

UNITED STATES PATENT OFFICE.

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METHOD OF ADJUSTING AND HOLDING THE GAGE OF RAILWAY-RAILS.

SPECIFICATION forming part of Letters Patent No. 771,402, dated October 4, 1904.

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To all whom it may concern:

Be it known that I, CONSTANTINE B. VOYNOW, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Means for Adjusting and Holding the Gage of Railway-Rails, of which the following is a specification.

My invention relates to means for accurately determining and thereafter permanently maintaining the gage of railway-rails, and particularly of those on city traction-lines.

It has for its object the production of such means of a type that may be employed with any type of equipment that will not call for special implements or skill in setting and that will be simple, efficient, and economical in manufacture. Heretofore it has been necessary to use special devices of this character to accord with the character of the equipment in each case. For electric roads employing overhead trolley-wires tie-rods have been used; but for conduit systems the tie-rods have had to be cut, and special construction of yokes and other pieces of apparatus has been necessary to secure the same, with attendant trouble and expense.

I attain my object by combining a rail-brace and tie in such manner that while a solid abutment is produced at any desired point without special skill on the part of the workman setting it an accurate adjustment can be had of the rail in either direction and the rail then locked firmly in position against any lateral displacement.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a combined brace and tie-rod embodying my invention. Fig. 2 is a side view of the same with a rail connected thereto and shown in section. Figs. 3 and 4 are respectively plan and side view of a modified form of the invention. Fig. 5 is a side view of still another modification of the invention.

In Figs. 1 and 2, A is a railway-rail of the

type now usually employed on city traction-lines. These rails are usually laid upon cross-ties of wood; but in some cases they are supported upon metal extensions of the cast yokes surrounding and supporting the conduit structure in which the conductors are carried for supplying current to the cars. In the one case wood, in the other case metal, is the material of the supporting structure; but in either case my invention is not only applicable, but is easily applied. It consists, essentially, of the brace B, solidly secured to the bed structure and supplied with means to move and adjust the rail and to lock the same in position when adjusted. Heretofore, so far as I know, the only rail-braces in commercial use have been those which are solidly set up against the rails, usually on the outside of a curve or switch, for the purpose of preventing spreading. It is quite obvious that such braces can only be placed in position after the rail has been spiked down and that they require some degree of skill in setting because of the possibility of setting the rail in if the brace-spikes are carelessly driven, the gage being thereby injuriously reduced. In such case the only way to remedy the trouble thus created is to pull the spikes, remove the brace, and set it over. According to my invention, however, all difficulties inherent in the old type of brace are obviated and adjustment is not only made easy, but accurate and permanent. Moreover, in case of accidental displacement the rails can be readjusted at any time without other tools than a wrench, it being presupposed that paving materials or other surface obstructions are first removed. The brace B is preferably formed up out of heavy sheet or plate metal with a lower or foot flange *b* and a rising flange *b'*, terminating in a vertical portion *b¹⁰*, which is provided with perforations *b⁹* and *b¹⁹* for a purpose that will be described. In order to render the brace perfectly rigid, a central rib *b³* is formed up out of the body and of such shape that its side walls are in planes substantially at right angles to those of the

foot and rising flanges throughout, its lower end merging into the base or foot flange and its upper end similarly merging into the vertical flange b^{10} . The vertical flange b^{10} is divided on a central vertical line, and its two halves b^4 and b^5 are relatively displaced or staggered during the forming operation. The purpose of this is to form two shoulders b^6 and b^{60} . Resting against the outer face of the part b^4 is a threaded nut d , which lies snugly against the shoulder b^6 , being thereby prevented from turning. Threaded into the nut, but passing freely through the smooth-walled orifice b^9 in the flange of the brace, is the bolt D, whose head lies upon the inside of the flange, as shown. The outer end of this bolt engages with and exerts pressure upon the web a' of the rail A, and as the bolt is screwed home the effect is evidently to force the rail away from the brace. Resting against the inner face of the brace-flange b^5 and lying snugly against the shoulder or offset b^{60} is the threaded nut d' , with which engages the bolt D'. This bolt passes not only through the opening b^{10} of the flange b^5 , but it also passes through a smooth-walled opening in the web a' of the rail, its head lying upon the outside thereof. When this bolt is screwed up, therefore, it tends to draw the rail A toward the brace B.

In setting the device thus described the procedure is evidently simple. The rails having been drilled to receive the bolts D', either before or after being placed in position, the braces B are spiked down (if wooden ties are used) or bolted (if iron construction is used,) so as to bring the vertical flange b^{10} into approximately correct position. The distance of this flange from the web of the rail must always be sufficient to permit of adjustment to some extent without reaching the nut d . The length of the bolts may be made anything desired, although we prefer to have them short, as shown in the drawings. The brace having been set, the gage is determined in the usual or any desired way, and the rail is adjusted thereto by reverse movements of the bolts D and D'. When the desired position of the rail has been accurately reached—as, for instance, by turning up the bolt D' while leaving the other loose—the adjustment is made permanent by finally setting up the second bolt tightly against the rail, the web a' being then obviously rigidly held between the head of bolt D' and the tip of bolt D against movement in either direction.

In Figs. 3 and 4 I have shown a modification of the means for preventing turning of the nuts while manipulating the bolts. In these figures instead of relatively displacing or staggering the two portions of the vertical flange b^{10} to form shoulders I produce small projecting flanges or lips b^7 and b^8 upon the

upper end of the flange b^{10} , these being turned over in opposite directions, so as to overlie the respective nuts d d' , forming shoulders to prevent their turning.

In Fig. 5 I have shown a single bolt whose head D' lies on the outside of the rail-web and which has a nut d^2 screwed tightly home against the inside of the rail-web, so that the bolt is firmly secured to the rail. Now by putting one or two nuts d d' on the bolt and against the faces of the brace the rail may be forced in one direction or the other with but the single bolt.

I am quite well aware that many changes and variations can be made in matters of form and dimensions, material, and even by the substitution of equivalents. All such changes and variations, however, I contemplate as being within the scope of my invention.

What I claim, and desire to secure, is—

1. The means for adjusting and holding the gage of railway-rails which comprises a rigid abutment secured in proximity to the rail, a movable member carried thereby and adapted to engage the rail to adjust the same, together with locking means for the rail also carried upon the abutment, substantially as described.

2. The means for adjusting and holding the gage of railway-rails which comprises a rigid abutment secured in proximity to a rail, a screw-threaded member movable longitudinally in the abutment to engage and move the rail, together with means to lock the same, substantially as described.

3. The means for adjusting and holding the gage of railway-rails which comprises a rigid abutment secured in proximity to but independently of and not touching, a rail, a threaded member carried on the abutment and a threaded bolt to engage the same adapted also to engage and move the rail, together with a locking device for the same, substantially as described.

4. The means for adjusting and holding the gage of railway-rails which comprises a rigid abutment secured in proximity to a rail, movable members carried on said abutment and adapted to engage the rail to move it in opposite directions, substantially as described.

5. The means for adjusting and holding the gage of railway-rails which comprises a rigid abutment secured in proximity to a rail, a pair of threaded bolts carried upon said abutment and adapted to engage the rail on opposite sides, and means to lock the same when adjusted by the joint action of said bolts, substantially as described.

6. In means for adjusting and holding the gage of railway-rails, a bed or support for the rail, as T, a brace or abutment B secured thereto as by bolts C, said brace having a vertical double-shouldered portion carrying nuts d and d' on its opposite faces, bolts D and D'

working in said nuts but passing freely
through the brace-flange, the heads of the
bolts being oppositely disposed, and the ar-
rangement such that bolt D' may be set up to
5 exert a pull on the rail A toward the brace,
while the bolt D may exert a thrust on the
rail from the brace, substantially as described.

In testimony whereof I have hereunto set
my hand, in the presence of two subscribing
witnesses, this 20th day of February, 1904.

CONSTANTINE B. VOYNOW.

In presence of—

WM. H. KENNEDY,

CHAS. A. GALLAGHER.