(No Model.)

A. McKENNEY.

TUBULAR RAILWAY RAIL.

No. 277,765. Patented May 15, 1883.

Fig. 1.

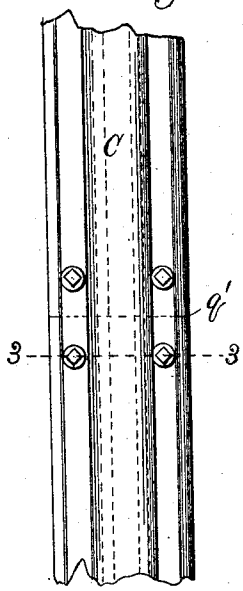


Fig. 3.

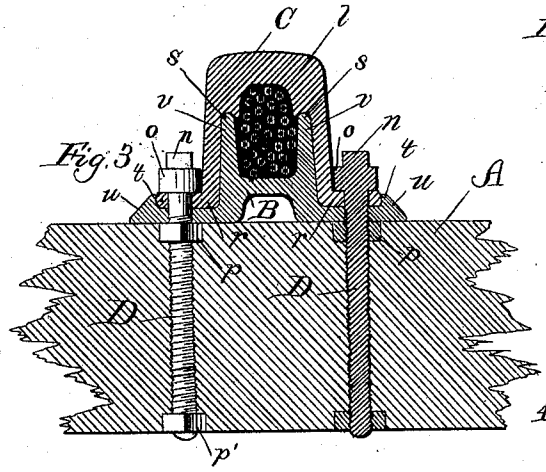


Fig. 2.

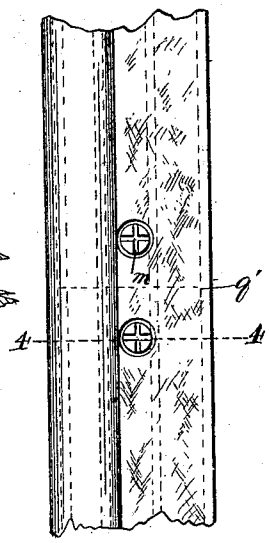
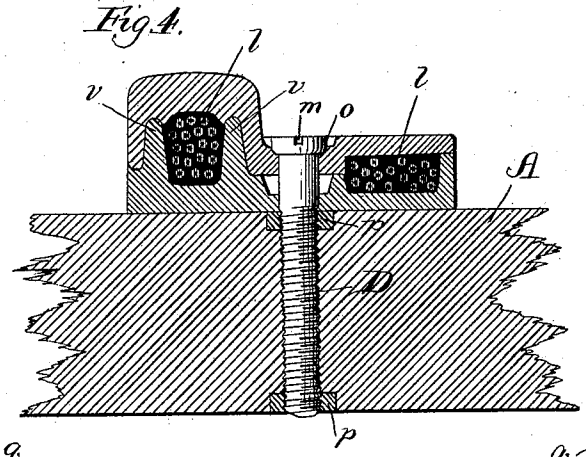
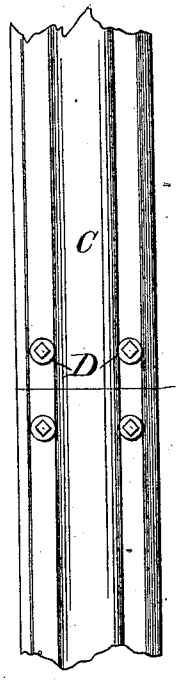
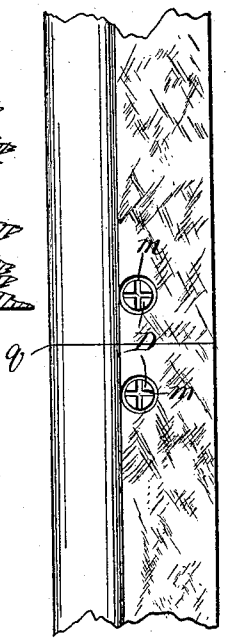


Fig. 4.







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UNITED STATES PATENT OFFICE.

ALMERON McKENNEY, OF CHICAGO, ILLINOIS.

TUBULAR RAILWAY-RAIL.

SPECIFICATION forming part of Letters Patent No. 277,765, dated May 15, 1883.

Application filed September 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALMERON MCKENNEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tubular Railway-Rails; and I hereby declare the following to be a full, clear, and exact description of the same.

The object of my invention is twofold: first, to enhance the stability and durability of the rails by securing them in such a manner that they shall maintain their regularity, both in level and gage, and not be subject to unequal or successive depression at the joints; and, secondly, to adapt them better than heretofore for serving as receptacles for telegraph and telephone wires.

My invention relates to the class of tubular rails which comprise a base-plate having longitudinal flanges projecting upward, and an arched head fitting over the flanges and resting on the base-plate, which is recessed or grooved to receive the head, the base-plate and head being jointed alternately; and my improvement consists in the manner in which I construct these parts and secure them to the ties or stringers, whereby the objects above recited are accomplished, all as hereinafter more fully set forth.

Heretofore it has been the practice to use spikes as the medium for securing the rails in position. A spike, however, driven into wood has but little power of holding the parts together, especially in a vertical direction, since it holds only by the friction against its smooth sides and leaves the parts intended to be held together free to vibrate vertically, for when the ends of a rail have been sprung downward and have reacted a few times the main hold of the spike on the timber is destroyed. Moreover, by the splitting and breaking of the fiber, incident to the driving, the strength of the timber is impaired and its hold against the side-thrust of the train rendered weak and of little avail against the displacement of the gage or line. In a word, spikes are wholly inadequate and have no proper place about a railway-track. It is no cure of these defects to shim up the under side or to provide any amount of support, either in the way of wood or metal, underneath, so long as these parts are loose and at liberty to be separately sprung downward by the blow of every passing wheel and then suddenly react, for though the vibration be very slight at first, still, if there be any at all, it rapidly increases. The trouble is not in the mere progressive wave of deflection which travels with the engine, but rather that the parts are not confined together to be acted on as one piece; and the true remedy, therefore, is to overlap the parts in equal lengths and then to confine them, so that both must vibrate together. To place heavy metal plates under the ends of rails does not remedy the evil, for this is simply furnishing a convenient anvil to pound them on. Neither is it any remedy to make the bearings rigid by any means whatever at the joints. The mere undulation, above mentioned, of the rails, incident to the burden of the passing train, cannot of course be provided against in any practicable manner; but this is not a matter of material consequence, provided it is made uniform. In short, to provide a uniform and smooth bearing comprises the whole problem, and this is what I aim to accomplish.

I overcome all the difficulties above enumerated by having the two parts of the rail overlap each other in half-lengths, and by forming the head, as well as the base-plate, with one or two lateral flanges at its base, (one flange being employed for street-car rails and two for other rails,) the flange or flanges of the head fitting snugly and evenly upon the flange or flanges of the base, and the two parts being secured firmly together and to the stringers or ties by vertical lag-screws passing through the flanges and the stringers or ties, and further stayed and secured by nuts. This construction also leaves the tube wholly unobstructed throughout its entire length, which cannot be the case where transverse bolts are used for securing the parts together, since these must manifestly pass through the tube, nor where vertical bolts are employed passing through the center of the arched head, for the same reason. Hence by my construction the tubular interior is rendered in every way suitable to serve as a receptacle for electric conducting-wires.

Referring to the accompanying drawings, Figure 1 is a broken plan view of my improved rail in the form adapted for steam-railways; Fig. 2, a broken plan view of my improved rail in the form adapted for street-railways; Fig. 3, a cross-section taken on the line 3 3 of Fig.

1, and Fig. 4 a cross-section taken on the line 4 4 of Fig. 2.

My improvements are substantially identical in the two forms of rail shown, and I shall therefore proceed to describe the construction for the T-rails, and subsequently point out the incidental differences which necessarily follow their application to street-car rails.

A is the stringer or sleeper; B, the base-plate of the rail, having two vertical flanges, *v*, and two lateral flanges, *u*, the latter being provided with longitudinal recesses *t*.

C is the arched head, provided with interior longitudinal grooves, *s*, to receive the tops of the flanges *v*, over which it fits, and with lateral flanges *r*, adapted to fit snugly within the recesses *t* in the base-flanges *u*.

The parts B and C overlap each other in half-lengths, the ends of the head meeting, for example, at the joint *q*, and the ends of the base meeting at the joint *q'*, half a length away, each part being made continuous over a joint formed in the other. At each joint, whether in the base or head, I secure the parts together, and also to the stringer or sleeper by means of lag-screws D on each side of the joint. The lag-screw which I employ is formed with heavy threads to take a deep hold on the wood, and may be of sufficient length to pass through the lateral flanges of both the head and base, and also through the stringer or sleeper. At the top of the latter it passes through a nut, *p*, sitting within the wood, flush with its surface, between which and the head *o* of the screw the two flanges *u* and *r* are embraced. Thus after the screw has been driven so far as to bring the head down upon the flange all further turning operates to compress the flanges of the two parts together, the head acting against the upper and the nut against the lower one. For street-car rails, the stringer being generally of soft wood, I prefer, also, to use a second nut, *p'*, at the under side of the stringer, (and which may sit within a recess bringing it flush with the surface of the wood or not, as preferred,) the effect being to give to the screw a hold upon the wood beyond that secured by the threads alone. Of course the same construction may be adopted for other rails, though it is there less essential. For street-car rails, in which the screw passes through the wagon-tread, it is of course necessary that the top of the screw be flush with the metal, which must therefore be recessed to receive the head. With the T-rails, however, this is neither necessary nor desirable. As in either case the screw is driven into position by means of a bit, (which may have a brace of sufficient length to permit the operator to work it in an upright position,) I construct the heads according to the requirements. For T-rails a simple square projection, *n*, to enter an ordinary bit, will suffice; but for street-car rails it is preferable to make the diameter of the recess in the flange a little greater than that of the head, so that the bit can be slipped over the head, and to form recesses *m* in the head, crossing each other at right angles, to be entered by corresponding projections on the bit.

In the form of rail shown in Figs. 1 and 3 four screws are used at each joint—two on each side of the head—whereas in the form shown in Figs. 2 and 4 two only are used—both on the same side of the head—there being no flange on the other side to receive them, the head sitting within a groove, *k*, in the base on that side, and the two parts presenting a straight surface from top to bottom. In both forms, however, the same result is attained in substantially the same way, so far as concerns binding the two parts firmly together and to the sleeper or stringer, while in each, also, the tubular interior is left unobstructed for the passage of electric conducting-wires *l*. The facility with which, under my construction above described, the upper portion of the rail may be removed and replaced renders the wires more readily accessible than ground-wires have ever been before.

The street-car rail, when constructed with a partly-hollow tread, as represented in the drawings, affords an additional receptacle for wires, of which advantage may be taken, if desired.

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

1. In combination with a tubular railway-rail comprising a laterally-flanged base and laterally-flanged head overlapping each other in half-lengths, as shown, and with the stringers or ties, the lag-screws D, passing vertically through the lateral flanges of both parts and into the stringers or ties, and the nuts *p*, sitting within recesses in the tops of the stringers or ties and receiving the screws, substantially as described.

2. In combination with the tubular rail comprising a vertically and laterally flanged base and an arched and laterally-flanged head, said parts overlapping each other in half-lengths, and the head being grooved longitudinally on its interior to receive the vertical flanges of the base, and with the stringers or ties, the lag-screws D, passing through the lateral flanges of both parts of the rail into the stringer or sleeper, and the nuts *p*, through which the screws pass, sitting within recesses in the tops of the stringers or ties, substantially as described.

3. The combination, with a tubular rail comprising a vertically and laterally flanged base and arched and laterally-flanged head, said parts overlapping each other in half-lengths, and being secured together and to the stringers or ties by vertical lag-screws D and nuts *p*, as shown, of the electric conducting-wires *l*, passing through the tubular interior of the rail, substantially as described.

ALMERON McKENNEY.

In presence of—
JAMES S. McKENNEY,
A. H. GREENWOOD.