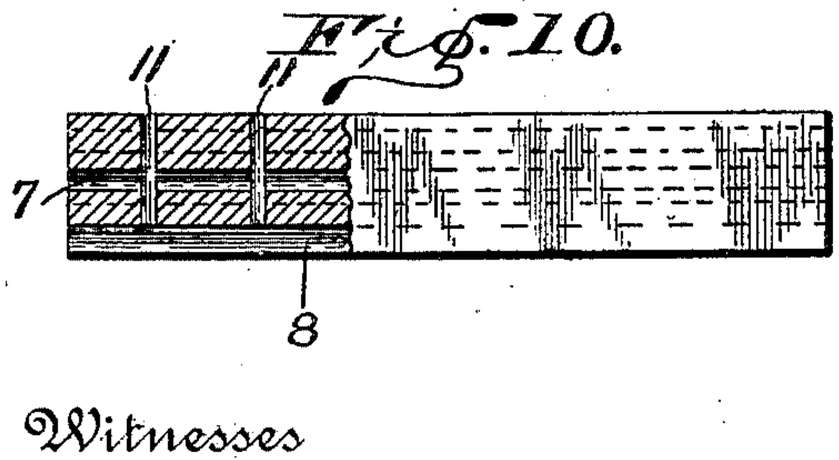
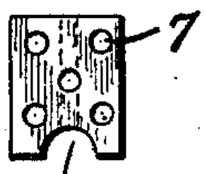


Fig. 11.



Witnesses
C. L. Frye.
A. G. Miller

Inventor
Benjamin H. Smith,
By W. J. FitzGerald & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

BENJAMIN HOSTETTER SMITH, OF SHIPPENSBURG, PENNSYLVANIA.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 704,394, dated July 8, 1902.

Application filed February 5, 1902. Serial No. 92,632. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN HOSTETTER SMITH, a citizen of the United States, residing at Shippensburg, in the county of Cumberland and State of Pennsylvania, have invented certain new and useful Improvements in Railroad-Ties; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to railway construction, and more particularly to the provision of a tie or rail-sleeper which while comparatively simple and cheap in construction will be found very durable and efficient in the performance of its office.

The prime object of my invention is to so construct the tie that it can be formed of comparatively cheap material and easily disposed in its operative position with the assurance that great permanency will be attained.

Other objects and advantages will hereinafter be made clearly apparent, reference being had to the accompanying drawings, in which—

Figure 1 shows a side elevation of a track-rail, illustrating the end section of the ties or sleepers when disposed in their respective operative positions. Fig. 2 is a transverse section of a portion of the track-rail illustrated in Fig. 1, showing one of the ties partly in side elevation and partly in longitudinal section. Fig. 3 is a top plan and an end view of one of the ties, also showing the metallic reinforcing-plate. Fig. 4 shows a side elevation, partly in section, of another form of tie, while Fig. 5 illustrates an end view of that form of tie construction illustrated in Figs. 4 and 10 when provided with longitudinally-disposed bars. Fig. 7 is a side view, partly in section, of a tie properly reinforced at the point of greatest strain. Figs. 8 and 9 are respectively sectional views of the construction shown in Fig. 7. Figs. 10 and 11 are respectively a side elevation, partly in section, and an end view of the tie provided with longitudinal apertures, the tie being of slightly different shape from that presented in Fig. 6.

For convenience in referring to the several features of my invention and the elements deemed necessary to illustrate a practical application thereto to use, 1 designates the track-rail, of the usual or any preferred construction, while 2 illustrates a preferred form of tie which is substantially rectangular in cross-section, though such shape or outline may be varied at pleasure, it being understood that any preferred variety of plastic or molten material may be employed. It is my object, however, to form the tie by molding the same from clays, molten slag, or the like, so that the ties or sleepers will be of the desired form and construction, as illustrated in the drawings.

When the tie is formed of earthy matter, as above indicated, the same may be properly reinforced, if desired, by combining with each tie a metal bar of proper size, said bar being designed to rest in the longitudinal recess 3, formed at the top of the tie and also at the bottom thereof, if desired, as indicated by the numeral 4.

It will of course be understood that the groove 3 may also be formed in the bottom of the tie, which may or may not be occupied by a reinforcing-bar, as may be preferred. The ties are properly embedded and sustained in any suitable form of coöperating substance suitable for forming a road-bed of permanent character—as broken stone, coarse gravel—used alone or in combination with the proper quantity of cement or other plastic material which in time will unite all the particles together to form a solid continuous mass.

It is obvious that the tie may be shaped or molded so as to assume various shapes or outlines, as indicated by the remaining views of the drawings.

In Fig. 7 it will be observed that the body portion of the tie 5 presents an inverted-trough-like appearance, each end of which is provided with the integral rail-supporting sections 6, separated a proper distance to coincide with the gage of the track, thus disposing one of the rails over each of the sections 6.

In Fig. 9 I have illustrated a transverse section of the tie on line x x of Fig. 7, and it will therefore be observed that the supporting or reinforcing sections 6 are oblong in form and provide reliable means for sustaining the weight of the rails and the load carried thereby. By providing the reinforcing-

sections 6, combined with the trough-like body portion 5 of the tie proper, it will be observed that when the tie has once been properly embedded in its operative position that said reinforcing-sections, combined with a peculiar form of tie itself, will reliably secure said tie against casual longitudinal or lateral movement.

If preferred, the body proper of the tie in each and every instance may be reduced in weight by providing a plurality of longitudinal apertures 7, which may be readily formed during the process of molding or casting. It is well known that large quantities of molten slag are disposed of by furnace-men upon the dump-pile and at great expense. I find, however, that I can employ such material to great advantage and profit in the construction of a tie or sleeper of permanent character adapted to contribute very materially to the permanency of road-bed construction. In the form of tie illustrated in Figs. 10 and 11 the under side thereof is provided with the longitudinally-disposed groove 8, designed to hold the tie against lateral movement, and thereby insure that when the tie has once been disposed in its operative position in the road-bed it will so remain. A similar groove 9 is also provided for the under side of the tie illustrated in Figs. 4, 5, and 6, said groove being designed for the same purpose as above set forth. The rails may be securely fastened to each of the ties by means of the locking-bolts 10, which extend upward through suitable apertures 11, provided in the ties, the head of the bolt 12 being preferably disposed upon the under side of the tie, so that the free ends thereof will receive the nuts 13, and when said nuts are turned home upon the threaded ends of the locking-bolts they will be brought to bear upon the compensating blocks 14 in such a manner that said blocks will securely and tightly engage the contiguous edge of the rail and hold the same in union with the tie until said nuts are released.

While I have described the preferred combination and construction of parts deemed necessary in materializing my invention, I wish to comprehend in this application all substantial equivalents and substitutes that may be fairly considered as falling within the scope of my invention.

Having thus fully described my invention, the manner of using the same it is thought will be fully apparent from the foregoing specification considered in connection with the accompanying drawings, and further reference, therefore, to the details is deemed unnecessary.

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

The herein-described tie formed of plastic or molten material and provided upon its under side with means to engage the contiguous part of the road-bed whereby a longitudinal and lateral slipping movement will be prevented, in combination with a reinforcing bar or bars fitting a groove in a contiguous part of the tie and means to hold said reinforcing-bars in place and additional means coöperating with said tie and bars to engage the track-rails and lock them in union with said parts, all combined substantially as specified and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

BENJ. HOSTETTER SMITH.

Witnesses:

F. H. SMITH,

ANNA H. SMITH.